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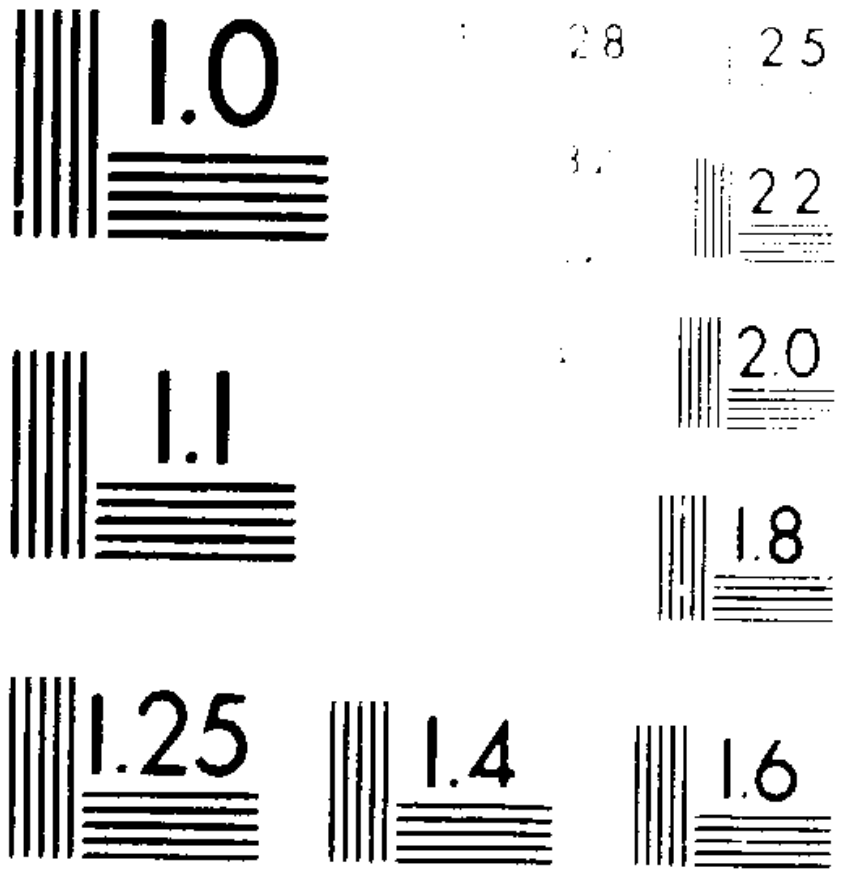
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DP/ID/SER.B/481
9 November 1984
English

China.

ASSISTANCE IN THE MANUFACTURE OF ALUMINIUM WINDOWS AND DOORS.

DP/CPR/80/045

CHINA

Terminal Report*

Prepared for the Government of China
by the United Nations Industrial Development Organization
acting as executing agency for the United Nations Development Programme.

Based on the work of W.G. Fancourt,
Plant Lay-out Engineer

United Nations Industrial Development Organization

Vienna

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ABSTRACT

The main aim of this project is to develop the industrial capacities in order to provide the appropriate physical inputs for the expansion of building construction in China and at the same time meeting local conditions.

As a result of analysis and discussion with the relevant Chinese authorities , Mr. Farcourt, the author of this report has made some suggestions for further training and assistance in the building construction area.

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1. BACKGROUND

This report covers the work done on mission DP/CPR/80/045/11-03 at the Guangzhou Aluminium Windows Factory between 19 September and 5 October 1984 after briefings in Vienna and Beijing.

W.G. Fancourt travelled together with consultant J.S. Arkwright who will complete this phase of the project. A handover of work was made during the joint time at the project site.

The previous work on the project up to January 1984 is given in the report headed 'Visit Report of Paul Anton GmbH, Sulzbach, FRG' by W.G. Fancourt dated January 1984. Work in the intervening period has been mainly the determination and ordering of additional equipment and shipment to the project site.

2. GENERAL SITUATION

This project has become much more complex than envisaged in the project document because the windows to be manufactured at the time of the installation of the equipment are of a different design (i.e. the "old" or "original" design) to those which the factory was designed to manufacture. The previous report and correspondence details the numerous changes and additions to the equipment list which have been made to accommodate the manufacture of "old" design windows for an initial period, and to allow a change of methods to manufacture the "new" designs at a later date.

A meeting was held in the early part of this mission between Mr. LI Junqi, Engineer and Mr. Li Tieqiang, Engineer of the China State Construction Engineering Corporation, Mr. Wu Cai, Director and Mr. Wu Zhong Yao, Vice Director of the Guangzhou Aluminium Window Corporation at which it was agreed that extrusions would be ordered without delay for the "new" designs of sliding and casement windows. The general wall thickness will be fixed at 1.5 mm as previously discussed and this may involve some further

minor changes to drawings before the extrusions are ordered. The first order for the new extrusions will be for a sample quantity to make windows to check for design errors. It is noted that there is an adequate supply of extrusions for the "old" designs in the factory at present but some difficulties are expected with future supplies.

The factory layout has had to be changed during the machine installation period in order to enable the "old" designs to be manufactured as a temporary measure. The workflow for this manufacture will not be ideal since the machine positions have been arranged as far as possible to suit the new designs.

3. EQUIPMENT DELIVERY

The equipment left the Anton factory packed in four containers and four wooden crates. On arrival at the project site one wooden crate was inside a fifth container for no obvious reason.

The Anton engineer, Mr. M. Priego and the UNIDO consultants witnessed the unsealing and unpacking of the equipment. Some relatively minor damage was apparent on initial inspection. A full inspection report will be completed by J.S. Arkwright when all equipment has been installed and tested. There were no apparent shortages other than two small items of machine spares not found at the date of this report.

4. FACTORY PREPARATION

The factory preparation was well advanced but not 100% complete at the time of the receipt of the equipment. The general standard of preparation was good with all essential services and necessary installation tools and labour available.

The floor surface in the factory is not very smooth by European standards and may need to be screened in the future in order to provide a more even surface for the movement of materials betweer machines.

5. MACHINE LAYOUT CHANGES

At the time of writing this report the installation of equipment is proceeding generally in line with the schedule. The numerous and inevitable small problems which occur are being solved without undue difficulty by the co-operation of all parties.

As far as possible all the machines to be used for the manufacture of the "new" window designs have been positioned as shown on the original layout, with the exception of two machines in the sliding window workshop.

The additional machines supplied for the manufacture of the "old" designs have been installed between the original machines and can be removed when the "new" designs are in production. This compromise will result in a less efficient workflow prior to the changeover but will involve the smallest possible amount of work to make the change.

The equipment changes made for the production of doors has resulted in less imported equipment being supplied for these products and there is thus a need for additional Chinese supplied equipment for this workshop.

6. SUGGESTED FURTHER ACTION

J.S. Arkwright will deal with the completion of the installation, testing and demonstration of the machines prior to the departure of the Anton Engineers. After the engineers leave he will help to make the factory operate by assisting with:

(a) Machine operator instructions and safety measures;
(b) Overall workflow and movement of materials;
(c) Works documentation;
(d) Production control;
(e) Manning levels and supervision.

The next post for this project is the training function but some training work is being done during this mission in order to enable the equipment to be used correctly.

It is proposed that Mr. Arkwright should cut short the present mission, possibly at the end of November, as soon as the factory is able to make the "old" designs of windows reasonably efficiently. The time saved can more efficiently be used, together with some of the timed allocated for future training, to assist with the change of production from "old" to "new" product designs when the new extrusions are available.

It is recommended that the split of the mission in this way and the interchange with the training mission will allow the factory to operate for a trial period without UNIDO assistance and more easily identify the areas where the future training effort should be concentrated.

One area of product design and manufacture which remains unresolved is the design and manufacture of handles and hinges. The writer has maintained contact with one of the companies visited during the study tour, namely Arthur Shaw Limited, Willenhall, Wolverhampton, UK, who have provided sample handles and hinges of a design and quality more appropriate to the new window designs. It is recommended that this company be contacted to quote for the supply of specialist design information and equipment for the manufacture of these components from aluminium extrusions. Designs of this type will eliminate any future requirement for the factory to install die casting equipment.