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Regional Seminar on Machine Tools
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COUNTRY STUDY REPORT
ON
THE MACHINE TOOL INDUSTRY
IN
THE SYRIAN ARAB REPUBLIC 1/

by

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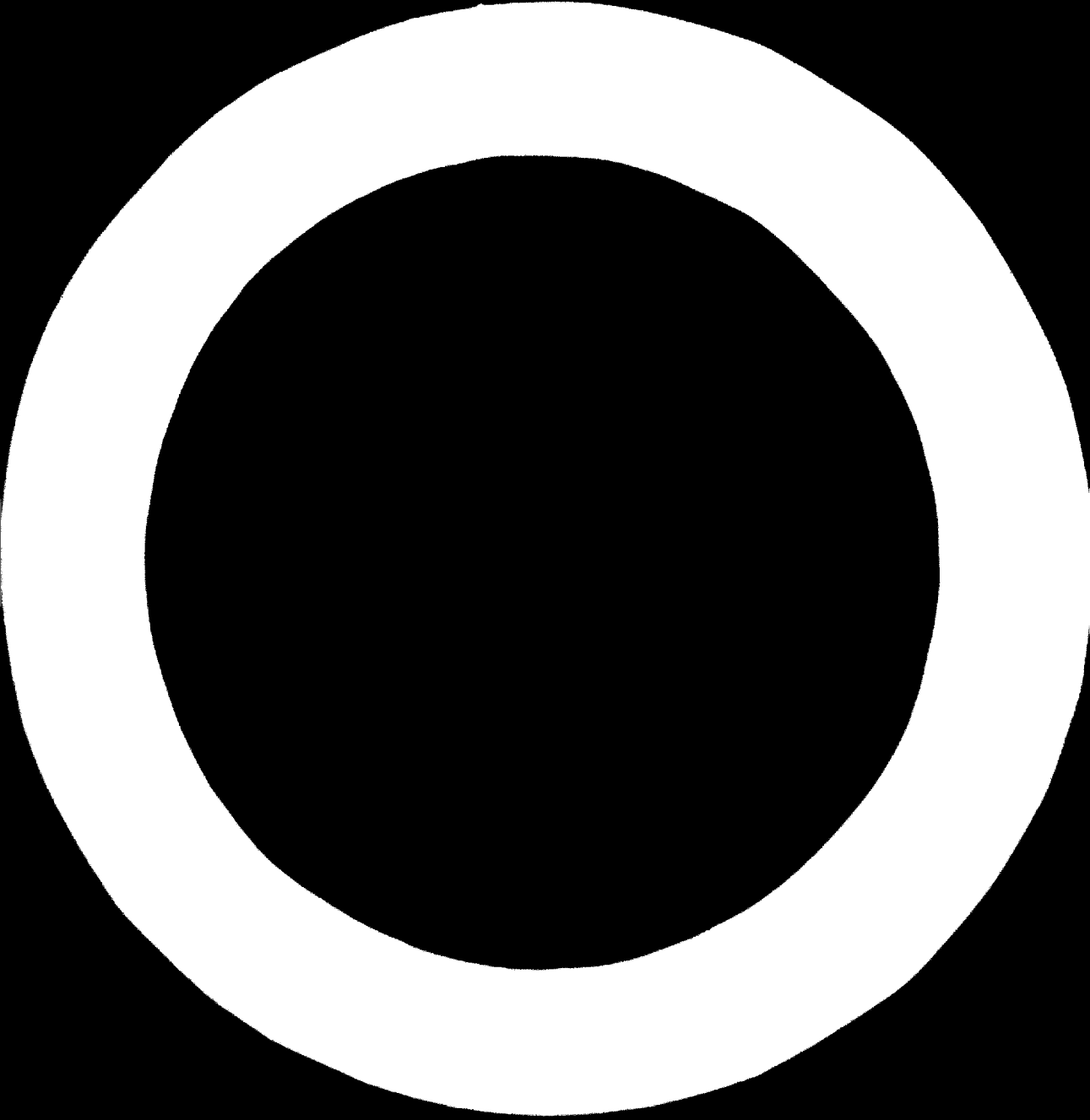

There is an increasing use of machine tools in different industries and in workshops throughout the world. This is true also in Syria where the machine tool is a fundamental item, which helps in developing the industry of the country.

The trade statistics of the last five years show an increase in the imports of machine tools. This trend has been accounted for in the five year plan according to which it is planned to establish a machine tool manufacturing industry based on a series of studies conducted in 1969.

The machine tool industry is expected not only to cover local demand, but also to export a part of the production to the Arab countries and other nations.

The production programme is divided into two parts or stages as set forth in Annex I which refers to the kind and quantities of machine tools and accessories it is planned to produce.

During the initial period (stage I) the production of only simple machines of prime necessity is planned to gain experience and improvement of professional skill. The second stage comprises the production of more complicated machines. This production programme has been worked out with due consideration to the economical kind and quantities of the products.

We want to refer to some figures with regard to the last production programme:

- The necessary capital is 33.5 million Syrian Pounds or about 3.35m English pounds.
- The material needed, such as steel and cast iron, is 1400 tons per year, will be imported in the first period until the iron and steel manufacturing project realises in Syria and is put into production.
- The machine tools factory will need 780 technical workers and 220 employees in other different working positions.
- In the first stage the factory will work in one shift.

The auxiliary industries

In Syria there are a number of small foundries to satisfy the castings for pumps factories.

In addition to the relatively larger governmental workshops and foundries, a great number of small and medium sized mechanical workshops and small foundries are distributed throughout the country, and these manufacture some of the spare parts needed also for maintenance purposes.

Also we can refer to the electrical motor factory, which will be put into operation this year and produce 25,000 motors of power 0.25 - 7 Hp.

We can consider a number of big workshops and other training centres which can be used as production workshops according to certain programmes.

The project of machine tools manufacturing at 1969 did not materialize in Syria because of certain economical conditions and because of other more necessary and urgent projects, but the Government looks on this project seriously and if we get the necessary capital with repayments over a long period with reasonable interest, or the supply of the necessary equipment for this factory, manufacturing can begun under a license agreement.

The UNIDO can advise on the method of supplying the necessary equipment and the technical assistance according to the previous conditions. At the same time UNIDO can help Syria by another programme for establishing the necessary re-building of the machine tool factory by supplying the supervising experts and necessary equipment. The Syrian Government will prepare the suitable building, manpower and other necessities. The same expert could train the Syrian technicians on controlling and adjusting the tools of the machine tools, and the Government could prepare one of the training centres for this purpose.

Numerically Controlled Machine Tools

With reference to the availability of manpower and man-hour costs in Syria, we think that it is not necessary and uneconomical to use numerically controlled machine tools, but after the next four years it will be necessary to use the last automatic machines in any field, because the Alfurat Dump Project will be finished and agriculture and other industries will attract and contain the workers in Syria, so it will be necessary and economical to use automation.

We hope that in this short report we have covered the main questions concerning the machine tool industry and its difficulties in the Syrian Arab Republic.

Annex N° 1

PROPOSITION OF PRODUCTION PROGRAM

Product	Technological Parameter	Minimum the economical number of pieces per annual
1	2	3
First stage:		
Bench drilling machine	Max.diameter 10-13 mm	180
Pillar drilling machine	Max.diameter 20-25 mm	120
Hacksaw machine	Hacksaw blade 630 mm	80
Sliding, surfacing and screw-cutting lathe	Length 800 an 2000 mm Swing diameter 355 mm	100
Horizontal milling machine	Milling table 355 x 1250 mm	80
Grinding wheel head, bilateral working	Grindings diameter 250 and 350 mm	120
Bandsaw for wood	Diameter of band 1800 mm	60
Swivel vice for machine	Span length 120. 180 mm	120
Vice for manuel working	Span length 60, 120 mm	3000
Face-plate for lathes	from 300 to 500 mm diameter	100
Three-jaw chuk for lathes	Diameter 250, 400 mm of hard-and soft-wares	800
Centre point for lathes	Morse taper 1 to 5	5000
Circular dividing table for milling & drilling machine	Diameter 400 mm	200
Milling machine arbor	Diameter 16, 22, 27, 32, 40, 50 mm	1000
Spacers for milling machine arbor	Interior diameter 16, 22, 27, 32, 40, 50 mm	5000
Drill chuck	Morse taper 1 to 5	10000
Straigth roughing tools high speed steel	From 10 to 40 mm square	
Bent roughing tools	dito	
Straight finishing tools	dito	
Bent side tools	dito	
Offset side tools	dito	60000
Bent finishing tools	dito	
Rectangular bent under-cutting tools	dito	
Wide face square nose tools	From 10 to 40 mm square	
Internal roughing tools	From 6 mm Ø x 125 mm to 32 mm Ø x 355 mm	
Straight recessing tools	From 6 x 10 x 100 mm to 25 x 40 x 280 mm	

1	2	3
Lathe tools with clamp type tool-holder for carbide tip straight lathe tools	From 12 x 12 x 110 mm to 32 x 32 x 250 mm	500
dito bent lathe tools	dito	
Offset lathe tools	dito	
Plain milling cutters for special hard materials	Diameter from 40 to 100 mm	
Plain milling cutters for very soft & tough materials	dito	
Shell end mills for normal milling operation	dito	40000
Shell end mills for special hard materials	dito	
Plain milling cutters for normal milling operation	dito	
Shell end mill for very soft and hard materials	dito	
Staggered tooth side milling normal milling operation	diameter from 50 to 100 mm	
Staggered tooth side milling cutters for very soft & hard materials	dito	
Side milling cutters with radial teeth	Diameter from 50 to 100 mm	
Tapped shank end mill with machine taper	Nominal diameter from 10 to 55 mm	30000
End mill cutters with parallel shank	Nominal diameter from 6 to 88 mm	
<u>Second stage:</u>		
Shaper	Stroke length 400 or 630 mm	50
Hydraulic surface grinding machines with horizontal spindle	Table working surface 250 x 600 mm	50
Universal wood working machine for drilling and milling	Height of centres 150 mm	60
Universal grinding machine hydraulic	Nominal diameter 200 mm grinding length 400 or 600 mm	40
Sharpening machine for tools and cutters grinding	Nominal diameter 200 mm grinding length 400 mm	80
Wood planer bilateral working		60
Dividing head for milling machine		60

1	2	3
Twist drill with machine taper	Nominal diameter from 8 to 35 mm	200000
Twist drill with parallel shank	Nominal diameter from 3 to 12 mm	200000
Machine reamer with machine taper	Nominal diameter from 5 to 45 mm	50000
Hand reamer with square	Nominal diameter from 5 to 30mm	50000
Saw blade for hack sawing machine	Length from 300 to 600 mm	10000
Metal cutting saws for hand saws	Length 300 mm	30000
Flat file for rough and finish	From 6 to 12 inch	20000
Half-round file for rough and finish	dito	20000
Round file for rough and finish	dito	20000
Triangular file for rough and finish	dito	20000
Square file for rough and finish	dito	20000

Country SYRIAN ARAB REPUBLIC

STATUS OF MACHINE TOOLS

Machine Tools *

Years	Number of Machine tools produced	Number of Machine tools imported	Number of Machine tools exported	Stock of Machine tools	Demand
1960		1150			
1970		1950			
1980		4130			4130
A. Milling Machine Tools					
1960		50			
1970		120			
1980		250			250
B. Drilling Machine Tools					
1960		100			
1970		200			
1980		450			450
C. Lathes					
1960		120			
1970		230			
1980		350			350
D. Grinding Machine Tools					
1960		220			
1970		400			
1980		900			900
E. Presses					
1960		50			
1970		80			
1980		180			180
F. Others					
1960		500			
1970		900			
1980		2000			2000

* The term machine tools includes metal cutting, metal forming, physics, chemical processing, welding and other related machines.

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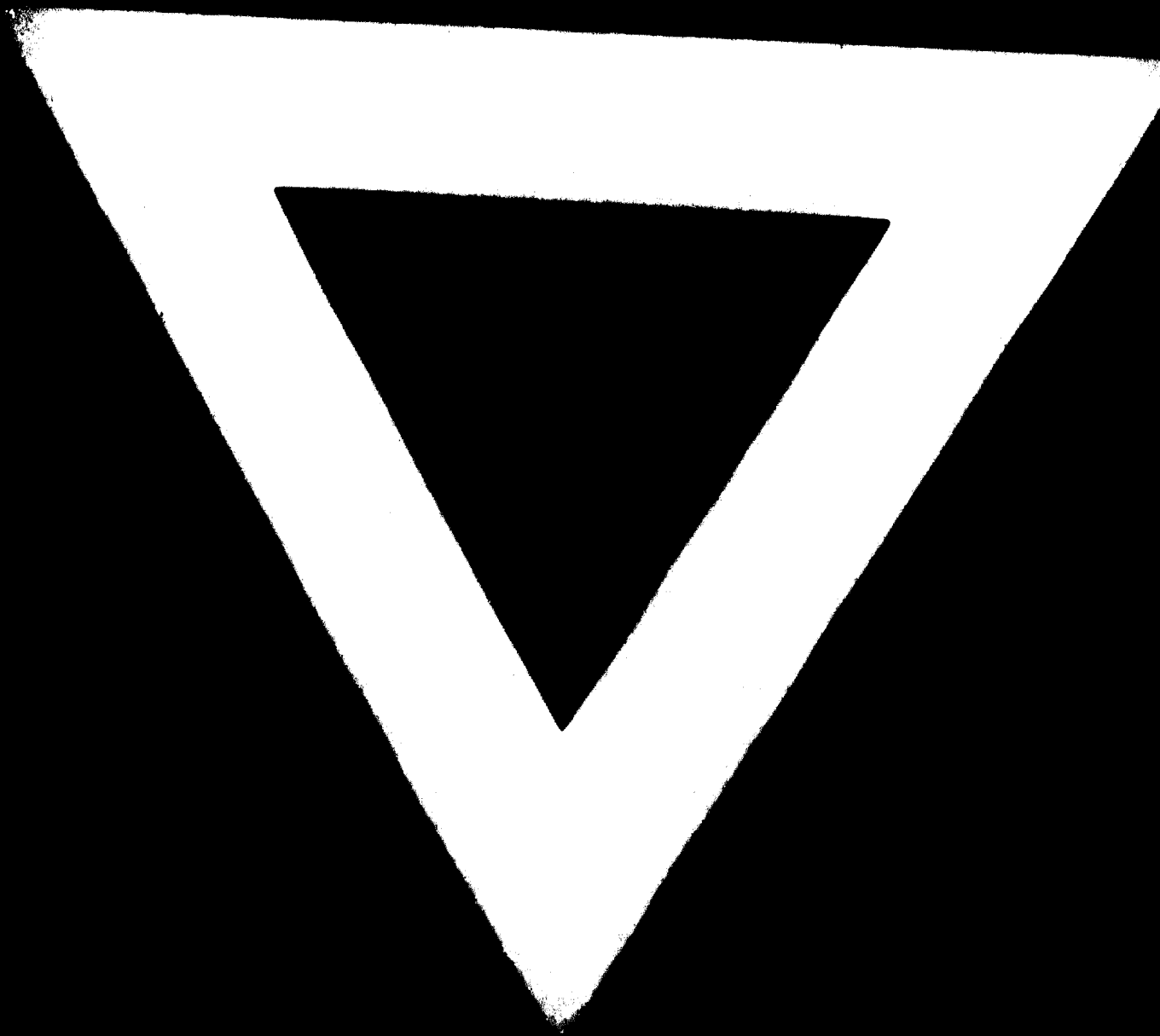

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