

Title of Technology to be offered	Development of manufacturing technology for production of wide metallic glass ribbon
Type of Technology	Indigenous
Area of Technology	Manufacturing technology of advanced materials
Details of Collaborating Agency	Nil
Approach adopted in new technology to evade technological gap in the existing one	The major problem of getting continuous wider metallic glass ribbon is the instability of the melt puddle and maintaining the quenching rate without heating of the copper wheel during melting of the master alloy. In the developed technology, melt puddle stability was achieved through a flexible crucible positioning system.
Advantage/Benefits of new technology	Continuous ribbons of nearly 1 Kg materials with more than 25mm width and 30micron thickness can be prepared directly from melt. The product does not need any expensive forging and rolling operation. Duration of melt-spinning to get about 1kg product (after melting of the alloy) is less than a minute and hereby power requirement during production is less. Fe-,Co-, Ni- based product have excellent magnetic properties with the coercivity ~ mOe
Constraints in technology (if any)	On-line winding of the product
Brief description/abstract (150 words)	A technology has been developed for the preparation of 1kg wide (more than 25 mm width and about 30 μ m thick) continuous amorphous (metallic glass) ribbons through melt spinning technique where the molten alloy is rapidly solidified using rotating copper wheel. The property was further enhanced by nanocrystallization of the product by suitable composition and heat-treatment. The major problem of development of the wide metallic glass ribbon is the stability of the melt puddle and maintaining the quenching rate without preheating of the copper wheel during melting of the master alloy. In the developed technology melt puddle stability was achieved by keeping flexibility in crucible positioning and choosing melting station away from the quenching wheel
Major raw material	Fe, Co, Ni, Cr, Nb, Cu, Si,B, Al, Mg, Zr
Area of application	Advanced materials, High performance magnetic materials
Details of specific application	Transformer core, switch mode power supply, sensor materials, High strength Al and Mg based ribbon as protective materials, brazing alloys (CuNi, TiZr).
Status of Development	Batch scale
Ecological/Environmental Impact (if any, specify briefly)	No
Patenting details	352/del/2007
Extent of Commercialisation	Under exploration
Demand Assessment/Market Potential (Optional)	There is a good demand for advanced magnetic materials. Such magnetic materials which can replace the conventional crystalline alloys due to their high efficiency in applications are mostly imported and are therefore expensive.
Technology Transferring Agent	CSIR/NML
Technology Transfer Assistance Offered (Optional)	Details of equipment and processing technology to manufacture continuous wide ribbon.
Key words	Melt spinning, Rapid Solidification, Metallic glass, fine grained / nanostructure materials
Country of origin	India