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PRESENT STATUS AND FUTURE PLANS FOR THE  
DEVELOPMENT OF THE PLASTICS INDUSTRY  
IN SINGAPORE  
WITH SPECIAL REFERENCE TO THE MOULD MAKING INDUSTRY ✓  
by

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### Mould Manufacturing Industry

Instead of describing the present status and future plans of the development of the plastics industry in my country as stipulated in the side-memoire of UNIDO. I present here a brief report of the mould manufacturing industry in Singapore which is relevant to the course I will be attending; "Mould design and mould making." My colleague, Mr. Tan Hong Sui who will be attending the course in plastic technology, will submit the report on plastics industry.

### History of Mould Making in Singapore

As one of the main subsidiary industry of the plastics fabrication industry, mould making is a highly specialised industry because of its requirements of professional skills and precision machining technology and high level of technical know-how.

In 1966, the first tool and die training centre was established by the Economic Development Board of Singapore in conjunction with the ILO foreign aid programme. A batch of ten trainees received training in mould making. Two years later (1968), a group of Hong Kong manufacturers started its operation here and advanced mould making know-how and technique had been brought into the industry by them and was well developed in the next few years.

However, not until the year 1973, mould making did very little progress and the total number of mould makers did not exceed 70. In the last two years because of the greater demand by the local consumer goods, electronics assembly firms, the industry started to boom, consequently, mould manufacturers from Australia, Hong Kong and Taiwan stepped in to build their factory here. Today, there are four major mould manufacturing factories and approximate 20 other small mould factories in Singapore. Total work-force are well over 200 at present.

Present Status of Problem Encountered in the Industry

The application of spark erosion machining and copy mill in mould making, and its use to manufacture almost all conventional moulds (general injection, blow mould, compression mould) including double injection moulds, composite harden moulds, etc.

However, the local mould makers still are unable to cover the tooling requirements. Most of the large and complicated cold, automatic and high speed injection moulds and the large rigid urethane moulds are still being ordered overseas. This is not in line with our government policy, which is to cover as much as possible the local requirements by our own industry. A study of the industry recently shows that the following factors are some of the hold-backs or short-comings in the industry.

1. Lack of advance technological know-how in mould design and making.

(a) Very limited practical knowledge in the listed field shown below:-

- (i) Two colour mould and moulding.
- (ii) Fully-automatic automatic urethane moulding and moulding.
- (iii) Thermosetting plastic injection moulds and moulding.
- (iv) High speed operation moulds and moulding.
- (v) Hot runner and hot tips moulds and moulding.

(b) Most of the designs are less practical in production with the following processes:-

- (i) Precision machining, ultrasonic, polishing and electro-erosion processes.
- (ii) Special finishing treatments: chemical etching, mirror-like finish, etc.
- (iii) Special attention to be made in material selection, especially when the material is to mould rigid, low viscosity, thermosetting plastics: e.g. Nylon, polycarbonate, PVC, etc.

2. There are very limited number of skillful operators in certain

machinery, tools, dies, etc. for the purpose of making, duplicating, and repairing tools. The government is also interested in the development of a tooling industry, the manufacture of which is essential for the recovery of local industry and the development of production of machinery and tools.

Nature of Plans

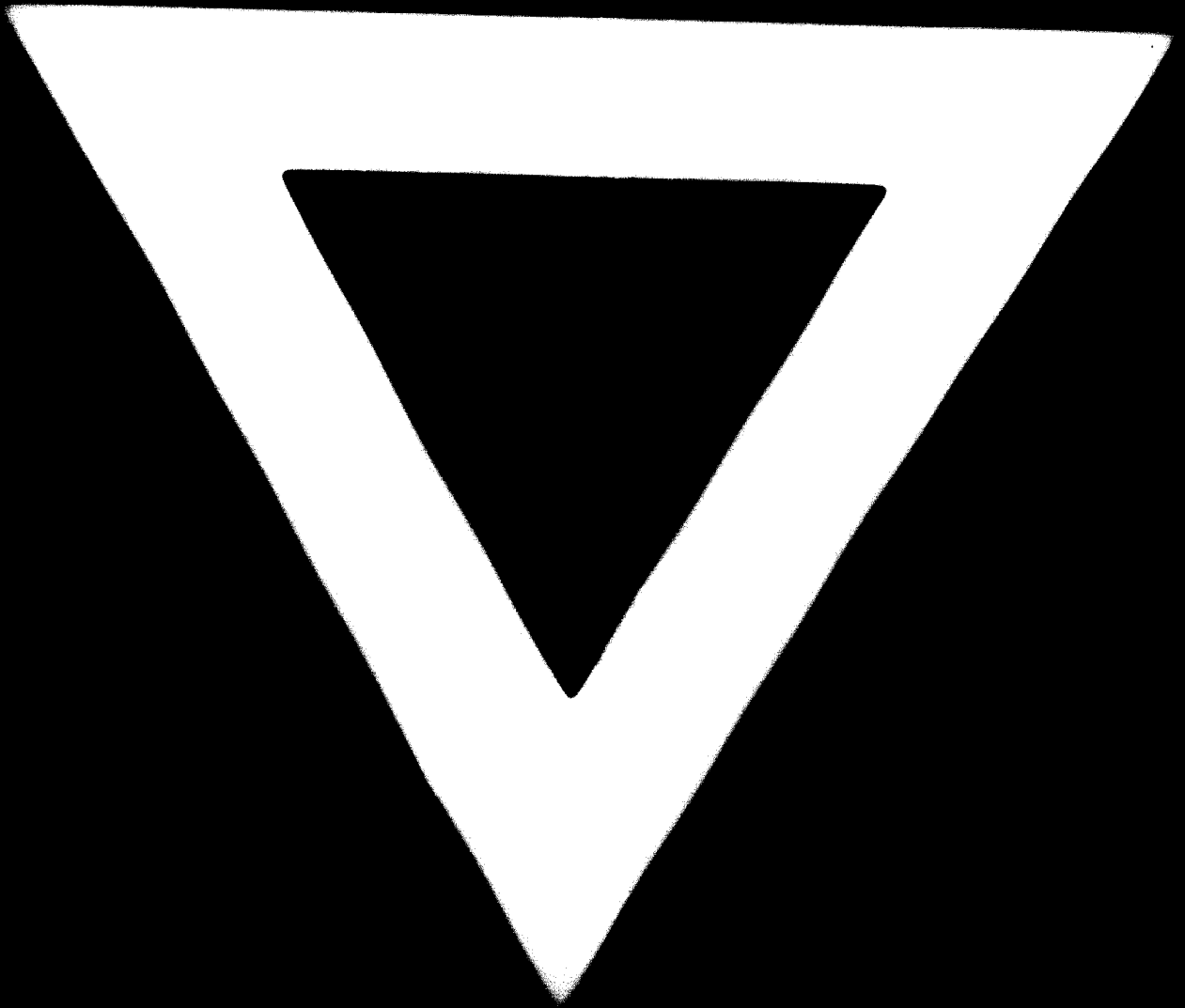
1. A drive on the tools and machinery industry is being transferred from a hobby to a serious enterprise. The government has initiated a drive to develop a tooling industry. In many cases, the government is providing financial aid. A pool of 5,000 tool and die makers is being established (under a training scheme so far). Amongst them, 2,000 outside makers, 30% of whom will be trained in mold making.
2. A leading mold manufacturing factory in Singapore, the Great Moulds Factory, intended to increase their present output two-fold in 1977. Some advanced and very precision machines in mold making have been ordered. This will probably lead to the aim of covering the whole tooling requirements by local manufacturers.

UNIDO

As a result of the present various aid programmes, UNIDO has given to its member countries, we would, as a developing country, need to obtain the following from the UNIDO, if possible:

1. Special arrangement for direct communication between manufacturing firms of developed and developing countries. This will enable us to obtain more technical know-how, exchange of experience at a smaller scale, and at certain specified fields.
2. More training schemes, technical and practical films and books from UNIDO.





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