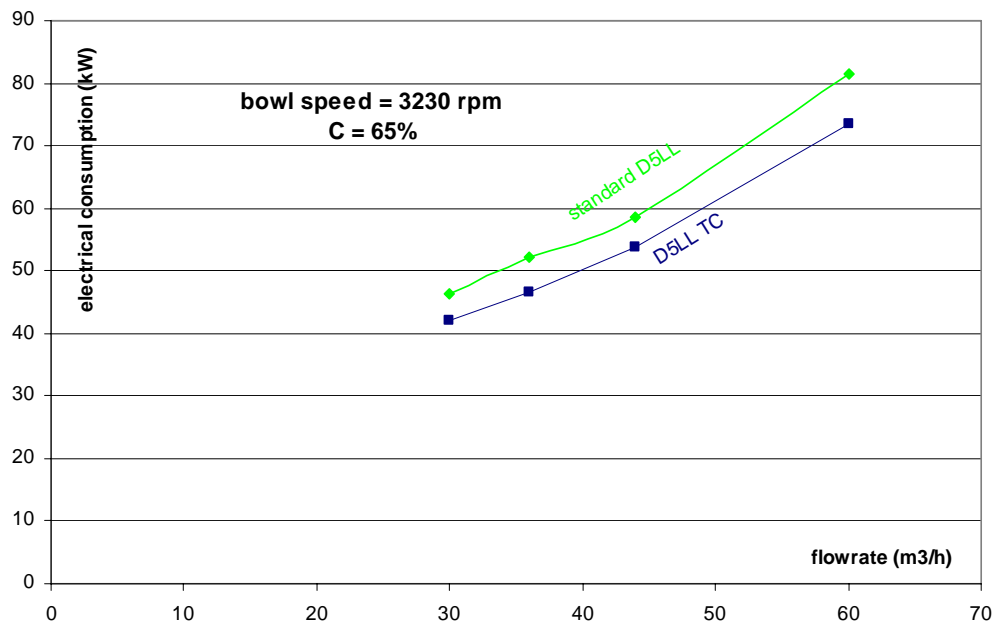
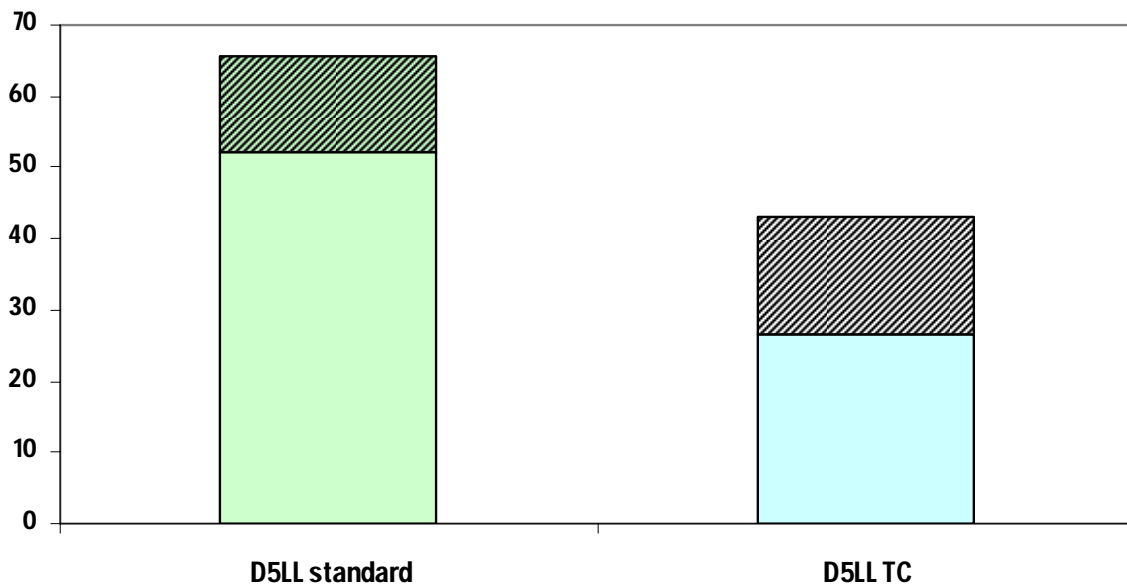
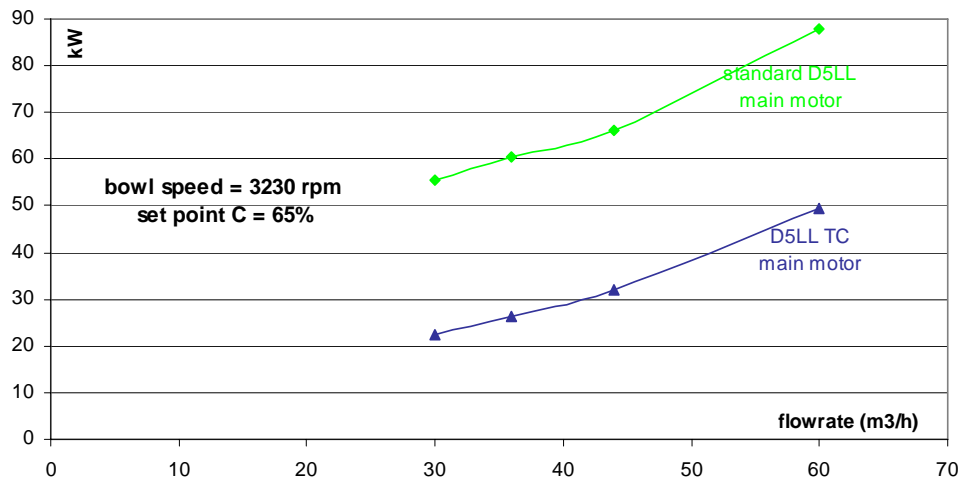


Features and Benefits of the Andritz TC Drive Technology

Andritz has been the pioneer in introducing centrifuge innovations to the market. We were the first to unveil power regeneration, user-friendly controls, and independently balanced bowl and scroll. Andritz has once again raised the bar in centrifuge technology offering the first Coaxial Transmission Drive (TC). The centrifuge and its driving system merge to offer: Power consumption reduction, Reduced wear components, Reduced noise, Reduced weight, Smaller footprint, and Reduced vibration. All of these features continue on Andritz's goal of improving the operation and reliability of the centrifuge technology. This new technology is protected by a worldwide patent n° 03011337.7 (Europe) / n° 10/688,260 (US).

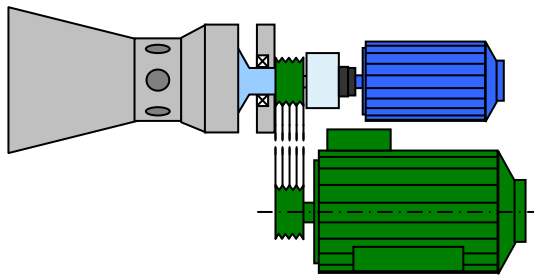
- Power Consumption Reduction:** The TC Drive eliminates the need for an intermediate coupling, redex gearbox, motor bearings, and drive belts which all consume available power. This allows the use of a much smaller main drive motor to perform the same task. Couple that with a 96.8% efficient motor and it allows a 10 – 15% improvement in power consumption over regenerative drive systems.



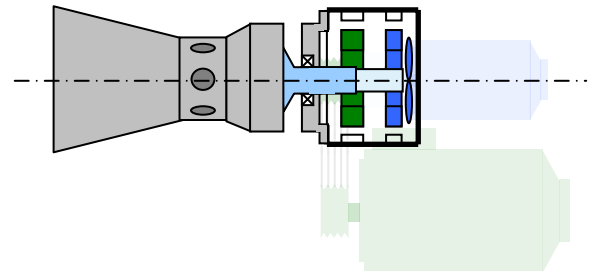


- **Improved Reliability / Reduced Wear Components:** Andritz's new TC Drive eliminates a number of wear components used in conventional drive configurations. The secondary (scroll) drive motor is directly flanged to the main drive eliminating alignment issues and improving the ease of assembly. The motor and reducer become much easier to dismantle and reassemble. These features improve maintenance requirements and reliability.
 - No Drive Belts
 - No belt maintenance or replacement

- No over/under tensioning
- No slippage
- No pulley adjustment
- No Coupling Element
 - Fewer moving parts
 - No maintenance or replacement
 - No alignment issues
- No Redex Gearbox
 - Fewer moving parts/Kinetics
- No Bearings Inside the Motor
 - Simpler design
 - Motor maintenance is reduced to a minimum



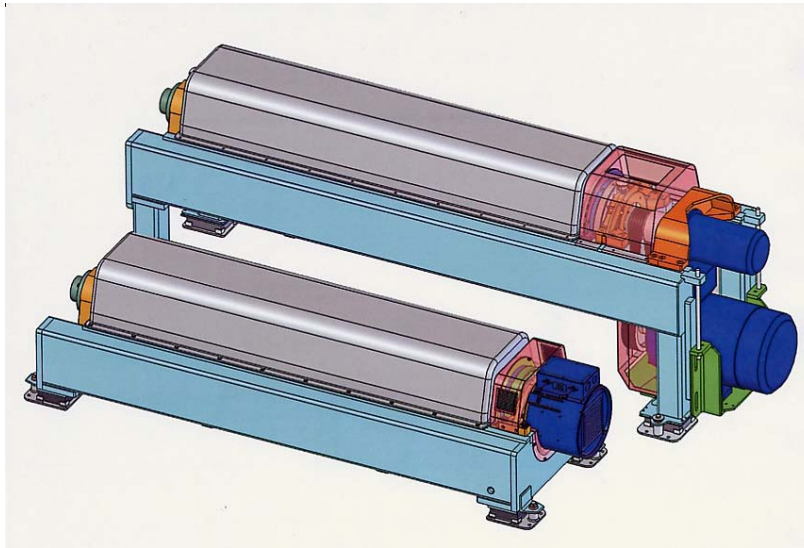
Regenerative Drive



TC Drive

- **Reduced Noise:** Andritz has always taken great care in reducing noise generation in our machines. The new TC Drive improves upon this once again with as much as a 5% reduction in noise versus a conventional drive configuration.
- **Reduced Weight:** The compact inline design and elimination of components that the TC Drive offers, has decreased the total weight of the centrifuge. Weight has been decreased by 17% on the Andritz D5LL machine and 19% on the D7LL machine. This reduction allows for easier handling and placement as well as a smaller foundation.

- Reduced Footprint:** In today's market, space is a commodity. Andritz realizes this and continually looks to decrease the space requirements of our machines. The TC Drive improves upon this by requiring at least 17% less space than our regenerative drive design. This compact design allows for a smaller footprint, easier maintenance and handling, reduced height requirements, and a smaller noise hood.



- Reduced Vibration:** Vibration is always a concern when dealing with high speed equipment. The TC Drive is mounted in line with the bowl, placing the center of gravity closer to the axis and reducing tilting vibrations. The reduced number of rotating parts allows vibrations to be easily corrected by balancing the drive motor with the bowl. All of the moving parts are coaxial allowing better vibration distribution. This reduction in vibration provides for better reliability and longevity of bearings and other rotating components.
- Controls Compatibility:** Andritz has developed and implemented many "New Age" technology features. Such technology includes *Early Start*, *Extended Run*, *Pause/Resume* and *One Touch* operational features. These features allow for totally automatic / operator, unassisted start up, optimization, operation and shut down. These features along with our standard automatic torque control and touch screen human interface permit the owner to easily identify, control and adjust the polymer dosage and cake solids. Once set points are identified and input into the PLC, the


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system will run unattended with ease and reliability, even as feed solids change during the dewatering cycle.

Another standard feature of our control system is “one button” sequential start and stop commands. This feature automatically and in correct order energizes and de-energizes the process required ancillary equipment.

Andritz knows the importance of providing reliable, user friendly equipment. We incorporated all of these advanced controls features into our new TC Drive equipped Centrifuge design.

- **Development and Testing:** Andritz understands that testing and proving the technology is important in the market. We have completed a number of shop tests and prototype field tests on the TC Drive system. Our system has been in successful operation for 18 months. We have been studying a side by side test with one of our regenerative drive machines that has proven the advantages and reliability of the system.
- **Process Advice:** Processes change over time. Andritz maintains a fully staffed applications laboratory for trouble-shooting upset conditions for our customers. There is no charge, and is without restriction to all our customers. Degreed engineers with over 20 years applications experience staff our in house laboratory.
- **Summary:** In summary, we recognize that Andritz has to go the extra mile for our customers. Andritz has built a reputation for manufacturing technologically advanced and quality competitive equipment. Andritz is also recognized for providing outstanding after the sale service and assistance. Rest assured that Andritz’s customers dewatering equipment needs will be met with total satisfaction.

