A 12’ diameter Yankee dryer in Canada, operating at speeds up to 5500 fpm, was experiencing limited drying capacity and non-uniform cross-machine sheet moisture profiles. The dryer had a plain shell with no internal ribs to increase its drying rate.

Kadant Johnson developed a unique configuration of Turbulator Tube bars specifically for plain shell Yankee dryer applications.

Yankee dryer Turbulator bars must have enhanced features to ensure that the bars remain in place during operation. Yankee dryers operate with one or two pressure rolls loaded directly against the dryer shell. These rolls deflect the shell as it passes through the nip. Turbulator bars must be able to accommodate this repeated shell deflection.

Yankee Turbulator bars were installed in the Yankee dryer at a Canadian mill and two old syphon headers were removed and replaced with Kadant Johnson rotary syphons.

The drying rate was increased immediately upon start-up. The cross-machine sheet moisture profile improved and the resulting sheet quality was more uniform.

Most modern Yankee dryers have shells with internal ribs for high heat transfer. However, for those Yankee dryers that have plain shells and operate at speeds above rimming, the installation of Yankee dryer Turbulator bars can greatly improve drying capacity and drying uniformity. The financial return from the installation can be extremely high, much larger than the cost of purchasing and installing the bars.

Yankee Turbulator Tube bars benefits:

- Increases the drying rate of machines that are running at steam pressure limits.
- Reduces steam pressure in dryers that are running at production limit.
- Shifts drying from the hot air hood to the Yankee dryer and reduces total drying energy costs.
- Improves the moisture profile, improving sheet quality and reducing chemical usage.
- Increases the speed of response to changes in steam pressure.