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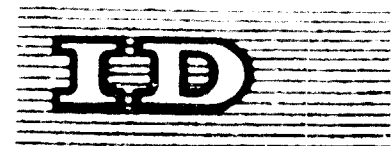
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REPORT ON MACHINE TOOLS

IN

KUWAIT <sup>1/</sup>

by

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Machine Tool Industry has started being used in Kuwait, in the early Fifties, in Government Departments, Oil Company and by local workshops.

A - Government of Kuwait.

Five Ministries are using machine tools on fairly large scale in Kuwait, as outlined below:

1 - Ministry of Public Works.

The Ministry of Public Works started using machine tools at 1952, when a large fleet of road machinery has been imported, and large Transport Section was founded. Then the necessity of machine tools for maintenance purposes was essential. This Ministry now has a large number of Centre Lathes, of various sizes and capacities. Milling Machines, Shaping Machines, Crankshaft Grinders, Cylinder Boring Machines, and Oil Engine Overhaul Machine Tools.

2 - Ministry of Education.

The Ministry of Education, has the technical College. Therefore, this College was founded in 1953 and has a fairly good number of machine tools for training purposes. Their shop is well equipped by centre lathes, radial drills, shaping machines, milling machines, grinders, etc... Students from secondary Schools are accepted there, and they will be employed by various technical Ministries after graduation.

3 - Ministry of School Affairs.

The Ministry of Social Affairs has an Institute for training skilled labour on various trades, and it has a machine tool program, to train Artizans, on centre lathes, shaping machines, and milling machines, and measuring tools. Training period is 18 months, and Graduates mostly employed by Government Technical Ministries.

This Institute was founded by the Government of Kuwait and the International Labour Office of the United Nations. International Experts and Instructors, are managing training on various trades by the aid of local Kuwaiti Instructors, who are graduated from same training Institute. And the Management and the Administration of the Institute are carried by the

Ministry of Social Affairs.

4 - Ministry of Finance ( Dept. of Customs & Port ).

The machine tools in the Department of Customs and Port are specially specified for the maintenance of marine works for ships, tugs and boats. Their workshops has large capacity lathes, shaping machines and large drilling machines, grinders, welding machines, etc...

Beside marine works, they machine all parts involved in cranes and trailers and transport engines.

5 - Ministry of Electricity and Water.

The Ministry of Electricity and Water has the largest workshops in Kuwait and the Middle East. It's main workshops at Shuwaikh was founded in 1953. Basically for the maintenance purposes of it's first Distillation plant and Power Station. Demand on Electricity and water was rapidly growing as the Country is expanding and developing. More distillation plants and power stations were constructed, and, accordingly, the main workshops was expanding to carry out all maintenance tools required by distillation plants and power stations and other sections, of mechanical and electrical services and maintenance.

Average of 12,000 work - orders are executed by main workshops, 50% of which are executed by machine shop. This machine shop is very well equipped by machine tools. Some are for general purposes and some are specially specified to machine, certain parts used in Ministry's equipment.

The following machine tools are available at present:

Centre lathes from 3' - 25', Between centres,  
Shaping machines up to 10' - 0" stroke,  
Horizontal and vertical boring machines,  
Milling machines,  
Surface grinders,  
Lepping machines,  
Crankshaft grinders up 8' - 0" between centres,  
Multi radial drills,  
Circular and band metal cutting saws,  
Disc grinders,  
Pipe bending machines,  
Brake presses,  
Pneumatic hammers,  
Motor overhull machinery,  
Hardening ovens,  
Coil winding machines,  
Balancing machines,  
Bending machines,

Electrical rollers  
Capstan lathes, etc.,

- a - Demand on die casting is becoming necessary, in order to use our various alloy materials, and to expedite production of required parts, and to save 50% at least of material wasted by turning processes, and to save 70% of labour cost.
- b - Regarding shafts building, this is also very important. As we are facing problems in highly expensive shafts, and crankshafts needs building and can't be scraped due to high cost in case of replacement.  
If we come to good training of this process and the know how, we can purchase the machinery and renew our pending shafts, and face future defects specially to those shafts which the defect is below the permissible grinding under size on any journal or bearing seat.
- c - In cases of vibration troubles we are facing mostly in electrical motor rotors of 500 HP. and over. We have Hoffman Balancing machine of 10 ton capacity and 20 feet length and 6' 0" Swing purchased in 1958, we find difficulty and spend time to detect cause. We use false weights and workout. A long calculation and keep trying to smooth the vibration to the minimum or we try to shift critical speed away from starting or running speed. We appreciate gaining training on easier method or new modern process as we do appreciate also using vibration analyzers to detect cases in location before dismantling rotors and transporting to workshops. In balancing field we like to adopt a universal diving coupling to suit all diameter shafts as we are now, manufacturing a new coupling for each case to suit it's original driving coupling which takes time and waste material.
- d - Regarding precision grinding finishes, this includes outside and internal grinding. We appreciate getting more knowledge and training in this field. And being introduced to the up to date highly precision grinding machine tools. Also the lapping machines to the maximum precision or nearly 0.0001", as we require this daily for various shafts, cylinders, sleeves, plates, and valve rods and seats etc.,

This in brief outlined report on machine tools available and it's use in common sector (Government).

**B - Private Sector and Local Companies.**

In private sector and local companies and Oil Companies every firm or factory or company is equipped with machine tools necessary for it's business or industry generally non in Kuwait as mentioned previously in this report has the machine tool available at the main workshop of the Ministry of Electricity and Water.

As a fact most of the oil companies and private sector gets the technical assistance and the use of our machine tools in the main workshops when requested and aproved by the Ministry.

As a short review of the local sector, there are machine shops for engine overhaul, aluminium industry, iron mangry, marine workshops, sheet metal workshops, steel furniture, wood working machinery.

**C - Man Power.**

Most of machine tools were operated by foreign artizans at the begining and now, by encouraging policy of training the Kuwaiti skilled labourers and technical assistance graduated from technical college and training centres and Institute are filling over 50% of machine tool operators and supervisors jobs.







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