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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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United Nations Industrial Development Organization

Industrial Feasibility Studies

MANUFACTURING OF THREE-PHASE ELECTRONIC METERS IN CHINA

CPR/107/M/93-12

IPO

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tables
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diagrams
illus.

FEASIBILITY STUDY

OF A JOINT-VENTURE INDUSTRIAL PROJECT FOR THE

MANUFACTURING OF THREE-PHASE ELECTRONIC METERS IN CHINA

CPR/107/M/93-12

February, 1996

Feasibility Study

of a Joint-Venture
Industrial Project for the

Production of Three-Phase Electronic Meters in China

CPR/107/M/93-12

This Feasibility Study was prepared on behalf of UNIDO
by a Project Team whose members were:

- Mr. Marco Caira, Project Leader and Industrial Engineer
- Mr. Virgilio Monaldi, International Market Analyst
- Mr. Tang Shanhua, Local Market Analyst
- Ms Lara Lam, Financial Analyst

Milan, February, 1996

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1.1 Project background and history

1.1.1 Electric power development in China

Based upon the overall strategic plan of China's socialistic modernization program set by the State Council, the development targets of the electric power industry in the coming years are as follows:

- Maintain electric power elasticity equal to unity. In order to do so, the average annual newly-added installed capacity must be 15~17 GW in 1995-1997, and greater than 20 GW in 1998-2000, with the annual growth rates of power and electricity generation accounting for 8-9%.

- Expand the power networks coordinately and simultaneously with power source construction.

- Strengthen technical renovation in the meantime while speeding up the extension type expanded reproduction.

In order to realize these targets the China's government is formulating and instigating specific policies and projects.

- The main administrative mechanism will be the establishment of a new electricity tariff system.

- Nation-wide electricity - saving projects have been given priority.

1.1.2 The project history

Both the new electricity tariff system and electricity saving projects require the use of modern electric meters, especially to service medium and large enterprises. Traditional electric parameter calculation has been performed using the induction-mechanical meters. Because of its single function, this kind of meter cannot offer multi-structure tariff evaluation, remote control, time of day nor daily or monthly measurements of energy, etc.

In order to improve the precision degree of electric parameter calculation and to achieve an automatic management of the electric grid absorption, it is necessary to develop a new multifunction electronic meter.

A preliminary analysis was performed in 1993 by Chinese Chengde Radio Factory, which was interested in developing new electronic meters for industrial use. This analysis indicated the utility of the whole electronic three-phase meter TRIO, made by Italian TXT Company. After preliminary contact, the two firms decided to set up a joint venture in Chengde for the production of the TRIO electronic meters.

1.1.3 The product

TRIO E.M. is a new, all-electronic electricity meter (class 1) for Medium and High Voltage Customers, with Distribution Line Carrier communication capability.

1.1.4 Joint venture partners

Chengde TXT Instrument & Meter Company Ltd. is jointly set up by:

- Chengde Wireless Electricity Factory;
- China Grain and Oil Food Import and Export Company;
- TXT Group.

1.2. Market Analysis

1.2.1 Definition of the basic idea of the project,

The idea for the project originated in the identification of the Chinese Authorities' urgent need to up-grade the overall technological level of the industrial sector (such as the electric power industry). In this area, one of the specific and urgent needs was considered to be a complete reform of the China's electric metrology, with particular reference to the electric metric system.

At present, China does not possess the sophisticated technology that the automatic management of the electric grids would require. That makes it impossible to produce purely indigenous units. On the other hand, the limited availability of foreign currencies would make extremely difficult to import on a continuous basis such high-level technological instrument.

1.2.2 National and regional demand and market for product

The electric power industry in China has been growing rapidly during the last ten years.

At the same time, the progressive development of the electric power industry has resulted in the share of energy consumption for electric generation increasing from 18.6 in 1980 to about 20 % in 1993 and it is likely to continue to grow during next years.

1.2.3 Present utilization, by the Chinese industry, of meters with the same functions

- The average annual production of such a meters in North China Power Group is around 2.5 million sets.

- This current level of electronic meter production is not significant because the industry is only in its inital stages of development.

- At present, electronic meters similar to the Trio-meters, imported from abroad, are used in China for interface purposes at public level with the final objective of carrying-out effective energy-saving programs.

- However, in the more immediate term, the main goal is to fill the information gap resulting from the great difficulty in measuring electricity consumption and establishing the tariffs.

1.2.4 Approximate future size of demand.

Making a conservative assumption, the annual demand of three-phase meters should amount to around 100,000 units per year.

However, the actual market size for electronic meters taking into account the price effect is likely to be in the range of 30-40 %. That means, in actual figures, a market size ranging from 30-40 thousand units.

If, as implicitly assumed by technical consideration, the joint-venture is going to produce, at regime, 10,000 units of electronic meters per annum, the implicit market share would be between 30 and 14.5 % of the total.

1.2.5 Anticipated competition for the project from existing and potential national, regional and international competitors

- At present, there is no other significant foreign competitor in China even if ABB, CN of USA, Landis and Cyr of Swiss and ENH of Germany have each developed electronic meters and introduced them into the market. However, the available information on the level of their selling prices is rather reassuring from the perspective of the JV. The competitors' unit prices range from 1000 to 1200 US$ (+ 33% if custom duties), a level which is far above the J.V.'s unit price of 750 US$.

- It can reasonably be assumed that for another two years no real competitors will be present in the market.

1.3. Raw materials and supplies

1.3.1 Raw materials

The TRIO electronic meter is mainly made up by the following components:

- one ABS case constituted by a cover and a base plate;
- one electronic feeder circuit;
- one sensor circuit;
- one CPU circuit;
- galvanized steelplates for the supporting and the shielding of the circuits;
- wires and connectors.

Almost all the components (electronic and mechanical components and ABS case) are available in Chinese market; only the sensor circuits, due to their very high technological level, will be imported from Italy, even in the long term.

1.4. Location, site and environmental assessment

1.4.1 Natural Environment

Located in north-east of Hebei province, bordered on Beijing, Tianjing, Lianing province and Inner Mongolia, 256 km from Beijing, Chengde is located between the Bashang Plateau and the mountainous area in North China.

1.4.2 Socio-economic environment

- According to the most recent estimates in the first quarter of 1995, GDP grew on a yearly basis, by a reported 11.2 per cent, which represents a marginal slowdown of the overheating that had been in effect since 1992.
  The expected slow-down induced by policy measures will very likely bring the rate of growth of Gross Industrial Output (GIO) sharply down to about 12 per cent in 1995 and further to 11 per cent in 1996.

1.4.3 Government policies, regulations, incentives and restrictions

The government encourages foreign direct investments (FOI) in projects that meets its priorities, with special reference to those that bring in desired technology and capital and

generate exports or substitute for imports and finally, to those projects that upgrade infrastructure or meet its social goals.

- Equity joint-ventures, wholly foreign-owned operations and contractual (or co-operative) joint-ventures are the three principal vehicles for direct investment.

1.5. Engineering and technology

1.5.1 Production process and capacity

The total production process is split up into two sequential process:

1. production of the feeder and CPU cards;
2. assembly of TRIO meter.

During the first year of production the JV makes only the assembly of TRIO meter while the TXT supplies the cards.

The plant is capable of producing 40-50 TRIO meters per day, which assures the maximum production volume of 10,000 pieces/year.

1.5.2 Equipment and Machinery

The majority of the modern machinery and equipment to be installed in the JV will be come from TXT supply sources. The costs of equipment, machinery and industrial vehicles are the following:

- 190,000 US$ for the equipment and machinery supplied from TXT;
- 460,000 YUAN for the equipment and machinery supplied from Chinese partner.

1.5.3 Civil Works and buildings

The factory lay out is defined taking into account the present structure of the buildings and the possibility of a future expansion in production. For the production of TRIO meters the JV needs approximately 2,000 m^2. The Chinese partner will place the North Region buildings at JV's disposal. The buildings cover costs are 2,035,000 YUAN.

1.6. Organization and over head costs

1.6.1 Organizational structure of Joint Venture

The organizational structure makes provision for the shareholders/Executive Management Board over the General Manager/President.

The shareholder/Executive Management Board will consist of five members: General Manager/President from Chengde Wireless Electricity Factory, Vice President/Production Director from TXT, one board member from China Grain & Oil Food Import and Export and two additional members from TXT.

1.6.2 Overhead Costs

Overhead costs are divided into two categories: factory overhead and administrative overhead costs. General factory overhead amounts to a total of 498,750 Yuan. Administrative overhead costs include building taxes (equal to 1.2 % of initial value), office general expenses and marketing expenses and have a total value of 564,500 YUAN.

Thus total overhead costs equal to 1,063,250 YUAN per year at full production.

1.7 Human resources

1.7.1 Employees

The workers and staff for both administration and factory production activities will be hired using public advertising.

Staff for Production and Marketing Division must be new graduates and should have some knowledge of English; the employees are 11.

The production of TRIO electronic meters proposed in the Project refers to 2,000 working hours per year.

The number of workers is 40.

1.7.2 Training of workers and staff

The training can be provided as follows:

- Three production engineers will be trained abroad through lectures and on the job training at TXT's production facilities for two months;
- Workers will be trained through lectures and on the job training at the JV factory for one month. The training course will given by a TXT senior engineer.

1.7.3 Costs

SALARIES

The estimated labor net salaries are:
- workers = 600 YUAN/month
- staff = 1,200 YUAN/month.

To take into account all the benefits (contributions, insurance, bonuses, etc.) a multiplier of 1.6 to the basic salary must be applied. The total cost for salaries of workers and staff is 714.240 YUAN.

MANAGERIAL STAFF

In addition to the President, there are the Executive Managers in the JV: the Production Director, the Administration Director and the Marketing Director.

The Production Director (also Vice-President) will be a Chinese Engineer with good experience in electronic production and knowledge of English language. He will be engaged by TXT and the salary shall be charged to the JV company. The total cost of managerial staff salaries is 283.200 YUAN.

1.8. Implementation planning and budgeting

1.8.1 Pre-production activities

Implementation of the JV project starts from the time of submission of the feasibility study to the Chengde People's Government. Upon its approval, it takes about seven months to start operation.

The preparatory activities vary with phases: finalization of JV agreements, building repairing, training, etc. as follows:

1. Establishment of the JV Company.
2. Building repairing
3. Overseas training
4. Installation of equipment and machinery
5. In factory training

1.8.2 Pre-production costs

The project anticipates pre-production capital expenditures of 322,300 Yuan + 55,000 USD. These include labor and managerial costs during the test run and training, the material and test run costs, the training costs and overseas and in factory during the first and second year.

In addition the JV shall keep a reserve of 350,000 Yuan (for personnel, administration and overhead costs) + 1,200,000 USD (for raw material costs) as working capital.

1.9 Financial and Investment Appraisal

1.9.1 Analysis of Results

With the above inputs, the project shows a positive Net Present Value of 994,634 US.$ using a discount rate of 21%. Thus, the projects is projected to meet the investors' required rates of return, well above the threshold of decision (0 level).

The internal rate of return over the total investment (IRR) seems quite good at 41.4%, representing a calculated spread of 20% over the required discount rate. The spread is quite high, but it should be taken into account that a consistent margin is required for the implicit risk of using an innovative technology, both from the process and market point of view.

Net Profit is positive from the very first year, and the Net Profit to Equity ratio rises as high as 119% in the third year to eventually stabilize around 20% in the latter years of the project. The JV operation is expected to break-even upon reaching 54% of its operating capacity.

Outside financing of 135,000 US.$ in the eighth month of 1996, 350,000 US.$ in the sixth month of 1997, 335,000 US.$ in 1998, and 300,000 US.$ in 2002, all with an estimated interest rate of 15% and a repayment period of around 5 years, are deemed necessary to keep the joint venture in operation and finance its growth.

2. PROJECT BACKGROUND AND HISTORY

2.1 Electric power development in China

"Equally stress extension and conservation" is the fundamental policy for the development of China's energy industry.

Since reform and opening to the outside. China's electric power industry has witnessed significant achievements, especially in the last five years, as the yearly newly - added installed capacity of large and medium sized generating units exceeded 12 GW. Such an achievement has attracted world-wide attention. By the end of 1993, the total national installed generating capacity had reached 182.9 GW.

However, although China's electric power industry is growing at a faster pace, the gap between supply and demand is still conspicuous. The nation-wide shortage of electricity has continued for 24 years. According to statistics, electric power supply is currently short of demand by approximately 20%.

This shortage of electricity is the direct consequence of the long-term imbalance of the supply and demand structure. As a country industrializes, the normal ratio of electricity-consuming equipment capacity to installed generating capacity is around 2:1. In China, however, this average ratio was around 2.4:1 during 1980-1993. This implies that the growth of electric power demand greatly surpassed the electric power supply capacity.

Investment structure dislocation is the basic cause of the improper ratio of electricity - consuming equipment capacity and generating capacity. After thoroughly analyzing the statistical data of many countries, experts with the World Bank hold that the proportion of investment in electric power in developing countries in GNP should be more than 2%, while China's annual average ratio only accounted for 1.24% during the period of 1980-1993. Moreover, a large investment scale in the capital construction and a relative insufficiency in electric power investment have co-existed for a long time.

Moreover, the acute insufficiency of power supply, accompanied by great waste of electricity, has been intensifying the imbalance of power supply and demand. Both the electricity-producing units and-consuming units have great potential for saving electricity. In regard to public utilities, the major task is to curb plants' house service consumption rate and line loss rate. Presently, not only is China's network framework comparatively weak, but the growth of urban and rural grids is seriously backward as well. Facilities and equipment are obsolete and have been worn down over the years without proper repair, resulting in a great loss in energy delivery and the failure to match the growth of power consumption in urban areas and the countryside. In regards to power utilization, the electricity consumption per unit GDP is rather high. Through technical renovation and technological advancement, there are bright prospects for saving energy and reducing consumption.

Based upon the overall strategic plan of China's socialistic modernization plan set by the State Council, the development targets of the electric power industry in the coming years are as follows:

- Maintain electric power elasticity equal to unity. To do so, the average annual newly-added installed capacity must reach 15~17 GW in 1995-1997, and be greater than 20 GW in 1998-2000, with the annual growth rates of power and electricity generation accounting for 8-9%.

- Expand the power networks coordinately and simultaneously with power source construction.

- Strengthen technical renovation while accelerating the extension type expanded reproduction.

In order to realize those targets the China's government is undertaking certain projects.

- A new electricity tariff system will be established. A scientific and reasonable pricing mechanism which will meet the requirements of market economy is being developed. This mechanism will more accurately price the provision of its product and will ensure an adequate financial contribution towards the needs of the national economy and societal development. It will also ensure efficient and on time loan and tax repayment, as well as meet investor's requirements in obtaining reasonable rate of return on their equity. Time - of - use pricing for peak and off peak, dry and wet season will be promoted vigorously. The more economically - developed regions are planned to be the forerunners in implementing a new pricing mechanism.

- Nation-wide electricity - saving is a priority project of the Chinese government.

Electricity conservation will be strictly enforced. Every effort must be made to improve technical economical indexes and reliability of domestically-made large sized generating units, to extensively carry out the technical renovation of urban and rural grid, and to replace and retire 33 GW of medium and low pressure, high consumption generating units, so that the net coal consumption of thermal power plants will decrease by 50 g/kWh as compared with the present value by the end of this century. Society-wide electricity conservation must be vigorously promoted, electricity conservation techniques must be disseminated and applied, and manufacturing industries must be encouraged and supported to produce electricity-saving type products. In addition, electricity-saving management policies must be instigated using production quotas as electricity consumption per unit product should be reduced by a wide margin. For certain high energy consumption users, the State will encourage and force them to carry out technical renovation through a state industrial policy.

2.2 The project history

Both the new electricity tariff system and the electricity saving project require new electric meters, especially to service medium and large industries.

The traditional electric parameter calculation is performed using the induction-mechanical meters. Because of its single function, this kind of meter cannot offer multistructure tariff evaluation, remote control, time of day or daily or monthly measurements of energy, etc. In order to improve the precision degree of electric parameters calculation and to realize an automatic management of the electric grid absorption, it is necessary to develop a new multifunction electronic meter.

A preliminary analysis was performed in 1993 by Chengde Wireless Electricity Factory, which was interested in developing new entirely electronic meters for industrial use. This analysis recognized the utility of the electronic three-phase meter TRIO, made by Italian TXT Company as reference product. After preliminary discussions, the two firms decided to set up a joint venture in Chengde for the production of the TRIO electronic meters.

2.3 The product

- Main Characteristics

TRIO E.M. (fig.2.1) is a new, all-electronic electricity meter (class 1) for Medium and High Voltage Customers, with Distribution Line Carrier communication capability.

It is compact: size 160x300x98 mm.; weight 2,4 kg.; fire-proof, anti-tamper ABS case.

It includes a two-way data Distribution Line Carrier communication system, allowing communication via an external coupler through the medium voltage network. Modems for other types of channel (telephone network, radio) can be provided upon request.

A one-way optical channel which permits a coupling with an optical reader and two-way serial line (IEC 1107 standard) are also included.

An information display (alphanumeric, two lines, 16 characters per line) permits easy reading of measured and key diagnostic data, with any ambient light level.

Powerful processors and large data memory capacity permit time-of-day, daily and monthly measurement of energy (active and reactive), power over programmable integration periods, and other data.

TRIO E.M. supports any tariff structure, as well as new and advanced metering needs, including quality of service metering.

Two-way communication capabilities and fully programmable communication protocols permit to connect TRIO E.M., as an intelligent peripheral, to advanced Customer Service Automation Systems.

A high degree of reliability is achieved by a high level of integration, the use of well-proven electronic components, advanced hardware design (electromagnetic compatibility class 4), superior software design methodology and extensive laboratory testing.

A novel, extremely high-reliability, removable memory module is included in TRIO E.M. (in addition to more conventional data protection mechanisms) for retention of all billing data, in the event of meter failure or loss of operating power of the meter: This avoids using mechanical clock-work displays as back-up, and ensures very complete storage of billing data.

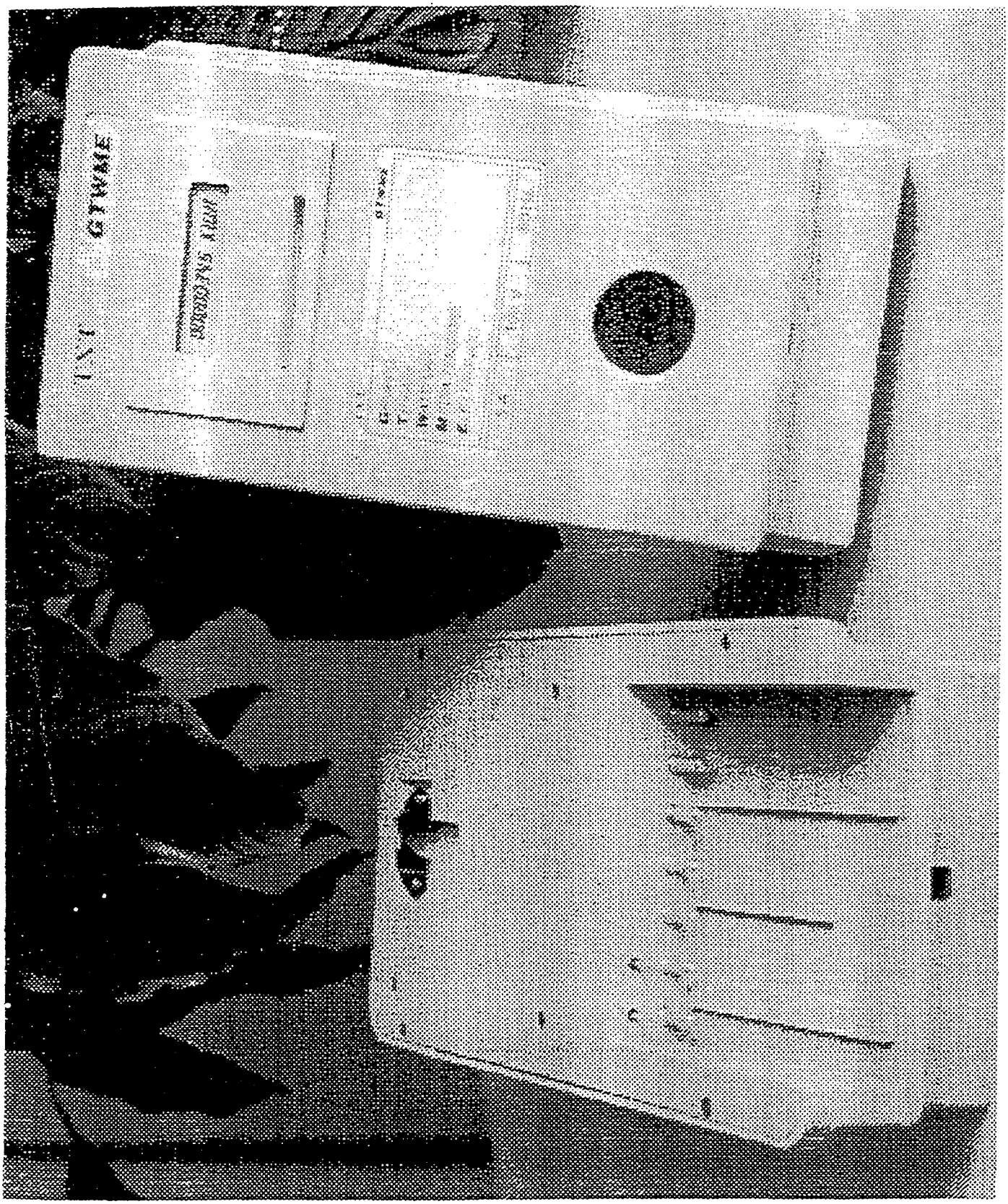

Figure 2.1 - TRIO E.M.

The TRIO E.M. is fully engineered for production and compliant major utilities with functional and interface specifications, both electrical and mechanical. It can easily be reprogrammed to meet different billing and measurement needs.

- ***Major functions***

- Digital measurement and processing with any phase unbalance or asymmetry.

- Main measurements: active and reactive energy and power; programmable time-of-day, day-of-week, seasonal billing rates.

- Other measurements; loop and phase voltages, currents, power factor, instantaneous active and reactive power, average power over 15 sec., 1 min., 5 min., 15 min.

- Recording of power load curves: daily, weekly or monthly, both active and reactive.

- Communications: Distribution Line Carrier modem; optical channel; one serial line for communications to user devices (e.g., load management).

- Fully programmable via Distribution Line Carrier modem or local Multifunction Terminal (also available as a TXT product).

- Extensive diagnostics to increase device availability, to protect data and to detect tampering.

- **Technical Characteristics**

Measurement class:	1
Supply Voltage:	
Nominal Value:	Vn= 100 V
Acceptable supply range:	-60% to +20% Vn
Nominal Frequency:	Fn= 50 Mz ±5%
Tolerable overloads:	
permanent:	up to 130% Vn
transient:	up to 200% Vn
Power Consumption:	< 10 VA
Voltmetric Input:	
Reference Voltage Vn (IEC 186):	100 Vrms ±20%
Waveform:	symmetric sinewave
Total Harmonic Distortion:	< 20%
Current Input:	
Reference current Ib (IEC 186)	5 Arms
Maximum current (Imax):	1.5 Ib
Measurement field:	from 0.1 Ib to 1.5 Ib
Instantaneous overload (IEC 1036):	20 Imax for 0.5 sec.
Waveform:	symmetric sinewave
Total Harmonic Distortion:	any

Communication ports:
One bi-directional serial line (IEC 1107)
One serial line with Optical Coupling (one way only)
Two-way modem for coupling to MT line (Distribution Line Carrier)

Display

Alphanumeric LCD, two lines, 16 characters per line, back it.

Electromagnetic compatibility: Class 4

Size and weight: 160x300x98 mm.; 2.4 kg

Environmental specifications:

Operating temperature range:	-10°C to 55°C
Storage temperature:	-25°C to 70°C
Relative humidity:	93% at 40°C
Atmospheric pressure:	70 kPa to 106 kPa

Reference Standards:
IEC 1036, IEC 185, IEC 186, IEC 85, IEC 348, ENEL: GLI, CISPR16

2.4 Joint venture partners

Chengde TXT Instrument & Meter Company Ltd. is jointly set up by:

- Chengde Wireless Electricity Factory;
- China Grain and Oil Food Import and Export Company;
- TXT Group.

2.4.1 Chengde Wireless Electricity factory

C.W.F.F. is located in 10 Dongxing Street Chengde, Hebei province-China.

The Company was established in 1968; it is under the Chengde Municipality control.
The factory is located in two different but nearby locations in the Dongxing Street (so called south and north region). CWE factory overall covers 3967 m^2 area (2200 m^2 in south region and 1767 m^2 in north region). The work shops and the offices cover 1980 m^2 area in south region and 1180 m^2 in north region; in north region some bungalows cover a 507 m^2 area.
In 1995 C.W.E. factory employed 257 staff and workers (165 technical workers, 50 technical staff and 42 administrative and management staff).

The factory's two regions produce two different types of product: the south region produces electrical and electronic components, whereas the north region produces mechanical components. The production of south region factory is essentially focused on: velocity meters, electronic switch board, relays, overload breakers and sounds speakers boxes.
The north region produces mechanical components as mechanical conveyor, reducers, truck dampers.

C.W.E. factory has 1.4 million Yuan of net fixed assets and approximately 0,64 million Yuan invested in circulating capital.
In 1993 it produced 5.687 million Yuan (700.000 $ US.) in goods.
In 1994 it produced 11.357 million Yuan (.385.000 $US.) in goods.

2.4.2 China Grain Oil Food Import and Export Company

C.G.O.F.I.E. company is a state ownership company; the legal location is in Jia 2, Beilis, Dong Sanhuan, Beijing. It is one of the largest state-running company in the grain and oil import-export field. It has three branches, 108 forms in China and offices in many parts the world.

C.G.O.F.I.E. company will participate to the JV only with a ready cash investment.

2.4.3 TXT Group

General Information

TXT is an independent group of companies, specializing in high-reliability computer based systems for the professional market.

The structure of the TXT group is summarized below.

- TXT Group S.r.l.

  is the holding of the group having the stock control of the other companies.
  TXT Group S.r.l. is owned by TXT managers.

- TXT S.p.A.

  TXT S.p.A. is concerned with Design, Production and Marketing of (microprocessor based) apparatuses for the following applications field:

  - energy management
  - building automation
  - plant's monitoring and data collection systems

- TXT Ingegneria Informatica S.p.A.

  This company is controlled by TXT Group S.r.l. and participated by the French Group GSI - Generale the Service Informatique S.A. (based in Paris).

  TXT Ingegneria Informatica is a systems and software company, operating in the following fields:

- Factory Automation;

- R&D projects on several aspects of the software and data-base technology, in co-operation with research institutions (both national and European) and European leading companies;

- Software design and development support to major Italian companies in the Aerospace command and control areas;

- Connectivity products: software for integration among etherogeneous computers.

Location and facilities

The independent companies of the TXT Group areas structured as one integrated organization. The number of personnel is about 100. All companies are grouped in a single site, located in Via Socrate, 41 20128 MILAN (ITALY)

TXT laboratories cover an area of 3500 square meters area and house several computer systems.

Revenues

Revenues of TXT Group (in million - Italian Lire):

	1993	1994	1995
TXT Ingegneria Informatica S.p.A.	8.388	7.945	9615
TXT S.p.A.	7.512	8.074	9.954
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TXT Group	15.900	16.019	19.569

2.4.4 JV Capital

According to the preliminary contract of association on setting up the Joint Venture:

- the total amount of investment of the JV Company is one million and five thousand US dollars;
- the registered capital of the JV company is one million and fifty thousand US dollars;

The investment contribution by each part is as follows:

- Chengde Wireless Electricity Factory and China National Cereals, Oils & Foodstuff Imp.& Exp Corporation: 525,000 US$ takes up to 50 % of the registered capital, in forms of land, buildings, machinery and equipment, premises and cash.
- TXT: 525,000 US$ takes up to 50 % of the registered capital, in forms of know-how, machinery and equipment and cash.

3. MARKET ANALYSIS

3.1 Definition of the basic idea of the project, including a description of the product

The idea of the project originated in the identification of he Chinese Authorities' urgent need to up-grade the overall technological level of the industrial sector.

In particular it became even more evident that crucial industries, such as the electric power industry, could not keep pace with the tumultuous and rather chaotic industrial growth without access to the most advanced sources of technology available in the industrial countries.

In this context, one of the specific urgent needs was considered to be a complete reform of the China's electric metrology, with particular reference to the electric metric system. At present, the traditional mechanical induction electric meters in use of the electric grids of China, because control of these grids. Consequently, strong harmonic variations and negative sequences exert great influences on the measurement precision. To cope with this problem, it was considered to be as a condition "sine-qua-non" for the development of a new type multifunction electronic meter.

At present, China does not possess the sophisticated technology that the automatic management of the electric grids would require. That makes it impossible to develop purely indigenous production units. On the other hand, the limited availability of foreign currencies would make extremely difficult to import on a continuos basis such high-level technological instrument. A simple reference to the available figures can illustrate the importance of this fact. In 1994, only the North China Power Grid, the Northeast Power Grid and some Provinces such as Shandong and Jangsu imported nearly 20,000 set of all-electronic three-phase electric meters from USA, France, Switzerland and Israel.

In 1995 the North China Power Grid continued to import a number of electronic meters. With unit prices of these units ranging from 1,200-1,300 US$, the foreign exchange outflow involved is significant. This is even more so, if account is taken of the fact that the imported meters are currently only used for key lines (i.e. interconnections between different provinces).

It is under these circumstances that the Chendge Wireless Factory located in the area of North China Power Group and the Italian TXT located in Milan started to develop their relationship in view of the creation of a possible Joint-Venture.

The rationale besetting this move is found in the need of the Chengde Wireless Factory to avail itself of the highly-sophisticated technology developed by TXT to start a new production line of the multi-function electronic meters. At the same time, TXT proved to be particularly interested to expand its volume of production by taking advantage of a favorable potential market.

3.2 National and regional demand and market for product

The electric power industry in China has been growing rapidly during the last ten years. By the end of 1993, electricity production grew an average rate of more than 9 % over the same period. Along with the rapid growth of installed generating capacity, the construction of EHV transmission facilities and the expansion of the power network have also been speeding up. By the end of 1993, the total length of 220 kV and above level lines was over 100,000 km.

Now in China there are seven regional power networks and provincial grids:

- Northeast Electric Power Group
- North China Electric Power Group
- Central China Electric Power Group
- East China Electric Power Group
- Northwest Electric Power Group
- Guandong/Guangxi/Yunnan/Guizhou Electric Power Group
- Shandong Electric Power Group
- Sichuan Electric Power Group
- Fujian Electric Power Group

Among these, four inter-provincial power networks have an installed capacity of more than 25,000 MW (i.e. Northeast, North China, East China and Central China).

At the same time, as a result of the progressive development of the electric power industry, the share of energy consumption for electric generation increased from 18.6 in 1980 to about 20 % in 1993 and is likely to continue to growth during next years.

The growth of electric power industry, on the supply side, has been insufficient, however, to keep pace with the rapid growth of the industrial sector on the demand side. (Average 90-94: about 10 %). More recently, industry sector growth, which is usually driven by fixed asset investment, slowed to 16.3 % in 1994 from an average of more than 20 % during the biennium of 1992-93 because of tighter central bank control and investment demand. As in the past, the impressive performance of the industrial sector was underpinned by the non-state sector.

Moreover, this expansion was not evenly balanced throughout the country and the coastal provinces of Jangsu, Fujian, Shandong, Guandgong, Guanxi and Hainan contributed over 60% of the growth the gross value of the industrial output.

As a consequence of this tumultuous industrial growth, electricity consumption of the whole sector increased from 397.1 TWh in 1986 to 629.1 TWh in 1993 and shortfalls in peak electricity became more severe and amounted to about 20 % of demand.

In 1995 and 1996, growth of the industrial sectors is forecasted to become more moderate in line with expectations that liquidity conditions will became tighter as the central bank escalates its battle against inflation. As preliminary indications, industry sector growth is estimated at 12 % in 1995 and 10 % in 1996.

This slowdown should provide a certain relief to the electricity supply but it would not alleviate existing electric power shortages completely.

In fact, according to the most recent estimates, electricity demand is expected to grow according to an electricity demand/GDP growth elasticity of about 1[1]. In actual figures that means that demand would move from 621 TWh in 1990 to 965 TWh in 1995 and 1560 in the

[1] This assumed elasticity is higher than the historical rate for the 1980's, which did not represent satisfying all demand. It can be reasonably stated that past lower-than-planned elasticities reflected suppressed demand as is shown by the fact that electricity elasticities moved in the opposite direction of GNP growth.
Moreover, anything less than 1,0 is a typical of industrialising countries.

year 2000 with a total growth of 55.4 per cent over the first period and 61.6 % over the second period[2].

Despite the revised supply target, this rhythm of growth would very likely only partially reduce electric power shortages (from 5 to 10% of total demand on average).

The feasibility study analyzes as a market area only the North China Electric Power Group area, for the following reasons:

- China is too large a country, compound by numerous regions and provinces which can been easily considered as independent countries, to be analyzed in its entirety.
- each Power Group, which is the principal buyer of electric meters, is an independent company under the auspices of the Ministry of Electric Power;
- the North China Electric Power Group alone supplies more than one hundred million inhabitants with electricity.

At the level of the North China Power Group, electricity generation reached 149.500 TWh in 1994 (i.e. 16.4 % of the total country) with an increase of 15.7 % with respect to 1993. However, this increase was barely in line with the growth of the industrial sector as a general trend while problems of peak electricity shortages continued to affect negatively its performance. At the same time it is possible that the present structure of consumer distribution (i.e. 80 % civil consumers and the remaining 20 % to industry) will keep on changing in favor of the industrial consumers.

On the other hand, it is important to note that in the transformation of primary energy to that for end-use, the utilization efficiency of energy can generally be improved. Therefore, the energy intensity (energy consumption per unit value of output) keeps decreasing with an increased share of electricity in total primary energy and the utilization of other energy conservation measures.

3.3 Present utilization, by the Chinese industry, of meters with the same functions

- The average annual production of such a meters in North China Power Group is around 2.5 million sets.

- At the same time, the production of electronic meters is not important because it is just in its initial phase of production.

- At present, electronic meters currently imported that are similar to the trio-meters are used in China for interface purposes at public level with the final objective of carrying-out effective energy-saving programs.

- However, in the more immediate term, the main goal is to bridge the information gap resulting from the great difficulty in measuring electricity consumption and fixing the tariffs.

3.4 Historical trends and estimates of future trends in costs and prices

According to the available data, the prices of the conventional three phase meters produced in China since 1990 are the following:

- mechanical: from 24 US$ in 1990 to nearly 100 US$ in 1995;
- electromechanical: from 120 US$ in 1990 to 170 US$ in 1995.
- electronic : 1200-1300 US$ in 1994 (only by import).

[2] A recent World Bank study estimates that electricity demand in 2000 will range from 1,258 to 1,444 to 1661 billion kWh in the low, medium and high forecast respectively.

3.5 Approximate present size of demand; its past growth, major determinants and indication.

At present, the meters manufactured in China and utilized by the domestic industry are all three-phase electro-mechanical meters. The average annual production of this type of instruments is about 2 million sets.

On top of this, another 30 million sets of single-phase mechanical induction electric meters are produced by local industry and used for private consumers.

According to the figures provided by the State Ministry of Mechanical and Electric Industry and the research work carried-out on this issue, in 1994 there were as many as 15 million sets of three-phase electro-mechanical meters in the North China Electric Grid, out of which 3 million sets directly controlled by this Power Group. Large and medium size enterprises accounted for about 8.6 % (258,000 units) of the meters under the control of North China Electric Grid. The annual rate of growth of demand over the past five years can be estimated at about 8 to 10 %, with a progressive acceleration over the past two years (1993 and 1994).

The most recent estimate provided by the Chinese authorities figures the annual demand of new electro-mechanical meters at around 2,000,000 units out of which 1,500,000 units are for substitution purposes (at a rate of 10%) and the remaining 500,000 units represent new additions to the existing stock. If as a preliminary assumption the same percentage of 8.6 is applied to the total demand (i.e. constant share assumption), the requirements of the three-phase electric meters for medium and large enterprises would amount to 172,000 units.

If, on the other hand, a more conservative assumption is made, that is at 5 % level, the same requirements would drop to 100,000 units (i.e. 5% of 2,000,000 units).

However, in both cases, the actual market size for electronic meters taking into account the price effect, is likely to be in the range of 30-40 %. That means, in actual figures, a market size ranging from 30-40 thousand units as a minimum and 52-69 thousand units as a maximum.

If, as implicitly assumed by technical consideration, the joint-venture is going to produce, at regime, 10,000 units of electronic meters per annum, the implicit market share would be comprised between 30 and 14.5 % of the total.

3.6 Anticipated competition for the project from existing and potential national, regional and international competitors

- At present, there is no other significant foreign competitor in China even if ABB, CN of USA, Landis and Cyr of Swiss and ENH of Germany have each developed electronic meters and imported them into the market. However, the available information on the level of their selling prices is rather reassuring from the perspective of the JV. The competitors' unit prices range from 1000 to 1200 US$ (+ 33% of custom duties), a level which is far above the J.V.'s unit price of 750 US$ of its locally produced product.

- It can reasonably be assumed that for another two years no real competitors will be present in the market.

4. RAW MATERIALS AND SUPPLIES

4.1 Raw materials

The TRIO electronic meter is mainly made up by the following components:

one ABS case constituted by a cover and a base plate;
- one electronic feeder circuit;
- one sensor circuit;
- one CPU circuit;
- galvanized steelplates for the supporting and the shielding of the circuits;
- wires and connectors.

In Fig. 4.1 a simplified scheme of TRIO is shown.

Both the cover and the base plate of the case is made with BAYDUR; this material can be molded and injected. For forecast production rate (10,000 set/year) the injection process is recommended; in North China regions a manufacturer is available

In the following table the main components of the three electronic circuits are related.

ITEM	BRAND
POWER SUPPLY CIRCUIT	
Feeder card	Chinese supplier
Integrates	National or equivalent
Transistors, diodes, zener, etc.	SGS, etc.
Resistances	Chinese supplier
Transformers, inductances, etc.	Newport, Enco, Elma or equivalent
Capacitors	Chinese supplier
Connectors	Chinese supplier
SENSORS CIRCUIT	
Sensors card	Italian supplier
Integrates	Harris
Sensors	TXT
Connectors	Italian supplier
CPU CIRCUIT	
CPU card	Chinese supplier
Integrates	National, Motorola, Xicor, Texas, Toshiba, Intel, Oki, Lattice, SGS, Analog, Maxim
Transistors	Siemens or equivalent
Diodes, zener, led, etc	Siemens, Amp or equivalent
Resistances, trimmers, etc.	Chinese supplier
Inductances, transformers, etc.	Chinese supplier
Capacitors	Adveco, etc.
Connectors, base-plugs, dip-switch, etc.	C&K, Augat, Robinson Nugent
Display, keyboard	Optrex or equivalent

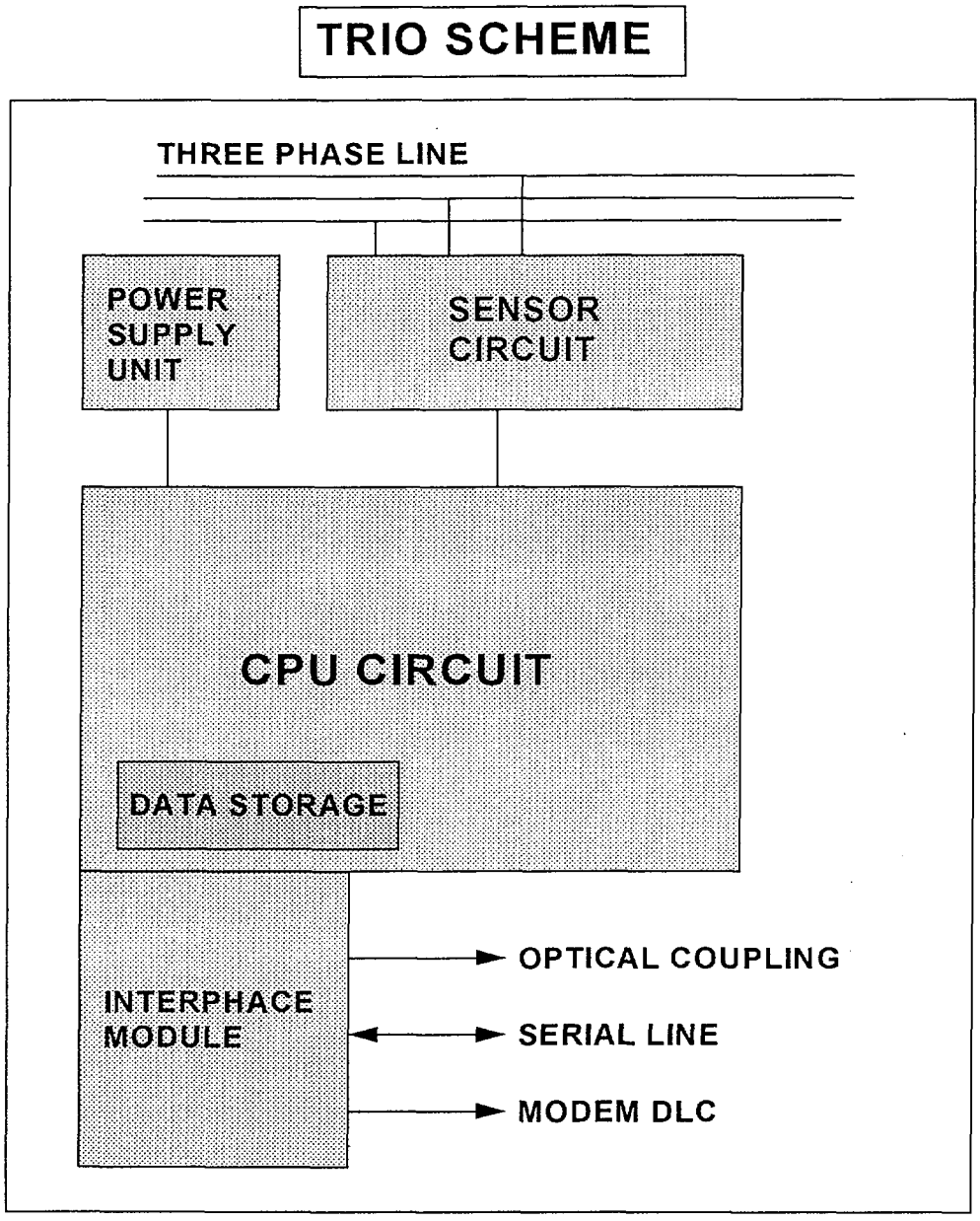

TRIO SCHEME
THREE PHASE LINE
POWER SUPPLY UNIT
SENSOR CIRCUIT
CPU CIRCUIT
DATA STORAGE
INTERPHACE MODULE
OPTICAL COUPLING
SERIAL LINE
MODEM DLC

Figure 4.1

Almost all the components (electronic and mechanical components and ABS case) are available in Chinese market; only the sensor circuit, because of the very high technological level, shall be imported from Italy, even during the long term production phase.

4.2 Costs

In the following table the cost per set of raw materials are related.

ITEM	Foreign cost (US$)	Local cost (Yuan)
ABS Case		83
Power supply circuit	45	373
Sensor circuit	80	
CPU Circuit	380	3154
Steelplates		75
Other components		83
Total cost	**505**	**3768**

In the other components item the costs of wires, plugs, screws, PCB film , cardboard box and user manual are taken into consideration.

4.3 Energy

The JV factory will use electricity for lighting and processing. The total requirement for this service at the full production will be about 120,000 kWh/year; the total cost is 44,000 Yuan/year.

5. LOCATION, SITE AND ENVIRONMENTAL ASSESSMENT

5.1 Natural Environment

5.1.1 Geographical, social and economic characteristics

Located in north-east of Hebei province, bordered on Beijing, Tianjing, Lianing province and Inner Mongolia, 256 km from Beijing, Chengde is located between the Bashang Plateau and the mountainous area in North China (Figures 5.1, 5.2).

5.1.2 Area and Population

A total area of 39,500 Square Kilometers comprises a population of 3,416,000. The total land area of Chengde city is 59,320,000 m^2, out of which 5,132,900 m^2 is the cultivated area and 2,355,800 m^2 is under forest. The size of the Municipal district is about 704 Square km with a relative population of 386,000 people (i.e. about 11.3 per cent).

5.1.3 Climate

The type of climate is Yanshan Mountains climate with transition from frigid the warm temperate zone. The four seasons are clearly separated. The average rainfall is between 400 and 800 millimeters. Frost-free period is from 73 to 170 days.

5.1.4 Mineral resources

Several metal and non-ferrous deposits have been ascertained.
The main metal deposits include iron, copper, vanadium, titanium, chromium, molybdenum, manganese, lead, zinc, silver, gold, etc. Non-ferrous metals include coal, galena, asbestos, plaster stone, crystal, cryolite, granite, phosphorus, refractory clay, betonite, zeolite, marble, silica and limestone. The reserve of limestone is the most important in the Province while the deposit of low-grade phosphorus, with its 200 million tons of material, covers as much as 20 per cent of the North China reserve.

5.1.5 Water resources

Chengde area is well endowed with water resources. Four rivers are flowing through the city: Luanhe River, Chaohe River, Lioche River and Dahughe River.

5.1.6 Forest resources

Chengde is an important forest zone in Hebei province, with rich resources of fruits and wild annuals. Area under forest is about 21,156 million m^2, while total forest resources can be estimated at 31.594 million cubic meters.

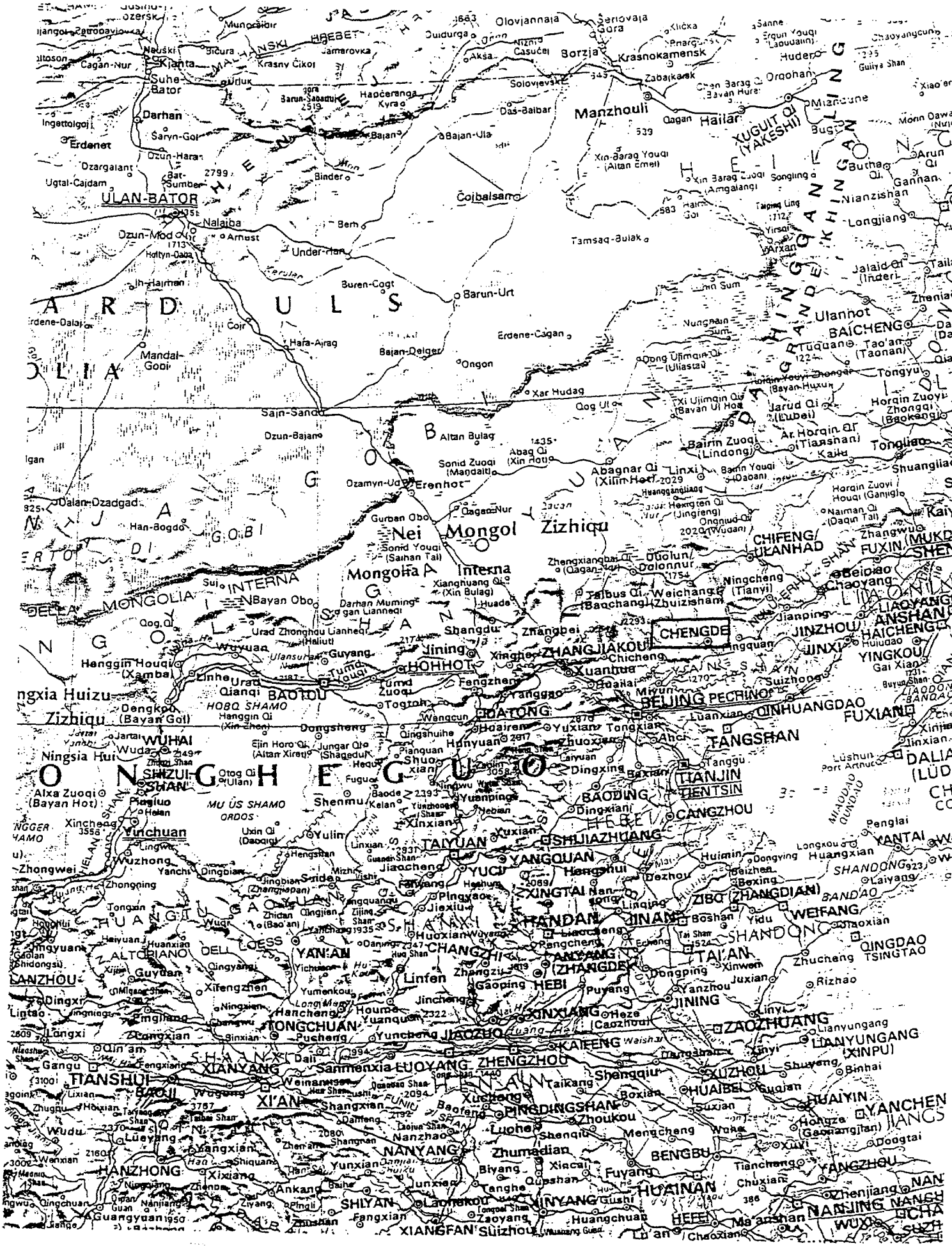


Figure 5.1 - Chengde province

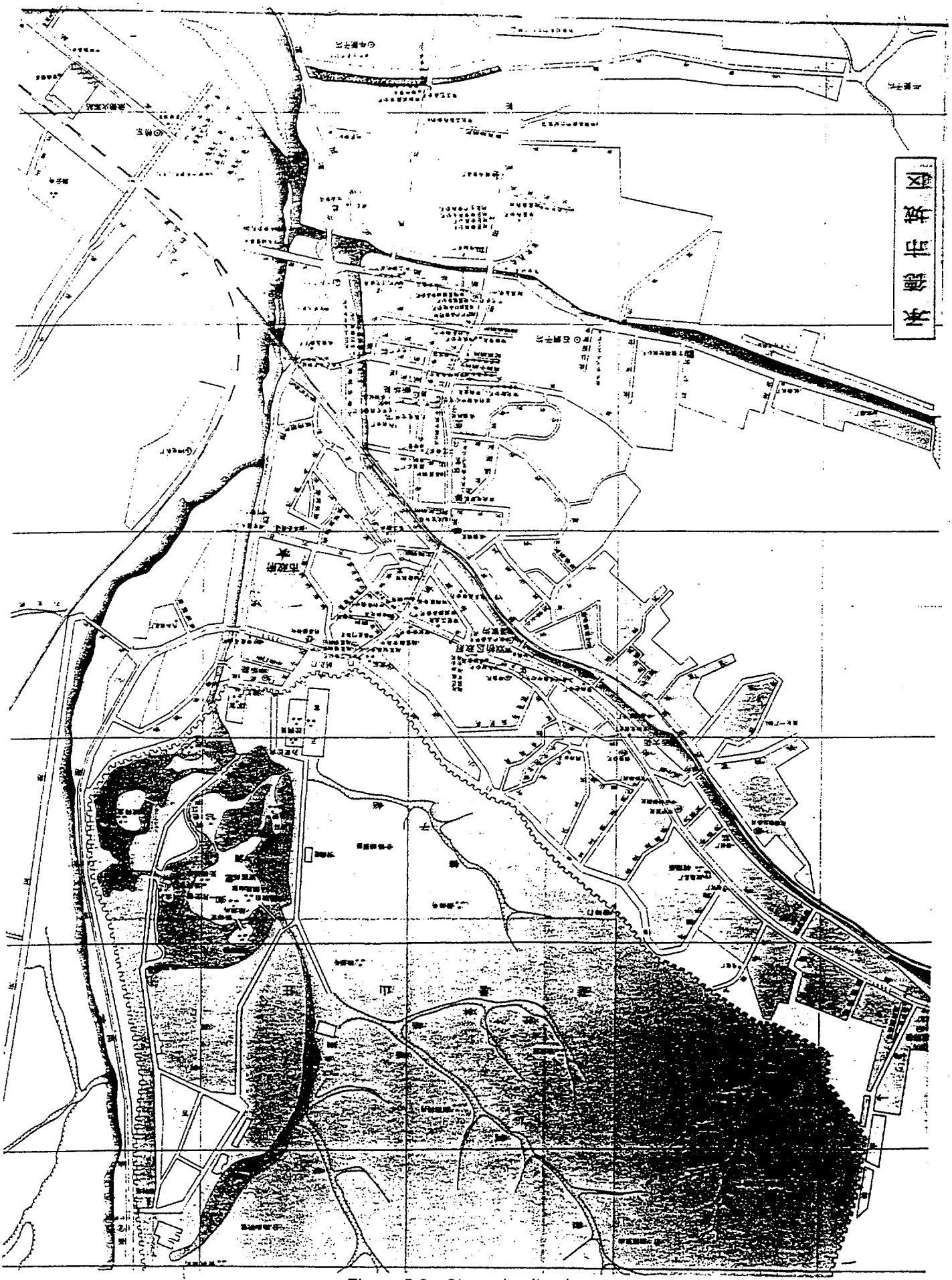


Figure 5.2 - Chengde city plan

5.2 Socio-economic environment

- According to the most recent estimates in the first quarter of 1995, GDP grew on a yearly basis by a reported 11.2 per cent, which represents a marginal slowdown of the overheating that has been continuing since 1992.
  The expected slow-down induced by policy measures will very likely bring the rate of growth of Gross Industrial Output (GIO) sharply down to about 12 per cent in 1995 and further to 11 per cent in 1996.

- Foreign-invested enterprises and, hence, exports should be relatively unaffected by this move, though the real growth of exports is set to slow from 1994's overheated rate.

- Prospects for agriculture are mixed. The drought in northern China may depress grain output, but the continued rapid growth of sideline activities is likely to ensure that the overall growth rate remains around the trend, i.e. at just under 3 per cent.

- All in all, the result of these forecasts is an overall growth rate of 9.7 per cent in 1995, falling to 8.6 per cent in 1996. It is likely that the 1996 slowdown might have serious consequences for employment. Finally, it is expected that the national target for inflation of 15 per cent will not be met unless sharper liquidity squeeze. The most reliable forecasts remain at 18-20 per cent this year falling to 13-16 per cent in 1996[3].

  At the local level, Chengde High and New Technical Industrial Development Zone is a comprehensive one with various functions such as science, industry, commerce, trade and tourism. Among various objectives to be achieved, the development of high and new technology industry is considered to be a top priority.

  Industry has been developing very quickly until the end of 1993 and the GNP of the city has already reached 6,250 million Yuan. The industrial departments are numerous. With metallurgy, food-stuff processing, mechanics electronics, chemical industry, building materials, coal industry and textile as its backbone, an industrial system is taking shape to form a complete set of activities.

5.3 Government policies, regulations, incentives and restrictions

The government encourages foreign direct investments (FOI) in projects that meet its priorities, with special reference to those that bring in desired technology and capital, that generate exports or substitute for imports and finally, those that upgrade infrastructure or meet its social goals.

More specifically, in March 1995, the Chinese government has listed the sectors that are to be encouraged or discouraged according to their various degree of priority. These are the following:

A) "Encouraged" sectors:

1. Agriculture and Livestock
2. Infrastructure and Transports
3. Projects using advanced and sophisticated technology
4. Air sector (civil aviation)

B) "Discouraged" sectors: (i.e. special government "case-by-case" approval is needed)

1. Buildings (i.e. Hotels and Residential buildings)

[3] It is to be pointed-out, however, that talking of national inflation in China is rather a non-sense because this would assume the existence of a well integrated national market.

2. Household machines (Washing machines, Refrigerators, etc.)
3. Selected types of pharmaceuticals

C) "Forbidden" sectors:

1. Press and Television and other on the telecommunication services sector
2. Armaments
3. Environment damaging industries.

Foreign investment in China has picked up greatly since the 1989 Tiananmen Square massacre. The government reports that from 1979, when China began its open-door policy, to the end of 1993, 174,400 foreign funded projects were approved, for a contracted investment [4] value of 221.8 billion dollars. Of this, around $ 62 billion has been put into operation. During 1993, the value of foreign investment contracts signed came to 110 $ billion and the amount of foreign investment actually utilized stood at around $ 27.5 billion.

In 1994, despite the introduction of the new tax regime and strong competition from other law-cost labor sites (mainly Indonesia, Malaysia, Philippines and Korea), the influx of foreign investment continued to be important. In fact, during that year, 47,000 new foreign investment in directly productive sectors for a capital value of 33,8 billion have been approved with a percentage increase of about 23 per cent with respect to 1993.

- Sector composition of foreign investments over the last 15 years, can, broad and large, be synthesized as following:

  a) Industrial sector: 60 per cent
  b) Building sector: 25 per cent
  c) Infrastructure, distribution energy, transport, services and agriculture: 15 per cent.

  The great majority of these projects were "labor intensive" and of assembly-line nature, many being in the textiles, electronics and plastic industries and being largely (80 per cent) situated throughout the coastal Provinces.

- Finally, the average size of the investment made by the foreign partner can be estimated at around 1,7 million of US dollars.

- Equity joint-ventures, wholly foreign-owned operations and contractual (or co-operative) joint-ventures are the three principal vehicles for direct investment. Their role in the national economy can easily be illustrated by these figures:

  a) 34,7 billion dollars of export value (or 28,7 per cent of total Chinese exports)
  b) 51,9 billion dollars of import value (or about 45 per cent of the total Chinese imports
  c) Approx. 14 million people employed (or more then 9 per cent of the total employment in the industrial and service sector).

Investment in joint-ventures come under the 1979 law entitled "Joint Ventures Using Chinese and Foreign Investment", which was further clarified in the implementation regulations of 1983, 1986, 1988 and 1990. Among the areas covered are a) Examination and approval, b) A venture's management structure and operating rules, c) The nature of the contribution to investment capital (which, in addition to cash, may consist of machinery and equipment, materials, industrial property, know-how and other items).
The treatment of labor, dispute-resolution mechanism and dissolution. Provincial and local administrations use the national laws in setting their own regulations.

[4] Including equity joint ventures, co-operative joint-ventures.

5.3.1 Incentive loans and grants

- The central government, the provinces, and the Special Economic Zones (SEZs) do not generally offer outright grants or loans to foreign investors to help finance a new project. However, favored investors are supposed to be granted special treatment under the "Provisions of the State Council of the Peoples' Republic of China for the Encouragement of Foreign Investment (also known as "22 Articles").

  These articles state that "export enterprises and technological advanced enterprises", after examination by the Bank of China, shall be given priority in receiving loans for short-term revolving funds needed for production and distribution, as well as for other needed credit". Experience, however, shows that favorable status under the articles does not guarantee access to the loans.

5.3.2 Interest rates on loans

From July, 1, interest rates for different types of loans are the following:

A) Loan for fixed assets (July 1995)

a) Below one year:	10.20‰	per	month	corresponding	to	12.95	%	per year
b) Between 1 and 3 years:	11.25‰	"	"	"		14.36	"	" "
c) Between 3 and 5 years:	12.60‰	"	"	"		15.39	"	" "
d) Above 5 years:	12.75‰	"	"	"		16.42	"	" "

B) Loans for current business (July 1995)

a) Within half a year: 10.08‰ per month corresponding to 12.79% per year
b) Within one year: 12.06‰ per month corresponding to 15.47% per year

5.3.3 Tax regime and tax incentives

China encourages direct foreign investment mostly through tax reduction or exemption. Recently, China has implemented a tax reform which has an important impact on foreign-invested enterprises (including joint-ventures).

The most significant changes are:

a) The introduction of the 5 per cent turnover tax on financial services;
b) A capital gains tax on income from the sale of properties
c) The implementation of a new value-added tax (VAT).

a) Basic corporate income tax

- The basic rate is 33 per cent, which comprises a 30 per cent national tax and a 3 per cent local tax.

- In practice, an incentive tax regime applies to many Joint Ventures established in the Special Economic Zones (SEZs) and Economic and Technological Development Zones (ETDZs) as well as certain high-tech zones on areas singled-out for preferential treatment. Chengde area is one of these.

- The Chengde preferential tax system for our J-V can be summarized as follows:

  a) Exemption from income tax for two years starting from the first profit-making year

  b) Reduction of 50 per cent for the following three and a half years

  c) A further reduction of 50 per cent if technology remains advanced

  d) In regards to local income tax, exemption for five years (after the first year of profit making)

  e) A further reduction of 50 per cent for the following five years and half.

All this brings the basic corporate income tax rate down to 15 per cent during the first five or six years (depending on first profit-making year).

The following table provides an illustration of such a system, on the assumption that the second year would be the first profit-making year:

Example of tax-reduction system

I				II		III
Income tax (30%)				**Additional local tax (10% of 30%)**		**= I + II**
	Years	Reduct.Rate (%)	Tax rate (%)	Reduct. Rate (%)	Tax rate (%)	Effective Tax rate (%)
	1	-	-	-	-	-
First profit	2[5]	100	0	100	0	0
	3	50	0	100	0	0
	4	50	15	100	0	15
	5	50	15	100	0	15
	6	50	15	100	0	15
	6.5	50	15	100	0	15
High Tech.	7	50	15	50	1.5	16.5
High Tech.	8	50	15	50	1.5	16.5
High Tech.	9	50	15	50	1.5	16.5
	10	0	30	50	1.5	31.5
	11	0	30	50	1.5	31.5
	12	0	30	0[6]	3.0	33.0

It is also possible, with a special authorization, to obtain a reduced rate (about 10 per cent) or even exemption from income tax in connection with the acquisition or introduction of particularly advanced technologies.

Furthermore, the 1994 tax reform has implemented a new V.A.T. (value added tax) carrying a basic rate of 10 per cent for most industries.

However, machinery and equipment imported under a co-operation program (i.e. joint venture) are exempted from this tax.

b) Taxes on foreign exchange gains and losses

[5] First profit making year
[6] Possibility of exemption

Foreign exchange gains and losses are treated as ordinary business income/losses and subject to taxation at normal rates.

c) Withholding tax on profit and dividends

Profits obtained in China by the foreign partner of the JV can be remitted abroad with a payment of 10 per cent of the amount remitted.

Special treatment applies to profits directly reinvested by the foreign partner of a JV.

Under the unified tax law refund such JV may obtain a 40 per cent refund (or 100 per cent refund for high-tech project) of the enterprise tax already paid if they reinvest the earnings in the same project or in a new project.

d) Withholding tax on royalties and fees

A basic 20 per cent tax applies to royalties remitted abroad. This tax is usually reduced to 7 or 10 per cent for priority industries or other situations where the government wishes to promote transfer of technology. (Or, when the technology is provided as well on preferential terms).

ENGINEERING AND TECHNOLOGY

6.1 Engineering design concept

The engineering design of the process is undertaken taking into account the following requirements:

- A high standard quality for production
- Stabilization of production capacity
- Gradual transfer of technology
- Possibilities of market expansion

The JV company makes a production program based on the results of the market analysis as is proposed in Chapter 3; the long term production capacity can easily increase of 20% about.
The proposed production method and configuration of equipment are planned to enable the management to gradually transfer the technology to technicians and workers. Production will reach full capacity within two years; moreover, only in the second year the JV will adopt the full cycle of production process. Quality control levels are set to meet the international standards for electronic meters.

6.2 Processing flow and plant layout

The total production process is split into two sequential process:

1. production of the feeder and CPU cards;
2. assembly of TRIO meter.

The process flow is shown in Figure 6.1 and 6.2. During the first year of production the JV makes only the assembly of TRIO meter while the TXT supplies the cards.

6.3 Production capacity

The plant is capable of producing 40-50 TRIO meters per day, which assures the maximum production volume of 10,000-12,000 units/year.
The production program, shown in table 6.1, can be achieved using the proposed production process and equipment.

Year	Working days/year	Daily production	Yearly production	Capacity
1st	125	6	750	18 %
2nd	250	16 - 17	4,150	41.5 %
3rd	250	32	8,000	80 %
4th	250	40-50	10,000-12,000	100 %

FIGURE 6.1 - FEEDER AND CPU CARDS PRODUCTION PROCESS FLOW

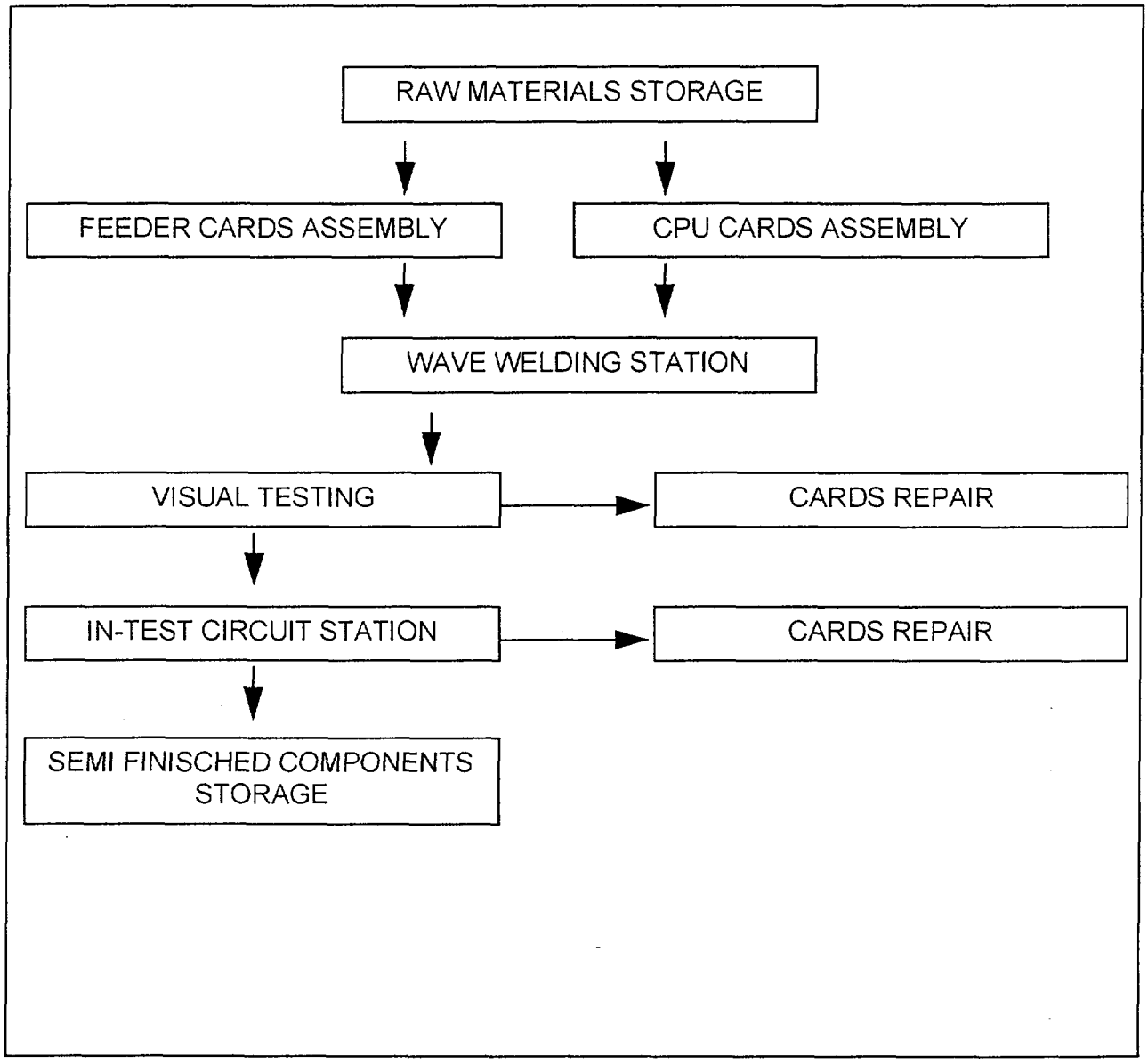
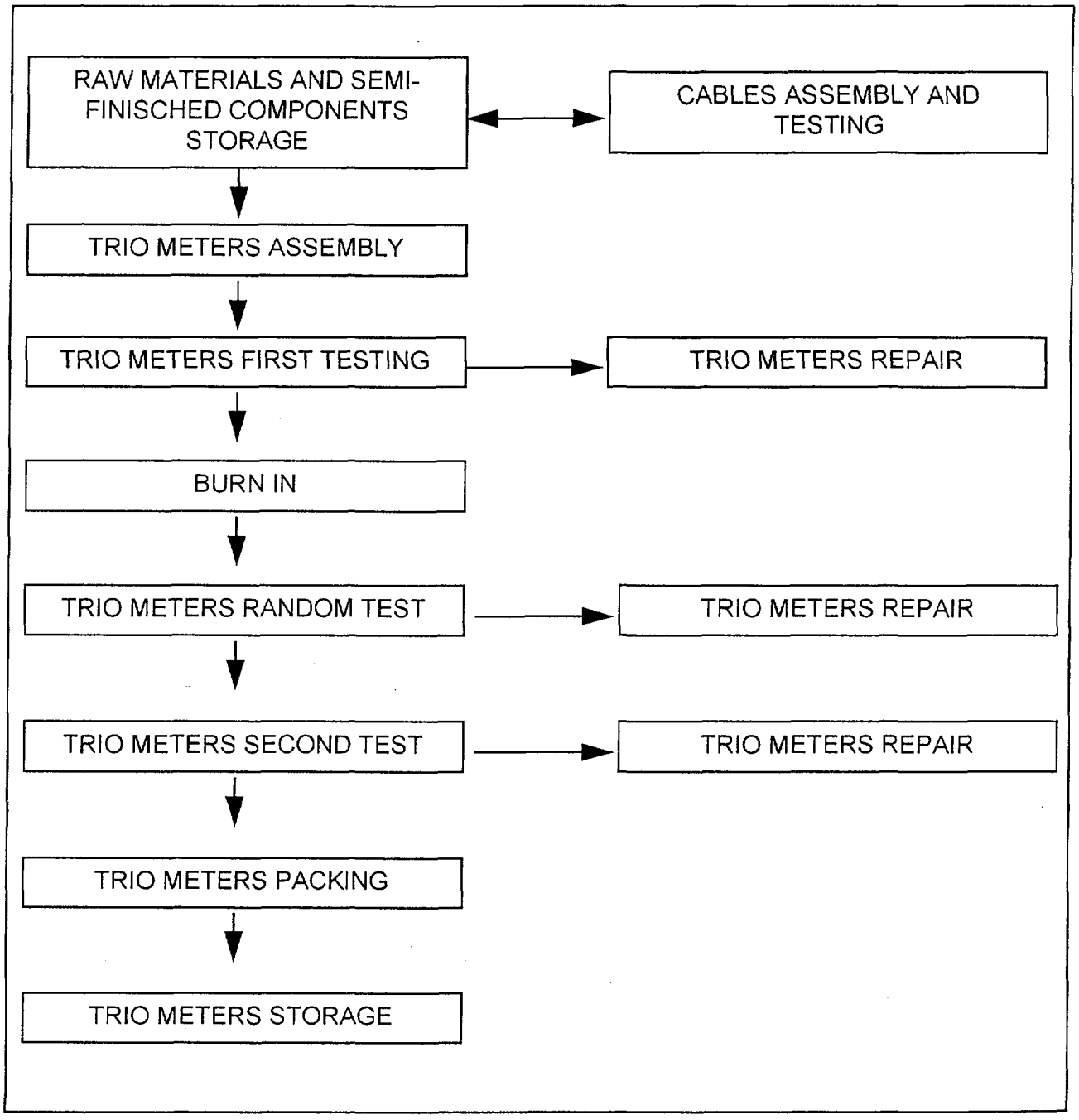


FIGURE 6.2 - TRIO METER ASSEMBLY PROCESS FLOW



6.4 Equipment and Machinery

The majority of the modern machinery and equipment to be installed in the JV will be come from TXT supply sources. The costs of equipment, machinery and industrial vehicles are shown in Table 6.2

ITEMS	NO.OF UNITS	FOREIGN COSTS ($)	LOCAL COSTS (YUAN)
CARDS PRODUCTION LINE			
Feeding cards assembly bench	1	3,500	
CPU cards assembly bench	1	3,500	
Wave welding line	1	25,000	
Visual testing bench	1	1,500	
In test circuit equipment	1	95,000	
First repairing bench	1	1,500	
CARDS PRODUCTION LINE COSTS		**130,000**	
TRIO PRODUCTION LINE			
Cable dressing bench	1	2,000	
TRIO assembly bench	2	4,000	
First/second testing station with the instrumentation: digital oscilloscope, three-phase calibrator, multimeter, waves generator, testers, feeder, RCC bridge, PC, etc.	1	28,000	
Components for burn-in room: heater, controller, feeding system, fire-fighting system, etc.	1		35,000
Electromagnetic compatibility testing station: bench, high-voltage tester, electrostatic discharge tester, electrical burst generator, etc.	1	23,000	
TRIO repairing station	1	3,000	
TRIO PRODUCTION LINE COSTS		**60,000**	**35,000**
Storage, handling and packing components			**75,000**
INDUSTRIAL VEHICLES			
Industrial truck	1		200,000
Office car	1		150,000
INDUSTRIAL VEHICLES COSTS			**350,000**
TOTAL COSTS		**190,000**	**460,000**

6.5 Civil Works and buildings

The factory lay out is defined taking into account the present plans of the buildings and the possibility of a future expansion of the production. For the production of TRIO meters the JV needs approximately 2,000 m^2. The Chinese partner will place the North Region buildings at JV's disposal; in Figures 6.3, 6.4, 6.5 the factory lay out is shown.

The buildings cover costs are the following:

Land and Buildings value	1,785,000 YUAN
Repair and maintenance of the buildings	250,000 YUAN
Total buildings costs	**2,035,000 YUAN**

Figure 6.3 Factory lay out at ground floor.

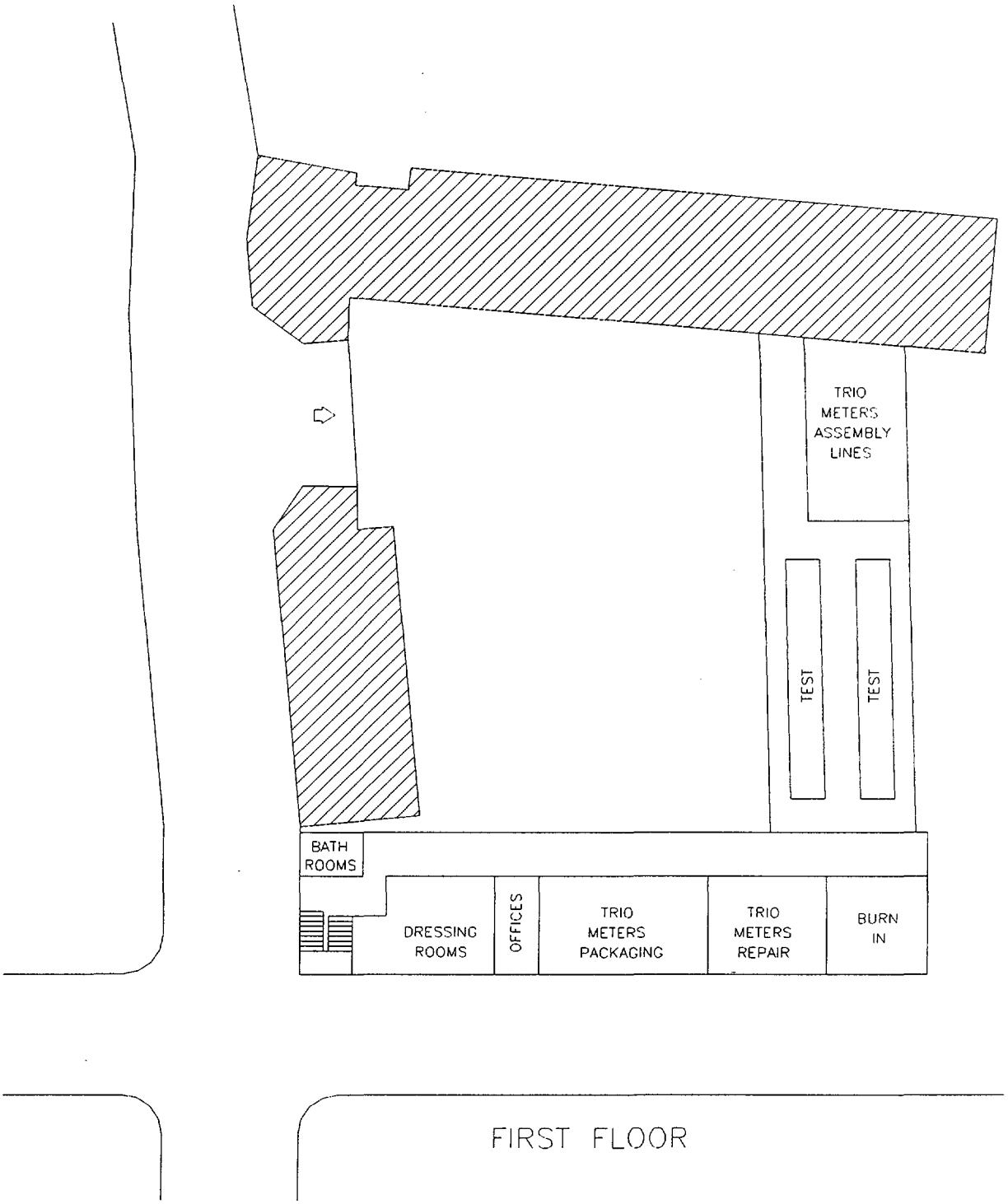


Figure 6.4 Factory lay out at first floor.

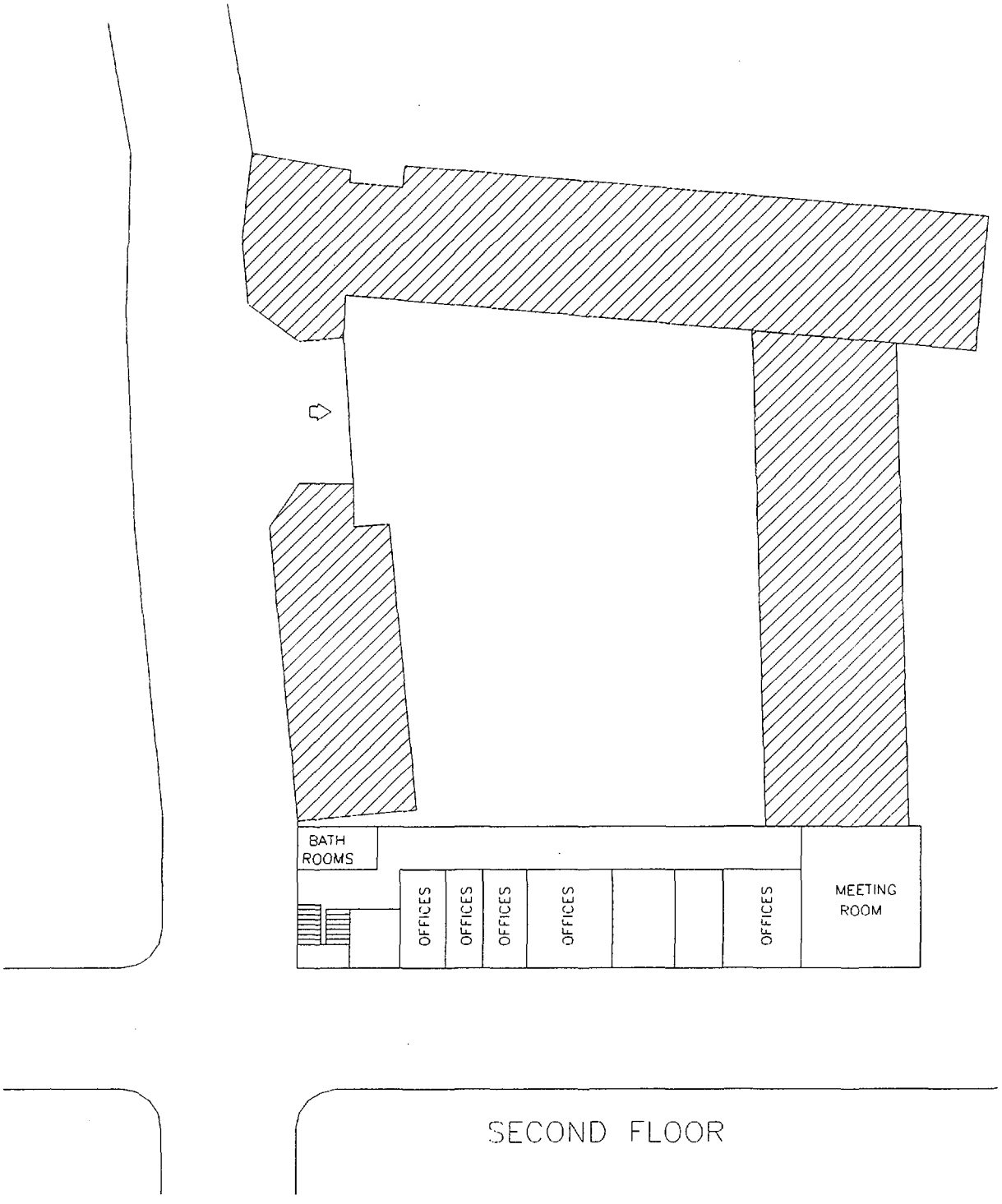


Figure 6.5 Factory lay out at second floor.

7. ORGANIZATION AND OVER HEADS COSTS

7.1 Organizational structure of Joint Venture

The Joint Venture company will be managed under the Chinese management structure with new Italian managerial inputs.

The organizational structure makes provision for the shareholders/Executive Management Board over the General Manager/President.

The shareholder/Executive Management Board will consist of five members: General Manager/President from (Chengde Wireless Electricity Factory), Vice President/Production Director (TXT), one board member by China Grain & Oil Food Import and Export and other two members by TXT.

To the President the full responsibility to run the day-to-day operations of Joint Venture company is given, while the long term decisions will be made by the Board.

Figure 7.1 illustrates the organizational structures summarizing the above functional areas.

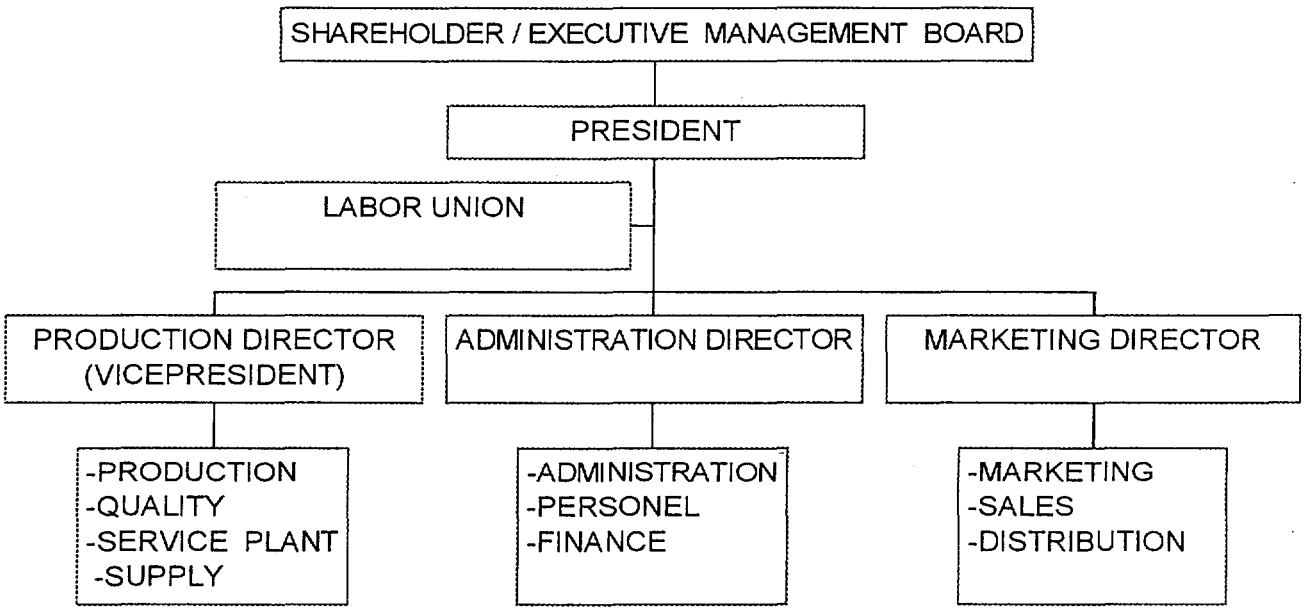


Figure 7.1 - Organizational structure

7.2 Functional Areas

The President is the head of the operational unit consisting of Production, Marketing, Administration.

The Production Division is responsible for choices of raw materials, technological process, assembly, testing, repair and storage the final product. It is also responsible for the quality control of the production process, for the reliability of the process equipment, for the service plants and the maintenance of all the machinery and for the supply of materials.

The Marketing Division carries out the activities related to sales and distributions of meters, including claim settlements. Furthermore, this Division is expected to handle the advertising programming and implementation of sales promotion.

The Production Director and the Marketing Director will support the President for the preparation of tenders.
Furthermore the Production Division and the Marketing Division will supervise quality control and price competition issues in regards to domestic and foreign competitors, one of the crucial elements for ensuring a sound profitable operation.

7.3 Overhead Costs

Overhead costs are divided into two categories: factory overhead and administrative overhead costs. Factory overhead costs include maintenance and general factory administration costs. The value is assessed at 78,750 Yuan/year. Table 7.1 shows the breakdown of the maintenance costs.

ITEM	RATE	PURCHASED VALUE (YUAN)	COSTS (YUAN)
- Buildings	0.5 %	2,035,000	10,175
- Machinery	3.0 %	1,700,000	51,000
- Vehicle	3.0 %	350,000	10,500
- Others	3.0 %	200,000	6,000
TOTAL COSTS			**77,675**

Table 7.1 - Maintenance Costs

The general factory overhead costs is estimated as 1% of the major factory costs: i.e. raw material costs, labor costs, etc. It would cover the costs of factory supplies and insurance for buildings, equipment and machinery. The general factory overhead amounts to a total of 498,750 Yuan.

Administrative overhead costs include building taxes (equal to 1.2 % or initial value), office and general expenses as well as marketing expenses.

The total overhead costs are shown in table 7.2.

COST AREA	AMOUNT (YUAN)
Factory overhead	
Maintenance	78,750
General Cost	420,000
Total Factory overhead	**498,750**
Administrative overhead	
Building tax	24,500
General expenses	40,000
Marketing expenses	1,245,000
Total Administrative	**1,309,500**
TOTAL	**1,808,250**

8. HUMAN RESOURCES

8.1 Recruitment of employees

The workers and staff for both administration and factory production activities shall be hired using public advertising.

Staff for Production and Marketing Division must be new graduates and should have some knowledge of English.

The production of TRIO electronic meters proposed in the Project refers to 2,000 working hours per year.

In the table 8.1 the number of workers and staff at the full production for each Division is shown:

TABLE 8.1

DIVISION	STAFF	WORKERS
PRODUCTION		
I YEAR	3	
RAW MATERIALS STORAGE		2
CABLES ASSEMBLY		1
TRIO METERS ASSEMBLY		5
TRIO METERS I° AND II° TEST		8
BURN IN		1
TRIO METERS RANDOM TEST		2
PACKING		2
TRIO METERS STORAGE		1
INSHOP MOVEMENT OF COMPONENTS		2
DRIVER		1
GENERAL PLANTS		1
MAINTENANCE		1
TOTAL FIRST YEAR	3	27
II YEAR	3	
FEEDER CARDS ASSEMBLY		4
CPU CARDS ASSEMBLY		4
WAVE WELDING STATION		2
VISUAL TESTING		1
IN-TEST CIRCUIT STATION		1
CARDS REPAIR		1
TOTAL PRODUCTION DIVISION	6	40
ADMINISTRATION DIVISION	3	
MARKETING DIVISION	2	
TOTAL NUMBER	**11**	**40**

8.2 Training of workers and staff

The JV company requires a sophisticated technology. The main training activities shall focus on:

⇒ production technology of electronic industrial components;
⇒ electronic measurements;
⇒ testing of components;
⇒ quality control and quality assurance.

The training can be provided as follows:

- Three production engineers will be trained abroad through lectures and on the job training at TXT's production facilities for two months;
- Workers will be trained through lectures and on the job training at the JV factory for one month. The training course will given by a TXT senior engineer.

Taking into account the importance of maintaining high quality standards, a crucial issue for electronic production, qualified training regarding international quality guidelines (i.e. ISO 9000) will be necessary for the management and production team.

8.3 Costs

SALARIES

The level of salary is in principle determined by the Shareholder/Executive Management Board, reflecting the other JV companies salary levels in Chengde area.

The estimated labor net salaries are:
- workers = 600 YUAN/month
- staff = 1,200 YUAN/month.

To take into account all the benefits (contributions, insurance, bonuses, etc.) a multiplier of 1.6 to the basic salary must be applied.

Table 8.2 shows the labor costs of the JV.

Table 8.2

	Units	Salary (YUAN/year)	Annual costs
PRODUCTION			
Workers	40	11,520	460,800
Staff	6	23,040	138,240
ADMINISTRATION	3	23,040	69,120
MARKETING	2	23,040	46,080
Total			**714,240**

MANAGERIAL STAFF

Besides the President three are the Executive Managers in the JV: the Production Director, the Administration Director and the Marketing Director.

The Production Director (also Vice-President) will be a Chinese Engineer with good experience in electronic production and knowledge of English language. He will be engaged by TXT and the salary shall be charged to the JV company.

Table 8.3 shows the managerial and staff costs.

Table 8.3

	Salary (YUAN/month)	Yearly salary (YUAN)
PRESIDENT	5,000	60,000
VICE-PRESIDENT	6,000	72,000
ADMINISTRATION DIRECTOR	3,500	42,000
MARKETING DIRECTOR	3,500	42,000
SECRETARIES (4)	5,600	67,200
TOTAL		**283,200**

9. IMPLEMENTATION PLANNING AND BUDGETING

9.1 Pre-production activities

Implementation of the JV project starts from the time of submission of the feasibility study to the Chengde People's Government. Upon its approval, it takes about six months to start operation.

The preparatory activities vary with phases: finalization of JV agreements, building repairing, training, etc. The detailed schedule is shown in Figure 9.1:

1. Establishment of the JV Company.

The concerned three partners sign the JV agreement and go through the registration, submission of the application form for initiation of factory operation. The day when approval is obtained is considered the day of JV company's establishment. The land and building use right is to be transferred to the JV and its approval is given by the Chengde People Government.

2. Building repairing

The equipment and machinery for mechanical works of Chengde Wireless Electricity Factory are transferred from North region to South region; civil works for repairing and modifying the building in North region will then begin. It will take three months to complete the civil works.

3. Overseas training

Upon the finalization of the JV agreement , three production engineers will be sent to TXT to acquire technical skills related to electronic production, TRIO E.M. scheme, electronic measurements, etc. The training, including lectures and practical training, will last three months.

4. Installation of equipment and machinery

The installation of first trance of machinery for the assembly, testing and burn in of TRIO E.M. will last about one month, after the approval of duty exemption for imported equipment.

5. In factory training

After the first part of recruitment of technical personnel the training will start. The test runs and training of the engineers and workers will last about two months. At the end of first year, the second part of the recruitment of personnel will start. Moreover, the second trance, of machinery for the cards production will be sent by TXT to the JV. In the beginning of second year, a new round of test runs and training will begin and will last about two months. During the in factory tests and training, a TXT engineer will be present.

FIGURE 9.1 - SCHEDULE OF PREPRODUCTION ACTIVITIES

Figure 9.1 - Schedule of Pre-Production Activities

9.2 Pre-production costs

The project anticipates pre-production capital expenditures of 65,720 Yuan + 55,000 USD. These include labor costs during the test run and training, the material and test run costs, the training costs and overseas and in factory.

In addition the JV shall keep a reserve of 350,000 Yuan (for personnel, administration and overhead costs)+ 1,200,000 USD (for raw material costs) as working capital.

In Table 9.1 the costs incurred during the pre-production phases are shown.

Table 9.1

	COSTS (USD)	Costs (YUAN)
I° Year pre-production expenditures		
Overseas training	35,000	
Labor and managerial costs		184,660
Materials and test run costs		35,000
In China training costs	20,000	
TOTAL	**55,000**	**219,660**
II° Year pre-production expenditures		
Labor and managerial costs		32,640
Materials and test run costs		70,000
Training costs	20,000	
TOTAL	**20,000**	**102,640**
Working capital (II° year)	1,200,000	350,000
Total	**1,275,000**	**672,300**

10. FINANCIAL AND INVESTMENT APPRAISAL

10. FINANCIAL AND INVESTMENT APPRAISAL

10.1 General Aspects

The following financial analysis has been carried out using the methodology recommended in the UNIDO Manual for the Preparation of Industrial Feasibility Studies. In accordance with this methodology, UNIDO COMFAR III expert package has been used for the financial and economic calculations.

The financial analysis has been carried out to evaluate the Chinese Joint Venture, established as described in the present feasibility study, for production of electronic three-phases electricity meters and its subsequent distribution in the local market for industrial use. By taking into consideration the required project input costs and output prices, risks and uncertainty this study is aimed at clarifying the main issues of the business plan, calculating:

1) the analysis of the cost estimates for the project, based on the information included in the previous chapters of the study

2) the financial analysis, including the flow of financial resources and the project financial net benefits

All financial calculations have been carried out using the local currency Yuan (given a realistic current exchange rate of 8.4 Yuan for 1 US.$), but the results have been reported using US dollars as the accounting currency, for the sake of simplicity in understanding the figures. As well, it has been assumed that the products will be sold exclusively in the local market, generating revenues in local currency Yuan.

The base case financial analysis which immediately follows involves the financial analysis of the project according to the guidelines and assumptions for project (sales growth, costs, etc.) that have been developed throughout the entire study. Annexe 1 exhibits the COMFAR III Expert printouts of this analysis. A sensitivity analysis of the base case has been carried out as well.

An additonal alternative scenario of the project has also been added. This scenario serves to build upon the base case by developing it to its logical consequence. It is based on different or additional assumptions, and thus provides an alternative plan for the project's development. This additional scenario, whose COMFAR III Expert printouts are included in Annex 2, has not been considered elsewhere in the text of the study and therefore should be considered as a separate broad forecast rather than a integral part of the study carried out.

10.2 Analysis Method

The financial and economic evaluation has been conducted using the methodology which UNIDO recommends as well as standard capital budgeting procedures. The future cash flows are forecasted, generated by the project over the estimated planning horizon of 10 years.

In determining the rate of discount to be used, the appropriate cost of funding was considered, calculating the weighted average cost of capital (WACC). This reflects both the risk involved in Chinese investment and the capital structure[1].

[1]**The discount rate used for NPV calculation is the WACC, where the weights are based on the proportion of the firm's capital structure accounted for by each source of capital. This discount rate takes in account the time value of money, as well as the riskiness of the JV's cash flows.**

WACC = %D * Rd * (1-t) + %E * Re
where Rd is the cost of debt and Re is the expected rate of return on each partners equities

Finally the COMFAR III Expert Software has been used to evaluate the present value of the JV's future cash flow discounted at the cost of capital.

The following assumptions have been made:

i) It has been assumed all the electronic meters production will be bought by the local service provider, namely the North China Bureau, for updating and strengthening of the existing network of electricity consumption detectors for industrial use (i.e. for the application of industrial sites such as factories). Therefore, from the JV standpoint, all the meters produced are sold. This hypothesis of 100% volume produced and sold will last for all the project life.

ii) A model without inflation is considered (real terms analysis) to examine the profitability of the industrial initiative independently from the general economic conditions. The calculations have been carried out using Yuan cash flows for product sales and for all payments which will take place in Yuan, considering US.dollar currency for all foreign expenses (converted to Yuan terms), and finally discounting all cash flows at the calculated weighted rate of return. For the sake of an easy understanding, the final results are reported in US dollars. A relatively high political risk (expropriation, exchange control, repatriation) was taken into consideration.

iii) In the calculation of incremental cash flows, it was assumed that the effect of "home market erosion" was supposed absent (the JV products do not take sales away from the Italian partner products, which in fact is considered not to export any single piece to China, thus avoiding improper competition).

iv) Sensitivity analysis was performed on this base case. Prices were forecast to be 5%, 10%, and 15% percent less than the base case prices. The resulting net present values and corresponding break-even ratios serve to illuminate further the JV's value and risks.

10.3 Input Data

The following sections highlight the input data utilised for the COMFAR III calculations, as derived from the previous chapter of the present feasibility study (Chapt.2 - Chapt.9).

10.3.1 Total Investment Costs

Initial investment costs are defined as the sum of fixed assets (fixed investment costs plus pre-production expenditures) and current assets (net working capital). These costs will be met during the construction phase foreseen for the first 7 months of 1996. The production phase starts on August 1st, 1996, lasting for the last five months of the year, and proceeding for a further 9 years.

The overall investment cost is estimated as 778,095 US.$ for fixed investment assets, of which almost half (300,000 US.$) is due to the estimated value of TXT's equity contribution in the form of technology. Plant machinery & equipment is valued at 105,832 US.$ during the first year (1996) and additional 130,000 US.$ on the second year(1997, first full year of production)

In this case we have estimated the Rec for both the Chinese partners is about 15%, corresponding to the term loan interest, and that the Re for the Italian partner is about 15% plus an Rf of approx. 10% (for ten years investment), thus the Italian Rei equals 25%. The composed Re, weighting the different rates and different invested capitals, is equal to 21%
In addition: %D is practically equal to 0, as the project is totally equity financed over its entire life (except for a short term debt required during the start-up phase). Therefore: WACC= 21% *in our case.*

Pre-production expenditures account for 89,378 US.$ in the construction phase, split by labour (3,085 US.$), training (55,000 US.$), materials and test run costs (4,166 US.$), personnel (5,028 US.$), management (13,869 US.$) and insurance (8,228 US.$) An additional expenditure of 32,219 US.$, mainly related to further training required at a later stage (during production) is envisaged.

As suggested from other Italian and Chinese producers, the technical life of these types of fixed assets is around 10 years; thus a depreciation rate of no lower than 10%/yr. (straight-line method) has been selected. The present model includes a depreciation rate linear to zero.

FIXED INVESTMENTS COSTS	Invest. outlay (US.$)	Depreciation rate (%)
civil works, structure & buildings	242,261	5%
plant machinery & equipment	194,166	10%
auxiliary and service plant equipment	41,666	10%
pre-production expenditure	121,597	10%
TOTAL INITIAL INVESTMENT (without Working Capital)	599,474	

10.3.2 Working Capital

Net Working Capital requirements have been calculated according to the expected minimum days of coverage (MDC) determined for the JV. The foreign supplies have been considered generating the need for a local stock up to 60 days, mainly due to oversee shipment. Local supplies contribute to stock for a limited 30 days: such a figure could still be properly tuned (reduced) during operations with an appropriate selection of the local suppliers.

Similarly, as far as the accounts payable are concerned, a distinction was made in between local and foreign contributions. As a matter of fact, the foreign payable are due to TXT itself, and therefore can be modulated, during the operation phase, in order to give the JV the best opportunities to reduce its financial exposition. For the present estimation, a conservative figure of 60 were considered as the maximum delay in payment allowed to the JV. On the contrary, on local basis, especially at the beginning of the operational phase, it is highly unlikely having payment delays higher than 30 days, at least until long-term relationship will be set-up with the suppliers.

For the same reason, a relatively high figure for the cash-in-hand part of the working capital was considered, equivalent to 25 days, to give the JV company the possibility to fulfil very short term requirements in case no delay would be accepted. The following table summarises the main input for working capital coverage (MDC, Minimum Days of Coverage):

Item	MDC
Raw Material (foreign sourced)	60
Raw Material (locally sourced)	30
Work in Progress	5
Finished Products	30
Accounts Receivable	60
Cash in Hand	25
Accounts Payable (foreign source)	60
Account Payable (local source)	30

The yearly average capital trapped in the company can subsequently be calculated. The first year of production (second half of 1996, 5 months at reduced capacity) requires an investment in working capital of 141,531 US.$, to be increased to 926,000 US.$ during the second year, and reaching around 1,926,000 US.$ in the fourth year, rising slightly thereafter in each successive year.

As it will result, the net investment in WIC results in about 30% of sales level.

10.3.3 Sources of Finance

It is assumed that the entire initial investment is composed by the capital expenditures (478,097US.$), the pre-production expenditures (121,597US.$) and the required initial net working capital is financed by the equity funds of the three partners and outside financing.

The total amount of equity infusion is fixed at 1,043,000 US.$, divided among the three partners with a share of 23% (242,261 US.$) to the Chengde Wireless Factory, a share of 26% (276,488 US.$) to China Grain and Oil Im-Exp, and a 50% share to the Italian TXT (525,000 US.$). It is worth noting that half almost half of TXT's equity contribution (300 000 US.$) is in technology, a non-cash intangible asset.

Partner	Equity Contribution (US.$)	Share %
Chengde Wireless Factory	242,261	23.21
China Grain and Oil Im-Exp	276,488	26.49
TXT Group	525,000	50.29
TOTAL EQUITY	1,043,750	100

The total equity is considered paid in at the beginning of the activity (1996), and the distribution of total investment is delineated in the table below.

Year	1	2	3	4
Total Investment (thous.US.$)	879	946	700	299
Cumulated investment (thous.US.$)	879	1,825	2,525	2,824
Equity contribution (thous.US.$)	1,043	0	0	0

Thus, it can be clearly understood from the cash flow for financial planning that the contributions could be more effectively disbursed in several tranches over the initial months of the first year, according to the construction planning, and in a second tranche on the second year (1997), covering the second part of the investment.

Such a split would increase the equity remuneration, thus improving the financial performance over equity only. However, for the sake of a simple understanding of the cash flow, and for matching with any legal requirement of capital contribution, in the present analysis all the equity is considered paid in at the beginning, resulting in slightly pessimistic (i.e. conservative) analysis.

The project will require outside financing over its life in additional to its self-financing capabilities obtained by the net profit from sales. An initial loan of 135,000 US$ is required in ninth month of Year 1, to be followed by additional loans of 350,000 US$ in the sixth month of Year 2 and 300,000 US$ during Year 7. The loans have approximately 5 year repayment periods with an applicable interest rate of 15%.

10.3.4 Production Phase

The production phase is planned to start from 1.8.1996 (7 months of construction period), and lasts for 10 years.

The production is split into two separate phases, the first being based on Italian sourced components (electronic boards), and lasting for 12 months, under the name of TRIO 1, followed by a (mainly) locally sourced electronic meter, defined as TRIO 2. The production of TRIO 1 will start smoothly, to secure the possibility of a reliable transfer of technology to the Chinese JV. In the same way, the transition of manufacturing from TRIO 1 to TRIO 2, which will take place during 1997, will imply an initial period of steady production, before entering the final increase of production level.

The utilised capacity is nominally up to 18% for the first 5 months (monthly based percentage), increases to 41.5% over the following 12 months, reaching the 80% in the following year, and eventually stabilising at 100% (equivalent to 10,000 pcs per year).

It has been assumed that the increase of production capacity will follow the listed schedule:

Year	Model	produced pieces	equivalent capacity
1/96 - 7/96	TRIO 1	0	0%
8/96-12/96	TRIO 1	750	18%
1/97-7/97	TRIO 1	2,150	36.8%
7/97 - 12/97	TRIO 2	2,000	48%
1998	TRIO 2	8,000	80%
1999	TRIO 2	10,000	100%

Therefore, the year 2000 was selected as reference year. In the present model, all the production is considered to be sold on yearly basis.

The reference price has been defined through the market study; it has been assumed that at the beginning the level will be of 750 US.$, and that the competitive advantage of the JV company will permit the price to remain unchanged until 1998. After that, a yearly decrease in price of 50 US.$ will take place, due to the pressure of other incoming competitors from the year 1999, reaching a final steady level of 600 US.$.

Year	1996	1997	1998	1999	2000
Unit Price	750	750	750	650	600

Production costs are calculated taking into account of the differences of the two products TRIO 1 and TRIO 2, the related electronic boards being sourced mostly from abroad and locally respectively. The present study assumes that the JV will start importing most of the boards from Italy, substituting all the boards but the sensor circuit with locally produced items. As the following table describes, the main advantage is located on easier logistic management, reduced working capital requirement and foreign trade balance reduction, rather than on cost reduction.

TRIO 1 Raw Material List	US.$
ABS case	10
Italian Feeder Circuit	45
Italian Sensor Unit	80
Italian CPU Unit	380
Steelplates	9
Others	10
TOTAL	534

TRIO 2 Raw Material List	US.$
ABS case	10
Feeder Circuit	44
Italian Sensor Unit	80
CPU Unit	375
Steelplates	9
Others	10
TOTAL	528

Personnel costs are divided by categories, and has been considered as direct fixed and indirect fixed costs.

Direct Personnel	year salary (US.$)	1996	1997
workers	1,370	27	40
staff	2,743	4	6
marketing	2,743	2	3
administrative	2,743	1	2

Indirect Personnel	year salary (US.$)	1996
President	1	7,142
Vice-president	1	8,571
Admin. Director	1	5,000
Market.Director	1	5,000
Secretaries	4	2,000

Special attention can be placed on how the fixed costs (administration, marketing, indirect labour...) and the fixed assets depreciation affect the total production cost (all direct cost included) per unit. With reference to the output table Total Production Cost, the following results of margin with respect to unit price and cost are shown. The margin is calculated as the percentage of price exceeding the total unit cost. The table displays the percentage of expenditures addressed abroad.

Year	Total Unit Cost (US.$/pcs)	Foreign share of unit cost (%)	Unit Price (US.$/pcs)	Margin (%)
1996	869	74.6 %	750	- 13.0 %
1997	648	44.7 %	750	+ 15.7 %
1998	598	14.5 %	750	+ 25.0 %
1999	578	14.6 %	700	+ 20.9 %
2000	569	14.6 %	650	+14.0 %
2001	569	14.6 %	600	+ 5.4 %
.....	.....	.....	.....	.....

As a result, we may observe that the initial level of production does not compensate the overall expenditures, leading the margin lower than zero. Since the second year, the utilised capacity generates an increasingly positive margin, until the market policy on price forces downward the margin to the very limited level of about 5%. As an additional consideration, we should consider strictly necessary a further investment in research and development, in order to develop a lower cost version, to compete properly in the fully developed market

which will take place after the 2000. Such an investment should be located around 1999 - 2000, to face the positive projections of the market, and restore an acceptable margin even in presence of a decreasing trend for the price. The envisaged revision of the project could involve both the manufacturing process and the technical design of the product. It is beyond the possibility of the present study to carry out an estimation of the impact of the required project revision.

10.3.5 Income Taxes

According to law in the People's Republic of China, and according to the local authorities, an income tax holiday of three years will be granted to the project. After that, for a period of four years the income tax will be applied at the rate of 15%. Subsequently, for the remaining part of the project, an income tax will be applied of 16.5%.

10.4 ANALYSIS OF RESULTS

10.4.1 Cashflow for financial planning and profit distribution

The cashflow has been evaluated during the start-up period on a periodical (monthly) basis in order to determine the additional financing necessary to finance the JV's monthly growth prior to reaching full capacity. After this initial phase, the cashflow is evaluated on a yearly basis. The results, as previously introduced, show that an excess of equity is placed at the beginning of the period. As a consequence, up to the seventh month of 1996, the periodical cumulated cashflow (please refer to the annex schedules) remains positive without the need for outside financing.

As soon as the first production period approaches, the need for stock starts consuming the excess cash. The need to accumulate raw material stock results in accounts payable rising sharply to 926,000 US.$ in the first month of production. The majority of this amount needs to be repaid the following month, necessitating a loan of 135,000 US.$ to keep the accumulated cash balance positive through the start-up period of the next few months. Additional loans of 350,000 US.$ in the sixth month of 1997, of 335,000 US.$ in 1998, and 300,000 US.$ in 2002, all with an estimated interest rate of 15% and a repayment period of around 5 years, are also required to keep the JV in operation.

Profit distribution starts at the third year (1998), and following the maximum possible profit distribution policy from year 2000, thus using outside financing to a greater extent than equity to finance the JV.

10.4.2 Net Income Statement

The Net Income Statement schedule shows an increasing trend of **sales** from 562,500 US.$ of the first production year (second half of 1996) to 7,000,000 US.$ in 1999. Later on, the decrease of price leads the total sales decreasing to the steady state of 6,000,000 US.$ (year 2001 onward).

As a result of the decreasing of unit price, the **gross profit** from operations steadily declines from the 22.8% of the third year (1998) to a level of 5.4% of 2002 onward. Again, it seems that an appropriate policy of margin recovery is highly recommended to face the decreasing profit.

The **Net Profit** is positive since the very first year, even starting from a limited amount of 10,000 US.$. The Net Profit increases quickly to 482,000 US.$ (second year, 1997), then to 1,244,000 US.$ (third year), and starts to decline after 1999 to reach its lowest level in 2002 of about 208,000 US.$ increasing gradually form then on due to lower interest expenses. Net Profit as a Percentage of Total Sales (see graph) is around or above an adequate 10% until the year 2000, after which it drops significantly to a level slightly less than 4%. This demonstrating the strong effect of the decline in unit contribution (decrease in profit margin) as a result of the drop in the final unit price.

Part of the Net Profit generated is utilised to finance the rapid growth of business volume of the company, and therefore **dividends** start being distributed partially from the third year (1998), remain partially distributed in the years following 1999, and are eventually fully distributed from the fifth year (2000) onward. Such a distribution policy has been arbitrarily drafted according the principle of the maximum profit distribution, given the full coverage of the financial budget. This distribution is reflected on the discounted cash flow over equity (and equity share of each partner). Should be clearly understood that a real dividend policy can only be designed by the shareholders during the implementation phases and according the industrial policy of the company.

The Net Profit to Equity ratio (ROE) again shows a very positive initial sequence (ranging from 46% the second year to 119% the third year), falling later from 61% in 2000 to around 20% from then onwards. The trend can be easily understood from the Net Profit to Total Sales diagram (see Annex.1) As ROE should be compared with the equity return expectation of the partners, it be underlined that the Chinese partner's expectations are exceeded at any single stage of the company business plan, but for the Italian share after 2000 it is not, the discount factor of the TXT Group being set at 25%. Such a difference in the overall evaluation will probably imply a different approach to industrial re-investment and business management of the different parties in the mature years (from 2000 onward) of the company.

As far as the Return On Investment is concerned, the COMFAR III printouts show that the ROI level, which is quite comfortable in the period 1997-2000, declines to about 10% from 2001. It implies that, given the term commercial loan at about 15% rate, the company will not be able to bear the financial costs of a loan. Therefore, the eventual re-investment policy should be planned far in advance with respect to the year 2001, thus benefiting from a better price positioning and financial margin. As a consequence, a different dividend policy would derive from different financial commitment (aimed at re-investment in both industrial equipment as well as in research and development), and therefore a different calculation of each partner's return on equity (and NPV accordingly) would derive.

10.4.3 Discounted cashflows

The financial evaluation has been carried out assuming a basic reference configuration for the investment project, defined by the cost estimation summarised in the previous paragraphs. This basic version does not include any inflation rate. The related printouts are enclosed in the Annex 1 to the present study.

10.4.4 Discounted Cashflow over total investment

- Given the general assumptions of the project, the Net Present Value (NPV) over the project, calculated at 21% of discount rate, is positive (994,637US.$), with a NPV ratio of 34% (total discounted value higher than initial fixed investment by 34%). The evaluation shows a positive result, with a very good margin on the threshold of decision (0 level).

- The internal rate of return over total investment IRR looks very good (41.4%), which represents a calculated 20% spread over the required discount rate. The spread is quite high, but it should be taken into consideration that a consistent margin is required for the implicit risk of facing an innovative technology, both from process and market point of view.

10.4.5 Discounted Cashflow over total equity invested

- The NPV calculated over the equity invested shows a very positive trend, being equal to 1,005,641 US.$ at 21%. The related internal rate of return (over total equity) is calculated equal to 50%.

- As an additional trial, parametric variations over the NPV have been estimated. As in the diagram sketched in the annex, a reduction of 6% in the level of sales revenues would imply the reduction of the IRR from the 41% to a return of 18%, lower than the discount factor of 21%. Such a behaviour indicates a high sensitivity of the present business plan with sales price, according to the steady margin of 5% detected in the total unit cost analysis. Again, the suggestion for a cost reduction policy ranging from the third year of operations is highly recommended to ensure the plan a greater margin of stability.

10.4.6 Discounted Cashflow over equity invested by the Italian partner TXT

- The discounted sequence over the equity invested by the Italian partner TXT Group shows a positive NPV of 161,722 discounted at 25%. The discount factor has been selected according to the Italian partner attitude and expectation.

- The related Internal Rate of Return is equal to 35.4%, which represents a clear confirmation of the positive assessment of the project, having the IRR to be compared with the discount factor of 25%, and therefore resulting in a 11.4% margin over the requested positive interest.

- The dynamic payback period is calculated in 5 years; it means that the overall equity investment is paid back through dividend distribution within a period of five years, which appears to in line with a normal industrial expectation.

10.4.7 Break-even Analysis

A break-even analysis was performed on this base case. First, costs were allocated according to their variable and direct cost contribution. All raw material, factory supplies, and other costs were considered completely variable. All other costs, including all personnel costs, were considered fixed. The JV operation was determined to break-even when it reached 54% of its operating capacity. Again, in the early period of the JV (years 1996-2000) the break-even margin are even better (i.e.lower), reaching its edge in 1998 (22.6%).

The break-even shows a positive results, resulting in a higher margin in the starting period, thus mitigating the in-house risks connected to the handling of the industrial process, and resulting lower (but still large) in the mature years of operations.

10.5 Sensitivity Analysis

10.5.1 Sensitivity Analysis: Assumptions

Sensitivity analysis was performed on the predicted market prices and production levels of the product. This is to take into account the risk of market unpredictability in terms of supply and demand conditions. Prices were forecast to be 5% less than the base case prices while

costs were kept constant. Production levels lower by 10% and 15% were also introduced in hypothetical scenarios.

10.5.2 Sensitivity Analysis: Financial Results

The sensitivity analysis demonstrates that with the reduction of output prices by only 5%, net present value becomes negative. This demonstrates the great price sensitivity of the project, in most part due to the extremely low variable margin (approx. 7%) that is earned from 2001 onwards.

A reduction in output of 5 % and 10%, results in the NPV remaining positive as shown below. Thus, as long as prices remain stable, the JV is not at risk in terms of small fluctuations in its production/sales.

Reduction in Output	Sales revenues (full production) MUS $	NPV at 21% (MUS $)	IRR (%)	Operating Margin (%)
-10%	5.850	.677	34.9	10.8
-15%	5.250	.519	31.7	10.3

10.6 AN ALTERNATIVE GROWTH SCENARIO - FINANCIAL AND INVESTMENT APPRAISAL

An additional scenario has been considered in the feasibility analysis. This involves a long term strategy of the JV investing both to 1) lower product costs and 2) raise production capacity. Assumptions from the base case remain valid if not contradicted from the new assumptions of this scenario that are summarised under the following headings.

10.6.1 Sources of Finance

In order for the partners to more efficiently invest in the project, their equity contribution can be spread out in trances during the first year of construction, instead of the entire amount being invested during the initial month. This contribution program is indicated below.

	TXT Group	China Grain	Chengdu Wireless
1/96	310,000 US.$	1 000 000 Yuan	1 000 000 Yuan
3/96	0	1 322 500 Yuan	1 035 000 Yuan
9/96	215,000 US.$		

10.6.2 Investment Costs

Technology

Due to a strategy designed to achieve lower costs, during the project's third year (1998), an investment in technology of 250,000 US.$ is made. This allows for an 18% reduction in raw material costs on the Sensor Circuit and CPU Circuit, translating into an overall reduction of 16% on raw material for the following years.

Four years later, during 2002, another 250,000 US.$ investment in technology is made to reduce overall raw material costs a further 16% for the following years.

Plant Enlargement

During 2002, an additional investment of 605,000 US.$ in civil works and 235,000 US.$ in production equipment respectively is made, equal to 2.5 times the initial investment in these items as economies of scale have been assumed.

This enlargement would allow for a production increase from 10,000 units/year to an eventual output of 40,000 units per year by 2005.

10.6.3 Production Phase

Production Capacity

Due to investment in plant expansion, it is predicted that production will increase in the following manner from 2002.

Units/Yr:	Year
10,000	2002
20,000	2003
30,000	2004
40,000	2005

Unit Prices

The unit price is predicted to continue to decrease due to the lower raw material costs and increased competition in the market. This price will stabilise around a unit price of $500. Thus, the steady fall in unit price is shown below.

Year	Unit Price	Year	Unit Price
1996	$750	2001	$600
1997	$750	2002	$550
1998	$750	2003	$500
1999	$700	2004	$500
2000	$650	2005	$500

Personnel Costs

Personnel costs rise as the number of employees rise parallel but less than proportional to the rise in production due to economies of scale. In-factory training costs in years 2002-2004 are proportional to increment in workers. In 2002, an overseas training costs of $35,000, equal to that incurred at the beginning of the project, has been predicted. Pre-production labour costs are predicted as 1 month of salary for new workers for years 2002-2004.

10.6.4 Indirect Costs

This alternative scenario predicts that the JV will find itself facing a more competitive environment. As a consequence, not only are efforts made to lower input costs, but marketing costs as a percentage of sales are predicted to double from Year 1(rising from 2.5% of sales in the base case to approximately 5%). This marketing expenditure is predicted to rise proportionaly to the steady increase in production/sales throughout the JV's life. General factory overheads are also predicted to rise proportional to output.

10.6.5 Distribution of Profits

Part of the Net Profit generated is utilised to finance the rapid growth of business volume of the company, and therefore **dividends** start being distributed partially from the third year (1998), remain partially distributed in the years following 1999, and are eventually fully distributed from the fifth year (2000) onward

10.7 ANALYSIS OF RESULTS OF ALTERNATIVE INVESTMENT APPRAISAL

The project shows itself to be highly profitable based on the new assumptions of this alternative scenario. Additional financing to that in the base case will obviously be required in order to support the increased level of growth of the JV.

10.7.1 Cashflow for financial planning and profit distribution

As the total equity under this scenario is dispersed in intervals throughout the first 9 months of 1996, the culminated cash flow balance is kept positive at a more minimal level, thus more effectively utilising the partners' equity.

Loans of 25,000 US.$ in the twelfth month of 1996, 57,000 US.$ in the fourth month of 1997, 400,000 US.$ during the sixth month, and 36,000 US.$ during the eighth month of 1997 are required to keep the accumulated cash flow positive. The 1997 loans are required to finance the significant rise in production from 1996 to 1997. In 1998, it is interesting to note that the added direct contribution due to increased production and lower material costs, generates sufficient cash to cover the resulting greater working capital needs and, more importantly, the 250,000 US.$ investment in technology during that year.

This technology investment results in a decrease in raw material costs of 16% overall during the following years. In 2002, another significant investment is technology and infrastructure (250,000 US.$ and 840,000 US.$ respectively) to raise capacity and lower raw material costs a further 16% overall in raw material costs. By that time, the project will have accumulated enough retained earnings (having enjoyed an operating margin of around 30% in prior years due to lower raw material costs) to finance the cost of these investments internally.

10.7.2 Net Income Statement

Sales revenue increase more sharply due to the slightly more accelerated rise to reach the full production capacity of 10,000 per year before the 2002 investment to increase capacity. Revenues thus rise from 562,000 US.$ in year 1 and reach 7,000,000 US.$ in year 4 at full capacity. In 2001 and 2002, revenues drop as a result of the steady decrease in unit price.

After 2002, capacity is increased and revenues rise according from 10,000,000 US.$ to 15,000,000 US.$ and finally to 20,000,000 US.$ in the last three projected years of the project, with the unit price stabilising at $500.

Profit remains positive in all years, with variable margin ranging from 30 and 40% due to contradictory successive drops in unit prices and reductions in raw material costs. Dividend policy remains the same as in the base case, with the project being financed mainly from outside sources.

Net Profit to Equity Ratio (ROE) steadily rises to peek at a very high 422% in 2005. Return on Investment (ROI) follows the same trend, peaking at 155% the same year and Profit as a Percentage of Sales slightly varying around a healthy 20%.

10.7.3 Discounted Cashflows

The Net Present Value (NPV) of the project, calculated at a 21% discount rate, is highly positive (4,932,590 US.$). The internal rate of return over total investment is also very high (86%) representing almost 65% spread over the required discount rate. The IRR on equity is similarly high at 97%. These results exhibit the strong economies of scale that the project will be predicted to benefit from, and the strong effect of the increased unit contribution resulting from successive decreases in raw material costs.

For the Italian partner TXT, the project exhibits a positive NPV of 1,612,466 US.$ and a IRR of 70%, well above TXT's required return of 25%. TXT's equity will be paid back through dividend distribution within a 4 year period.

ANNEX 1

COMFAR PRINTOUT

Basic Version

SUMMARY SHEET

Project title: TRIO Electronic Meters
Project description: Joint-venture betweem Chinese and Italian partners to produce electronic meters for electricity consumption measurement in China
Date and time:

Project classification: New project
Joint-venture project

Construction phase: 1/1996 - 7/1996
Length: 7 months
Production phase: 8/1996 - 12/2005
Length: 10 periods

Accounting currency: US Dollars
Units: Absolute
Reference currency:
Exchange rate:

INVESTMENT COSTS

	Total construction	Total production	Total investment
Total fixed investment costs	648.095,24	130.000,00	778.095,24
Total pre-production expenditures	89.378,93	32.219,05	121.597,98
Increase in net working capital	0,00	1.938.523,89	1.938.523,89
TOTAL INVESTMENT COSTS	737.474,17	2.100.742,94	2.838.217,11

SOURCES OF FINANCE

	Total inflow

SUMMARY SHEET

Equity capital	1.043.750,00
Long-term loans	1.120.000,00
Total short-term loans	501.597,34
TOTAL SOURCES OF FINANCE	2.665.347,34

INCOME AND COSTS, OPERATIONS

	First year 8/1996-12/1996	Reference year 2000	Last year 2005
SALES REVENUE	562.500,00	6.500.000,00	6.000.000,00
Factory costs	462.876,79	5.478.858,94	5.492.236,56
Administrative overhead costs	3.100,00	7.440,48	7.440,48
OPERATING COSTS	465.976,79	5.486.299,42	5.499.677,04
Depreciation	17.712,40	61.953,57	31.529,76
Financial costs	6.750,00	80.125,00	27.000,00
TOTAL PRODUCTION COSTS	490.439,19	5.628.377,99	5.558.206,80
Marketing costs	61.755,95	148.214,29	148.214,29
COSTS OF PRODUCTS	552.195,14	5.776.592,28	5.706.421,09
Interest on short-term deposits	0,00	0,00	0,00
GROSS PROFIT FROM OPERATIONS	10.304,86	723.407,72	293.578,91
Extraordinary income	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00
GROSS PROFIT	10.304,86	723.407,72	293.578,91
Investment allowances	0,00	0,00	0,00
TAXABLE PROFIT	10.304,86	723.407,72	293.578,91
Income (corporate) tax	0,00	108.511,16	48.440,52
NET PROFIT	10.304,86	614.896,56	245.138,39

SUMMARY SHEET

RATIOS

Net present value	at 21,00 %	994.637,61
Internal rate of return on investment (IRR)	41,40 %	
Modified IRR on investment	18,06 %	
Internal rate of return on equity (IRRE)	50,22 %	
Modified IRRE on equity	21,07 %	

INVESTMENT COSTS - TOTAL
US Dollars

	Total construction	Total production	Construction 1/1996-1/1996	Construction 2/1996-2/1996	Construction 3/1996-3/1996	Construction 4/1996-4/1996	Construction 5/1996-5/1996
Total fixed investment costs	648.095,24	130.000,00	542.261,90	0,00	0,00	0,00	105.833,33
Total pre-production expenditures	89.378,93	32.219,05	963,69	2.832,74	37.832,74	2.832,74	5.104,88
Increase in net working capital	0,00	1.938.523,89	0,00	0,00	0,00	0,00	0,00
TOTAL INVESTMENT COSTS	737.474,17	2.100.742,94	543.225,60	2.832,74	37.832,74	2.832,74	110.938,21
Foreign share (%)	16,16	30,84	0,00	0,00	92,51	0,00	57,84

INVESTMENT COSTS - TOTAL
US Dollars

	Construction 6/1996-6/1996	Construction 7/1996-7/1996	Production 8/1996-8/1996	Production 9/1996-9/1996	Production 10/1996-10/1996	Production 11/1996-11/1996	Production 12/1996-12/1996
Total fixed investment costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total pre-production expenditures	29.500,12	10.312,02	0,00	0,00	0,00	0,00	0,00
Increase in net working capital	0,00	0,00	-463.299,87	858.360,71	-320.807,14	60.794,64	326.719,64
TOTAL INVESTMENT COSTS	29.500,12	10.312,02	-463.299,87	858.360,71	-320.807,14	60.794,64	326.719,64
Foreign share (%)	67,80	0,00	116,27	99,04	99,70	89,99	99,18

INVESTMENT COSTS - TOTAL
US Dollars

	Production 1/1997-1/1997	Production 2/1997-2/1997	Production 3/1997-3/1997	Production 4/1997-4/1997	Production 5/1997-5/1997	Production 6/1997-6/1997	Production 7/1997-7/1997
Total fixed investment costs	0,00	0,00	0,00	0,00	130.000,00	0,00	0,00
Total pre-production expenditures	0,00	0,00	0,00	0,00	8.333,33	21.485,71	2.400,00
Increase in net working capital	-419.746,81	479.680,36	-420.346,43	479.680,36	-420.346,43	479.680,36	156.163,67
TOTAL INVESTMENT COSTS	-419.746,81	479.680,36	-420.346,43	479.680,36	-282.013,10	501.166,07	158.563,67
Foreign share (%)	100,26	99,14	100,12	99,14	103,13	98,88	108,82

INVESTMENT COSTS - TOTAL
US Dollars

	Production 8/1997-12/1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002	Production 2003
Total fixed investment costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total pre-production expenditures	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Increase in net working capital	306.841,05	523.274,51	299.515,32	8.758,80	-1,18	874,01	891,49
TOTAL INVESTMENT COSTS	306.841,05	523.274,51	299.515,32	8.758,80	-1,18	874,01	891,49
Foreign share (%)	-109,37	16,78	10,51	89,22	47.145,38	0,00	0,00

INVESTMENT COSTS - TOTAL
US Dollars

	Production 2004	Production 2005
Total fixed investment costs	0,00	0,00
Total pre-production expenditures	0,00	0,00
Increase in net working capital	909,32	927,51
TOTAL INVESTMENT COSTS	909,32	927,51
Foreign share (%)	0,00	0,00

ANNUAL COSTS OF PRODUCTS - TOTAL
US Dollars

	Production 8/1996-12/1996	Production 1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002
Raw materials	507.005,95	2.309.267,86	4.369.523,81	5.373.809,52	5.285.714,29	5.285.714,29	5.285.714,29
Factory supplies	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Utilities	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Energy	497,62	2.278,69	4.330,55	5.325,88	5.238,57	5.238,57	5.238,57
Spare parts consumed	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Repair, maintenance, material	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Royalties	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Labour	37.476,19	103.981,71	123.540,07	126.010,87	128.531,09	131.101,71	133.723,74
Labour overhead costs (taxes etc.)	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Factory overhead costs	24.739,88	59.375,36	59.375,00	59.375,00	59.375,00	59.375,00	59.375,00
FACTORY COSTS	569.719,64	2.474.903,61	4.556.769,43	5.564.521,27	5.478.858,94	5.481.429,57	5.484.051,60
Administrative overhead costs	3.100,00	7.440,24	7.440,48	7.440,48	7.440,48	7.440,48	7.440,48
OPERATING COSTS	572.819,64	2.482.343,85	4.564.209,91	5.571.961,75	5.486.299,42	5.488.870,04	5.491.492,08
Depreciation	17.712,40	53.413,89	61.953,57	61.953,57	61.953,57	51.961,90	34.652,78
Financial costs	6.750,00	50.875,00	123.000,00	105.750,00	80.125,00	54.500,00	80.625,00
TOTAL PRODUCTION COSTS	597.282,04	2.586.632,74	4.749.163,48	5.739.665,32	5.628.377,99	5.595.331,95	5.606.769,85
Direct marketing costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Marketing overhead costs	61.755,95	148.214,29	148.214,29	148.214,29	148.214,29	148.214,29	148.214,29
COSTS OF PRODUCTS	659.038,00	2.734.847,03	4.897.377,76	5.887.879,61	5.776.592,28	5.743.546,23	5.754.984,14
Foreign share (%)	73,90	44,02	14,21	14,40	14,44	14,45	14,27
Variable share (%)	77,01	84,52	89,31	91,36	91,59	92,12	91,94

ANNUAL COSTS OF PRODUCTS - TOTAL
US Dollars

	Production 2003	Production 2004	Production 2005
Raw materials	5.285.714,29	5.285.714,29	5.285.714,29
Factory supplies	0,00	0,00	0,00
Utilities	0,00	0,00	0,00
Energy	5.238,57	5.238,57	5.238,57
Spare parts consumed	0,00	0,00	0,00
Repair, maintenance, material	0,00	0,00	0,00
Royalties	0,00	0,00	0,00
Labour	136.398,22	139.126,18	141.908,71
Labour overhead costs (taxes etc.)	0,00	0,00	0,00
Factory overhead costs	59.375,00	59.375,00	59.375,00
FACTORY COSTS	5.486.726,08	5.489.454,04	5.492.236,56
Administrative overhead costs	7.440,48	7.440,48	7.440,48
OPERATING COSTS	5.494.166,55	5.496.894,52	5.499.677,04
Depreciation	31.529,76	31.529,76	31.529,76
Financial costs	61.750,00	44.375,00	27.000,00
TOTAL PRODUCTION COSTS	5.587.446,31	5.572.799,28	5.558.206,80
Direct marketing costs	0,00	0,00	0,00
Marketing overhead costs	148.214,29	148.214,29	148.214,29
COSTS OF PRODUCTS	5.735.660,60	5.721.013,56	5.706.421,09
Foreign share (%)	14,29	14,32	14,36
Variable share (%)	92,25	92,48	92,72

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Construction 1/1996-1/1996	Construction 2/1996-2/1996	Construction 3/1996-3/1996	Construction 4/1996-4/1996	Construction 5/1996-5/1996	Construction 6/1996-6/1996	Construction 7/1996-7/1996
TOTAL CASH INFLOW	1.043.750,00	0,00	0,00	0,00	0,00	0,00	0,00
Inflow funds	1.043.750,00	0,00	0,00	0,00	0,00	0,00	0,00
Inflow operation	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	543.225,60	2.832,74	37.832,74	2.832,74	110.938,21	29.500,12	10.312,02
Increase in fixed assets	543.225,60	2.832,74	37.832,74	2.832,74	110.938,21	29.500,12	10.312,02
Increase in current assets	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Operating costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Marketing costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Loan repayment	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	500.524,40	-2.832,74	-37.832,74	-2.832,74	-110.938,21	-29.500,12	-10.312,02
CUMULATIVE CASH BALANCE	500.524,40	497.691,67	459.858,93	457.026,19	346.087,98	316.587,86	306.275,83
Foreign surplus (deficit)	525.000,00	0,00	-35.000,00	0,00	-64.166,67	-20.000,00	0,00
Local surplus (deficit)	-24.475,60	-2.832,74	-2.832,74	-2.832,74	-46.771,55	-9.500,12	-10.312,02
Foreign cumulative cash balance	525.000,00	525.000,00	490.000,00	490.000,00	425.833,33	405.833,33	405.833,33
Local cumulative cash balance	-24.475,60	-27.308,33	-30.141,07	-32.973,81	-79.745,36	-89.245,48	-99.557,50
Net flow of funds	1.043.750,00	0,00	0,00	0,00	0,00	0,00	0,00

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Production 8/1996-8/1996	Production 9/1996-9/1996	Production 10/1996-10/1996	Production 11/1996-11/1996	Production 12/1996-12/1996	Production 1/1997-1/1997	Production 2/1997-2/1997
TOTAL CASH INFLOW	1.001.066,06	210.000,00	575.764,29	225.750,00	150.000,00	800.803,57	187.500,00
Inflow funds	926.066,06	135.000,00	463.264,29	75.750,00	0,00	613.303,57	0,00
Inflow operation	75.000,00	75.000,00	112.500,00	150.000,00	150.000,00	187.500,00	187.500,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	541.602,02	937.196,55	248.003,69	268.801,90	465.726,90	352.674,64	638.798,24
Increase in fixed assets	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Increase in current assets	462.766,19	-62.325,00	142.457,14	136.544,64	-56.412,50	193.556,76	-56.412,50
Operating costs	66.484,64	66.484,64	93.195,36	119.906,07	119.906,07	146.766,69	146.766,69
Marketing costs	12.351,19	12.351,19	12.351,19	12.351,19	12.351,19	12.351,19	12.351,19
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	0,00	6.750,00	0,00	0,00
Loan repayment	0,00	920.685,71	0,00	0,00	383.132,14	0,00	536.092,86
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	459.464,04	-727.196,55	327.760,60	-43.051,90	-315.726,90	448.128,93	-451.298,24
CUMULATIVE CASH BALANCE	765.739,87	38.543,33	366.303,92	323.252,02	7.525,11	455.654,04	4.355,80
Foreign surplus (deficit)	488.166,67	-900.583,33	244.083,33	-155.708,33	-425.041,67	294.583,33	-601.791,67
Local surplus (deficit)	-28.702,63	173.386,79	83.677,26	112.656,43	109.314,76	153.545,60	150.493,43
Foreign cumulative cash balance	894.000,00	-6.583,33	237.500,00	81.791,67	-343.250,00	-48.666,67	-650.458,33
Local cumulative cash balance	-128.260,13	45.126,66	128.803,92	241.460,35	350.775,11	504.320,71	654.814,13
Net flow of funds	926.066,06	-785.685,71	463.264,29	75.750,00	-389.882,14	613.303,57	-536.092,86

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

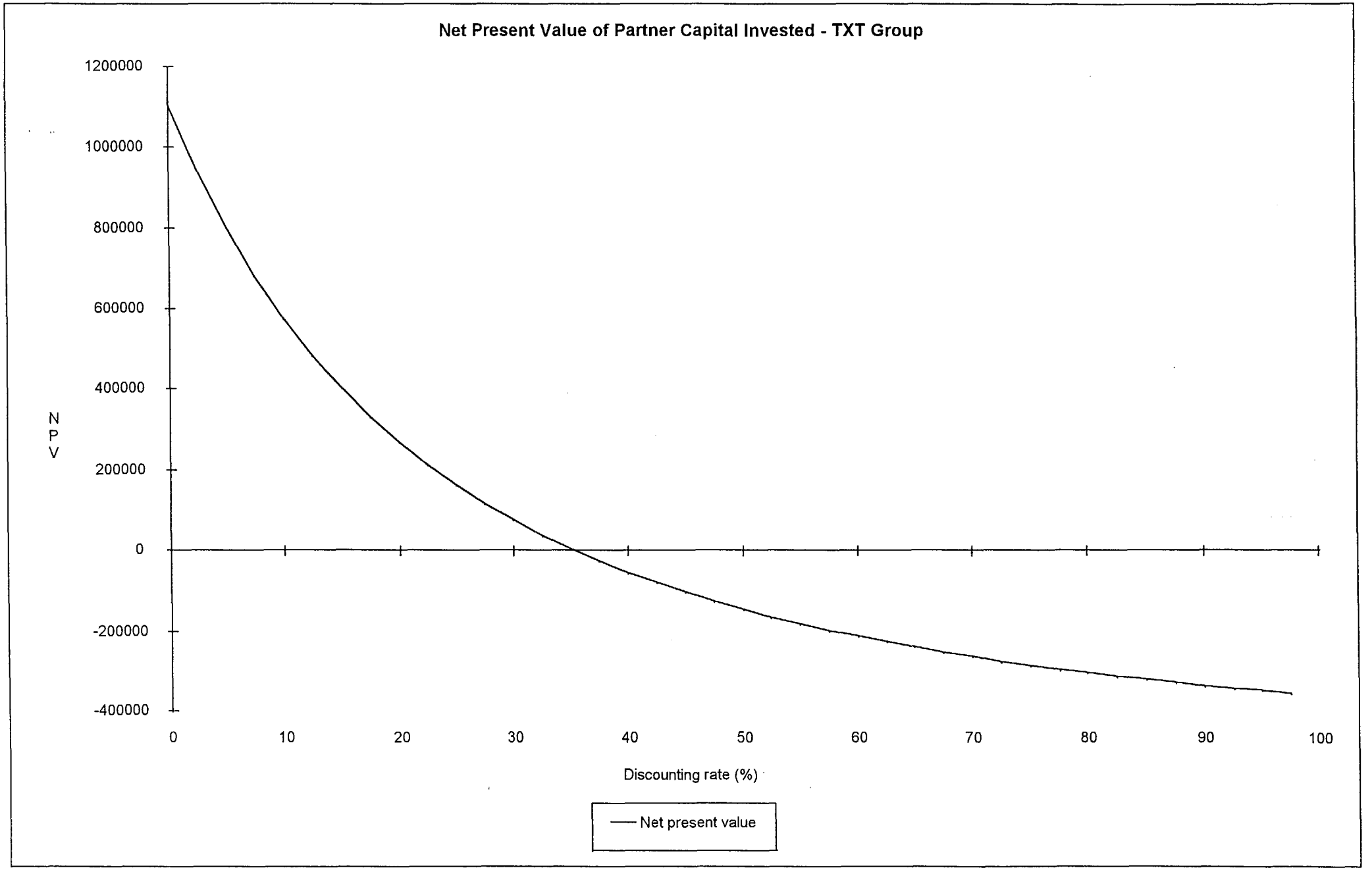
	Production 3/1997-3/1997	Production 4/1997-4/1997	Production 5/1997-5/1997	Production 6/1997-6/1997	Production 7/1997-7/1997	Production 8/1997-12/1997	Production 1998
TOTAL CASH INFLOW	838.303,57	225.000,00	875.803,57	612.500,00	262.500,00	1.811.821,67	6.381.462,77
Inflow funds	613.303,57	0,00	613.303,57	350.000,00	0,00	311.821,67	381.462,77
Inflow operation	225.000,00	225.000,00	262.500,00	262.500,00	262.500,00	1.500.000,00	6.000.000,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	378.785,74	665.508,95	543.829,79	713.705,38	371.102,98	1.867.789,72	6.125.297,99
Increase in fixed assets	0,00	0,00	138.333,33	21.485,71	2.400,00	0,00	0,00
Increase in current assets	192.957,14	-56.412,50	192.957,14	-56.412,50	-231.350,62	618.662,72	569.737,29
Operating costs	173.477,40	173.477,40	200.188,12	200.188,12	200.188,12	1.136.496,05	4.423.117,83
Marketing costs	12.351,19	12.351,19	12.351,19	12.351,19	12.351,19	61.755,95	148.214,29
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	0,00	0,00	50.875,00	123.000,00
Loan repayment	0,00	536.092,86	0,00	536.092,86	387.514,29	0,00	115.000,00
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	746.228,59
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	459.517,83	-440.508,95	331.973,79	-101.205,38	-108.602,98	-55.968,05	256.164,78
CUMULATIVE CASH BALANCE	463.873,63	23.364,68	355.338,47	254.133,09	145.530,11	89.562,06	345.726,85
Foreign surplus (deficit)	269.333,33	-627.041,67	114.083,33	-672.291,67	-349.291,67	175.580,00	-1.103.076,88
Local surplus (deficit)	190.184,50	186.532,71	217.890,45	571.086,29	240.688,69	-231.548,05	1.359.241,66
Foreign cumulative cash balance	-381.125,00	-1.008.166,67	-894.083,33	-1.566.375,00	-1.915.666,67	-1.740.086,67	-2.843.163,55
Local cumulative cash balance	844.998,63	1.031.531,35	1.249.421,80	1.820.508,09	2.061.196,78	1.829.648,73	3.188.890,39
Net flow of funds	613.303,57	-536.092,86	613.303,57	-186.092,86	-387.514,29	260.946,67	-602.765,81

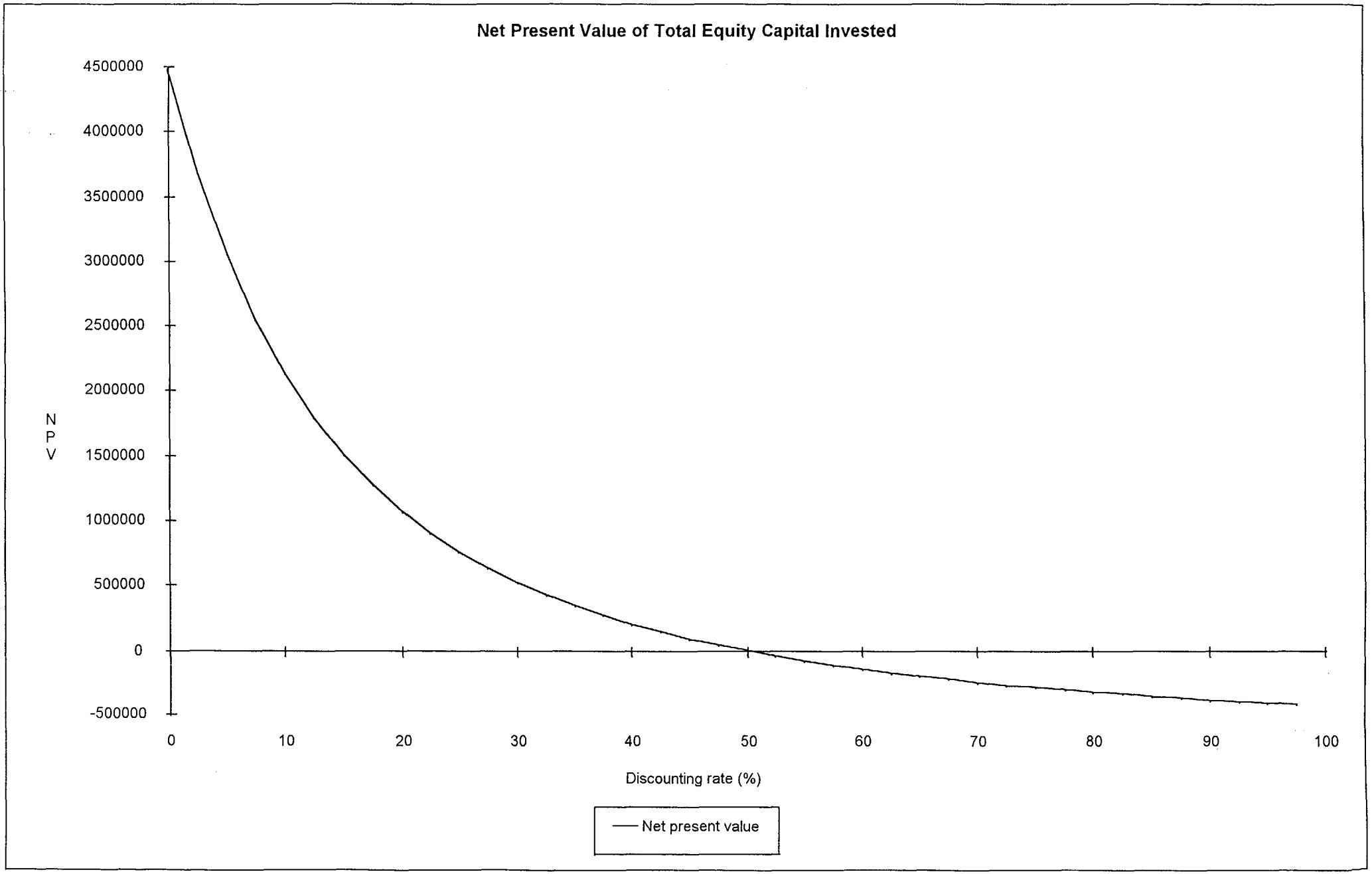
CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

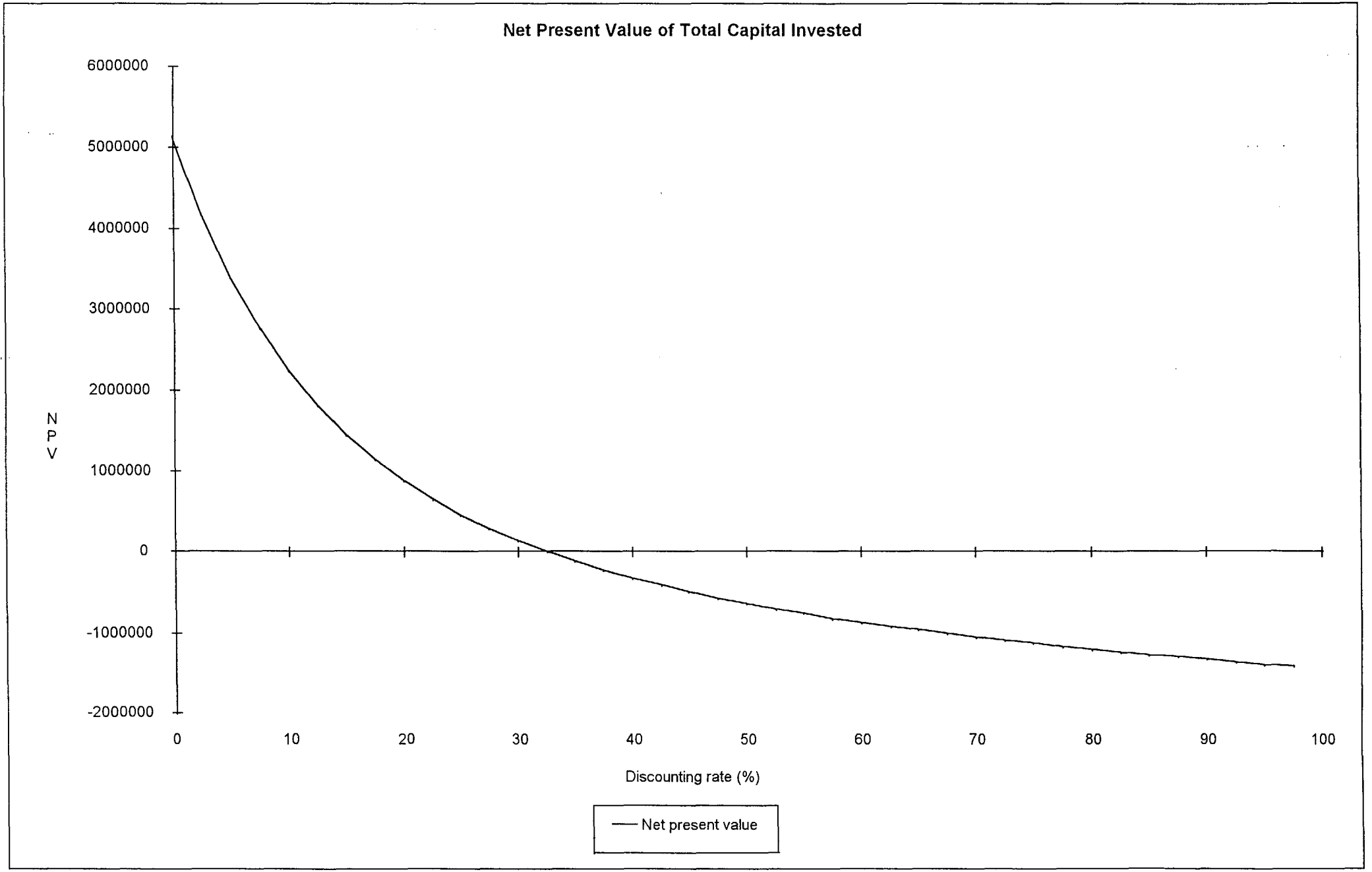
	Production 1999	Production 2000	Production 2001	Production 2002	Production 2003	Production 2004	Production 2005
TOTAL CASH INFLOW	7.076.258,24	6.500.000,00	6.000.858,05	6.300.000,00	6.000.000,00	6.000.000,00	6.000.000,00
Inflow funds	76.258,24	0,00	858,05	300.000,00	0,00	0,00	0,00
Inflow operation	7.000.000,00	6.500.000,00	6.000.000,00	6.000.000,00	6.000.000,00	6.000.000,00	6.000.000,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	7.229.588,95	6.617.638,56	6.074.728,30	6.092.054,57	6.085.195,06	6.085.212,89	6.029.397,75
Increase in fixed assets	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Increase in current assets	375.773,57	-8.844,34	856,87	874,01	891,49	909,32	927,51
Operating costs	5.483.779,20	5.486.299,42	5.488.870,04	5.491.492,08	5.494.166,55	5.496.894,52	5.499.677,04
Marketing costs	148.214,29	148.214,29	148.214,29	148.214,29	148.214,29	148.214,29	148.214,29
Income (corporate) tax	180.045,44	108.511,16	38.468,07	36.752,38	43.616,00	46.032,76	48.440,52
Financial costs	105.750,00	80.125,00	54.500,00	80.625,00	61.750,00	44.375,00	27.000,00
Loan repayment	170.833,33	188.436,48	125.833,33	125.833,33	115.833,33	115.833,33	60.000,00
Dividends	765.193,12	614.896,56	217.985,70	208.263,48	220.723,40	232.953,67	245.138,39
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	-153.330,71	-117.638,56	-73.870,25	207.945,43	-85.195,06	-85.212,89	-29.397,75
CUMULATIVE CASH BALANCE	192.396,14	74.757,57	887,32	208.832,76	123.637,69	38.424,80	9.027,05
Foreign surplus (deficit)	-1.216.282,30	-1.117.046,30	-909.069,46	-904.735,71	-911.001,80	-917.152,41	-923.280,10
Local surplus (deficit)	1.062.951,59	999.407,74	835.199,21	1.112.681,14	825.806,74	831.939,51	893.882,35
Foreign cumulative cash balance	-4.059.445,84	-5.176.492,15	-6.085.561,60	-6.990.297,31	-7.901.299,11	-8.818.451,51	-9.741.731,61
Local cumulative cash balance	4.251.841,98	5.251.249,72	6.086.448,93	7.199.130,07	8.024.936,80	8.856.876,31	9.750.758,67
Net flow of funds	-965.518,21	-883.458,04	-397.460,98	-114.721,81	-398.306,73	-393.162,01	-332.138,39

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Scrap 2006
TOTAL CASH INFLOW	2.823.204,09
Inflow funds	0,00
Inflow operation	0,00
Other income	2.823.204,09
TOTAL CASH OUTFLOW	561.177,95
Increase in fixed assets	0,00
Increase in current assets	0,00
Operating costs	0,00
Marketing costs	0,00
Income (corporate) tax	0,00
Financial costs	18.000,00
Loan repayment	543.177,95
Dividends	0,00
Equity capital refund	0,00
SURPLUS (DEFICIT)	2.262.026,14
CUMULATIVE CASH BALANCE	2.271.053,19
Foreign surplus (deficit)	497.944,44
Local surplus (deficit)	1.764.081,69
Foreign cumulative cash balance	-9.243.787,17
Local cumulative cash balance	11.514.840,36
Net flow of funds	-561.177,95


Net Present Value of Partner Capital Invested - TXT Group
1200000
1000000
800000
600000
400000
200000
0
-200000
-400000
NPV
0
10
20
30
40
50
60
70
80
90
100
Discounting rate (%)
Net present value


Net Present Value of Total Equity Capital Invested
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
-500000
NPV
0
10
20
30
40
50
60
70
80
90
100
Discounting rate (%)
Net present value


Net Present Value of Total Capital Invested
6000000
5000000
4000000
3000000
2000000
1000000
0
-1000000
-2000000
N
P
V
0
10
20
30
40
50
60
70
80
90
100
Discounting rate (%)
Net present value

NET INCOME STATEMENT
US Dollars

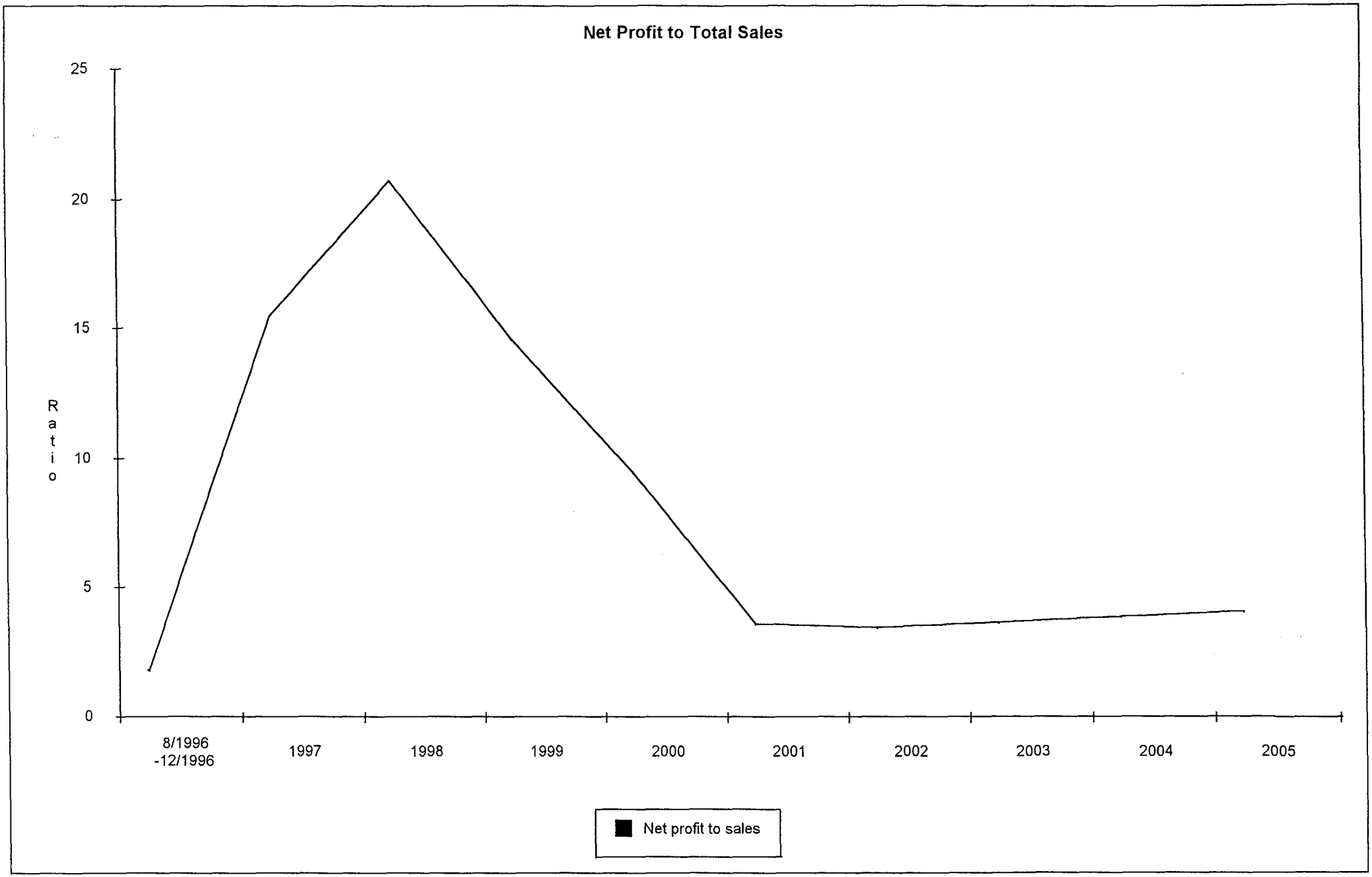
	Production 8/1996-12/1996	Production 1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002
Sales revenue	562.500,00	3.112.500,00	6.000.000,00	7.000.000,00	6.500.000,00	6.000.000,00	6.000.000,00
Less variable costs	400.660,71	2.206.751,29	4.232.762,29	5.290.952,86	5.290.952,86	5.290.952,86	5.290.952,86
VARIABLE MARGIN	161.839,29	905.748,71	1.767.237,71	1.709.047,14	1.209.047,14	709.047,14	709.047,14
in % of sales revenue	28,77	29,10	29,45	24,41	18,60	11,82	11,82
Less fixed costs	144.784,42	372.425,48	400.523,40	402.994,20	405.514,42	398.093,38	383.406,28
OPERATIONAL MARGIN	17.054,86	533.323,23	1.366.714,31	1.306.052,94	803.532,72	310.953,77	325.640,86
in % of sales revenue	3,03	17,13	22,78	18,66	12,36	5,18	5,43
Interest on short-term deposits	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	6.750,00	50.875,00	123.000,00	105.750,00	80.125,00	54.500,00	80.625,00
GROSS PROFIT FROM OPERATIONS	10.304,86	482.448,23	1.243.714,31	1.200.302,94	723.407,72	256.453,77	245.015,86
in % of sales revenue	1,83	15,50	20,73	17,15	11,13	4,27	4,08
Extraordinary income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GROSS PROFIT	10.304,86	482.448,23	1.243.714,31	1.200.302,94	723.407,72	256.453,77	245.015,86
Investment allowances	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TAXABLE PROFIT	10.304,86	482.448,23	1.243.714,31	1.200.302,94	723.407,72	256.453,77	245.015,86
Income (corporate) tax	0,00	0,00	0,00	180.045,44	108.511,16	38.468,07	36.752,38
NET PROFIT	10.304,86	482.448,23	1.243.714,31	1.020.257,50	614.896,56	217.985,70	208.263,48
in % of sales revenue	1,83	15,50	20,73	14,58	9,46	3,63	3,47
Dividends	0,00	0,00	746.228,59	765.193,12	614.896,56	217.985,70	208.263,48
RETAINED PROFIT	10.304,86	482.448,23	497.485,72	255.064,37	0,00	0,00	0,00
Ratios (%)							
Net profit to equity	0,99	46,22	119,16	97,75	58,91	20,88	19,95
Net profit to net worth	0,98	31,40	61,15	44,57	26,86	9,52	9,10
Net profit+interest to investment	1,94	29,21	54,10	39,85	24,52	9,61	10,19

NET INCOME STATEMENT
US Dollars

	Production 2003	Production 2004	Production 2005
Sales revenue	6.000.000,00	6.000.000,00	6.000.000,00
Less variable costs	5.290.952,86	5.290.952,86	5.290.952,86
VARIABLE MARGIN	709.047,14	709.047,14	709.047,14
in % of sales revenue	11,82	11,82	11,82
Less fixed costs	382.957,74	385.685,71	388.468,23
OPERATIONAL MARGIN	326.089,40	323.361,44	320.578,91
in % of sales revenue	5,43	5,39	5,34
Interest on short-term deposits	0,00	0,00	0,00
Financial costs	61.750,00	44.375,00	27.000,00
GROSS PROFIT FROM OPERATIONS	264.339,40	278.986,44	293.578,91
in % of sales revenue	4,41	4,65	4,89
Extraordinary income	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00
GROSS PROFIT	264.339,40	278.986,44	293.578,91
Investment allowances	0,00	0,00	0,00
TAXABLE PROFIT	264.339,40	278.986,44	293.578,91
Income (corporate) tax	43.616,00	46.032,76	48.440,52
NET PROFIT	220.723,40	232.953,67	245.138,39
in % of sales revenue	3,68	3,88	4,09
Dividends	220.723,40	232.953,67	245.138,39
RETAINED PROFIT	0,00	0,00	0,00
Ratios (%)			
Net profit to equity	21,15	22,32	23,49
Net profit to net worth	9,64	10,18	10,71
Net profit+interest to investment	9,96	9,77	9,59

FINANCIAL RATIOS

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Long-term debt to net worth	0,13	0,32	0,35	0,23	0,16	0,10	0,18	0,13	0,08	0,05
Current assets to current liabilities	2,11	3,81	8,48	7,56	7,21	6,09	6,56	6,39	6,22	6,18
Net cash flow to long-term debt	-6,25	-0,74	1,03	1,66	2,06	1,37	0,78	1,06	1,71	2,52
Accounts receivable to accounts payable	0,50	0,99	2,10	2,13	2,22	2,22	2,22	2,22	2,22	2,22
Net cash flow to long-term debt service	-125,07	-7,08	3,06	3,21	2,98	1,80	1,56	1,76	1,92	3,48

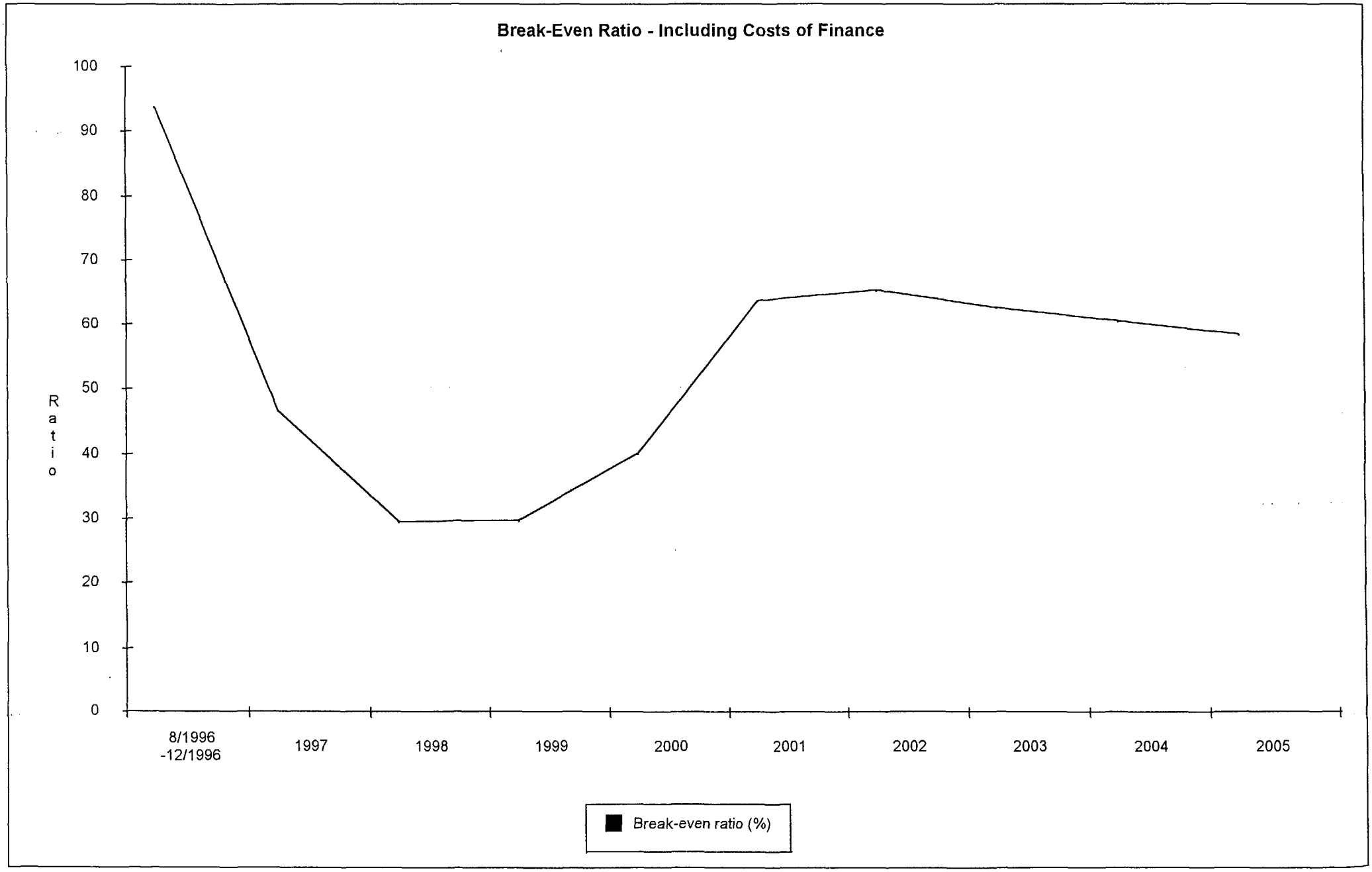

Net Profit to Total Sales
25
20
15
10
5
0
Ratio
8/1996
-12/1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Net profit to sales

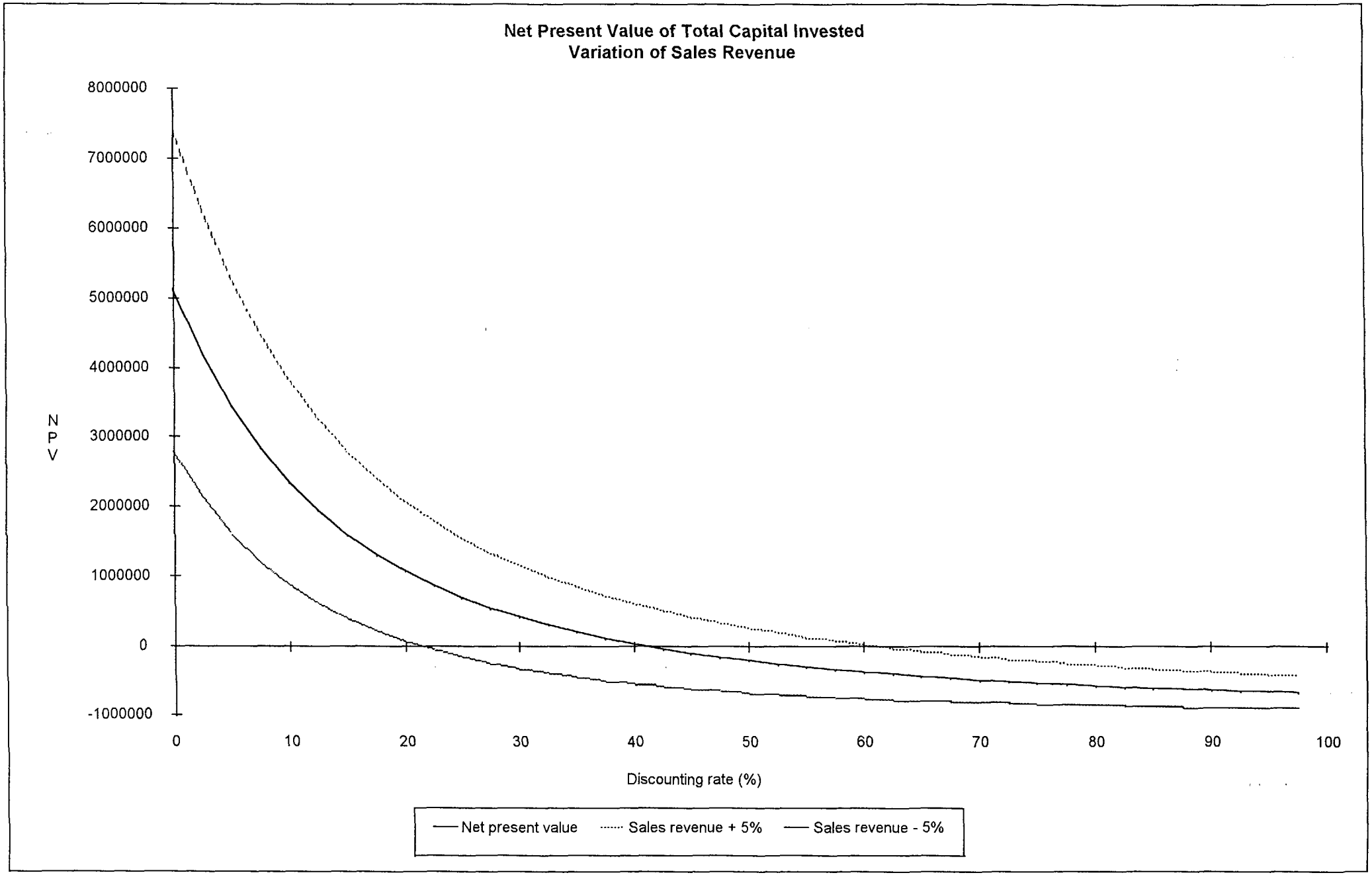
DISCOUNTED CASH FLOW - EQUITY CAPITAL INVESTED
US Dollars

	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL CASH INFLOW	327.761,78	-60.929,58	825.123,23	611.862,41	497.258,00	144.115,45	416.208,91	135.528,34
Surplus (deficit)	327.761,78	-60.929,58	78.894,65	-153.330,71	-117.638,56	-73.870,25	207.945,43	-85.195,06
Dividends	0,00	0,00	746.228,59	765.193,12	614.896,56	217.985,70	208.263,48	220.723,40
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	1.043.750,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital paid	1.043.750,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
NET CASH RETURN	-715.988,22	-60.929,58	825.123,23	611.862,41	497.258,00	144.115,45	416.208,91	135.528,34
CUMULATIVE NET CASH RETURN	-715.988,22	-776.917,80	48.205,43	660.067,85	1.157.325,85	1.301.441,30	1.717.650,21	1.853.178,55
Net present value	-715.988,22	-50.355,02	563.570,27	345.380,38	231.974,53	55.562,75	132.616,99	35.688,85
Cumulative net present value	-715.988,22	-766.343,25	-202.772,97	142.607,41	374.581,93	430.144,68	562.761,67	598.450,51
NET PRESENT VALUE	at 21,00 %	1.005.641,84						
INTERNAL RATE OF RETURN	50,22 %							
MODIFIED INTERNAL RATE OF RETURN	21,07 %							
SHORT NET PRESENT VALUE	at 21,00 %	669.406,06	for 10 years					
NORMAL PAYBACK	at 0,00 %	3 years						
DYNAMIC PAYBACK	at 21,00 %	4 years						

DISCOUNTED CASH FLOW - EQUITY CAPITAL INVESTED
US Dollars

	2004	2005	Scrap 2006
TOTAL CASH INFLOW	147.740,78	215.740,65	2.262.026,14
Surplus (deficit)	-85.212,89	-29.397,75	2.262.026,14
Dividends	232.953,67	245.138,39	0,00
Equity capital refund	0,00	0,00	0,00
TOTAL CASH OUTFLOW	0,00	0,00	0,00
Equity capital paid	0,00	0,00	0,00
NET CASH RETURN	147.740,78	215.740,65	2.262.026,14
CUMULATIVE NET CASH RETURN	2.000.919,33	2.216.659,98	4.478.686,12
Net present value	32.152,70	38.802,85	336.235,77
Cumulative net present value	630.603,21	669.406,06	1.005.641,84
NET PRESENT VALUE			
INTERNAL RATE OF RETURN			
MODIFIED INTERNAL RATE OF RETURN			
SHORT NET PRESENT VALUE			
NORMAL PAYBACK			
DYNAMIC PAYBACK			


Break-Even Ratio - Including Costs of Finance
100
90
80
70
60
50
40
30
20
10
0
Ratio
8/1996
-12/1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Break-even ratio (%)


Net Present Value of Total Capital Invested
Variation of Sales Revenue
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
-1000000
N
P
V
0
10
20
30
40
50
60
70
80
90
100
Discounting rate (%)
Net present value
Sales revenue + 5%
Sales revenue - 5%

PROJECTED BALANCE SHEET
US Dollars

	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL ASSETS	1.610.204,50	2.445.984,14	3.848.882,20	4.028.336,02	3.689.602,99	3.167.716,84	3.332.161,29	3.228.787,87
Total current assets	890.442,73	1.617.417,21	3.082.268,85	3.323.676,24	3.046.896,78	2.576.972,54	2.776.069,76	2.704.226,11
Total fixed assets, net of depreciation	719.761,77	828.566,92	766.613,35	704.659,78	642.706,21	590.744,31	556.091,53	524.561,77
Accumulated losses brought forward	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Loss in current year	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL LIABILITIES	1.610.204,50	2.445.984,14	3.848.882,20	4.028.336,02	3.689.602,99	3.167.716,84	3.332.161,29	3.228.787,87
Total current liabilities	421.149,63	424.481,05	363.664,80	439.923,04	422.319,90	423.177,95	423.177,95	423.177,95
Total long-term loans	135.000,00	485.000,00	705.000,00	534.166,67	363.333,33	237.500,00	411.666,67	295.833,33
Total equity	1.043.750,00	1.043.750,00	1.043.750,00	1.043.750,00	1.043.750,00	1.043.750,00	1.043.750,00	1.043.750,00
Reserves, retained profit brought forward	0,00	10.304,86	492.753,09	990.238,82	1.245.303,19	1.245.303,19	1.245.303,19	1.245.303,19
Net profit after tax	10.304,86	482.448,23	1.243.714,31	1.020.257,50	614.896,56	217.985,70	208.263,48	220.723,40
Net worth	1.054.054,86	1.536.503,09	2.033.988,82	2.289.053,19	2.289.053,19	2.289.053,19	2.289.053,19	2.289.053,19
Ratios (%)								
Equity to total liabilities	64,82	42,67	27,12	25,91	28,29	32,95	31,32	32,33
Net worth to total liabilities	65,46	62,82	52,85	56,82	62,04	72,26	68,70	70,90
Long-term debt to net worth	0,13	0,32	0,35	0,23	0,16	0,10	0,18	0,13
Current assets to current liabilities	2,11	3,81	8,48	7,56	7,21	6,09	6,56	6,39

PROJECTED BALANCE SHEET
US Dollars

	2004	2005
TOTAL ASSETS	3.125.184,82	3.077.369,53
Total current assets	2.632.152,81	2.615.867,29
Total fixed assets, net of depreciation	493.032,00	461.502,24
Accumulated losses brought forward	0,00	0,00
Loss in current year	0,00	0,00
TOTAL LIABILITIES	3.125.184,82	3.077.369,53
Total current liabilities	423.177,95	423.177,95
Total long-term loans	180.000,00	120.000,00
Total equity	1.043.750,00	1.043.750,00
Reserves, retained profit brought forward	1.245.303,19	1.245.303,19
Net profit after tax	232.953,67	245.138,39
Net worth	2.289.053,19	2.289.053,19
Ratios (%)		
Equity to total liabilities	33,40	33,92
Net worth to total liabilities	73,25	74,38
Long-term debt to net worth	0,08	0,05
Current assets to current liabilities	6,22	6,18

ANNEX 2

COMFAR PRINTOUT

Alternative Growth Version

SUMMARY SHEET

Project title: TRIO Electronic Meters
Project description: Joint-venture betweem Chinese and Italian partners to produce electronic meters for electricity consumption measurement in China
Date and time:

Project classification: New project
Joint-venture project

Construction phase: 1/1996 - 7/1996
Length: 7 months
Production phase: 8/1996 - 12/2005
Length: 10 periods

Accounting currency: US Dollars
Units: Absolute
Reference currency:
Exchange rate:

INVESTMENT COSTS

	Total construction	Total production	Total investment
Total fixed investment costs	548.095,24	1.470.000,00	2.018.095,24
Total pre-production expenditures	89.378,93	129.219,05	218.597,98
Increase in net working capital	0,00	1.036.176,27	1.036.176,27
TOTAL INVESTMENT COSTS	637.474,17	2.635.395,32	3.272.869,49

SOURCES OF FINANCE

	Total inflow

SUMMARY SHEET

Equity capital	1.043.750,00
Long-term loans	518.000,00
Total short-term loans	629.480,23
TOTAL SOURCES OF FINANCE	2.191.230,23

INCOME AND COSTS, OPERATIONS

	First year 8/1996-12/1996	Reference year 2000	Last year 2005
SALES REVENUE	562.500,00	7.000.000,00	20.000.000,00
Factory costs	462.876,79	4.466.923,49	13.584.123,33
Administrative overhead costs	3.100,00	7.440,48	7.440,48
OPERATING COSTS	465.976,79	4.474.363,97	13.591.563,81
Depreciation	17.712,40	61.953,57	134.929,76
Financial costs	312,50	43.983,75	0,00
TOTAL PRODUCTION COSTS	484.001,69	4.580.301,29	13.726.493,57
Marketing costs	61.755,95	297.619,05	1.000.000,00
COSTS OF PRODUCTS	545.757,64	4.877.920,34	14.726.493,57
Interest on short-term deposits	0,00	0,00	0,00
GROSS PROFIT FROM OPERATIONS	16.742,36	2.122.079,66	5.273.506,43
Extraordinary income	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00
GROSS PROFIT	16.742,36	2.122.079,66	5.273.506,43
Investment allowances	0,00	0,00	0,00
TAXABLE PROFIT	16.742,36	2.122.079,66	5.273.506,43
Income (corporate) tax	0,00	318.311,95	870.128,56
NET PROFIT	16.742,36	1.803.767,71	4.403.377,87

SUMMARY SHEET

RATIOS

Net present value	at 21,00 %	4.932.590,87
Internal rate of return on investment (IRR)	85,86 %	
Modified IRR on investment	30,88 %	
Internal rate of return on equity (IRRE)	97,43 %	
Modified IRRE on equity	34,65 %	

FIXED INVESTMENT COSTS - TOTAL
US Dollars

	Total construction	Total production	1996	1997	1998	1999	2000	2001
Land purchase	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Site preparation and development	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Civil works, structures and buildings	242.261,90	605.000,00	242.261,90	0,00	0,00	0,00	0,00	0,00
Civil works, structures and buildings-1	242.261,90	0,00	242.261,90	0,00	0,00	0,00	0,00	0,00
Civil Works for mass production	0,00	605.000,00	0,00	0,00	0,00	0,00	0,00	0,00
Plant machinery and equipment	64.166,67	365.000,00	64.166,67	130.000,00	0,00	0,00	0,00	0,00
Cards Production Line	0,00	130.000,00	0,00	130.000,00	0,00	0,00	0,00	0,00
Trio Production Line	64.166,67	0,00	64.166,67	0,00	0,00	0,00	0,00	0,00
Mass Production Equipment	0,00	235.000,00	0,00	0,00	0,00	0,00	0,00	0,00
Auxiliary and service plant equipment	41.666,67	0,00	41.666,67	0,00	0,00	0,00	0,00	0,00
Environmental protection	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Incorporated fixed assets (project overheads)	200.000,00	500.000,00	200.000,00	0,00	250.000,00	0,00	0,00	0,00
Technology	200.000,00	500.000,00	200.000,00	0,00	250.000,00	0,00	0,00	0,00
Project implementation	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Miscellaneous project overhead costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Contingencies	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL FIXED INVESTMENT COSTS	548.095,24	1.470.000,00	548.095,24	130.000,00	250.000,00	0,00	0,00	0,00
Foreign share (%)	11,71	24,83	11,71	100,00	0,00	0,00	0,00	0,00

FIXED INVESTMENT COSTS - TOTAL
US Dollars

	2002	2003	2004	2005
Land purchase	0,00	0,00	0,00	0,00
Site preparation and development	0,00	0,00	0,00	0,00
Civil works, structures and buildings	605.000,00	0,00	0,00	0,00
Civil works, structures and buildings-1	0,00	0,00	0,00	0,00
Civil Works for mass production	605.000,00	0,00	0,00	0,00
Plant machinery and equipment	235.000,00	0,00	0,00	0,00
Cards Production Line	0,00	0,00	0,00	0,00
Trio Production Line	0,00	0,00	0,00	0,00
Mass Production Equipment	235.000,00	0,00	0,00	0,00
Auxiliary and service plant equipment	0,00	0,00	0,00	0,00
Environmental protection	0,00	0,00	0,00	0,00
Incorporated fixed assets (project overheads)	250.000,00	0,00	0,00	0,00
Technology	250.000,00	0,00	0,00	0,00
Project implementation	0,00	0,00	0,00	0,00
Miscellaneous project overhead costs	0,00	0,00	0,00	0,00
Contingencies	0,00	0,00	0,00	0,00
TOTAL FIXED INVESTMENT COSTS	1.090.000,00	0,00	0,00	0,00
Foreign share (%)	21,56	0,00	0,00	0,00

INVESTMENT COSTS - TOTAL
US Dollars

	Total construction	Total production	Construction 1/1996-1/1996	Construction 2/1996-2/1996	Construction 3/1996-3/1996	Construction 4/1996-4/1996	Construction 5/1996-5/1996
Total fixed investment costs	548.095,24	1.470.000,00	442.261,90	0,00	0,00	0,00	105.833,33
Total pre-production expenditures	89.378,93	129.219,05	963,69	2.832,74	37.832,74	2.832,74	5.104,88
Increase in net working capital	0,00	1.036.176,27	0,00	0,00	0,00	0,00	0,00
TOTAL INVESTMENT COSTS	637.474,17	2.635.395,32	443.225,60	2.832,74	37.832,74	2.832,74	110.938,21
Foreign share (%)	18,69	39,37	0,00	0,00	92,51	0,00	57,84

INVESTMENT COSTS - TOTAL
US Dollars

	Construction 6/1996-6/1996	Construction 7/1996-7/1996	Production 8/1996-8/1996	Production 9/1996-9/1996	Production 10/1996-10/1996	Production 11/1996-11/1996	Production 12/1996-12/1996
Total fixed investment costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total pre-production expenditures	29.500,12	10.312,02	0,00	0,00	0,00	0,00	0,00
Increase in net working capital	0,00	0,00	-463.299,87	858.360,71	-320.807,14	60.794,64	326.719,64
TOTAL INVESTMENT COSTS	29.500,12	10.312,02	-463.299,87	858.360,71	-320.807,14	60.794,64	326.719,64
Foreign share (%)	67,80	0,00	116,27	99,04	99,70	89,99	99,18

INVESTMENT COSTS - TOTAL
US Dollars

	Production 1/1997-1/1997	Production 2/1997-2/1997	Production 3/1997-3/1997	Production 4/1997-4/1997	Production 5/1997-5/1997	Production 6/1997-6/1997	Production 7/1997-7/1997
Total fixed investment costs	0,00	0,00	0,00	0,00	130.000,00	0,00	0,00
Total pre-production expenditures	0,00	0,00	0,00	0,00	8.333,33	21.485,71	2.400,00
Increase in net working capital	-407.830,40	212.294,64	59.333,93	326.719,64	-687.732,14	959.360,71	95.312,71
TOTAL INVESTMENT COSTS	-407.830,40	212.294,64	59.333,93	326.719,64	-549.398,81	980.846,43	97.712,71
Foreign share (%)	103,19	97,13	92,20	99,18	101,96	99,00	116,28

INVESTMENT COSTS - TOTAL
US Dollars

	Production 8/1997-12/1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002	Production 2003
Total fixed investment costs	0,00	250.000,00	0,00	0,00	0,00	1.090.000,00	0,00
Total pre-production expenditures	0,00	0,00	0,00	0,00	0,00	59.571,43	18.428,57
Increase in net working capital	627.545,73	-152.113,36	-558.640,23	42,63	43,21	-12.420,73	48.384,69
TOTAL INVESTMENT COSTS	627.545,73	97.886,64	-558.640,23	42,63	43,21	1.137.150,70	66.813,26
Foreign share (%)	-67,71	49,01	-7,01	0,07	-0,03	25,34	19,71

INVESTMENT COSTS - TOTAL
US Dollars

	Production 2004	Production 2005
Total fixed investment costs	0,00	0,00
Total pre-production expenditures	19.000,00	0,00
Increase in net working capital	32.248,65	31.858,60
TOTAL INVESTMENT COSTS	51.248,65	31.858,60
Foreign share (%)	29,27	0,00

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Construction 1/1996-1/1996	Construction 2/1996-2/1996	Construction 3/1996-3/1996	Construction 4/1996-4/1996	Construction 5/1996-5/1996	Construction 6/1996-6/1996	Construction 7/1996-7/1996
TOTAL CASH INFLOW	463.095,24	62.202,38	47.619,05	47.619,05	107.619,05	47.619,05	27.976,19
Inflow funds	463.095,24	62.202,38	47.619,05	47.619,05	107.619,05	47.619,05	27.976,19
Total equity	463.095,24	62.202,38	47.619,05	47.619,05	107.619,05	47.619,05	27.976,19
Total long-term loans	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total short-term loans	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Inflow operation	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	443.225,60	2.832,74	37.832,74	2.832,74	110.938,21	29.500,12	10.312,02
Increase in fixed assets	443.225,60	2.832,74	37.832,74	2.832,74	110.938,21	29.500,12	10.312,02
Increase in current assets	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Operating costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Marketing costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Loan repayment	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	19.869,64	59.369,64	9.786,31	44.786,31	-3.319,17	18.118,93	17.664,17
CUMULATIVE CASH BALANCE	19.869,64	79.239,29	89.025,60	133.811,90	130.492,74	148.611,67	166.275,83
Foreign surplus (deficit)	225.000,00	0,00	-35.000,00	0,00	-4.166,67	-20.000,00	0,00
Local surplus (deficit)	-205.130,36	59.369,64	44.786,31	44.786,31	847,50	38.118,93	17.664,17
Foreign cumulative cash balance	225.000,00	225.000,00	190.000,00	190.000,00	185.833,33	165.833,33	165.833,33
Local cumulative cash balance	-205.130,36	-145.760,71	-100.974,40	-56.188,10	-55.340,60	-17.221,67	442,50
Net flow of funds	463.095,24	62.202,38	47.619,05	47.619,05	107.619,05	47.619,05	27.976,19

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Production 8/1996-8/1996	Production 9/1996-9/1996	Production 10/1996-10/1996	Production 11/1996-11/1996	Production 12/1996-12/1996	Production 1/1997-1/1997	Production 2/1997-2/1997
TOTAL CASH INFLOW	1.001.066,06	315.000,00	575.764,29	225.750,00	175.000,00	801.006,45	225.000,00
Inflow funds	926.066,06	240.000,00	463.264,29	75.750,00	25.000,00	613.506,45	0,00
Total equity	0,00	240.000,00	0,00	0,00	0,00	0,00	0,00
Total long-term loans	0,00	0,00	0,00	0,00	25.000,00	0,00	0,00
Total short-term loans	926.066,06	0,00	463.264,29	75.750,00	0,00	613.506,45	0,00
Inflow operation	75.000,00	75.000,00	112.500,00	150.000,00	150.000,00	187.500,00	225.000,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	541.602,02	937.196,55	248.003,69	268.801,90	459.289,40	370.866,90	404.196,21
Increase in fixed assets	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Increase in current assets	462.766,19	-62.325,00	142.457,14	136.544,64	-56.412,50	205.676,05	136.544,64
Operating costs	66.484,64	66.484,64	93.195,36	119.906,07	119.906,07	146.753,36	173.464,07
Marketing costs	12.351,19	12.351,19	12.351,19	12.351,19	12.351,19	18.437,50	18.437,50
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	0,00	312,50	0,00	0,00
Loan repayment	0,00	920.685,71	0,00	0,00	383.132,14	0,00	75.750,00
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	459.464,04	-622.196,55	327.760,60	-43.051,90	-284.289,40	430.139,54	-179.196,21
CUMULATIVE CASH BALANCE	625.739,87	3.543,33	331.303,92	288.252,02	3.962,61	434.102,15	254.905,94
Foreign surplus (deficit)	488.166,67	-660.583,33	244.083,33	-155.708,33	-425.041,67	294.583,33	-357.708,33
Local surplus (deficit)	-28.702,63	38.386,79	83.677,26	112.656,43	140.752,26	135.556,21	178.512,12
Foreign cumulative cash balance	654.000,00	-6.583,33	237.500,00	81.791,67	-343.250,00	-48.666,67	-406.375,00
Local cumulative cash balance	-28.260,13	10.126,66	93.803,92	206.460,35	347.212,61	482.768,82	661.280,94
Net flow of funds	926.066,06	-680.685,71	463.264,29	75.750,00	-358.444,64	613.506,45	-75.750,00

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

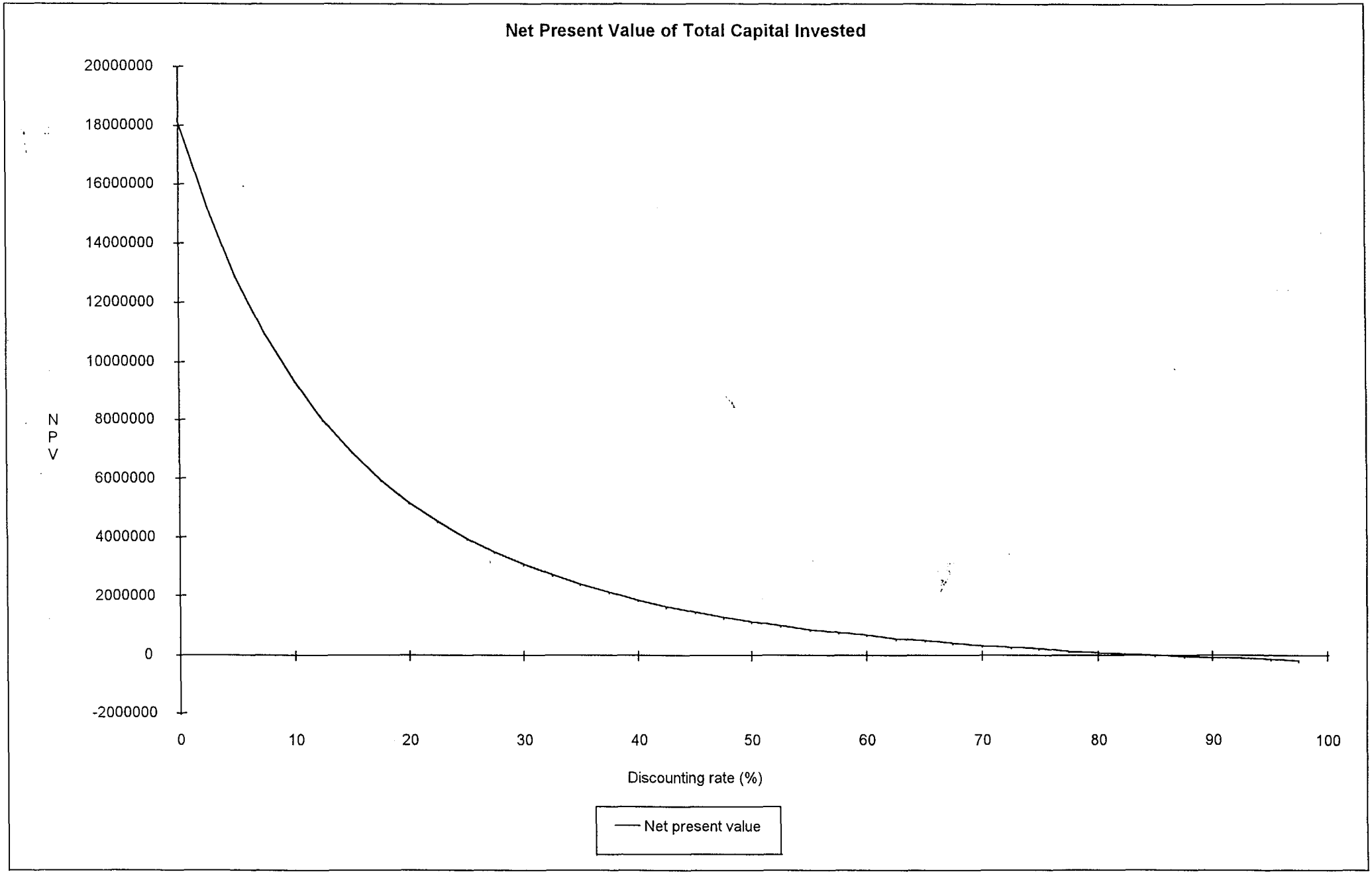
	Production 3/1997-3/1997	Production 4/1997-4/1997	Production 5/1997-5/1997	Production 6/1997-6/1997	Production 7/1997-7/1997	Production 8/1997-12/1997	Production 1998
TOTAL CASH INFLOW	339.710,71	319.500,00	1.411.146,43	737.500,00	337.500,00	3.025.505,80	6.750.000,00
Inflow funds	77.210,71	57.000,00	1.073.646,43	400.000,00	0,00	550.505,80	0,00
Total equity	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total long-term loans	0,00	57.000,00	0,00	400.000,00	0,00	36.000,00	0,00
Total short-term loans	77.210,71	0,00	1.073.646,43	0,00	0,00	514.505,80	0,00
Inflow operation	262.500,00	262.500,00	337.500,00	337.500,00	337.500,00	2.475.000,00	6.750.000,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	355.156,93	545.331,93	796.281,33	1.255.200,14	369.746,43	3.103.579,79	6.347.048,09
Increase in fixed assets	0,00	0,00	138.333,33	21.485,71	2.400,00	0,00	250.000,00
Increase in current assets	136.544,64	-56.412,50	385.914,29	-112.825,00	-293.662,29	1.142.051,54	-323.956,47
Operating costs	200.174,79	200.174,79	253.596,21	253.596,21	253.596,21	1.824.253,25	4.951.889,92
Marketing costs	18.437,50	18.437,50	18.437,50	18.437,50	18.437,50	92.187,50	297.619,05
Income (corporate) tax	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00	2.320,00	0,00	45.087,50	77.700,00
Loan repayment	0,00	383.132,14	0,00	1.072.185,71	388.975,00	0,00	277.293,12
Dividends	0,00	0,00	0,00	0,00	0,00	0,00	816.502,48
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	-15.446,21	-225.831,93	614.865,10	-517.700,14	-32.246,43	-78.073,98	402.951,91
CUMULATIVE CASH BALANCE	239.459,73	13.627,80	628.492,89	110.792,75	78.546,32	472,34	403.424,25
Foreign surplus (deficit)	-231.458,33	-500.791,67	332.916,67	-1.198.333,33	-340.875,00	160.932,00	-1.178.597,77
Local surplus (deficit)	216.012,12	274.959,74	281.948,43	680.633,19	308.628,57	-239.005,98	1.581.549,68
Foreign cumulative cash balance	-637.833,33	-1.138.625,00	-805.708,33	-2.004.041,67	-2.344.916,67	-2.183.984,67	-3.362.582,44
Local cumulative cash balance	877.293,06	1.152.252,80	1.434.201,23	2.114.834,42	2.423.462,99	2.184.457,00	3.766.006,69
Net flow of funds	77.210,71	-326.132,14	1.073.646,43	-674.505,71	-388.975,00	505.418,30	-1.171.495,59

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Production 1999	Production 2000	Production 2001	Production 2002	Production 2003	Production 2004	Production 2005
TOTAL CASH INFLOW	7.000.000,00	7.000.000,00	6.500.000,09	6.000.000,00	10.011.129,04	15.011.891,46	20.013.922,51
Inflow funds	0,00	0,00	0,09	0,00	11.129,04	11.891,46	13.922,51
Total equity	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total long-term loans	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total short-term loans	0,00	0,00	0,09	0,00	11.129,04	11.891,46	13.922,51
Inflow operation	7.000.000,00	7.000.000,00	6.500.000,00	6.000.000,00	10.000.000,00	15.000.000,00	20.000.000,00
Other income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	6.046.704,36	7.043.539,06	6.544.281,39	7.198.697,92	9.950.498,26	14.932.010,35	19.910.851,34
Increase in fixed assets	0,00	0,00	0,00	1.149.571,43	18.428,57	19.000,00	0,00
Increase in current assets	-888.880,94	-23,70	43,30	-12.453,90	59.513,73	44.140,11	45.781,10
Operating costs	4.473.818,21	4.474.363,97	4.474.920,65	4.475.488,46	6.848.560,01	10.209.836,96	13.591.563,81
Marketing costs	297.619,05	297.619,05	297.619,05	297.619,05	500.000,00	750.000,00	1.000.000,00
Income (corporate) tax	315.813,06	318.311,95	246.995,76	176.671,46	416.459,33	644.990,49	870.128,56
Financial costs	61.188,75	43.983,75	28.860,00	14.430,00	0,00	0,00	0,00
Loan repayment	444.940,71	105.516,34	96.200,00	96.233,17	0,00	0,00	0,00
Dividends	1.342.205,52	1.803.767,71	1.399.642,64	1.001.138,26	2.107.536,61	3.264.042,79	4.403.377,87
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00
SURPLUS (DEFICIT)	953.295,64	-43.539,06	-44.281,30	-1.198.697,92	60.630,79	79.881,11	103.071,16
CUMULATIVE CASH BALANCE	1.356.719,89	1.313.180,83	1.268.899,53	70.201,61	130.832,40	210.713,51	313.784,67
Foreign surplus (deficit)	-1.374.148,49	-1.567.114,83	-1.363.880,28	-1.451.634,03	-1.073.046,83	-1.656.487,15	-2.214.458,77
Local surplus (deficit)	2.327.444,13	1.523.575,77	1.319.598,98	252.936,11	1.133.677,62	1.736.368,26	2.317.529,93
Foreign cumulative cash balance	-4.736.730,93	-6.303.845,75	-7.667.726,03	-9.119.360,06	-10.192.406,89	-11.848.894,04	-14.063.352,81
Local cumulative cash balance	6.093.450,82	7.617.026,58	8.936.625,56	9.189.561,67	10.323.239,29	12.059.607,55	14.377.137,49
Net flow of funds	-1.848.334,98	-1.953.267,80	-1.524.702,55	-1.111.801,42	-2.096.407,57	-3.252.151,33	-4.389.455,36

CASH FLOW FOR FINANCIAL PLANNING - TOTAL
US Dollars

	Scrap 2006
TOTAL CASH INFLOW	2.590.613,02
Inflow funds	0,00
Total equity	0,00
Total long-term loans	0,00
Total short-term loans	0,00
Inflow operation	0,00
Other income	2.590.613,02
TOTAL CASH OUTFLOW	54.848,79
Increase in fixed assets	0,00
Increase in current assets	0,00
Operating costs	0,00
Marketing costs	0,00
Income (corporate) tax	0,00
Financial costs	0,00
Loan repayment	54.848,79
Dividends	0,00
Equity capital refund	0,00
SURPLUS (DEFICIT)	2.535.764,23
CUMULATIVE CASH BALANCE	2.849.548,90
Foreign surplus (deficit)	567.528,24
Local surplus (deficit)	1.968.235,99
Foreign cumulative cash balance	-13.495.824,57
Local cumulative cash balance	16.345.373,48
Net flow of funds	-54.848,79


Net Present Value of Total Capital Invested
20000000
18000000
16000000
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
-2000000
N
P
V
0
10
20
30
40
50
60
70
80
90
100
Discounting rate (%)
Net present value

NET INCOME STATEMENT
US Dollars

	Production 8/1996-12/1996	Production 1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002
Sales revenue	562.500,00	4.425.000,00	6.750.000,00	7.000.000,00	7.000.000,00	6.500.000,00	6.000.000,00
Less variable costs	400.660,71	3.134.971,59	4.761.857,57	4.286.685,95	4.286.685,95	4.286.685,95	4.286.685,95
VARIABLE MARGIN	161.839,29	1.290.028,41	1.988.142,43	2.713.314,05	2.713.314,05	2.213.314,05	1.713.314,05
in % of sales revenue	28,77	29,15	29,45	38,76	38,76	34,05	28,56
Less fixed costs	144.784,42	445.301,20	549.604,96	546.704,87	547.250,64	537.815,65	521.074,34
OPERATIONAL MARGIN	17.054,86	844.727,22	1.438.537,46	2.166.609,18	2.166.063,41	1.675.498,40	1.192.239,71
in % of sales revenue	3,03	19,09	21,31	30,95	30,94	25,78	19,87
Interest on short-term deposits	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Financial costs	312,50	47.407,50	77.700,00	61.188,75	43.983,75	28.860,00	14.430,00
GROSS PROFIT FROM OPERATIONS	16.742,36	797.319,72	1.360.837,46	2.105.420,43	2.122.079,66	1.646.638,40	1.177.809,71
in % of sales revenue	2,98	18,02	20,16	30,08	30,32	25,33	19,63
Extraordinary income	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GROSS PROFIT	16.742,36	797.319,72	1.360.837,46	2.105.420,43	2.122.079,66	1.646.638,40	1.177.809,71
Investment allowances	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TAXABLE PROFIT	16.742,36	797.319,72	1.360.837,46	2.105.420,43	2.122.079,66	1.646.638,40	1.177.809,71
Income (corporate) tax	0,00	0,00	0,00	315.813,06	318.311,95	246.995,76	176.671,46
NET PROFIT	16.742,36	797.319,72	1.360.837,46	1.789.607,36	1.803.767,71	1.399.642,64	1.001.138,26
in % of sales revenue	2,98	18,02	20,16	25,57	25,77	21,53	16,69
Dividends	0,00	0,00	816.502,48	1.342.205,52	1.803.767,71	1.399.642,64	1.001.138,26
RETAINED PROFIT	16.742,36	797.319,72	544.334,99	447.401,84	0,00	0,00	0,00
Ratios (%)							
Net profit to equity	1,60	76,39	130,38	171,46	172,82	134,10	95,92
Net profit to net worth	1,58	42,92	56,65	62,80	63,30	49,12	35,13
Net profit+interest to investment	2,19	38,91	56,54	93,21	93,05	71,94	32,52

NET INCOME STATEMENT
US Dollars

	Production 2003	Production 2004	Production 2005
Sales revenue	10.000.000,00	15.000.000,00	20.000.000,00
Less variable costs	6.538.096,19	9.807.144,29	13.076.192,38
VARIABLE MARGIN	3.461.903,81	5.192.855,71	6.923.807,62
in % of sales revenue	34,62	34,62	34,62
Less fixed costs	937.907,87	1.283.822,43	1.650.301,19
OPERATIONAL MARGIN	2.523.995,94	3.909.033,28	5.273.506,43
in % of sales revenue	25,24	26,06	26,37
Interest on short-term deposits	0,00	0,00	0,00
Financial costs	0,00	0,00	0,00
GROSS PROFIT FROM OPERATIONS	2.523.995,94	3.909.033,28	5.273.506,43
in % of sales revenue	25,24	26,06	26,37
Extraordinary income	0,00	0,00	0,00
Extraordinary loss	0,00	0,00	0,00
Depreciation allowances	0,00	0,00	0,00
GROSS PROFIT	2.523.995,94	3.909.033,28	5.273.506,43
Investment allowances	0,00	0,00	0,00
TAXABLE PROFIT	2.523.995,94	3.909.033,28	5.273.506,43
Income (corporate) tax	416.459,33	644.990,49	870.128,56
NET PROFIT	2.107.536,61	3.264.042,79	4.403.377,87
in % of sales revenue	21,08	21,76	22,02
Dividends	2.107.536,61	3.264.042,79	4.403.377,87
RETAINED PROFIT	0,00	0,00	0,00
Ratios (%)			
Net profit to equity	201,92	312,72	421,88
Net profit to net worth	73,96	114,55	154,53
Net profit+interest to investment	66,07	100,71	134,54

ANNUAL COSTS OF PRODUCTS - TOTAL
US Dollars

	Production 8/1996-12/1996	Production 1997	Production 1998	Production 1999	Production 2000	Production 2001	Production 2002
Raw materials	507.005,95	3.374.000,00	4.408.285,71	4.293.340,29	4.281.447,38	4.281.447,38	4.269.554,47
Factory supplies	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Utilities	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Energy	497,62	3.331,62	4.368,97	5.253,12	5.238,57	5.238,57	5.224,02
Spare parts consumed	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Repair, maintenance, material	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Royalties	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Labour	37.476,19	103.821,71	123.216,87	120.316,78	120.862,54	121.419,22	121.987,03
Labour overhead costs (taxes etc.)	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Factory overhead costs	24.739,88	59.375,36	59.375,00	59.375,00	59.375,00	59.375,00	59.375,00
FACTORY COSTS	569.719,64	3.540.528,69	4.595.246,55	4.478.285,19	4.466.923,49	4.467.480,17	4.456.140,53
Administrative overhead costs	3.100,00	7.440,24	7.440,48	7.440,48	7.440,48	7.440,48	7.440,48
OPERATING COSTS	572.819,64	3.547.968,93	4.602.687,03	4.485.725,67	4.474.363,97	4.474.920,65	4.463.581,00
Depreciation	17.712,40	53.413,89	61.953,57	61.953,57	61.953,57	51.961,90	34.652,78
Financial costs	312,50	47.407,50	77.700,00	61.188,75	43.983,75	28.860,00	14.430,00
TOTAL PRODUCTION COSTS	590.844,54	3.648.790,32	4.742.340,60	4.608.867,99	4.580.301,29	4.555.742,55	4.512.663,78
Direct marketing costs	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Marketing overhead costs	61.755,95	221.250,00	297.619,05	297.619,05	297.619,05	297.619,05	297.619,05
COSTS OF PRODUCTS	652.600,50	3.870.040,32	5.039.959,65	4.906.487,04	4.877.920,34	4.853.361,60	4.810.282,83
Foreign share (%)	74,63	40,20	13,92	14,19	14,24	14,21	14,13
Variable share (%)	77,77	87,27	87,55	87,61	87,88	88,32	88,87

ANNUAL COSTS OF PRODUCTS - TOTAL
US Dollars

	Production 2003	Production 2004	Production 2005
Raw materials	6.545.751,32	9.800.494,71	13.064.304,23
Factory supplies	0,00	0,00	0,00
Utilities	0,00	0,00	0,00
Energy	10.506,25	15.730,27	20.968,84
Spare parts consumed	0,00	0,00	0,00
Repair, maintenance, material	0,00	0,00	0,00
Royalties	0,00	0,00	0,00
Labour	195.880,49	264.299,81	329.359,52
Labour overhead costs (taxes etc.)	0,00	0,00	0,00
Factory overhead costs	107.142,86	130.952,38	178.571,43
FACTORY COSTS	6.859.280,91	10.211.477,17	13.593.204,02
Administrative overhead costs	7.440,48	7.440,48	7.440,48
OPERATING COSTS	6.866.721,39	10.218.917,64	13.600.644,50
Depreciation	127.444,05	131.129,76	134.929,76
Financial costs	0,00	0,00	0,00
TOTAL PRODUCTION COSTS	6.994.165,44	10.350.047,41	13.735.574,26
Direct marketing costs	0,00	0,00	0,00
Marketing overhead costs	500.000,00	750.000,00	1.000.000,00
COSTS OF PRODUCTS	7.494.165,44	11.100.047,41	14.735.574,26
Foreign share (%)	0,72	0,51	0,41
Variable share (%)	87,48	88,43	88,80

DISCOUNTED CASH FLOW - PARTNER EQUITY INVESTED - TXT GROUP
US Dollars

	1996	1997	1998	1999	2000	2001	2002	2003
TOTAL CASH INFLOW	0,00	0,00	410.619,10	674.995,17	907.114,80	703.880,30	503.472,44	1.059.880,18
Dividends	0,00	0,00	410.619,10	674.995,17	907.114,80	703.880,30	503.472,44	1.059.880,18
Equity capital refund	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL CASH OUTFLOW	525.000,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Equity capital paid	525.000,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
NET CASH RETURN	-525.000,00	0,00	410.619,10	674.995,17	907.114,80	703.880,30	503.472,44	1.059.880,18
CUMULATIVE NET CASH RETURN	-525.000,00	-525.000,00	-114.380,90	560.614,27	1.467.729,07	2.171.609,37	2.675.081,81	3.734.961,99
Net present value	-525.000,00	0,00	262.796,23	345.597,53	371.554,22	230.647,50	131.982,28	222.272,98
Cumulative net present value	-525.000,00	-525.000,00	-262.203,77	83.393,75	454.947,97	685.595,47	817.577,75	1.039.850,73
NET PRESENT VALUE	at 25,00 %	1.612.466,20						
INTERNAL RATE OF RETURN	70,13 %							
MODIFIED INTERNAL RATE OF RETURN	31,50 %							
SHORT NET PRESENT VALUE	at 25,00 %	454.947,97	for 5 years					
NORMAL PAYBACK	at 0,00 %	4 years						
DYNAMIC PAYBACK	at 25,00 %	4 years						

DISCOUNTED CASH FLOW - PARTNER EQUITY INVESTED - TXT GROUP
US Dollars

	2004	2005
TOTAL CASH INFLOW	1.641.487,15	2.214.458,77
Dividends	1.641.487,15	2.214.458,77
Equity capital refund	0,00	0,00
TOTAL CASH OUTFLOW	0,00	0,00
Equity capital paid	0,00	0,00
NET CASH RETURN	1.641.487,15	2.214.458,77
CUMULATIVE NET CASH RETURN	5.376.449,14	7.590.907,91
Net present value	275.395,84	297.219,62
Cumulative net present value	1.315.246,58	1.612.466,20
NET PRESENT VALUE		
INTERNAL RATE OF RETURN		
MODIFIED INTERNAL RATE OF RETURN		
SHORT NET PRESENT VALUE		
NORMAL PAYBACK		
DYNAMIC PAYBACK		

FINANCIAL RATIOS

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Long-term debt to net worth	0,02	0,28	0,17	0,10	0,07	0,03	0,00	0,00	0,00	0,00
Current assets to current liabilities	2,11	3,78	8,80	202,88	226,93	201,94	112,42	111,57	110,44	105,89
Net cash flow to long-term debt	-29,77	-0,95	2,73	8,30	9,93	15,39	0,00	0,00	0,00	0,00
Accounts receivable to accounts payable	0,50	0,99	2,51	0,74	0,74	0,74	0,74	0,70	0,74	0,74
Net cash flow to long-term debt service	-2.381,56	-10,41	6,15	14,05	12,78	11,84	-0,79	0,00	0,00	0,00

United Nations Industrial Development Organization
IPO Industrial Promotion Office

largo Domodossola, 1 - 20145 Milano Italy - tel. (39-2) 4815.522 fax (39-2) 4985.925