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➔ **MODIFIED IN-SITU™ ROLL BALANCING**
 at PCA • No. 1 Paper Machine Valdosta, GA

Following a December, 2001 Baseline Assessment, Bretech Engineering Ltd successfully conducted in-place balancing of paper machine dryer cylinders during the period of January 26 to 30, 2002.

Unbalance in dryer cylinders will produce high structural vibrations throughout the dryer section. Forces due to unbalance increase dramatically with machine speed.

$$F = (m\omega^2)$$

force (under m) speed (under ω)

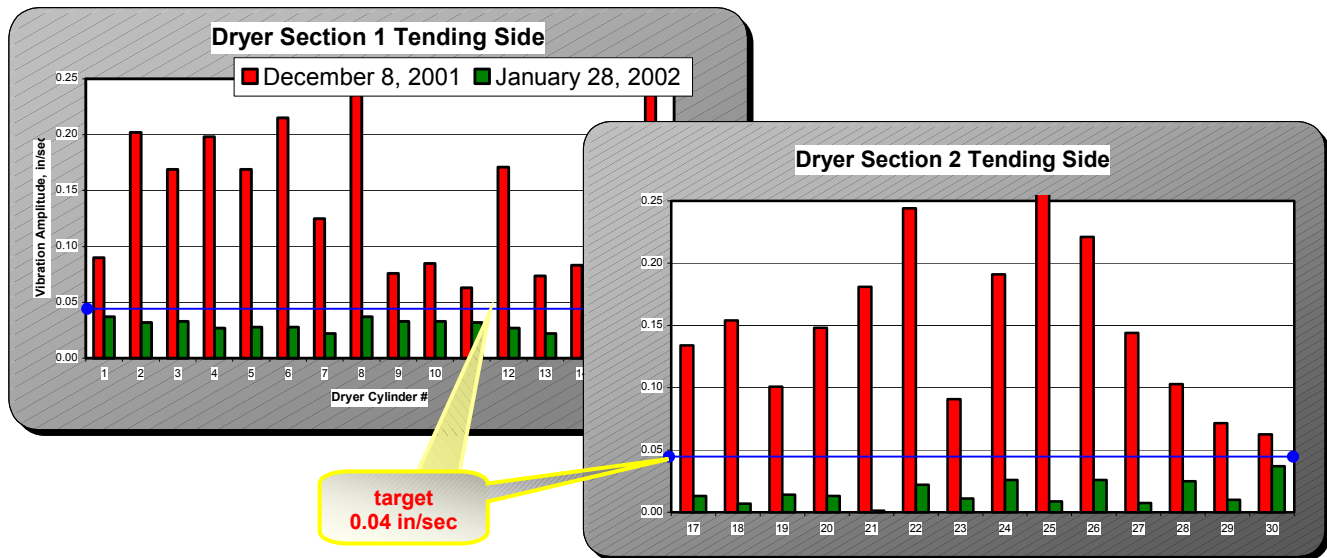
Correcting dryer unbalance will;

- ✓ improve paper machine reliability / availability
- ✓ improve paper machine speed capacity

Correcting dryer unbalance presents significant technical challenges, due to slow turning speeds, and phase influence of nearby dryers. Traditional correction methods include extended shutdowns, resulting in lost production costs.

IN-SITU™ was originally developed using regular maintenance shutdowns as the opportunity for incremental corrections. The *MODIFIED IN-SITU™* method was applied at the Valdosta site, permitting the unbalance corrections to be completed during a planned 5-day outage.

Correcting the dryer unbalance at **No. 1 Paper Machine – Valdosta, GA** was a key contributing factor to increasing the nominal machine operating speed from 2200 fpm to 2300 fpm. Another important factor was structural modifications, including the installation of machine direction stiffeners.



Subsequent assessments were conducted in April, 2002 and March, 2003, to evaluate the dynamic effect of machine speed increases and further structural modifications (also to confirm dryer cylinder balance quality).

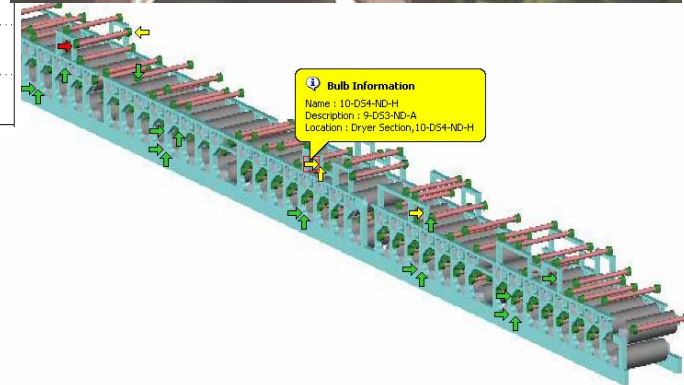
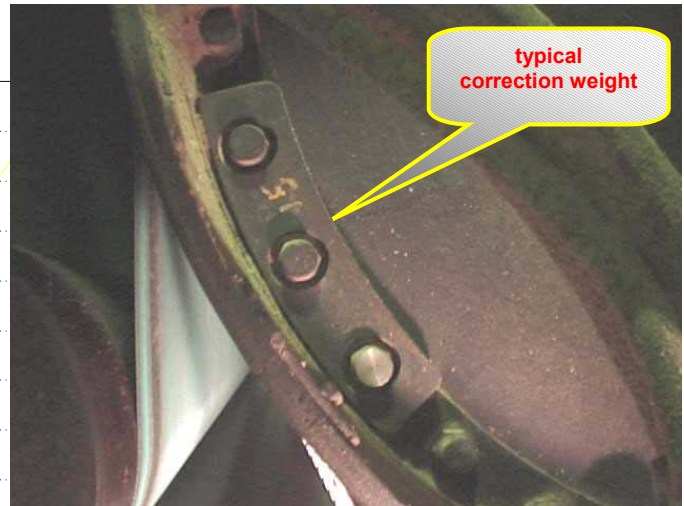
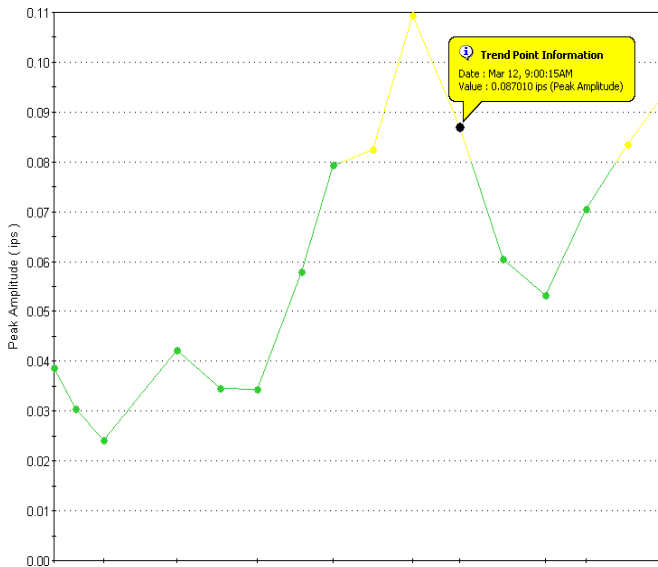
➔ **IN-SITU™ ROLL BALANCING**
at PCA • No. 1 Paper Machine Valdosta, GA

➤ **KEY BENEFIT**
✓ Machine Speed Increase • + 100 FPM
✓ + increased machine speed potential

➤ **KEY BENEFIT**
✓ vibration index reduction • 30%
✓ 1X amplitude from 0.18 to 0.05 in/sec

➤ **KEY BENEFIT**
✓ structural problems identified
✓ critical speeds identified

➤ **KEY BENEFIT**
✓ improved reliability
✓ fewer breakdowns • fewer sheet breaks



Bretech gratefully acknowledges teamwork and assistance provided by Packaging Corporation of America representatives, in particular **Mr. Alan Thomas, Mr. Phillip Poole, and Mr. Dewey Foster.**

Please direct any **IN-SITU™ ROLL BALANCING** inquiries or requests for additional information to:
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