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DEVELOPMENT OF A COMPUTER-AIDED DESIGN AND MANUFACTURING SYSTEM FOR EXTRUSION DIES

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An interactive system of computer programmes has been developed for the design and manufacture of shaped extrusion dies as one part of an overall research programme into the analysis of extrusion of arbitrary shaped products starting from cylindrical billets.

The system is developed on a mini-computer system equipped with three interactive graphics displays (one with colour), a four colour plotter and digitiser, a high speed printer, a slave copier, a paper tape reader and a punch. The system is developed in such a way so as to enable the designer to see the results on a graphics display and interactively communicate with the system in order to obtain the desired optimal design.

The system is capable of designing complex intermediate shapes of three dimensional extrusion dies with arbitrary shaped exit sections. The results are displayed as orthographic, isometric or perspective projections and are used to produce Engineering drawings or to generate NC (Numerical Control) tapes for the subsequent manufacture of these dies. Although more development and research are essential, the study concludes that the computer can be effectively used for the design and manufacture of extrusion dies.

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References:

1. Gunasekera, J. S. (1980) Int. Conf. in Manufacturing Engineering, Melbourne. (to be published).
2. Billhardt, C. F., Napal, V. and Altan, T. (1978) CAM-I Proc. Int. Seminar, New Mexico, 70.