splineTEX® - freely shapeable structural elements made of fiber-reinforced plastics

The areas of application for *splineTEX® range from sports equipment over furniture and elements for the construction of buildings to automotive bodies. At the Institute for Experimental Architecture of the University of Innsbruck, the architect and scientist Valentine Troi has invented and developed a novel materials technology for lightweight construction, which is already protected by patent. Based upon the research results and joined by a highly motivated team, she started a spin-off company in early 2011: together with international industrial partners, superTEX GmbH will commercialize the results of the research efforts and position them in the international marketplace through products and projects.*

The rapid development of software over the past few years has pushed open the doors to previously unimagined new spaces in architecture and design. So far, how ever, these have often been no more than virtual spaces. Anyone interested in free geometrical structures has enjoyed vast opportunities to form and reshape structures within the computer – when it came to realizing these freeform structures in the real world, however, the limits of what was possible were easily reached. The creation of complex geometrical structures is extremely expensive. It is exactly this problem that architect Valentine Troi's materials technology invention sets out to tackle. She and her founding team of *superTEX,* all of whom have taught and conducted research at the Institute for Experimental Architecture of the University of Innsbruck, have developed a revolutionary materials technology. In the future, the *splineTEX*® fiber composite profiles will allow the creation of complex geometrically formed structural elements in various scales at a considerably reduced cost. The multi-phase material, which is based on carbon, glass, basalt or hemp fibers, can easily be brought into the desired shape while it is still soft and behaves much like a garden hose, before it is then subsequently hardened.
It is therefore no longer necessary to create expensive shape molds which are currently required for the creation of freeform structural elements.

After two years of work developing *splineTEX*®, the customer base includes more than just architects and designers. The automotive industry, the aircraft and boat building industry as well as the aerospace sector have shown interest in the "flexible fiber compound profiles". At leading material-technological trade shows and symposia, the material, which was originally developed for applications in the areas of architecture and design, has already been considered an ultra-lightweight alternative to metal parts shaped by bending (e.g. aluminum). Prototypes of automobile components for the cars of the future are therefore already being planned.

www.supertex.at

superTEX **Research**

2008 Development of the research program "*superTEX* – textile qualities of fiber-reinforced plastics" under the leadership of Valentine Troi
2008-2009 1st Research phase : development of *splineTEX*® technology, sponsored by the Tyrol Science Foundation
2009 First 1:1 prototype *superTEX*bar for the celebration of the 40th anniversary of the Faculty of Civil Engineering at the University of Innsbruck
2009 Patent received for *splineTEX*®
2010-2011 2nd Research phase *superTEX p*rototypes
PRIZE Prototype Sponsorship Programm sponsored by the BMWFJ
2011 Spin-off of *superTEX,*
Foundation of the company sponsored by CAST and AWS

superTEX **Trade show appearances**

04/2011 Salone Satellite, Milan: Prototype *superTEX*Lounge
03/2011 JEC Paris: Prototype *superTEX*Tower, *superTEX*Table
03/2011 Wohnen&Interior Vienna: Prototype *superTEX*greenWall

superTEX **Lectures**

05/2011 University of Applied Arts Vienna, *splineTEX*®– freeform technologies fiber-reinforced plastics
04/2011 [E]motion in Architecture, Salzburg: materializing digital Design
03/2011 JEC Lecture, *splineTEX*®– freeform technologies fiber-reinforced plastics
12/2010 CIA – composites in architecture 2010 Weimar

superTEX **Team**

Valentine TROI (1977, Bolzano/Italy)
2003 Diploma in Architecture from the Leopold Franzens University Innsbruck
2003 Certification as civil engineer
since 2003, freelance architect
2003-2004 Assistant at the Institute for Experimental Architecture.Studio 3, Prof. Giencke
2005-2011 Assistant at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher
2011 Foundation of *superTEX*

Barbara JELLER (1976, Lienz/Austria)
2005 Diploma in Architecture from the Leopold Franzens University Innsbruck
2005-2010 Caramel Architects, Vienna
2008 Certification as civil engineer
2009 External lectureship at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher
2010 External lectureship at the Institute for Construction and Design, Prof.Schauer

Georg Wieser (1984, Innsbruck/Austria)
2006 Architectural studies at the Leopold Franzens University in Innsbruck
2008-2009 Tutor at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher
2010 Research Associate at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher

Stefan Strappler (1982, Bludenz/Austria)
2001 Architectural studies at the Leopold Franzens University in Innsbruck
2008-2009 Tutor at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher
2010 Research Associate at the Institute for Experimental Architecture.Structural Engineering, Prof.Schumacher