

Hydraulic commander: flexible solutions for fully automatic refiner control

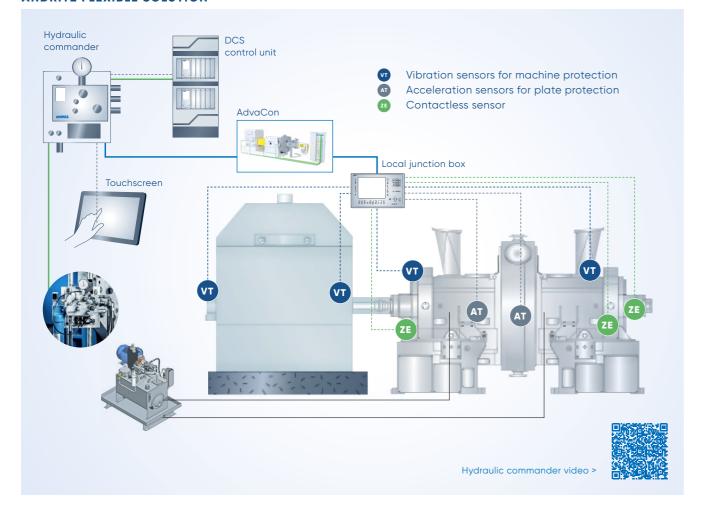
The hydraulic commander is a fully autonomous monitoring and control system for your refiners. The primary components in this innovative system are the AdvaCon (Advanced vibration condition monitoring and plate protection system) and a hydraulic control block with servo valve for optimum refiner plate positioning.

CONNECTING YOUR MILL TO THE TECHNOLOGY YOU NEED

Many refiners are fitted with outdated hydraulic systems or even purely manual devices for refiner plate adjustment. These systems require frequent and thus, time-consuming manual readjustment of the plate position in order to achieve high and uniform fiber

quality. This can result in poor plant availability, unscheduled refiner downtime and refiner plate damage due to the poor sensitivity of the plate positioning system and the resulting refiner load swing. In the worst-case scenario, this damage results in plate breakage - with all the dangers this entails for man and machine.

ANDRITZ FLEXIBLE SOLUTION



ANDRITZ HYDRAULIC **COMMANDER FUNCTIONS** The hydraulic commander controls the refiner plate's position and/or closing pressure, allowing operators to have remote control of refiners. The system achieves better and faster loading, reduces power variation and consumption, and makes operation easier and safer. Using one main control cabinet, the hydraulic commander can control up to four single-disc refiners. Its design is suitable for use on all refiner types. Hydraulic commanders control around 70 refiners in North America and more than 120 worldwide.

In full control

The actual control mode depends on the operator set points transmitted from the DCS. If the actual position reaches the position set point first, the position controller will remain active. If the actual pressure reaches the pressure set point first, the pressure controller is activated; this is called the dual mode. The hydraulic commander switches between modes seamlessly, without disturbances as there is only one analog output to the servo valve. This analog signal controls the servo valve, which in turn controls refiner plates movement. Pressure transmitters measure the hydraulic opening and closing pressure within the refiner's hydraulic cylinders of the refiner and these measurements are com-

puted in the commander. The program calculates the differential pressure, including compensation for cylinder geometry. This value becomes the set point for the pressure control mode. Depending on the control system set point, the commander will maintain this effective closing pressure under all process conditions.

During pressure control mode, the position set point acts as a minimum limit for the plate position. The hydraulic commander switches to position control mode if the minimum limit is achieved. The refiner will be equipped with contactless position sensors, accurately measuring all refining zones, whether it is a

single-disc, double-disc or conical disc (CD) machine. As CD machines have two refining zones controlled by a single rotor disc, albeit at different plate gaps, special consideration has been given to the location and positioning of the sensors to ensure all aspects of operation and plate changes have been met. These sensors have been used for years in all refiner types with success. As they are mounted outside the refiner, maintenance, calibration and adjustment is trouble-free. The zeroing of plate is realized using dynamic calibration and for a CD machine, this is performed separately for the flat zone and the conical zone. Dynamic zeroing of the plates consists of slowly closing the refiner

plates until an acceleration peak is detected; the zero is then set automatically. The AdvaCon is always active and prevents the plates from clashing in either mode without an operator's intervention.

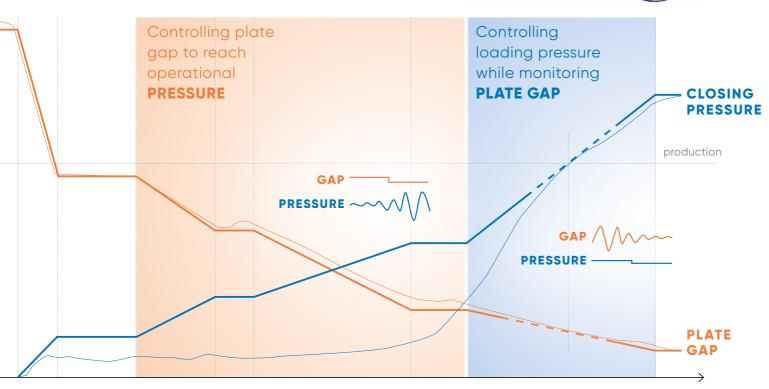
CONTACTLESS ROTOR POSITION

These new rotor position measurements can be installed easily on any single-disc, double-disc or CD refiner. It provides a direct replacement for existing LVDTs or TDCs that need to be replaced or repaired periodically and are often difficult to calibrate. These sensors connect directly to the HYDCOM, having a 4-20mA signal.

Automatic ramps

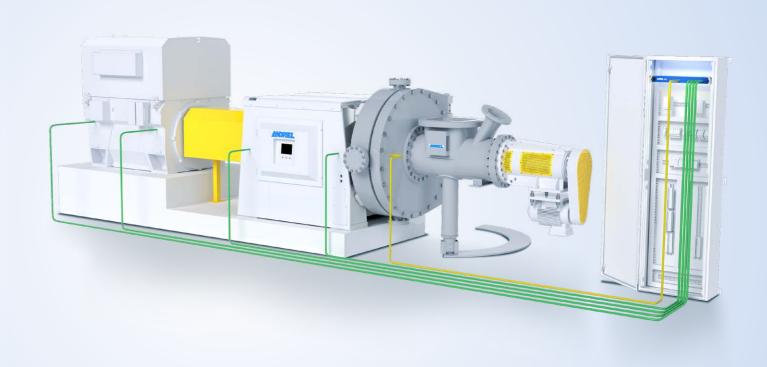
For hydraulic commander pressure and plate gap.





AdvaCon

Advanced condition monitoring and protection system for refiners.

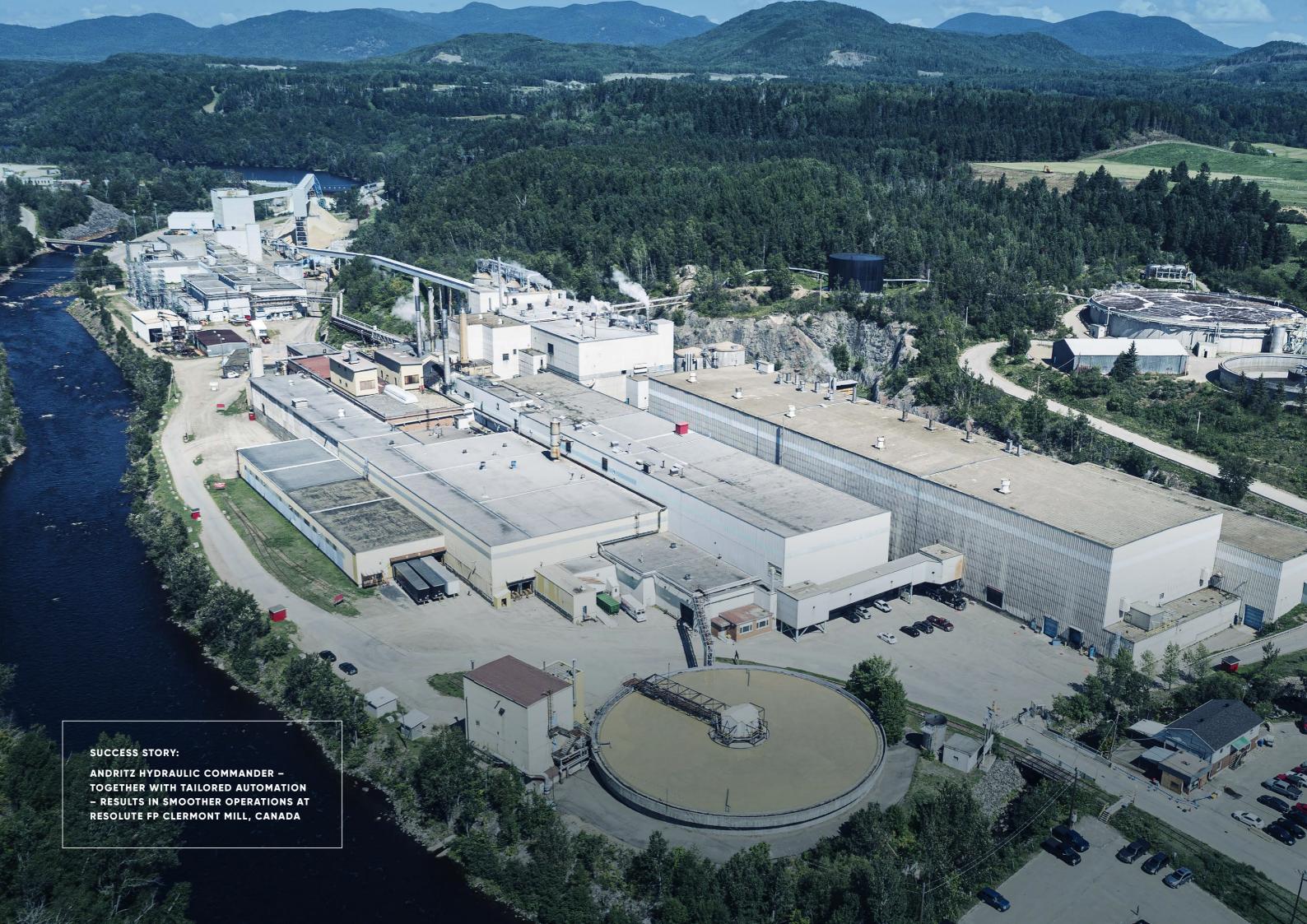


Advanced vibration condition monitoring and plate protection system

AdvaCon (Advanced vibration condition monitoring and plate protection system) is a measuring device for refiners and other rotating equipment such as plug screws and gearboxes. The constant vibration measuring function replaces the need for manual measurements, which are complex, time-consuming, and susceptible to error. AdvaCon avoids plate clashes by continuously monitoring acceleration amplitude within a specific design and adjustable frequency range relating to refiner plates. When AdvaCon senses a sudden signal increase above the moving average (accounting for plate wear), it immediately sends a digital signal to the hydraulic commander that slightly opens refiner plates and trigger logic sequences for plate protection, avoiding a potentially catastrophic failure. Additionally, dynamic zeroing of the plate gap can be set using an accurate and specific measured signal rather than relying on the inaccurate and old manual method of using headphones.

YOUR BENEFITS AT A GLANCE

- Accurate and faster plate position control and closing pressure
- · Reduced motor load variation, thus providing more stable fiber quality
- Reduced refiner power usage
- State-of-the-art refiner plate and bearing protection system
- A modern system with lower maintenance costs and easier operation
- · Less human intervention required
- Quick, responsive refiner plate adjustment to deal with changing process conditions
- Maximum safety and energy savings with AdvaCon





WE TAKE UP YOUR CHALLENGES!

For more information about the hydraulic commander, please visit www.andritz.com/hydraulic-commander

NORTH AMERICA

ANDRITZ Ltd./Ltee. Brantford, Canada p: +1 514 6317700

SOUTH AMERICA

ANDRITZ Brasil Ltda. Curitiba, Brazil p: +55 41 2103-7601

EUROPE

ANDRITZ AG Vienna, Austria p: +43 50805-0

ANDRITZ.COM



All data, information, statements, photographs and graphic illustrations in this leaflet are without any obligation and raise no liabilities to or form part of any sales contracts of ANDRITZ AG or any affiliates for equipment and/or systems referred to herein. © ANDRITZ AG 2020. All rights reserved. No part of this copyrighted work may be reproduced, modified or distributed in any form or by any means, or stored in any database or retrieval system, without the prior written permission of ANDRITZ AG or its affiliates. Any such unauthorized use for any purpose is a violation of the relevant copyright laws. ANDRITZ AG, Stattegger Strasse 18, 8045 Graz, Austria. Image brochure 07.2020 EN

