DRAG REDUCTION IN WATER SPORTS

In his doctoral research, Arnoud Greidanus is focusing on drag reduction for boats. His research into coatings that reduce drag combines two different areas of research: hydrodynamics and chemical technology. Using this type of research for sporting purposes is a new development, and rowers, sailors and canoeists stand to benefit from his research into fast coatings. Flow drag around rowing boats, canoes, sailing boats and swimmers forms a substantial part of total resistance. Near-wall flows can be affected by applying specific materials, such as specific surface structures and coatings, which can lead to the reduction of friction and drag. The presence of air, such as bubbles, may influence the effectiveness of these materials.

With this project, Greidanus is applying and developing specific measurement methods and experimental facilities to assess the effectiveness of these materials in a quantitative manner. Another important objective is to develop completely new materials, such as compliant coatings that adapt to local deformation as a result of turbulent flow fluctuations along a surface. This includes the development of appropriate materials, the evaluation of possible degradation, and the bonding of the coating to any substrate. These coatings will be tested in a systematic manner. The ultimate test will be to realise an improvement in sporting achievements.

Partners
InnoSportNL, DSM, KNRB, KNWV

TU Delft scientific expertise
PhD Candidate Arnoud Greidanus, Prof.dr.ir. Jerry Westerweel, Faculty of Mechanical, Maritime and Materials Engineering