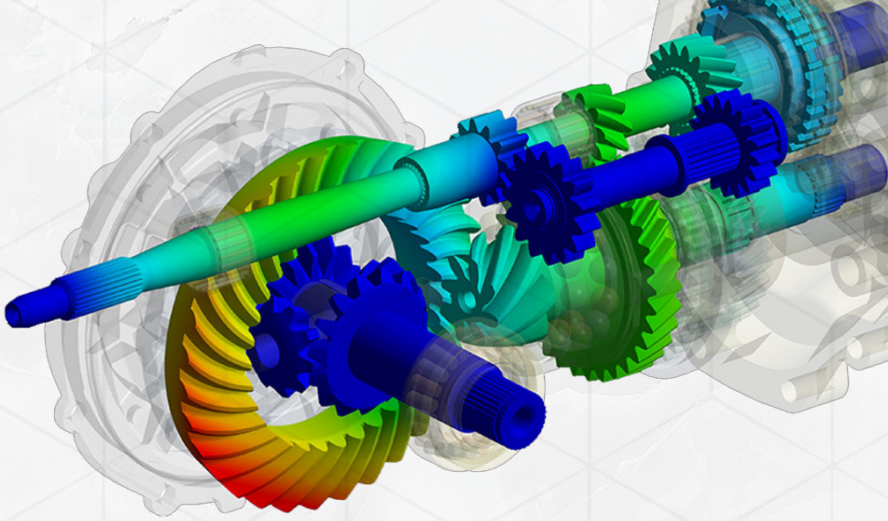

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CASE STUDY

معادن
MAADEN

# REACTOR TANK WITH AGITATOR

## CHALLENGES

A CFD analysis was carried out for a reactor tank with agitator. FEA analysis was also performed for the shaft and agitator in order to predict the failure of agitator blades. Fluid-structure interaction was the key point for this analysis, by mapping the pressure loads from CFD as loads (inputs) for the FEA Analysis.

## ENGINEERING SOLUTION

Alternative designs were suggested in order to reduce stagnation areas there by increasing the efficiency of the intake manifold.

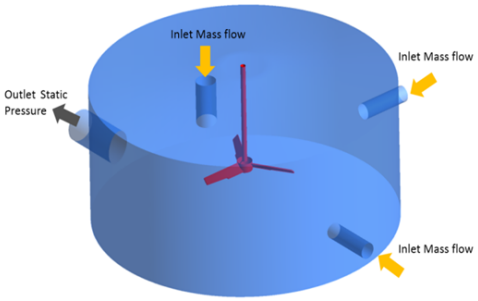


***Figure 1.*** *The 3D model of Reactor tank with agitator*

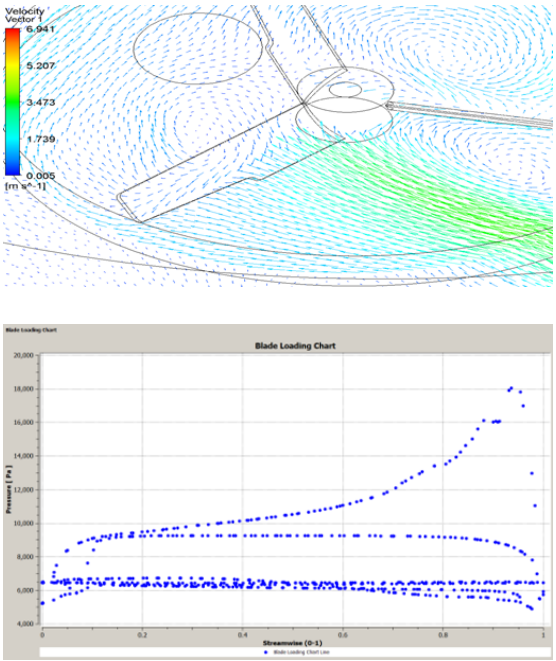


***Figure 2.*** *Velocity vectors showing the fluid behavior with blade load plots*

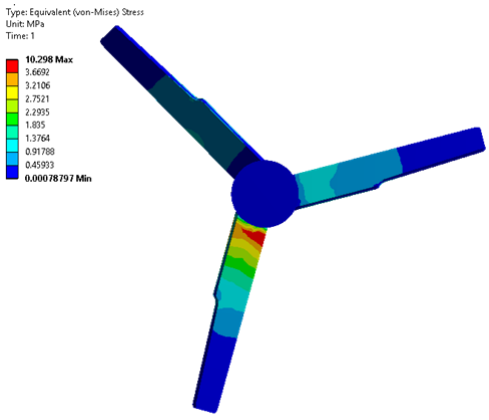


***Figure 3.*** *Contour plot indicating the stress on agitator blades, with actual failure*