



Institute of Science and Technology

Research

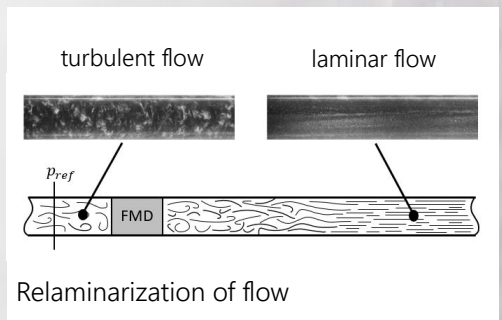
Research: Drag Reduction in Pipelines

Kühnen, J. et al. (2018): Relaminarization of pipe flow by means of 3d-printed shaped honeycombs

Three researchers at the IST Austria - Jakob Kühnen, Davide Scarselli and Björn Hof - have discovered a mechanism to control turbulence in pipe flows. They used 3D printing for their research activities.

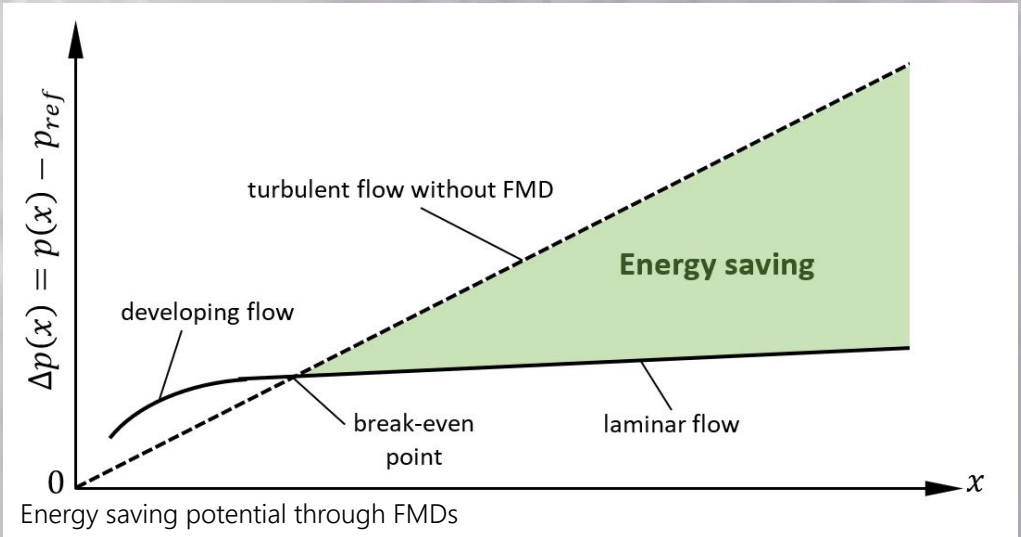
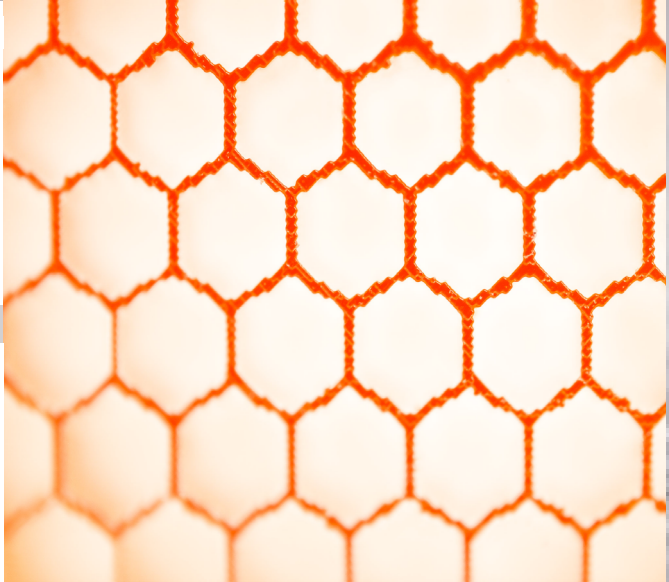
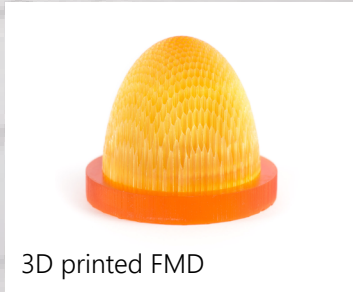
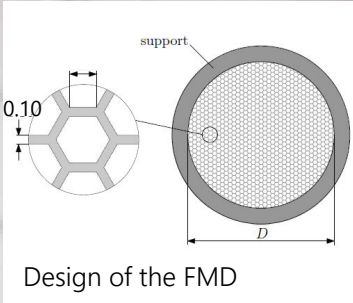
Background

In nature as well as industrial applications two fundamentally different flow states can be observed: laminar and turbulent flow. Since turbulent flow causes higher amounts of energy consumption in fluid transport, the aim of the research was to find a way to influence the turbulent flow, so it becomes laminar. Therefore, Flow Management Devices (FMD) were developed.



Energy Saving

By using FMDs, the energy involved in the transport of fluids such as water or oil could be drastically reduced, leading to massive cost savings.



Rapid Prototyping

Flow Management Devices are custom-shaped honeycomb devices with very thin walls. In order to find the ideal shape and length, nearly 100 prototypes had to be designed and tested.

Since so many different prototypes with very fine structures had to be produced in a cost-effective way, the research team chose 3D printing as their method of production.