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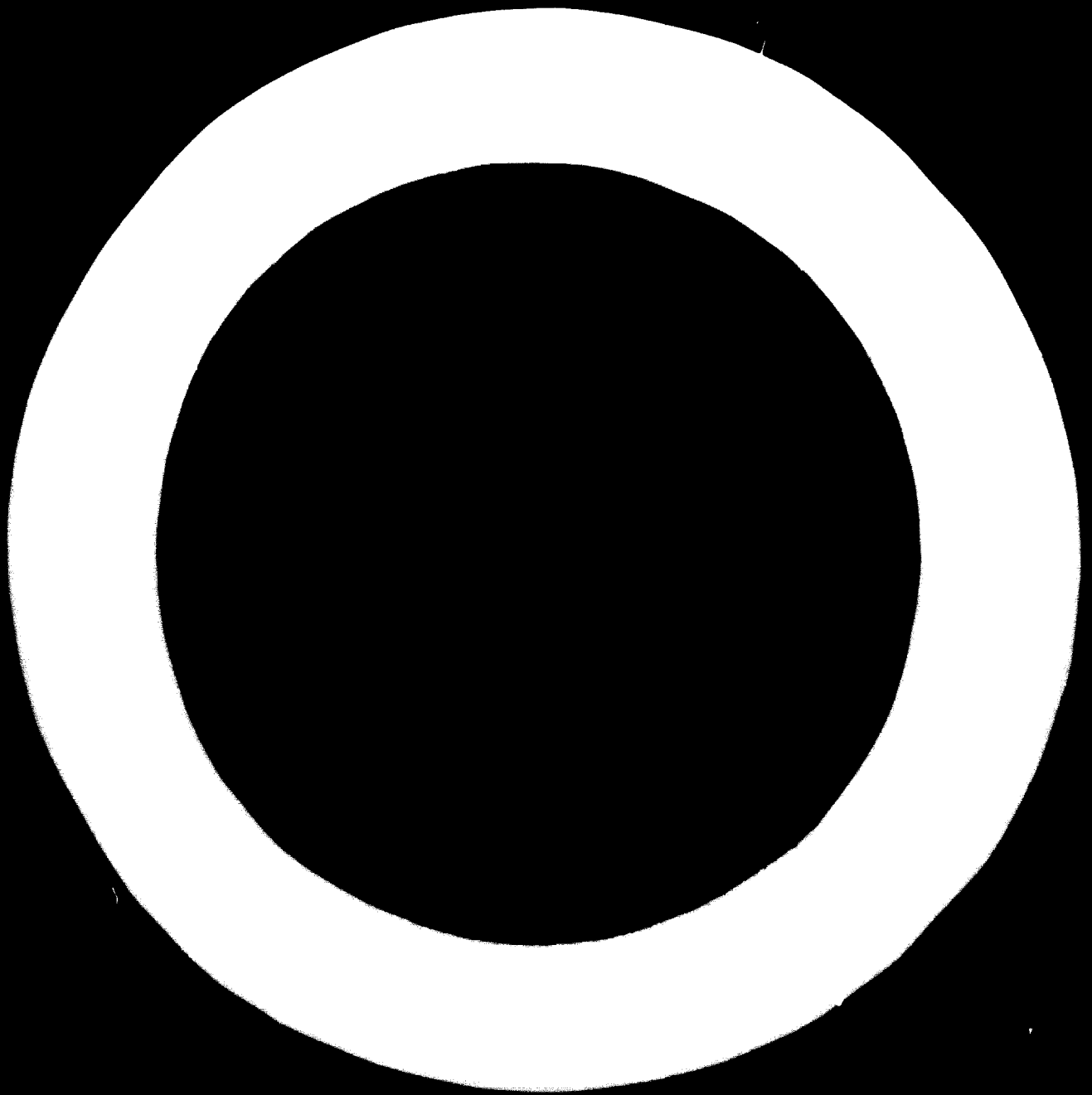
THE ROLE OF MACHINING CENTRES IN THE MANUFACTURE
OF SPECIAL MACHINES ^{1/}

presented by

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^{1/} The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO.

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As is known, machining centres came to the attention of experts in the years immediately following the last world war. They arose primarily from the urgent need to reconstruct and to create more jobs and they were based on new technological ideas which were spreading rapidly from one country to another.

Machining centres have a special application in the manufacture of components which are unusual by reason of their shape and bulk and of which only a small number of units are to be manufactured; examples are the large components used in shipbuilding, railways, large engines and rocketry etc. However, the centres are no less important in the manufacture of certain types of machine tools, which owing to the use for which they are intended, must be of considerable weight and size, naturally without detracting from the degree of precision and the permissible tolerances for the operation concerned.

For example, when it is necessary to manufacture machine tools ranging from 12 to upwards of 15 tons in weight, it is a fair assumption that one or more of the basic components, such as the bed, the columns, the base and the attachments, will also be large and heavy, which would make it a very slow laborious, and uncertain process to manufacture them by conventional methods with, also, a negative effect on the final cost of production.

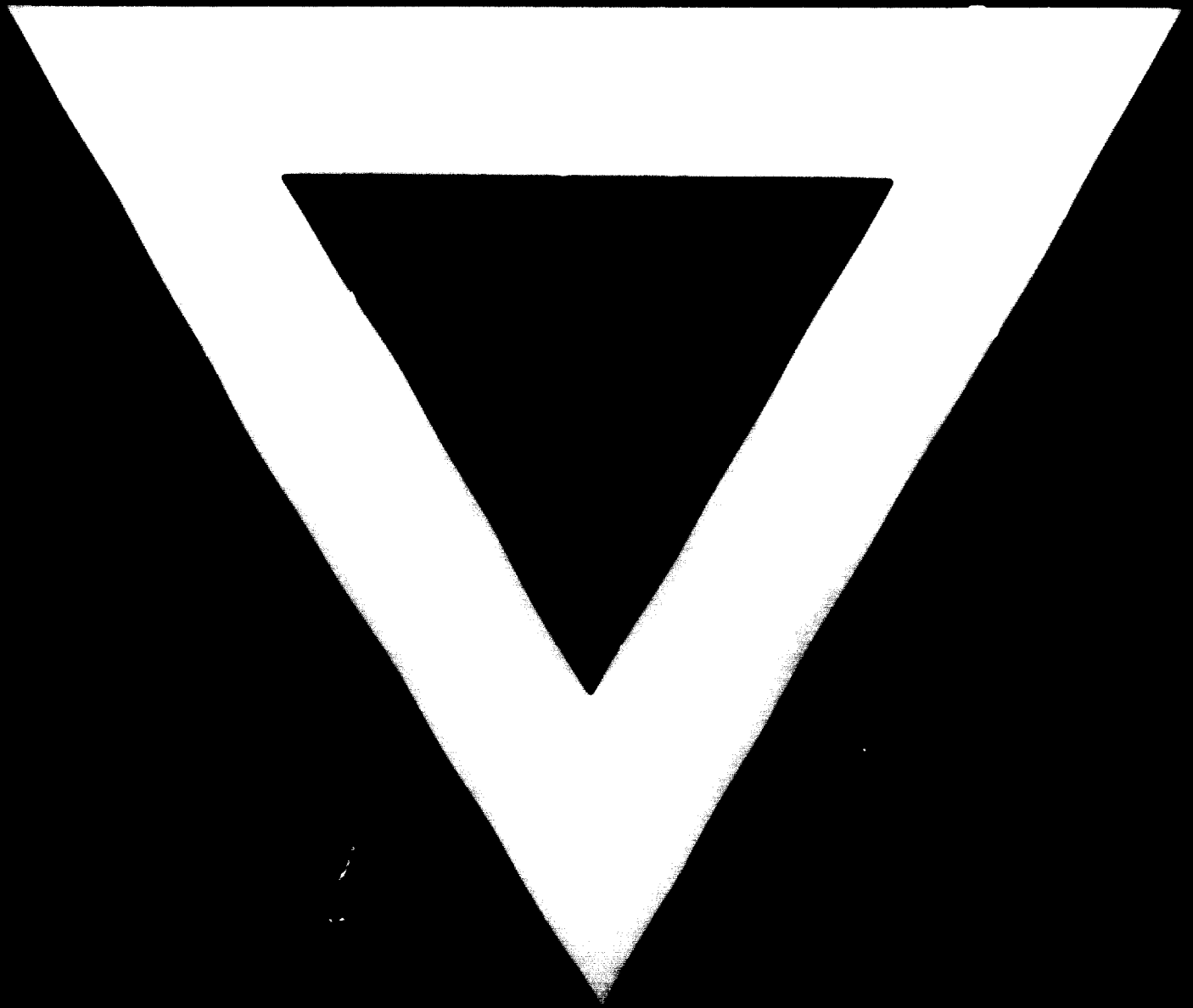
In such cases, the most efficient technological solution is to use a machining centre in which it is possible to carry out the main processes required, drilling, thread-cutting, boring, milling, etc., with minimum handling of the workpiece and with the absolute certainty of keeping within the permissible tolerances, even in the case of widely separated centres.

The experience of international firms specializing in the manufacture of special machines has made some Argentine firms very interested in the subject, and two of them have incorporated machining centres in their plants. Towards the end of 1970, Berardi Argentina S.A. purchased a machining centre of Czechoslovak origin, Skoda, model VD 200 A, which operates with a precision of ± 0.01 mm, ensured by electrical controls on the three basic co-ordinates. The total weight of the centre when ready for operation is of the order of 130,000 kg and it occupies 12 x 12 m floor space; the total height is about 7.5 m. The main spindle is 200 mm in diameter with a projection from the housing of 2,000 mm; the vertical travel of the carriage is 3,150 mm and the longitudinal travel is 8,000 mm. The maximum working area is 8,000 mm wide, 3.15 m high and 4,000 mm deep.

There are considerable technological and practical advantages in using such a machining centre, among which may be mentioned (a) it replaces four or five large conventional machine tools, (b) it carries out a complete working cycle in about one quarter of the time which would be required by using traditional methods, (c) it guarantees maximum productive efficiency by eliminating operating errors through the use of numerical control and visual indicators of co-ordinates, (d) great suitability with regard to the standards of cost and quality required by modern trends in industrial production, etc.

The second machining centre operating in Argentina within the sector of machine tool manufacture is to be found in the plant of the Turri Company, which is engaged in the manufacture of various types of lathes, radial drilling machines and automatic milling machines.





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