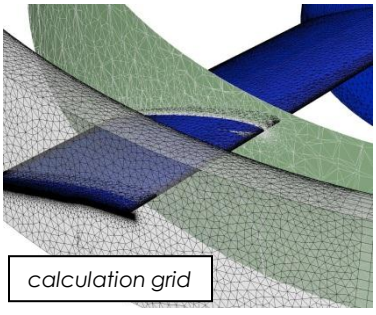
One for all

In the world's engine cooling and heating and ventilation markets the Multi-Wing brand has established a powerful reputation for quality, performance, durability and efficiency. Multi-Wing's goal is to maintain and build upon that reputation through the continued development of the Multi-Wing brand worldwide. Like any successful company, Multi-Wing's impellers have been copied, but only genuine Multi-Wing products produced by Multi-Wing International as carry the guarantee of performance, durability and efficiency.

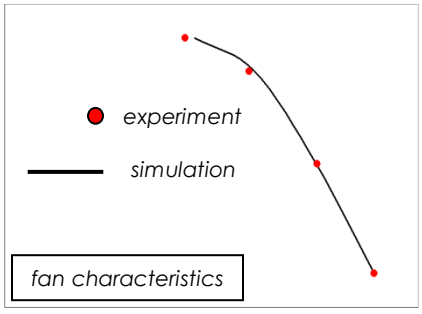
As the inventor of the thermo plastic component impeller, Multi-Wing is recognised as the world leader in axial fan impeller design and production. And, whilst the product range has expanded considerably, the basic product concept remains – producing highly efficient impellers from interchangeable components. Indeed, over the last ten years, the company has discontinued all the other products it manufactured to concentrate on the development of Multi-Wing.

In 1997 FlowMotion designed with great success its first impeller. The design process was based on methods which were state of the art for that period. Since then a lot has changed. The introduction of CFD made it possible to analyse and design fans and air foils and CFD gave a very detailed view of the aerodynamics. In the past FlowMotion has used CFD with success in the axial fan industry. The final challenge for FlowMotion was to create a mesh with the highest quality possible. Together with Multi-Wing an impeller has been selected to take on this challenge.



calculation grid

pressure distribution



fan characteristics

In order to create a mesh of such high quality the physical aspects of the flow must be known. The boundary layer height is one of the most important aspects of the flow around an airfoil. In order the achieve the correct y+ values a lot of work has been put in the development of the boundary layer mesh.

The pressure distribution in the picture above shows the very thin boundary layer. The gradients in a flow around a fast rotating fan can be quite large. The mesh distribution is adapted to these gradients. Especially in the area of the tip clearance a highly sophisticated mesh has been modelled.

Several points of the performance graph are calculated and compared with experiments. As can be seen in the graph below a very good agreement is achieved, even in the higher pressure region.
These latest developments can help Multi-Wing in the development of new impellers.

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