Steinbeis Centre for Technology Transfer India

Technology Offer Form

***Title:** **Textile Reinforced Concrete Prototyping Technology (TRCPT)**	***Author / Designation / Company:**
***Creation Date: Sep 2014** **Technology Type:** Process / Design / Material / Software / Others (specify) – ➢ **Process – To produce variety of high quality precast textile reinforced concrete products without using moulds**	***Desired Mode of Technology Offer:** Technology (Knowhow) Transfer / Production License / OEM Manufacturing / Joint Venture / Others ➢ **Technology Transfer**

Promotional Description :*(attach image if available)*

Textile Reinforced Concrete Prototyping Technology (TRCPT) encompasses green and innovative construction practices that can be deployed to make products without using moulds. Some of the key features of the technology are:

- Prototyping of Textile reinforced composite sheets yields products of various shapes and forms for structural as well as non-structural applications.
- Roofing sheets, slabs, tiles, filigree products, shells, pipes, etc. are some of the products made by using TRCPT.
- The products can find a host of applications in infrastructure engineering including structural strengthening, repair and rehabilitation, lining of tunnel or canal, column jacketing, fire protection, wind energy generation infrastructure, affordable mass housing, etc.

TRCPT Set-up

Various TRC Products Produced using TRCPT

Technology Benefits Summary, Differentiation & Uniqueness:

- TRCPT is suitable for mass production of textile reinforced concrete products in a factory without using moulds.
- Various types of textiles and cementitious binders can be used to develop TRC products.
- Light weight and non-corrosive concrete products
- Possibility to custom-design a product by suitably choosing the textile and cementitious binder combination
- Feasibility of on-site up- and down-scaling of the technology implementation
- Unique technology that can be deployed to produce a variety of products
- Overall production process optimizes the time required to fabricate and finish a ready-to-use product.

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Application & Potential Advantages:

- TRCPT replicates the multi-vitamin concept in the construction sector, by facilitating production of both structural and non-structural precast products.
- Textile reinforced concrete is non-corrosive and can be used to produce a variety of filigree elements.
- Affordable precast products for mass housing, improving the living standards of un-skilled manpower by being instrumental in job creation, possibility for on-site production of quality products at the project site are the main advantages of adopting TRCPT.
- High-quality precast TRC products along with the advantage of zero transport costs
- Aesthetically appealing designs can be embossed on the TRC sheets / slabs without incurring extra time or cost.
- For entrepreneurs, TRCPT enables competitive bidding of remote projects by offering to install the local production facility directly at site with minimum investment for producing TRC products.

Development Stage & Development Status Summary:

- The technology on **Textile Reinforced Concrete Prototyping** is readily available for customization as per industry requirement and commercialization on non-exclusive basis.
- TRL 6

Intellectual Property (if any) Please give Patent Summary:

- Indian patent filed: “Method and Apparatus for Producing Textile/Fabric Reinforced Composite sheets and Products”, Patent Application number: 2751DEL2014 dt. 25.09.2014

Technical Details:

- Different textiles made from fibers of glass, carbon, basalt, etc. can be used as reinforcement in TRC products.
- TRC sheet can be cut in the wet state during production.
- Thickness of TRC products can vary from 6 mm to 25 mm.
- Density of TRC: 1800-2100 kg/m^3, Compressive strength of binder- 40-60 MPa; Tensile strength of TRC: 4-20 MPa; Water absorption <5%, Low chloride penetration
- Established lab level production rate of TRC sheets at 8 m^2/hr

Collaboration Description, Terms & Restrictions & Seller Support (technical / training / documentation etc.):

- Technology on **Textile Reinforced Concrete Prototyping** is available with CSIR-SERC.
- Technology transfer will be effected on non-exclusive basis as per relevant CSIR guidelines applicable from time-to-time.
- Standard documentation on the technology and training support by CSIR-SERC scientists form part of the technology transfer.

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