

# ONE BIG AXIAL

*By Behzad Abdollahi, Design Engineer III and Chot Smith, Director of Bus. Dev. Operations & Field Service*

In October 2018, RMS performed a turn-around for an FCC unit main air blower (axial compressor) of a major US refinery. This Allis-Chalmers compressor operates as a part of a Power Recovery Train and is rated for 203,000 ACFM. To put it in perspective, this compressor can change out the air inside the New Orleans Superdome football stadium in about 10 hours.

These units are typically turned around on-site, but due to the heavy corrosion on the inlet casing it was decided to perform the work in RMS Houston facility. This would enable RMS to abrasive blast the compressor casing and coat it with heat-resistant paint to prevent further deterioration.



Figure 1

The compressor weighs more than 110,000 lbs., which requires special permits and provisions for transportation. Additionally, the inlet is located on the lower half of the casing, which means the horizontal split line is about 9 feet above ground level. Prior to receiving the compressor, RMS made provisions for a suitable scaffolding to ensure workers' safety and efficiency.

The turnaround was scheduled to be completed in two weeks, with 24/7 coverage. The crew were supervised by RMS field service specialists and a design engineer.

The spares had not been overhauled by RMS, so the history was not fully known at the time, and as is common with any turnaround, there were a few unexpected discoveries. However, being in the RMS shop proved advantageous due to additional capabilities to inspect, weld repair, fabricate, and machine parts as needed.



Figure 2

One of the highlights of the turnaround was discovering that some of the clearances between the overhauled rotor to the stator casing were less than specifications. Communications between RMS engineering and the customer representatives led to a decision to tip grind the blades, and highspeed balance the rotor (again). With efficient planning and implementation, only two additional days were added to the schedule.

The compressor left RMS facility on-schedule, looking brand new, and has been successfully in operation since. The spent (old) rotor and stator assemblies are currently at RMS Bethlehem location to undergo inspections and design upgrades. The typical design upgrades for these type machines increases their reliability, maintainability, and manufacturing accuracy.



Figure 3

**For more information:**

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