

**Project:** LowProTex - Processing fine yarns using a textile stent graft as an example for "ultra-low profile" catheter systems

**Partner:** Institut für Textiltechnik der RWTH Aachen University (ITA); GER  
Project-accompanying committee consisting of German SMEs  
and large companies

**Funding Agency:** AiF within the framework of the Programme for the Promotion of Industrial  
Community Research and Development (IGF) of the Federal Ministry of  
Economics and Energy

**Duration:** 01.07.2018 – 30.06.2020

**Authors:** Tim Bolle, Thomas Gries, Andreas Blaeser

**Description:**

The minimally invasive therapy of aneurysms of the abdominal aorta (endo-vascular aortic repair "EVAR") with stent graft systems is today a clinically established therapy method. In this procedure, the folded implant is advanced through a catheter to the aneurysm. The stent graft is then unfolded. A small diameter of the catheter system is decisive for the success of the therapy. The size of the catheter is limited by the thickness of the folded textile implant. The yarn count in commercial stent grafts is approx. 60 dtex (Multifil.). The system profiles vary between 18 and 24 French (Ø 6 - 8 mm). As a result of challenging anatomies such as stenosed or strongly curved access paths, up to 50 % of all patients are unsuitable for EVAR. Fine medical grade multifilament yarns with a titer of  $\leq 20$  dtex are commercially available. The current deficit is that such fine multifilament yarns cannot be processed into tubular fabrics.

The aim of the project is a stent graft made of a PET tubular fabric with a yarn titre  $\leq 20$  dtex (Multifil.) in order to make EVAR accessible to up to 15% more patients by using smaller system profiles (14 French  $\leq$  system profile  $\leq$  18 French). To this end, the processability of fine yarns in the weaving process will be investigated and made possible by suitable weaving machine modifications and adjustments in weaving preparation under medical-compliant conditions.

**Acknowledgement:**

The IGF project 20090 N of the Forschungsvereinigung Forschungskuratorium Textil e.V. (Textile Research Association) (FKT) on the topic "Processing of fine yarns using the example of a textile stent graft for "ultra-low profile" catheter systems" is funded by the AiF within the framework of the Programme for the Promotion of Industrial Joint Research and Development (IGF) of the Federal Ministry of Economics and Energy on the basis of a resolution of the German Bundestag. We are grateful for this support. We are also grateful for the support of the FKT. We would also like to thank the companies represented on the project committee for their technical support.



Gefördert durch:



aufgrund eines Beschlusses  
des Deutschen Bundestages

**Contact ITA:**

Dipl.-Ing. Tim Bolle (tim.bolle@ita.rwth-aachen.de)