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REDUCING THE COST OF FERTILIZER PLANTS IN DEVELOPING COUNTRIES*

by

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id.78-1974

The aim is, as we understand it, to find ways and means of reducing the total investment required for a fertilizer plant, while still guaranteeing a product of very high quality, a reasonable margin of capacity and a technically acceptable finish.

Any temptation to save on investment in these three areas would lead to far greater losses in production and considerable difficulties in operation.

Our experience in this field dates from 1965, when we had to build:

1. A 54% P_2O_5 phosphoric acid plant, ICH₁, producing 1,000 tonnes a day of sulphuric acid and 310 tonnes a day of P_2O_5 .
Start of operations: beginning of 1972;

A second 54% P_2O_5 phosphoric acid and triple superphosphate plant, ICH₂, producing 1,500 tonnes a day H_2SO_4 , 400 tonnes a day P_2O_5 and 300 tonnes a day TSP.
Start of operations: end of 1974;

A dicalcium phosphate plant, producing 60,000 tonnes a year.
Projected start of operations: August 1978;

A phosphoric acid and diammonium phosphate (DAP) plant, SEPA I, producing 3,000 tonnes a day of H_2SO_4 , 1,000 tonnes a day of 54% P_2O_5 and 1,000 tonnes a day of DAP.
Projected start of operations: Mid-1979.

In addition, we also plan to put into operation:

Project SEPA II, which will produce 1,000 tonnes a day of ammonia and 1,000 tonnes a day of nitrate;

Project ICH₃, which will produce 3,000 tonnes a day of sulphuric acid and 500 tonnes a day of 54% P_2O_5 .

The different areas in which we have succeeded in reducing investment costs may be summarized as follows.

I. Site selection

We have built our plants at the industrial port of Gabès, where we have benefited from such State investments as:

Port facilities for unloading raw materials and loading finished products. Expenditure on transport to and from our plants has thus been cut to a minimum;

Sea-water intake stations which supply the water used to cool our installations;

State-run system of road and rail communications;
Waste-water disposal system;
Equipped sites.

The general idea is to take advantage of industrial zones established by the State, which creates the infrastructure necessary for the development of a given region.

II. Presentation of the project and invitation to tender

The aim is to provide a clear and precise statement of essential project information. Accordingly, we include the following information in our invitations to tender:

1. A precise description of raw materials and utilities;
2. A precise description of local conditions: climate, temperature, wind conditions, seismic conditions, pollution standards, etc.;
3. Soil studies;
4. General civil engineering and equipment specifications. These specifications represent standards that must be met and cannot be departed from without special permission.

There is no question of cutting costs in this area; the purpose is to provide suppliers with a clear statement of their obligations;

5. Detailed specifications. We specify our requirements with respect to production capacity, product quality, processes (where applicable) and certain specific types of equipment.

We leave it to the contractor to select the means of achieving the objectives set;

6. The contractual provisions on the basis of which the operating contract is to be performed and which define the services to be provided by the contractor, his guarantees and responsibilities, and the services to be provided by the customer.

III. Measures which may make it possible to reduce investment costs

1. Maximum precision in the presentation of the project and invitation to tender discussed above. This makes it possible to reduce the element of risk in the overall operation.

2. Reliable and clear information on all local matters: supplies, administration, customs, labour legislation, taxation, insurance, etc.

The customer must guarantee that this information will be made available to the contractor, and must endeavour also to:

Assist the contractor so that he can carry out his local work without risk or delay;

Assist the contractor in contacting local firms capable of providing certain services;

Assist the contractor in the customs clearance of project equipment and in avoiding difficulties with customs officials by securing all the necessary assurances and guarantees;

Introduce the contractor to local government agencies.

3. Performance of certain local work

We ourselves undertake certain specific aspects of the project which can be handled separately, such as the construction of buildings for administrative and amenity services, laboratories, workshops, warehouses, utility connections, etc.

4. Consultations with specialized firms

In this area, we have followed three different approaches, depending on our capacity for supervision:

4.1 Turn-key project. The firms consulted are in general specialists in a major aspect of the over-all project; e.g., utilities + sulphuric or phosphoric acid production facilities + concentration plant.

Contracts of this type require fairly flexible supervision on the part of the customer, possibly assisted by an engineering consultant.

4.2 Turn-key project with the customer's participation

On this kind of project the contractor is responsible for the entire undertaking, but reassigns a portion of the work (studies, supervision, certain services, assembly operations, etc.) back to the customer, who performs it under the contractor's direction.

In this way it is possible both to reduce costs substantially and to train the customer's personnel.

4.3 Building of functional components of the project by specialized firms, the customer being responsible for connexions and link-ups

Under this arrangement investment costs are lowered because of the reduced risk to the contractors and the specialized know-how of the suppliers.

For this kind of project the customer must have at his disposal a sizable team of supervisors.

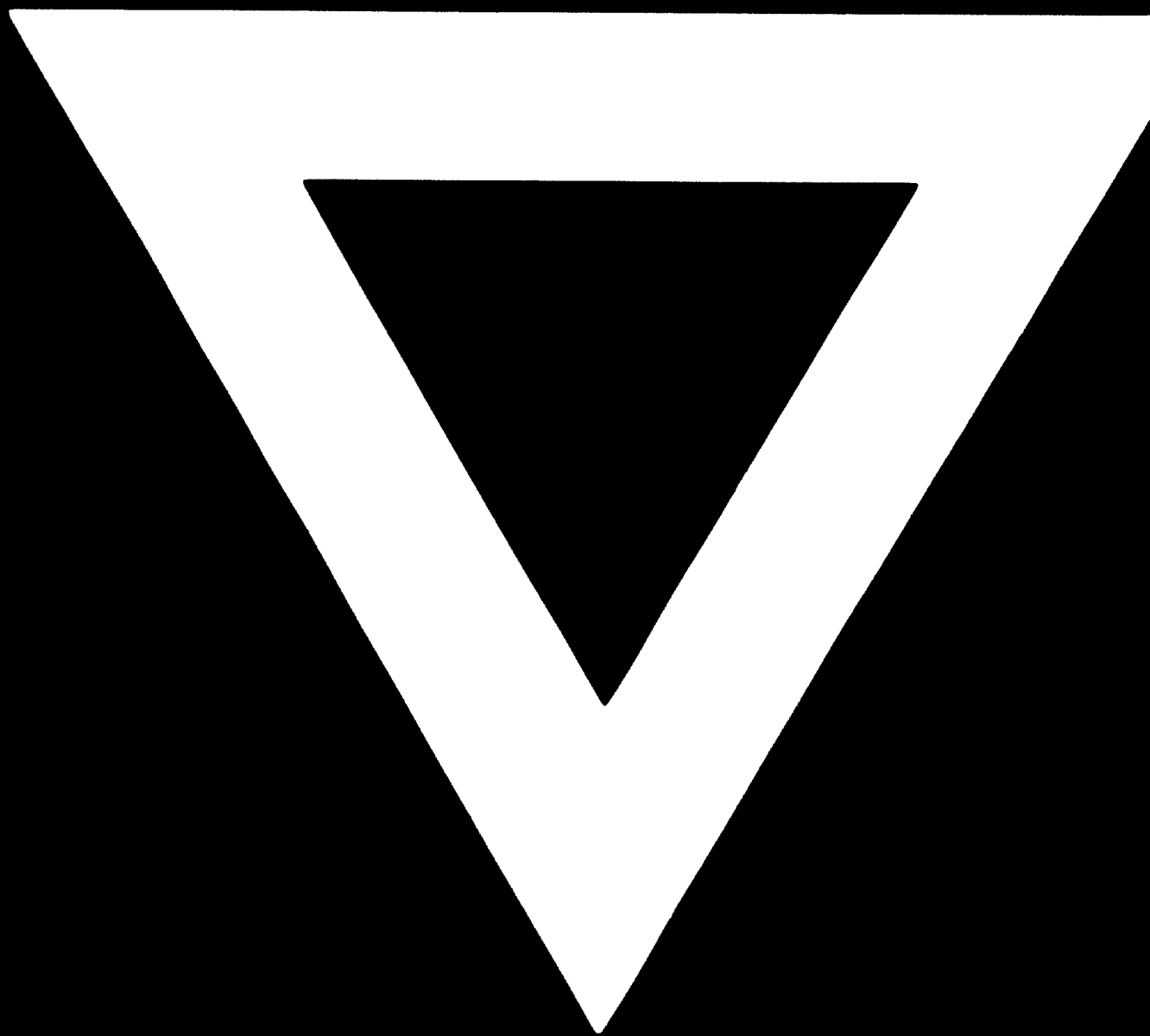
5. Selection of standard sizes and equipment so as to take advantage of studies already carried out and equipment that is available.

6. Selection of optimum storage capacities

These then are the principal approaches that we have followed in implementing our projects. We hope to realize even greater savings as our staff and workers acquire greater training.



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