

GP1026	Design and Fabrication of Erichsen Cupping Test Equipment		
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Formability of the sheet metal is an attribute, which yields successful conversion to intended geometric form. Mechanical intrinsic test alone cannot contribute to formability success since uni-axial deformation disregards stretching, thinning and anisotropic qualities of sheet metal. Erichsen Cupping test is a ductility test simulating similar mechanism to the real world system to recognize the forming characteristics of sheet metal. The intent is to design and fabricate Erichsen test equipment to emulate standards, ISO 8490: 1986 and BIS equivalent IS 10175: 1993.

The scope involves design and fabricating full scale standard Erichsen test equipment, which is used for MSRSAS laboratory test facility. Equipment constitutes a standard punch and die configuration; load requirement for which a mechanism is developed around. Conceptual models are critiqued for functional and financial traits arriving at best possible solution, followed by mathematical and geometric models. A comprehensive process plan is established to manufacture for form, fit and function.

Equipment qualification is done in three norms; Dimensional Inspection report (DIR) of all elements, load capacity of punch (35 kN) and blank force load (10 kN) by third party calibration service and specimen testing comparison to standards tests obtained by literature survey. The equipment qualifies in regard of all three norms and for which it can be considered and used as standard test equipment to measure formability of sheet metal as Erichsen Index (IE) in mm.

Design	Manufacturing and Assembly	Equipment qualification	Specimen testing

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