

EXECUTIVE SUMMARY

0.1 GENERAL

The technology status study on photocopiers has been carried out by Department of Scientific & Industrial Research, under the National Register of Foreign Collaborations. This study was carried out to provide analytical inputs on the present level of technology in use and gaps in technology with identification of areas which require promotional & supportive measures for absorption, adaptation & upgradation of imported technologies. This chapter provides, in a nutshell, the synopsis of the study for a quick appraisal.

0.2 INDUSTRY OVERVIEW

In all, there are 16 licences in the organised sector out of which 8 are in production. While one party has stopped production, four are likely to commence production shortly & the remaining three are not in production. Nine parties have signed foreign collaboration agreements. In addition, there are other units in the SSI category which by and large are involved in assembly of photocopiers from SKD/CKD kits.

The production in 1985-86 was around 5,500 machines and had gone upto about 10000 machines during 1986-87. The estimated market demand in 1985-86 was of the order of 10,000 photocopiers and is expected to go upto 20,000 machines by the terminal year of VIIth plan period (1989-90).

0.3 TECHNOLOGY OVERVIEW

The manual copying machines as well as coated paper copier machines based on direct transfer on sensitized paper, are almost obsolete at present in the domestic market with the introduction of plain paper copiers, mostly using mono-component or dual component dry toner indirect transfer process. The machines available in the market employ both hot & cold fixing and may have either fixed or moving platen. Further, liquid toner technology is also in use in certain photocopier models to a limited extent. The imported technology is mostly of Japanese origin and the reliance on collaborators or foreign parties, with whom tie-up arrangement exists, is considerable for designs & drawings, components/parts, tooling, dies, etc. The industry lacks the dynamism required for growth and development of new techniques, in the absence of domestic research & developmental activities, particularly, on electrophotographic processes and materials.

0.4 MANUFACTURING INFRASTRUCTURE

Custom-built jigs & fixtures and test equipment constitute major elements of

imported machinery, while adequate infrastructure exists in the country for manufacture of pressed parts, plastic/rubber parts, gears, rollers, etc. Barring a few leading manufacturers, the investments in plant & machinery items & tooling, on the whole, are not adequate, specially, in small scale sector. The manufacturing process is, therefore, based on mere assembly in many cases.

0.5 INDIGENISATION

The indigenisation of parts is governed both by technical feasibility & economical viability. Components/parts which are both technically & economically viable for indigenisation in India include sheet metal pressed parts, general purpose ICs, wiring harnesses, transformers, bushes, switches, halogen lamps, rollers & plastic gears.

Components/parts that are technically feasible but economically unviable for indigenous manufacture at present include large plastic moulded covers and die cast parts, due to high cost of moulds, dies and other initial expenditure.

A large number of component parts for photocopier manufacturing need to be sub-contracted to specialist vendors and low order size arising from low scales of operation inhibit potential vendors taking up production of parts for supply to OEMs. Although high import duties on components/parts for manufacture of photo-copiers encourage indigenisation, they are causing low sales volume and this in turn discourages indigenisation.

0.6 CONSUMABLES

Manufacture of selenium drum, for in-house consumption, has been taken up only by Modi Xerox Ltd & British Physical Laboratories (India) Ltd while many import the same. Further, investments in toner & developer plant has been made only by Modi Xerox Ltd. At present, the consumables which are specific to each machine model are under OGL and, although, selenium coated drum is most common in the range of photocopier models available in the domestic market, certain other models use cadmium sulphide arsenic triselenide, organic polymers as photo conductive materials on the drum. There is lack of standardisation to enable indigenous manufacture of drums on viable scale. Re-coating of drums is being done in some cases. Vendors like Vactec and Gujarat Vacuum Coaters Ltd have also started manufacture of selenium drums.

0.7 TECHNOLOGY GAPS

The areas in which technology gaps exist today include magnetic rollers, lens systems, high voltage power packs, specialised electromagnetic clutches, specialised microprocessor chips, toners & developers, photoreceptors, main drive geared fractional HP motors & stepper motors suitable for photo copiers, thermistors, photo transistors and infrared diodes. Vendor base for the same needs to be built up on priority. Availability of R&D manpower with expertise in reprography is scarce, the industry being relatively new.

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DESIGN & STANDARDISATION

In the diversity of models being produced, no common specifications have been drawn in respect of components/subsystems similar to a majority of models. Invariably, the specification adopted by OEMs are based on parts specifications detailed by collaborators where such arrangement exists. In other cases, parts are reverse-engineered for supply by vendors. The industry has not built-up sufficient strength in to R&D for original design & development of photocopiers. Component commonalisation in various models, to the extent possible, will strengthen vendor development on viable & economic basis and help in reducing the cost of production of photocopiers, ultimately.

0.9.

RECOMMENDATIONS

- The plain paper copier industry is dependent on imported know-how and import of critical components such as magnetic rollers, lens systems and sensitive electrical/electronic components. Several photocopier models are in existence in the market without a proper technical back-up by way of research & development, standardisation and indigenisation.
- Realising multi-faceted problems faced by the industry, there is a need to review the duty & tax structure in a manner which can encourage the growth of demand on one hand and indigenisation on the other. Since reduction in import duty may discourage indigenisation, it may be worth-while reducing, if not completely eliminating excise duty and local taxes on photocopiers.
- For achieving economies of scale, licensing of small capacities needs to be discouraged. Further, promotion of export-oriented units should be given necessary support.
- There is a need for taking up local manufacturing of items for which gap in technology exists with promotional support from state electronics corporations. In the long run this will result in technological self-sufficiency & viable investment proposition.
- To speed up indigenisation & absorption of foreign technology imported through foreign collaborations, it is recommended that a close monitoring of implementation programmes be pursued.
- There is a need to boost the exports by encouragement to indigenous manufacturers by way of marketing support from the State Trading Corporation.
- There is vital need to take up research in photocopier designing on our own. Development of technology for critical components, such as, magnetic rollers, optical system. HT transformers, toner and developer, etc., as identified in Chapter 7, is necessary. Further, the developmental work need to be undertaken by national laboratories & technical institutions on the basis of time bound programme.
- As is evident from Annexure 2, there are a number of models introduced in the Indian market with different maximum size acceptability (size of paper

copied), copying speed, reproduction ratios, etc. In the complexity of models, vis-a-vis, the consumer requirements, there is a need to restrict the number of models to the barest minimum, which will help in the indigenisation of components/sub-assemblies. The same requires review by a specialist study team.

- The present in-house R&D should be primarily directly towards product development and indigenisation.