KINNEY®

CASE STUDY

OIL-SEALED ROTARY VANE VACUUM PUMPS FOR FIBERGLASS MOLDING

PROJECT OVERVIEW

Increasing part strength and durability of resin-fiber composites through vacuum impregnation.

INDUSTRY SIC CODES

3731 – Ship Building and Repairing
3732 – Boat Building and Repairing

Fiberglass and composite plastics as part of the manufacturing process of ship and boat building.

KVO 200
Oil-Sealed Rotary Vane
Vacuum Pump

INCREASE EFFICIENCY WHILE REDUCING WASTE & MESS

The messy process of fiber and resin sprayed onto a boat mold.

Fiberglass can be a messy business. A boat manufacturing plant in South Carolina formerly used a process where the fiber and resin were sprayed onto a mold by the operator. The spraying process was extremely messy, wasteful, and fraught with hazards. In addition to mess, waste and hazard, the final product produced was similar to fiberglass lay-up, offering only moderate strength as the end result.

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Fiberglass mat and resin placed on molds during vacuum-impregnation.

Vacuum-impregnation process with plastic bag vacuum sealed to mold.

KVO 200 pump running 48 drops for small parts.

CHANGING THE PROCESS TO VACUUM-IMPREGNATION

As a part of their continuous improvement, the manufacturer is changing many of their parts to a vacuum-impregnation method. Fiberglass mat and resin are placed on the mold, then either a mirrored mold or plastic bag (depending on the need of the part) is vacuum-sealed to it. The vacuum holds for roughly 30 minutes while the resin cures. Utilizing vacuum impregnation has enabled the manufacturer to achieve better dispersion of resin throughout the part, while fully wetting out the fibers. This results in greater part strength and durability.

Ultimately, there is reduced waste and mess with vacuum impregnation. This environment allows for a more streamlined manufacturing process and increased throughput. For small parts, the vacuum runs continuously while the operator moves from station to station prepping or releasing parts. On larger parts, the operators lay the fiberglass on one mold while another is undergoing the vacuum curing.

THE KINNEY SOLUTION

The boat plant uses a single Kinney KVO 200 pump to run 48 drops for small parts, plus several larger areas simultaneously. The small footprint and quiet operation of the KVO oil-sealed rotary vane means it can be placed conveniently anywhere in the facility. The system piping consists of long and oversized runs minimizing any opportunity for liquid resin to enter the pump. Additional inlet filtration was not required in this installation. The entire vacuum system consists of this one small pump. Big gains with minimal cost, thanks to Kinney vacuum expertise.

Learn More

Download our product brochure online for more details.

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