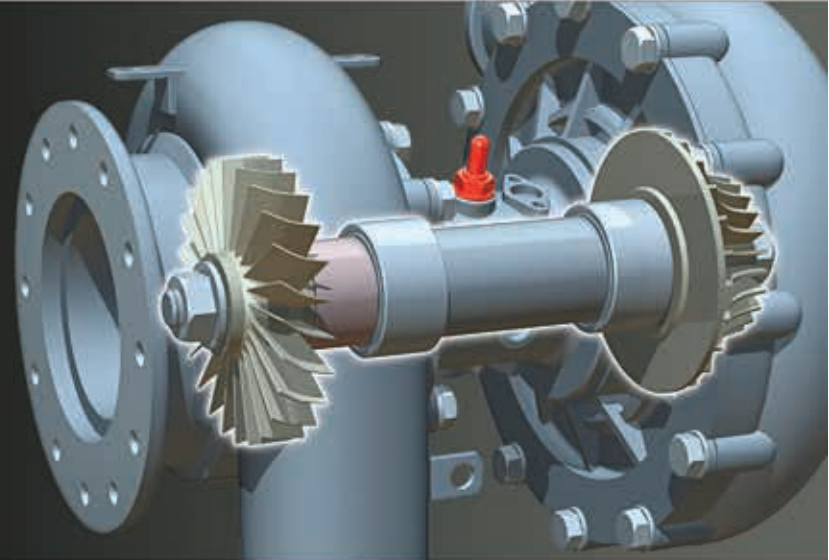


ANSYS® + FEDCO



"ANSYS Workbench has allowed FEDCO to successfully compete against some of the largest global manufacturers of pumping equipment. Now, our efficiencies rival those of our much larger competitors and, with FEDCO's greater agility and lower overhead costs, the company is thriving in a tough global manufacturing environment."

Eli Oklejas

President

Fluid Equipment Development Company, LLC (FEDCO)

Fast-Track Development of New Pump-Turbine Energy Recovery Unit with Stringent Efficiency Requirements



Streamlines shown in cross section through energy recovery turbine of HPB

FEDCO's main market is the supply of high-pressure pump and energy recovery equipment for seawater desalination. A combination of water shortages and growing energy costs has spurred rapid market growth as well as induced the entry of major international competitors. FEDCO needed to develop larger and more efficient models of its established hydraulic energy recovery units to sustain its growing market share. However, the expense and time involved in building and testing large prototypes were not acceptable.

Technical Challenge

FEDCO had less than four weeks to develop a highly optimized fluid design before committing to final pattern and casting designs. The main challenge was that FEDCO had just one chance to get the hydraulic and casting design right, so every resource was devoted to that objective.

Technology Used

ANSYS® Workbench™, ANSYS® CFX®, ANSYS® DesignModeler™

Engineering Solution

The ANSYS Workbench platform was mastered by the existing engineering team in a matter of several weeks, and ANSYS CFX software was used to evaluate the hydraulic performance of many prototype designs

- ANSYS Workbench smoothly integrated with solid models developed in SolidWorks® CAD software as well as FEDCO proprietary hydraulic design software.



Streamlines shown in cross section through pump impeller, diffuser, and housing of HPB

- FEDCO verified the accuracy of the ANSYS CFX analysis by comparing predicted performance of existing designs with actual performance.
- The rapid utilization of ANSYS technology was made possible by excellent on-site training tailored to FEDCO's specific objectives.

Benefits

- The entire process increased automation.
- Hydraulic design improvements developed within Workbench allowed FEDCO to meet efficiency requirements, which exceed extrapolated values of existing designs by approximately 6 percent.
- Ongoing analysis using ANSYS CFX has been applied to the entire FEDCO product line, resulting in efficiency gains ranging from 4 percent to 7 percent.
- A side benefit was a substantial reduction in operating noise levels of up to 15 dB.

Company Description

Fluid Equipment Development Company (FEDCO) is a leading designer and manufacturer of advanced high-speed liquid-driven turbochargers and centrifugal pumps for reverse osmosis desalination services. FEDCO competes on a global basis against some of the largest pump manufacturers in the world.

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