

TECUMSETH APPLICATION CHALLENGES AND OPERATIONAL SOLUTIONS

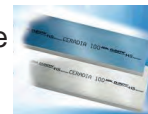
PULP AND PAPER NEWSLETTER

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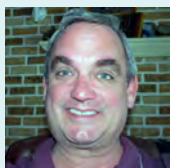
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Our customers have chosen the following products for the results achieved in successful applications:

- Metso Transmitters for measuring solids and consistency continue to provide reliable and accurate measurement that significantly improves operational performance.
- Clouth Creping Blades are increasing tissue machine performance with their impact on quality and increased life between changes.
- Clouth Doctor Blades are being applied in all paper and board machine locations with outstanding results on improved machine performance and length of service.
- Fournier Rotary Press has created quite a stir for the observed results and effectiveness at turning sludge into cake.
- CVN Vooner vacuum products maximize and improve the performance of all parts of your dewatering systems.
- ECS Event Capture System technologies continue to lead the way in camera systems to assist operators on paper machines.



PRESIDENT'S MESSAGE



Ken Klempner

Thank you for another great year. Your support for Tecumseth has been tremendous. We particularly enjoy the reception we receive when we get to meet with you at your sites. None of this would be possible without the great products and depth of support provided by our supplier companies and their willingness to meet your needs.

Tecumseth has improved our ability to serve our customers in Quebec. Roger Evans has joined our team. Located in Montreal, Roger has many contacts throughout Quebec and is eager to help Tecumseth build a greater presence in this area.

Last year we introduced a new business model with three divisions – **Performance, Environmental, Optimal**. This structure has worked well and allows us to focus attention on market areas where the applications and solutions are quite different from each other. **Performance Division** serves the operating performance requirements of the pulp and paper industry. **Environmental Division** provides solutions for municipal and industrial water and wastewater treatment. **Optimal Division** addresses the control and control performance of process automation systems to improve stability and coordinate operations.

As we look ahead, we will endeavour to work even harder to strengthen the relationships we have with you, our customers and to bring you solutions that further improve your operations.

Ken Klempner
President



APPLICATION - SOLUTIONS - PEOPLE

Success Highlights - Growth

- Tecumseth has been awarded expanded territories for a number of products as a result of our proven ability to get results for customers and to provide a high level of services. Tecumseth Performance now represents some of our OEM suppliers in markets from the Atlantic to the Pacific
- Our Tecumseth Filtration group operating under the Tecumseth Environmental banner, markets and distributes water and wastewater products to a variety of markets throughout Canada and the United States.
- As expected, there is considerable interest in our Tecumseth Optimal capabilities for optimizing performance and reducing operating costs. In particular, Tecumseth is implementing a new regime of advanced controls around centrifuge operations.

TECUMSETH Performance DIVISION



Clouth – Purpose Designed Doctor Blades

The Yellow Box Guys at Clouth continue to gain momentum by specifying high quality blades that provide improved service and performance for each application. The unparalleled success on tissue and board machines is noteworthy, as is the growing installation list at lightweight publishing and newsprint mills.



Tecumseth's hands-on approach to working with customers on each installation provides that extra level of comfort on blade selection. Our surveys ensure your blade holders are healthy and properly positioned – both of these are critical to installation satisfaction.

"We feel that the Clouth Doctoring products; both blades and HS1 holder have been instrumental in improving the cleanliness and productivity of our Paper Machine."

"I also installed one of your blades in the bottom wire breast roll our wet end break frequency has dropped to under 1 per day you will see an order for more blades..."

Newsprint Machine Manager



We Create Visibility

Event Capture Systems, Inc. leads the way on technology integration that gives operators better visibility down the machine and detailed information on the nature of breaks or defects. LED light technology, colour filters and high speed light pulsing have very significantly reduced lamp MTBF and slashed energy usage. Defect identification and reporting adds a whole new level of information and the ability to integrate with mill MIS adds to the functionality.

Tecumseth's hands-on support will ensure that you maximize the value of your investment and sustain its performance over time.

Customer claim: "The ECS Camera system helped us locate and resolve the water dripping issues that we had on the machine; no one believed it could be water drops until they saw it on the screen"

Tissue Machine Superintendent



Metso – Stable and Accurate Stock Delivery

Metso consistency measurement has no equal when it comes to accuracy, range and reliability, regardless of whether it is microwave, rotary, blade or light technology. Tecumseth works with you to install, optimize and realize the value of upgrading current technologies or to discover new applications that will provide enduring benefits to your performance. Tecumseth expertise and support ensures each application achieves the expected results and we continue to monitor that performance is sustained.

Basis Weight regulation is one of the most critical machine factors and the nelesACE basis weight valve takes control to a new level of accuracy and stability. It is exactly what you have been asking for: low cost, very high performance, easy to install and easier to maintain. Talk to a Tecumseth representative about how this game-changing valve will benefit your productivity through the uniformity of stock delivery and its impact on water removal, drying energy and overall sheet quality. Users see the difference, so will you.



Vacuum and Dewatering Performance

Vacuum system degradation occurs slowly and severely reduces water removal performance long before its impact is noted. Erosion in vacuum pumps, piping design, wear of Uhle box and suction box covers are all critical factors that must be monitored. CVN Vooner surveys and solutions lead to: cost-effective vacuum pump upgrades or replacement; improved suction box cover designs and materials; higher performance lubrication showers; or recognition that there is a need to focus on maintenance. Tecumseth also offers the highly regarded CVN Vooner oscillating shower and actuator technologies.

Tecumseth and CVN Vooner specialists are your go-to team to maximize dewatering performance in your wet end. Applied expertise for design of water removal elements reduces sheet breaks and ensures felt cleanliness and longevity.

Customer claim: "I have purchased and commissioned multiple CVN Vooner products over the years. They provide good quality, reliable products, at a competitive price.

They are very knowledgeable about finding solutions ..."
Paperboard Machine Production Superintendent

Customer claim: "The actuator is working well. Thank you for such a great product."
Operations Manager





Innovation In Process

Cellwood Machinery and Tecumseth have teamed up to provide mills with outstanding technologies for initial fibre preparation and process water reuse. The Grubben stock preparation technologies and the Krima system for dispersing waste paper fibre have been designed to develop quality fibre at low energy.

The Algas rotary drum microfilter has an outstanding record of clarifying process water and effluent for reuse in mill showers and pump seals. Tecumseth performs Algas in-situ pilot studies to demonstrate equipment capability and verify effectiveness.

Tecumseth has expanded to focus more resources on cleaning water, fibre recovery and energy use reduction in order to make pulp and paper operations more sustainable



Extraordinary Results:
Payback on these technologies
is typically 6 to 9 months.



Reliability in Paper Machine Rolls

Quality rolls for every machine position. MWN specializes in suction rolls and is a quality producer for all types from the breast roll through the machine to the reel spools. Tecumseth service technicians together with the renowned MWN manufacturing capability are a great combination to ensure the right fit of material and performance for your paper machine rolls.

High tolerance manufacturing, enduring performance:

- Breast and wire turning rolls
- Suction rolls and shells
- Press rolls and covers
- Felt rolls and reel spools
- Reel and winder drums



All paper makers depend on the reliability and performance of machine rolls. Tecumseth looks forward to discussing your future roll upgrades or rebuilds.



Up Your Quality and Throughput

As paper and board machines get pushed to wider trim widths and new quality specifications, wet edges often become a limiting factor that is easily corrected.

IRCON infrared edge-drying modules are installed to assist with water removal that moves sheet quality into specification limits.



Tecumseth works with customers to understand what can be achieved and the exceptional value that IR drying can bring to machine performance. Tecumseth personnel have a long history in realizing the importance of incremental drying and CD profile correction. We tackle your wet edge or streak problems.

Customer claim: "The system is performing as predicted by IRCON. We are achieving the desired moisture content across our sheet at the reel."
Large Specialty Paper Manufacturer



Authentic V.I.B. Parts

Tecumseth has teamed with Woollard and Henry to provide V.I.B. steam shower and water spray users with authentic parts and service from the people who designed and built the equipment.

Steam Shower Designs Updated

WH has overhauled steam shower systems to be more reliable and maintenance friendly.

It is time to look at upgrading!



Stock Prep Equipment & Water/Fibre Separation

OMC design engineers are the industry leaders for conceptualization of energy efficient, high performance and low maintenance equipment for developing fibre. From the pulper to the headbox, OMC has technology solutions for preparing pulp and recycle fibre, including wet and dry end pulpers, deinking, washing, screening, all stages of cleaners, stock refining and agitators.

OMC equipment for process water treatment and stock thickening include all mill applications.



TECUMSETH Environmental DIVISION



Metso – Solids Measurement

Metso solids transmitters provide a new level of accuracy and stability that significantly impacts wastewater treatment facility operations. The metsoTS for high solids gives dependable measurement of solids at primary and secondary clarifiers and then into digesters and centrifuges. The metsoLS provides dependable measurement of centrate solids to enable polymer dosing control and improved centrifuge operation.



Water and Wastewater Treatment

OMC Collareda has a complete line of water treatment systems, including raw water treatment and purification applications, process water clarification, solids/water separation and complete wastewater plants. OMC is pushing technology to new vistas as environmental demands and water reuse become societal requisites.

Primary Water Treatment Plants

- Solids filtration, electro deionization, activated carbon, mineral and substance removal, UV sterilization, ozonation
- Reverse Osmosis and nanofiltration for demineralization, desalinization, potable water creation
- Micro and ultrafiltration for purification of surface water, brackish water, seawater; and final treatment of waste water for discharge and reuse



Sludge to High Solids Cake

The Fournier Rotary Press sets a new standard for dewatering sludge from primary or secondary sources. The Rotary Press is clean, quiet and operates reliably unattended while making higher cake solids of mill waste or clarifier sludge. Tecumseth will assess the improvement potential for your operation—solids increase, energy reduction, polymer usage decrease, maintenance reduction. Complimentary testing of your sludge sample identifies the dewatering potential and a site pilot with a Rotary Press will demonstrate the actual results you can achieve.



Examples of demonstrated cake solids:

Municipal primary:	to 32%
Municipal secondary:	to 20%
Anaerobically digested:	to 27%
Pulp and paper mill:	to 52%
Hydro excavation:	to 78%

Biological Treatment Plants

- Variety of rotary filters for solids removal
- Proven DAF designs – circular and rectangular dissolved air flotation
- High efficiency water-air mixing system
- Sludge removal, dewatering and handling systems

TECUMSETH OPTIMAL DIVISION

Control Optimization

Tecumseth has teamed with premier control variability and process stability experts to assist industry with improved control and optimization of operations. The identification and remedy of variability resulting from control loop tuning, measurement or control element deficiency, control strategy design or process design is critical for optimal results and maximum operating time.



Centrifuge Polymer Feed Optimization

With the installation of a metsoTS on the centrifuge sludge feed, Tecumseth's feedforward control strategy automates polymer feed flow to automatically maintain a solids to polymer ratio. The control algorithm is implemented in the existing SCADA system to maximize operator visibility and usability.

With the addition of a metsoLS transmitter on the centrifuge centrate, Tecumseth can further optimize polymer addition while integrating the automation of flushing and cleaning hardware and providing a Foam Index to advise of possible polymer overdosing.

Experture – PlantTriage Control Performance Monitoring

Metso's Experture PlantTriage system monitors and analyzes the performance of process controls and control elements to identify, categorize and rate the impact of deficiencies. The identification of variability in device signals and control loop actions is recorded and then put through a root cause analysis to pinpoint the sources of unwanted disturbance.

This program runs continuously in background to identify variability or anomalies before they cause operating problems or quality degradation. Tecumseth expertise in control performance can assist your operation in deciding the best course of action for maximizing performance and reliability of your control system and technologies.

APPLICATION - SOLUTIONS - PEOPLE

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