

# Corrugated Packaging Industry



*From hardware to steam and condensate systems to audits and training, Kadant Johnson partners with its customers from start to finish to get the most out of your corrugator.*

## Optimization

To get the most out of your corrugator you must have well-trained operators, reliable machinery, efficient systems, and a team of experts to lean on. Kadant Johnson is a partner and provides you the team of experts needed to properly train operations, provide reliable machinery, and efficient steam and condensate systems to ensure you do get the most out of your corrugator.



## Audits

A reliable steam system requires preventative maintenance. This consists of identifying and correcting potential problems before they cause a shutdown. It does not take many hours of downtime to show the value of a proper, professional, proactive, preventative maintenance program. Such a program begins with identifying the potential problems.

### The Kadant Johnson Corrugator Audit

- Make-up water system
- Deaerator tank
- Boiler
- Single facers
- Double backer
- Condensate pumping stations
- Pressure control loops
- Differential pressure control loops
- Rotary steam joints
- Separator stations
- Steam traps
- Heat transfer capacity
- Steam showers

## Training

In addition to conducting audits, providing hardware, designing and installing modern steam and condensate systems, providing NDT services, Kadant Johnson also provides steam system, hardware, and maintenance training for your operating personnel to ensure proper and efficient operation of your corrugator. It is important your personnel are properly trained and able to identify and promptly address problems that could affect production or efficiency.

### Training Program

- Steam system overview
- Steam system component descriptions
- System walk-through
- Recommended daily, weekly, and monthly inspections
- Steam trap operation and maintenance
- Rotary joint and syphon operation and maintenance

## NDT Services

Kadant Johnson offers corrugator roll inspections and nondestructive testing (NDT) of high-pressure receiver and deaerator tanks to identify deficiencies and prioritize recommendations for improvements.

### NDT Service

- VT – Visual Inspections
- MT – Magnetic Particle Testing
- UT – Ultrasonic Testing
- PT – Liquid Penetrant Testing
- Professional and detailed inspection report

### Benefits

- Safe and reliable service
- Reduced maintenance costs
- Maximum equipment performance
- Reduced downtime
- Regulatory compliance

## Boiler Room Audits and Equipment

A Boiler Room Safety Audit (BRSA) is a third-party assessment of compliance with boiler room best practices and is used to identify gaps in safety, housekeeping, or operational practices. Using more than 70 audit checkpoints, the BRSA provides practical and helpful insights to promote boiler room safety. In addition to documentation review, specific tests are made on the boiler, high-pressure receiver, deaerator, and related equipment. A comprehensive written report with action items defined is included with the BRSA.

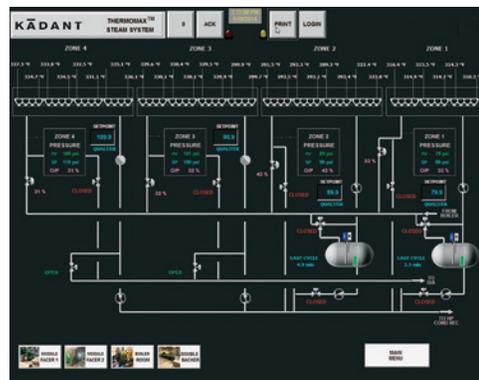
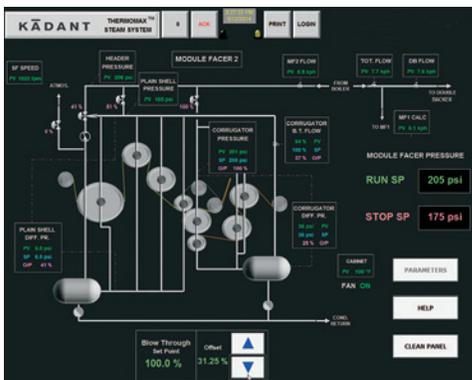


### Boiler Room Components

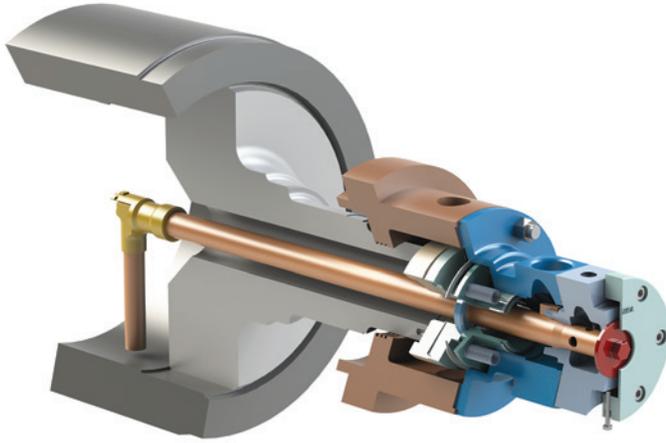
- Water conditioner
- Deaerator tank
- High-pressure receiver

## Control Systems

Kadant Johnson's PLC-based system provides touch screen control capability for a variety of operations. From complete hot plate control, including shoe loading and hot plate pressure, to feedback loops from infrared sensors allowing for fast response heat transfer requirements due to grade change, weight, and machine speed. The PLC-based system provides for user interface with recipe control. Boiler room PLC controls regulate automatic valves, trend pressures, and allow for remote access via the Internet. This critical functionality provides off-site troubleshooting and remote diagnostics by trained steam systems engineers.



# Rotary Joints and Advanced Syphon Systems

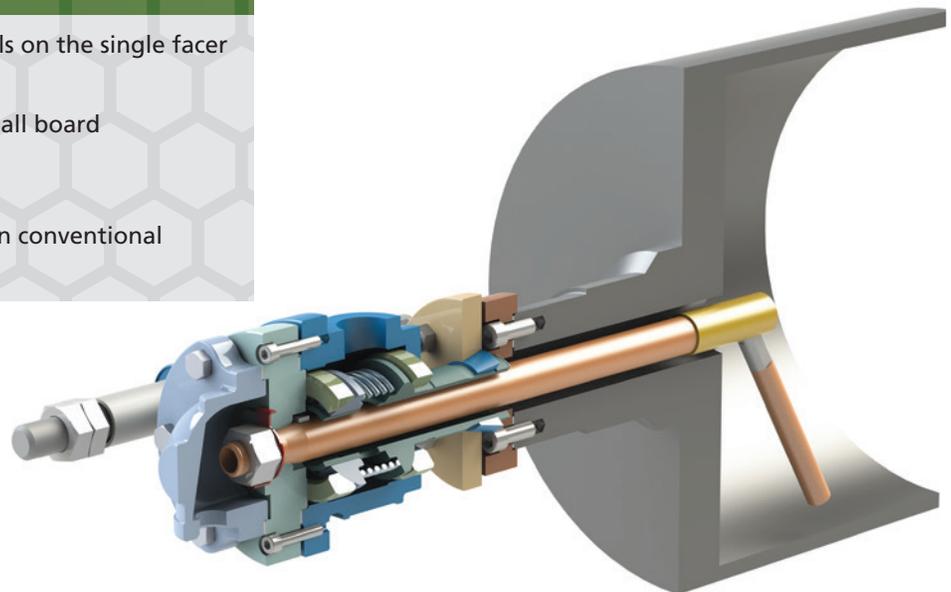


## CorrPro® Rotary Joint and Locking Syphon System

- Balanced seal and patented locking syphon elbow
- Externally adjustable syphon clearance
- Patented design allows operator to adjust the clearance between the internal roll surface and the syphon vertical pipe
- Trouble-free service resulting in less downtime
- Reduced maintenance time and materials costs

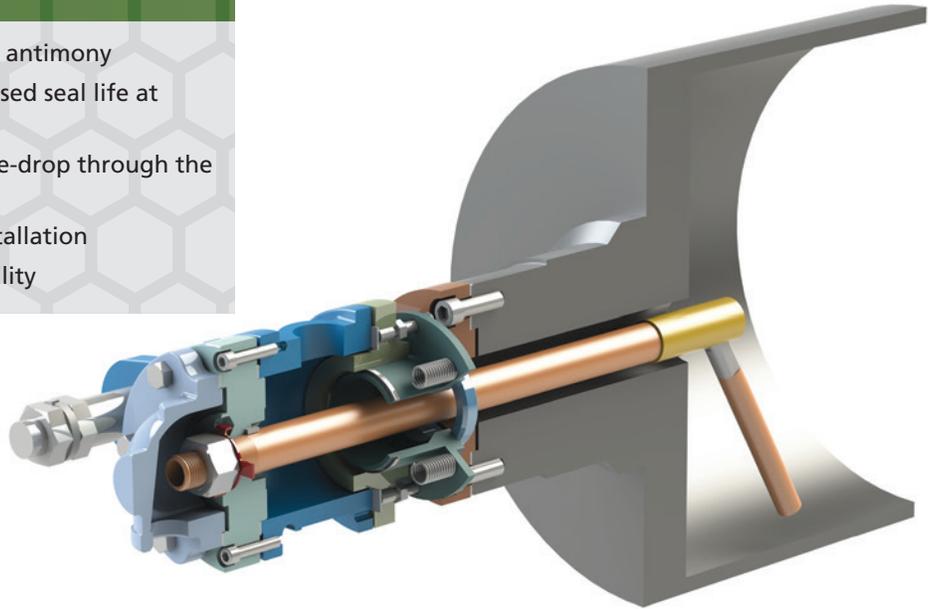
## LJX™ Rotary Joint and Rigid Syphon System

- Designed to retrofit critical rolls on the single facer
- Heavy-duty, robust design
- Delivers maximum heat across all board combinations
- Enhanced safety
- Eliminates deficiencies found in conventional syphon systems



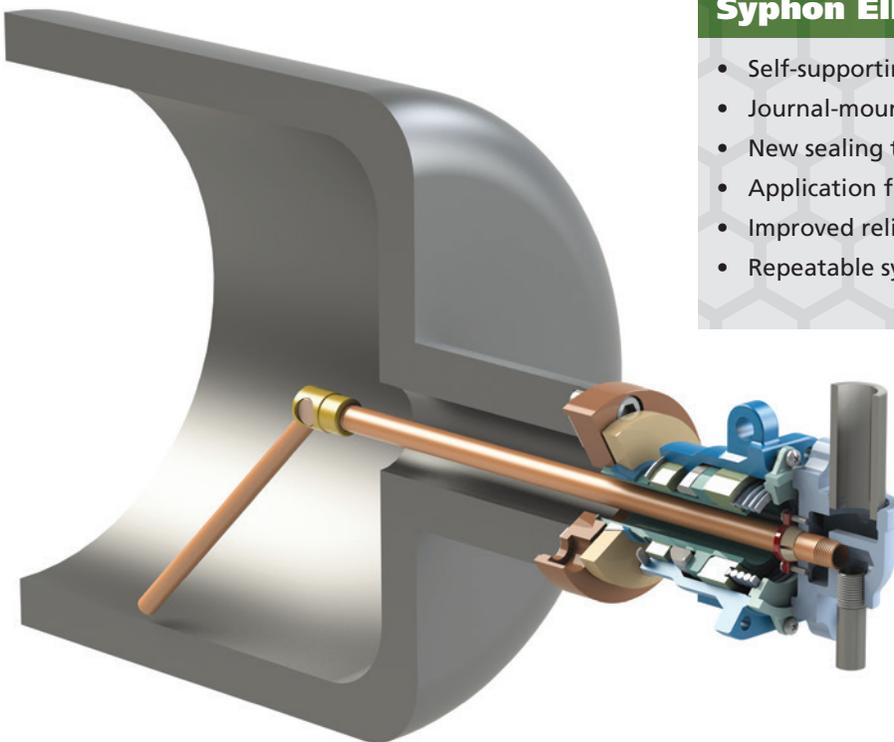
## LJX-PT™ Rotary Joint and Rigid Syphon System

- Balanced seal impregnated with antimony
- Reduced seal loading and increased seal life at higher speeds
- Full-flow design reduces pressure-drop through the steam joint
- No special tools required for installation
- Improved reliability and runnability



## SX® Rotary Joint and Pivot Body™ Syphon Elbow System

- Self-supporting rotary joint
- Journal-mounted locking elbow design
- New sealing technologies extends seal life
- Application flexibility
- Improved reliability and runnability
- Repeatable syphon clearance setting



# Accessories



## Teflon-Lined Steam Hoses

PTFE-lined flexible hose has been engineered specially for use as inlet and outlet connections to Kadant Johnson rotary joints. It prevents pipe strains from creating tension or stress on the rotary joint and does not restrict the rotary joint's built-in flexibility.

### Benefits

- Engineered specifically for rotary joints
- Reduces stress on rotary joint internal components
- Provides flexibility during installation and operation

## Steam Traps

Kadant Johnson's proprietary steam traps were purposely developed for use in corrugated packaging plants. They are designed to efficiently discharge condensate from corrugating rolls, preheater rolls, preconditioner rolls, and hot plates. The Kadant Johnson steam trap handles large and variable loads at any back-pressure and the thermostatic capsules provide automatic air-venting to ensure rapid warm-up of the rolls and other components.

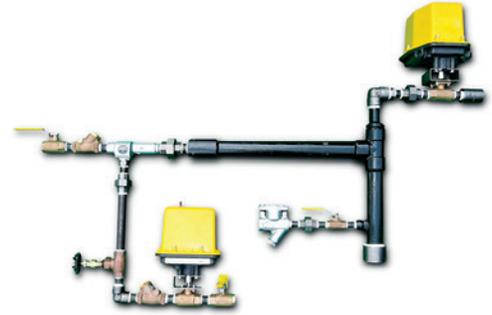
### Benefits

- Immediate condensate discharge under all conditions
- Maximum efficiency and heat output
- Faster start-up time
- Reliable and durable for extended operating life



## Variable Moisture Steam™ Shower Supply System

A Variable Moisture Steam shower supply system aids with proper flute formation on single facers, especially for those running at high speeds. With capacity of 200 to 350 pph (90 to 160 kg/hr), the VMA shower supply system is a solid option for lower speed single facers without a high demand for steam.



### Benefits

- Provides fine-mist atomization and moist steam
- Improves moisture formation and absorption
- Satisfies the demands of a modern, high-speed single facer
- Installation flexibility across various machines
- Optimizes flow rate dependent on machine speed
- Ease of operation
- Operator safety and convenience
- Simple plug-and-play installation

## Condensate Pumps

Liqui-Mover® condensate pumps replace conventional centrifugal pumps and motors in returning condensate at high pressures. Both float and float-free condensate pump designs are available as complete skid-mounted assemblies or as stand-alone pressure-powered pumps.

### Benefits

- No rotating parts and minimal moving parts for greater reliability and lower maintenance
- Little or no condensate cooling loss
- Compact dimensions, easy to install and operate

## ThermoMax® Steam Moisturizer Shower Supply System

The ThermoMax Steam Moisturizer builds upon the proven concept of the traditional VMS system. The higher capacity ThermoMax Steam Moisturizer can deliver up to 1,200 pph (545 kg/hr) of conditioned, fine-mist steam to the shower system.



# Steam Systems

How Each System Measures Up	ThermoTrap™ Steam System	ThermoPlus™ Steam System	ThermoMax™ Steam System
Optimal speed range (fpm)	150 – 900	150 – 1200	150 – 2500
Number of hot plate zones	Three	Three	Four
Proven design	✓	✓	✓
High-energy efficiency	✓	✓	✓
Rapid condensate return at start-up	✓	✓	✓
High-speed capability with Turbulator™ Bars		✓	✓
Consistent roll temperatures at higher speeds		✓	✓
Uniform cross direction roll temperature		✓	✓
PLC control with graphic user interface		✓	✓
Improved visibility of system operation		✓	✓
Increased feedwater pump life		✓	✓
Supervisory control of blow-through steam		✓	✓
Reduction of roll bowing following stop		✓	✓
Maximum heat transfer			✓
Fast response to grade changes			✓
Ability to handle wide range of load variation			✓
Optimum condensate drainage from plain-shell roll			✓
Rapid hot plate temperature response			✓
Reduced feedwater pump horsepower			✓
Minimum maintenance requirements			✓
Reduced troubleshooting time			✓
Rapid air removal at start-up			✓
Remote performance diagnostics			✓