

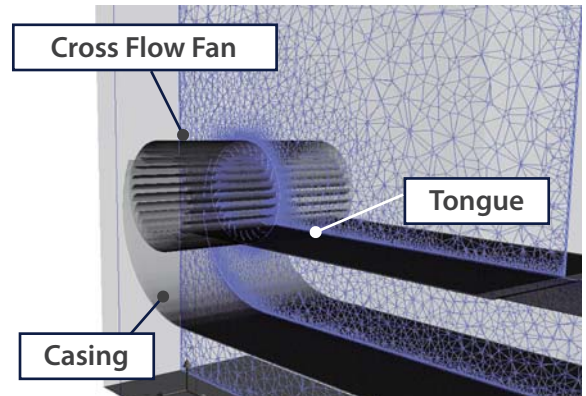
Internal Flow Mechanism of a Cross Flow Fan

Case Study - Osaka-Electro-Communication University

The internal flow of the impeller end captured by SC/Tetra

Cross Flow Fan

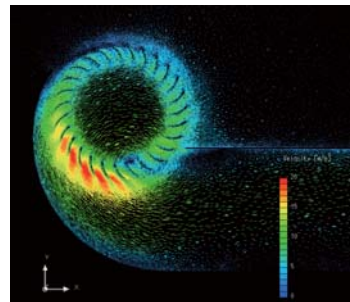
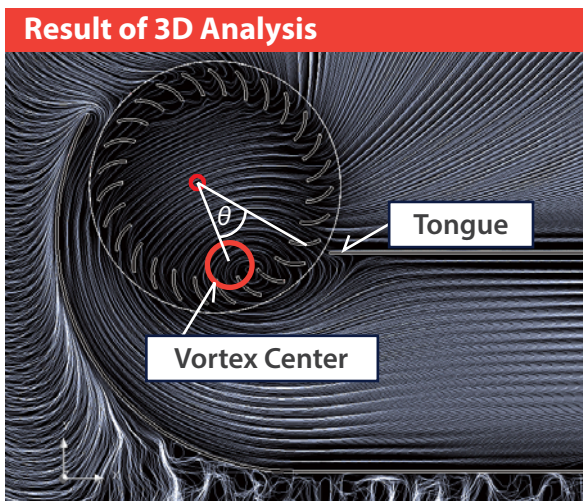
The internal flow of the impeller involves an eccentric vortex. This may affect the performance of the fan and the noise level. As the "small size" and "low level noise" fans are in high demand, analysis is performed to study the flow mechanism around the impeller.



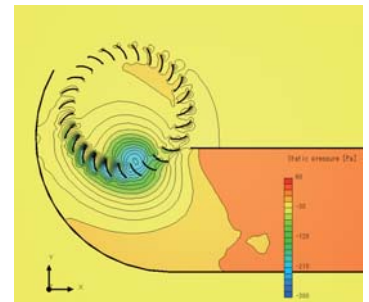
Analysis model

The Impeller Internal Flow

The location of eccentric vortex center is analyzed in order to clarify the influence of the casing side plate.

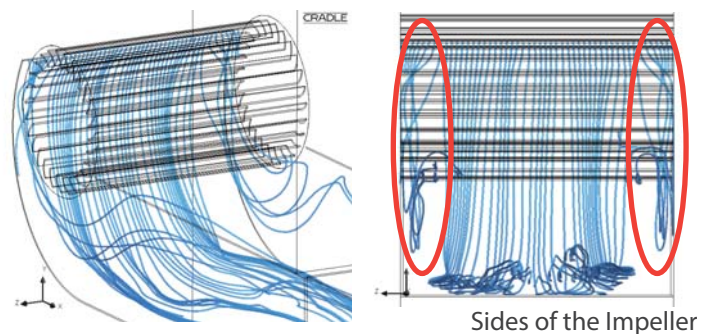


Velocity Distribution

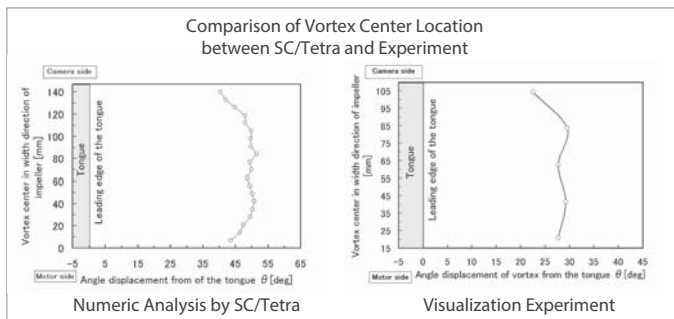


Static Pressure Distribution

3D Flow Between the Casing and the Impeller



Sides of the Impeller



The angle θ between vortex center and the tongue becomes smaller toward the edge of the impeller.

- Center of the impeller: flow along the casing
- Near the side boards: flow not along the casing

➔ It affects the location of the vortex center inside the impeller

Customer Comments

The result of simulation of the cross flow fan captured a similar pattern to the visualized experimental result. Furthermore, it captures the flow between the center of the casing and the impeller that is difficult to be captured in physical testing.