Research and Development

Advanced Drying Technology and Application Expertise

Kadant Johnson has long been known as an international leader in the development of advanced rotary seals and in fluid flow for special heat transfer applications. This reputation comes from a long-standing commitment to research and development.

Our research and development center allows papermakers to simulate a wide range of operating conditions of drying cylinders and rolls used in the paper and corrugating industries. Two fully-instrumented drying cylinders and a corrugating test roll are dedicated to research for the paper and boxboard industries.

The Most Advanced Facility of Its Kind

At the Kadant Johnson Research Center, papermakers and box plant operators can test different combinations of equipment and system components (such as rotary joints, syphons, doctor blades, and Turbulator® bars) and duplicate the specific operating conditions of the dryers of any commercial papermaking machine or corrugating roll. Using advanced data acquisition systems, Kadant Johnson can help determine the right components to maximize machine performance. These capabilities are reinforced by advanced system analysis and process expertise.

The Benefits

Testing at the Research Center can help ensure that you operate with the right combination of rotary joints, syphons, and system controls for maximum performance, uniformity, and efficiency.

The optimum system will produce the highest heat transfer rates, the maximum machine speed, and the highest machine productivity. The right system will also improve heat transfer uniformity. By improving cross-machine temperature profiles, sheet quality is enhanced. Data developed in the Kadant Johnson Research Center can help quantify the potential for improvement in quality, productivity, and profitability.

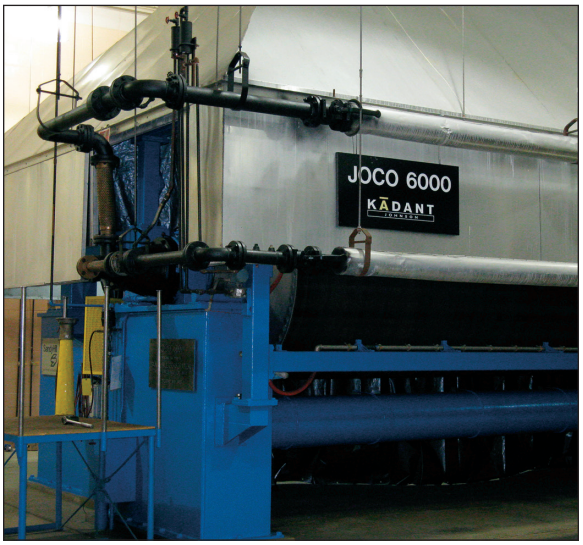
The Facility

- Fully instrumented control room with closed-circuit video system for real-time observation inside the test dryer cylinders
- Product development and performance test areas include Seal Technology Laboratory and Hot Oil Evaluation area
- Conference room seating 50, with closed-circuit television for live viewing of testing
- 1,350 m^2 (14,500 ft^2) dedicated to research and development

The Testing Cylinders

JOCO 6000

- 1.8 m (72”) diameter x 8.76 m (345”) face cylinder
- Grooves for syphons at both ends
- Rated for 11 bar (160 psig)
- Operating speed 2000 mpm (6560 fpm)
- Adjustable condensing rates to 49 kg/m^2-hr (10 lb/ft^2-hr)
- Real-time measurement of shell temperatures, differential pressure, steam and condensate flow rates
- Real-time observation of condensate behavior inside of cylinder

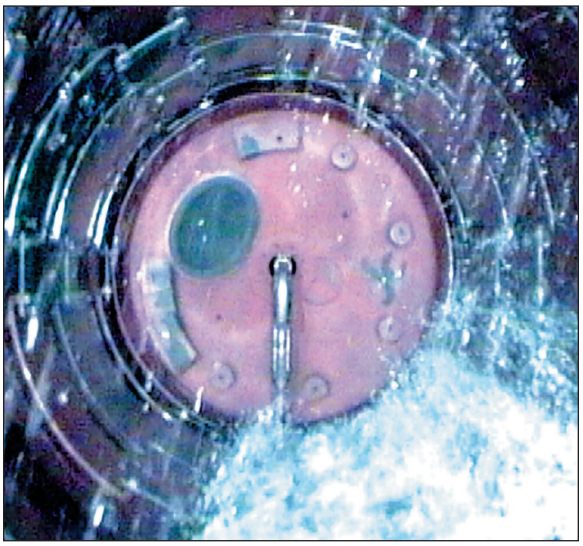


JOCO 4000

- 1.5 m (60”) diameter x 6.35 m (250”) face cylinder
- Grooves for syphons at both ends
- Rated for 11 bar (160 psig)
- Operating speed 1525 mpm (5000 fpm)
- Adjustable condensing rates to 49 kg/m^2-hr (10 lb/ft^2-hr)
- Real-time measurement of shell temperatures, differential pressure, steam and condensate flow rates
- Real-time observation of condensate behavior inside of cylinder

JOCO 2000

- 0.5 m (20”) diameter x 2.6 m (104”) face roll
- Rated for 14 bar (200 psig)
- Operating speed 730 mpm (2400 fpm)
- Adjustable condensing rates to 60 kg/m^2-hr (12 lb/ft^2-hr)
- Real-time measurement of shell temperatures, differential pressure, steam and condensate flow rates
- Real-time observation of condensate behavior inside of roll



Tribology Laboratory

Seal technology is a major area of study for Kadant Johnson engineers. In the Tribology Laboratory, the focus is on friction and wear of mechanical sealing components. This lab contains 15 testing machines and 40 testing positions. The machines are computer controlled and measure variables such as operating speed, pressure, temperature, and torque. Also within this lab, Kadant Johnson engineers test new seal materials and establish application limits, flow capacities, and heat transfer characteristics of Kadant Johnson equipment.

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Research & Development-1000 (US) 01/2019
Replaces all previous versions
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