

InfraStructures

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This electronic version of InfraStructures is made available for the sole purpose of giving our English speaking readers a taste of the original printed version of the magazine.

We will try to publish as much of the editorial content of the printed version as it is possible given the technical limitations.

Welcome to InfraStructures

Until recently, InfraStructures has been read mainly by French speaking users of heavy machinery.

Over the last seven years, InfraStructures has become a leader in its field. First by becoming the only magazine covering all aspects of the industry published in French in Canada. Then by being the first to publish all its editorial content on the web, and also by being the only construction magazine, published in French, having a significant readership outside the Province of Quebec.

For many years, we have received requests for an English version of InfraStructures. Technical limitations, and the lack of advertising revenue have prevented us from publishing such a magazine in print. Now, with the extent of the use of Internet by professionals, we feel that the time as come for a portable digital file (.pdf) version of InfraStructures in English.

While the content of the English version differs slightly from the original, most of the important news will be published in English. In the near future, more and more of the content of the original will be translated into English.

With over 500 visitors per day on average, spending over 13 minutes per visit, the website of InfraStructures is one of the most important sites of this kind. More than two thirds of the visitors come from outside Canada. With the English version of the magazine available on the web, visitors from outside will find it easier to enjoy the magazine.

Hoping to hear your comments,



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Cover page :

In the last few years, there have been many changes in the Environmental Sector of the industry. The ways trash is collected, treated and valued have all changed. More severe constraints have direct consequences on the choices made by people involved in the field.

InfraStructures is read by decision-makers in the Environmental Sector.

In the News...

Borex Inaugurates Its First Natural Gas Cogeneration Plant in France

The Borex Blendecques S.A.S. natural gas-fired cogeneration power station located in Blendecques in the Nord Pas-de-Calais region of France, a project which began in December 2000, was officially inaugurated on September 16 in the presence of many local dignitaries, business part-

ners and employees from Norampac Avot-Vallée S.A.S. and Borex Inc. Construction of this power station required an investment of approximately (euro) 9.1 million (C\$14 million).

The completion of the plant is in line with Borex's objective of development through diversification in both the geographical location of its plants and in production methods. The opening

of this plant also marks a decisive step in the Corporation's European expansion.

"The completion of this major project demonstrates Borex's ability to support its growth and profit objectives using the strength of our know-how," said Bernard Lemaire, Borex's Chairman of the Board and Chief Executive Officer.

The Blendecques cogeneration plant, which had its commercial start-up in January 2002, has a total installed capacity of 14.0 MW, for an annual production of 82.0 GWh all of which is sold to Electricité de France under a 12-year contract. In addition to this, the annual production of steam, forecasted at 221,000 tonnes, will be sold to the adjacent Norampac Avot-Vallée paper mill under a 20-year agreement.

The acquisition last winter, of the units held by Industélec Services S.A, a partner in the development of this station, will allow Borex to fully consolidate the results of Borex Blendecques S.A.S.

A pioneer in the development of natural gas fired co-generation plants, Borex was the first corporation to operate a natural gas-fired cogeneration power station of this type in Canada, starting in 1990. This first power station, located in Kingsey Falls, Quebec, is still the only one of its kind currently running in Quebec.

Borex operates twelve wood-residue, natural gas cogeneration, hydroelectric or wood turbine thermal energy producing stations in Québec, the United States and France. Also, Borex Power Income Fund, which is managed by Borex and in which Borex holds an important participation, operates eight hydroelectric, thermal or wood-residue as well as natural gas cogeneration energy producing stations in Québec. Together, these two entities have more than 230 employees and have a total installed capacity of more than 360 MW. Borex's stock trades on the Toronto Stock Exchange under the ticker symbol BLX.A and Borex Power Income Fund's stock trades under the ticker BPT.UN.

Source: Borex Inc.

The engineering firm of Dessau-Soprin now in Ontario

Dessau-Soprin, one of the largest engineering and construction companies in Canada providing professional services nationally and abroad, is pleased to announce that it has opened a new office in the City of Ottawa. The company is already firmly established in the National Capital Region with over 30 years of local experience through several subsidiaries, all located in the City of Gatineau. Through its Ottawa office, Dessau-Soprin intends to pursue its growth in the City, the region and throughout Ontario using its

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Dessau-Soprin's current activity in Ottawa, including the LeBreton Flats Remediation and Infrastructure Project, employs approximately 15 local people with an expectation of 50 additional positions over the next two years.

According to Peter Rapin, Manager of the Ottawa office: "the City of Ottawa and outlying regions offer a terrific business opportunity that mainly lies in the remarkable dynamism of their community. Also, Ottawa and Carleton universities provide a pool of high-calibre graduates that will allow us to fill certain manpower needs. We believe that our personalized service, in-house access to extensive experience and expertise and "one-stop" formula where clients find all the services required to carry out their projects under one roof, will appeal to many clients seeking a fresh professional approach to engineering, technology implementation and construction. This formula has already proved itself in other Canadian regions and abroad."

Dessau-Soprin is a consulting firm specialising in engineering, technology and construction, with annual sales of over \$125 million. Its staff is composed of nearly 1,500 professional engineers, scientists and specialists in various leading sectors such as energy, transportation, environment, municipal engineering, urban planning, building engineering, telecommunications as well as construction administration and project management. The firm is recognized as one of the "Canada's 50 Best Managed Companies" by the National Post and Les Affaires.

Source: Dessau-Soprin Inc.

Alcan to Expand Automotive Business in North America

On September 16, Alcan Inc. announced a \$25-million investment for the construction of a new manufacturing facility for the production of aluminum structural assemblies for the automotive industry in the Saguenay region of Quebec. The facility will create 35 new jobs with a potential of reaching close to 50 employees with the expected growth of the business.

This venture is part of a strategic expansion of Alcan's North American automotive supply business, which includes the establishment of a new structural products group to engineer and market lightweight structural sub-assemblies and crash-management systems.

"The new plant expands on the significant expertise Alcan has developed in Europe in the application of aluminum for automotive structural and crash-management systems and we are confident these products will find a receptive market in North America," said Travis Engen, President

and Chief Executive Officer of Alcan Inc. "It demonstrates our commitment to Quebec to developing value-creating products and to promoting economic diversification in the regions where we operate."

Construction will begin in fall 2003 with production scheduled to start in the fourth quarter of 2004. Initially, the Saguenay facility, together with a complementary facility in Novi, Michigan, will manufacture aluminum bumper beams as part of the Alcan Automotive Structures business within

the Alcan Engineered Products group.

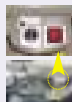
At the start of production, the new facility is expected to produce 600,000 aluminum bumpers per year, but Alcan's future plans are to expand the product range to include side-impact beams, instrument panel supports, and other weight-saving structural sub-systems.

"Our objective is to build on our leading position in the supply of lightweight solutions for automotive customers in North America by expanding our product range," said Mr. Kurt

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Wolfensberger, President of Alcan Engineered Products and Alcan Automotive. "The new manufacturing plant in the Saguenay will become a key element of Alcan's strategy in North America, which is to put in place, in partnership with the regions, the basis for a centre of excellence in the manufacturing of advanced automotive aluminum structural assemblies."

Alcan is a multinational, market-driven company and a global leader in aluminum, packaging, and recycling with 2002 revenues of US\$12.5 bil-

lion. With world-class operations in primary aluminum, fabricated aluminum as well as flexible and specialty packaging, Alcan is well positioned to meet and exceed its customers' needs for innovative solutions and service. Alcan employs 54,000 people and has operating facilities in 42 countries.

Source: Alcan Inc.

Pacific Oil & Gas in China

On September 9, Pacific Oil & Gas Limited

announced its first agreement in a series of major power investments planned for China. Through its subsidiary, East Asia Power Limited, Pacific Oil & Gas signed an agreement with the Government of Xiamen, Fujian, China to build, wholly own and operate a large-scale, state-of-the-art gas-fired combined cycle gas turbine (CCGT) power plant in Xiamen.

The power plant will have a total design capacity of 1,400 MW. Phase one of the project will start with an initial capacity of 2 X 350 MW and an investment of US\$350 million.

This investment represents a milestone for Pacific Oil & Gas as part of its continuing economic development between Indonesia and China. With China's continued strong economic growth and improving living standards, its power industry must now move quickly to service the rapidly increasing power demands in the country. Indonesia, rich in gas resources, will supply the liquefied natural gas (LNG) from its Tangguh, Indonesia gas field to fire Pacific Oil & Gas' wholly-owned CCGT plant.

Mr Arthur Ling, President of Pacific Oil & Gas said, "The new CCGT power plant will supply the much needed power for Xiamen as well as Fujian province itself, to help ease the problem of power shortage in the area."

Pacific Oil & Gas is also developing other power plants in China that will utilize LNG from its first 5 million ton per year LNG plant in Indonesia. The LNG from this plant has been committed to other Chinese provinces which are also experiencing rapid economic growth and the associated demand for more power capacity.

Pacific Oil & Gas is a Hong Kong based company committed to energy resource development in Asia and is supported by RGM International. Pacific Oil & Gas is focused on the development of integrated and cost-competitive energy supply chains which include upstream investments, LNG plants, transportation, receiving terminals, power generation plants and downstream gas transmission networks and facilities.

Source: Pacific Oil & Gas Limited

Polycor Acquires Georgia Marble Dimension Stone

On September 3, Polycor inc., Canada's leading architectural stone company and the second largest and most diversified supplier of architectural dimension stone in North America announced the acquisition of Georgia Marble Dimension Stone assets from Imerys, a world-wide leader in mineral processing.

Henceforth Polycor will be distributing and marketing Georgia Marble through its subsidiaries. Mr. Patrick Perus, President of Georgia



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Air volume7,9 m³/sec (275 cfm)
Tool diameter75-100 mm (3-4 po.)



FURUKAWA HCR1500-ED
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Tool diameter90-125 mm (3,5-5,0 po.)



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Marble Dimension Stone emphasized that Georgia Marble is one of the oldest and most respected supplier of American marble and commented as follows: "Polycor's ambitious growth plan to improve the competitiveness of the business, through its recognized expertise in marketing and manufacturing unique architectural stone projects throughout North America will greatly benefit Georgia Marble Dimension Stone. With the strong synergy between the new Georgia Marble Dimension Stone and Polycor's existing subsidiaries, customers will also benefit since they can now obtain georgia marble, granite and other natural stones from this unique supplier."

This important transaction enables Polycor to increase it's presence in the North American dimension stone market and to implement its supply diversification strategy and offer the broad spectrum of architectural stones. Polycor's chairman, Mr. Irénée Bouchard expects benefits from this transaction to accrue to all its existing plants and its vast distribution network.

Source: Polycor inc.

M. F. Schurman Company Wins North American Award

Steel Plus Network awarded the Quarterly Project - Summer 2003 to M. F. Schurman Company, Limited, a fabricator member in Summerside, Prince Edward Island, Canada. The Aquatics/Arenas Facility, located in Charlottetown, was chosen over five other projects submitted to the selection committee by Steel Plus Network members in North America. Schurman is one of the four companies nominated for Project of the Year 2003. Steel Plus Network will announce the name of the winner at the 9th annual convention in Cancun, Mexico, in January.

Mike Fraser, General Manager, steel fabrication division with M. F. Schurman Company, said "We used Steel Plus Technology to detail the project quickly and accurately. We have been a member for four years now so we were able to use the networking opportunities provided by our business group. Two other companies from the Maritimes contributed to the success of this project.

Fabrication of miscellaneous metals was sub-contracted to Prebilt Structures Ltd., also from Prince Edward Island and Guy's Welding Ltd, a fabricator member in Saint-Antoine-de-Kent, New Brunswick, did installation of the structural steel. The new building includes two arenas, a swimming pool, locker rooms and seating. The 600 tons of structural steel covered 110,000 square feet. Steel trusses required for the roof structure, measuring from 141 to 128 linear feet, were fabri-

cated and transported in two sections and assembled on site. These immense trusses supported approximately 300 steel joists.

M.F. Schurman Company, Limited began modestly in 1896. Since then the company has diversified and its subsidiaries are now involved in almost every aspect of the construction industry - from the supply of building materials to the construction of large institutional building projects. Schurman's Steel Fabrication Division, which launched operations in 1996, fabricates structural

steel components, miscellaneous metals, and provides on-site installation.

Steel Plus Network provides its structural steel fabricator members a range of innovative services that contribute to increasing competitiveness and sales volumes. The business group currently has 142 fabricator members in Canada and the United States. Steel Plus Network is a division of The Canam Manac Group Inc., an industrial company operating 19 plants specialized in the fabrication of steel components, semitrailers and



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forestry equipment. In 2002, sales reached \$ 936,719,000. The company employs over 4,000 people in Canada, the United States, Mexico, Romania and India.

Source: Steel Plus Network

RONA becomes the leading canadian retailer of hardware, home improvement and gardening products

Following the Competition Bureau's go-ahead, RONA Inc. concluded the acquisition of the Canadian subsidiary Réno-Dépôt Inc. of British multinational Kingfisher plc, making it the leading Canadian distributor and retailer of hardware, home improvement and gardening products.

The final price of the transaction is \$350 million, plus a \$12-million adjustment reflecting

changes in working capital and the portion of interest due on the purchase price since the transaction was announced on April 23. RONA will benefit from the net cash flow drawn from Réno-Dépôt's operations between March 29 and September 10, the closing date of the transaction. It bears pointing out that in 2002, the fourteen Réno-Dépôt stores and the six The Building Box stores recorded sales of \$846.6 million and operating profits (EBITDA) of \$57.6 million.

With the close of this transaction, the Réno-Dépôt and The Building Box stores, located in Quebec and Ontario respectively, now become a part of the RONA network. However, the Réno-Dépôt outlet in Sherbrooke, Quebec, will eventually be sold in keeping with a requirement of the Competition Bureau.

Despite the change of ownership, the Réno-Dépôt stores will remain as is for the moment in terms of the banner, product selection and services offered. "Our priority is to maintain exemplary customer service in all Réno-Dépôt, The Building Box and RONA stores," said RONA president and chief executive officer Robert Dutton.

RONA will integrate Réno-Dépôt into its network by relying on the same proven methodology used in its acquisition of the Revy/Lansing stores in 2001 and the Cashway chain in 2000. Thus, since the transaction was announced in spring, integration teams consisting of Réno-Dépôt and RONA officers have formed work teams to evaluate the business processes of each company.

Thanks to the integration exercise, the managers of Réno-Dépôt and RONA will be able to quickly leverage their complementary expertise by applying a best practices program, which will be implemented over the next few weeks, and that will translate into operational efficiencies, including in the stores. Substantial synergies, especially in terms of purchasing and distribution, should allow the Company to realize annual savings of at least \$35 million.

With this acquisition, RONA has improved its competitive position by consolidating and densifying its network in the Quebec-Windsor corridor - the most populated and competitive region in Canada - where all the Réno-Dépôt and The Building Box stores are located. This purchase also boosts RONA's total sales area by 2 million square feet and adds 4,300 people to its 16,000 employees across Canada.

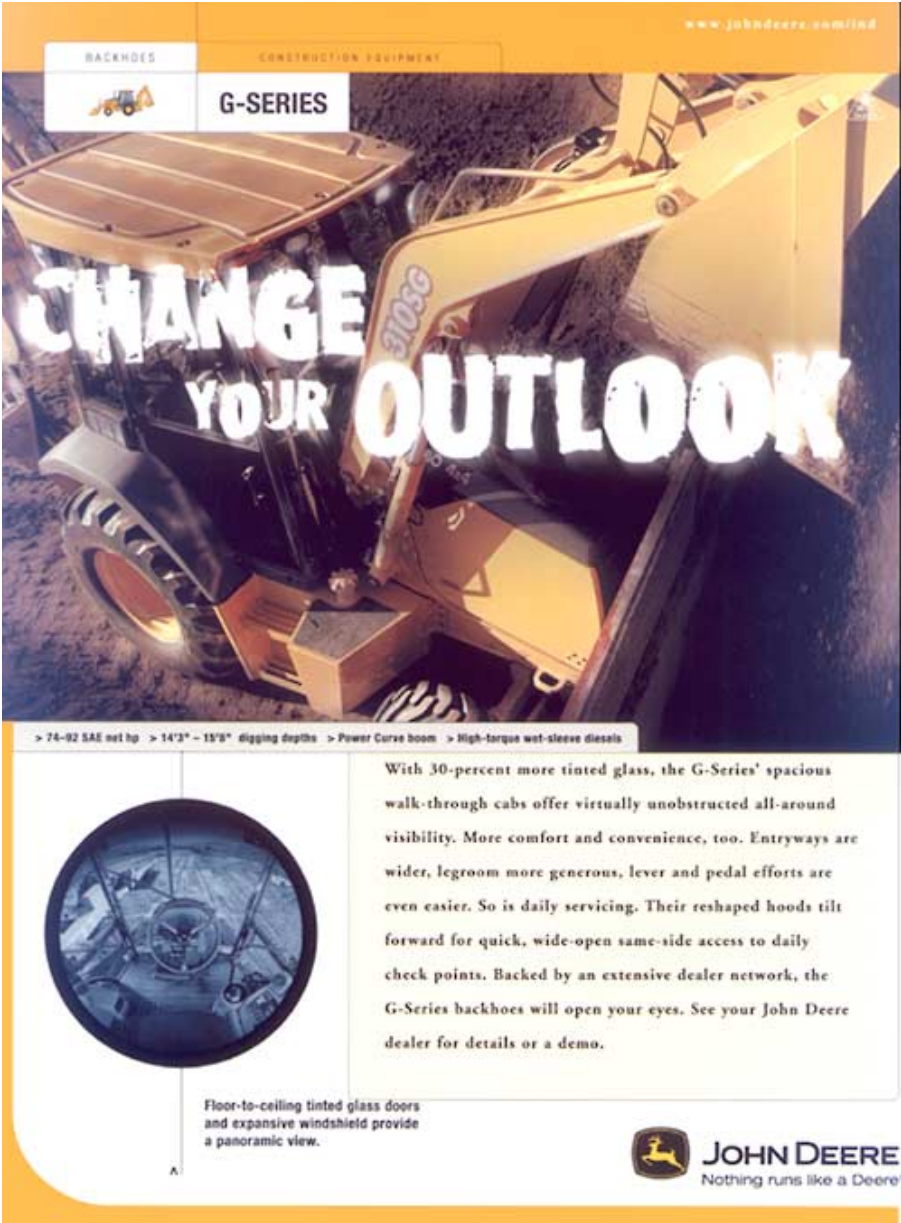
With the addition of Réno-Dépôt, the RONA network now holds 14% of the Canadian market for hardware, home improvement and gardening products. RONA's growth will also benefit Canadian manufacturers and wholesalers, who supply over 90% of the products distributed in RONA's Canadian store network. And with its new size, RONA's foundation is now more solid than ever and will allow independent merchants who are members of its network to compete more aggressively across Canada.

Source: RONA Inc.

Safety-Kleen Receives British Petroleum Achievement Award for Environmental Management System Excellence

British Petroleum (BP), the environmentally progressive international energy supplier, today presented Safety-Kleen Systems with an award recognizing the quality of Safety-Kleen's Environmental Management System (EMS).

Safety-Kleen is the first and only industrial waste management firm in the United States to



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receive such recognition from BP, which began the award program to honor those companies that meet BP's exacting standard for ensuring environmental compliance. More than 6,300 companies have been reviewed to date, and only 111 have met the requirements to be BP vendors.

"We are very proud to have met the strict qualifications for this award," said Safety-Kleen Chairman, CEO and President Ronald A. Rittenmeyer. "In a business world where 'commitment to the environment' is often talked about but sometimes hard to quantify, this BP program has established the gold standard for measurement, and we are the first in our industry to achieve that standard."

Companies seeking to become business partners with BP are evaluated against 10 environmental compliance measures, including regulatory awareness, employee training, record keeping, environmental event reporting, corrective actions and management commitment to environmental protection. Only vendors achieving passing marks in all 10 categories are selected as vendors to BP.

"This award is clear, independent acknowledgement of the thoroughness and excellence of our EMS program," Rittenmeyer said. "We have a harmonized, consistent set of environmental compliance standards across the country, which will benefit our customers, regulators, employees and the environment."

Rittenmeyer also noted that meeting BP's EMS requirements helps pave the way for Safety-Kleen's eventual ISO 14001 certification, the international standards program that measures and certifies a company's processes and programs.

"The BP standards are based on the ISO certification standards, so the BP award verifies that Safety-Kleen is on the right track toward achieving ISO certification," he said.

Safety-Kleen is the leading parts cleaner and industrial waste management company in North America, serving hundreds of thousands of customers in the United States, Canada and Puerto Rico.

Source: Safety-Kleen

Quebec chrysotile proven to be far less hazardous than amphibole

To demonstrate, proof in hand, that chrysotile asbestos can be used safely and responsibly, the Asbestos Institute today released the results of a study by a team of leading international specialists on the biopersistence of the Canadian fibre. According to the study's preliminary results, chrysotile fibres are far less hazardous than amphibole fibres, whose widespread use following the Second World War has caused serious

health problems in workers exposed to it.

To ensure this important study was conducted according to the highest scientific standards, the Institute mandated its coordination to Dr. Jacques Dunnigan, a Quebec toxicology expert, who has some 65 scientific papers to his credit, over 50 of which have been presented at international scientific meetings.

Funded by Quebec's Department of Natural Resources, Wildlife and Parks and the Asbestos Institute, this study on the biopersistence of Quebec chrysotile was conducted by Dr. David Bernstein, toxicologist (Geneva, Switzerland), Rick Rogers, Rogers Imaging Corporation (Needham, Massachusetts), and Paul Smith, Research & Consulting Company Ltd. (Fullinsdorf, Switzerland). The various phases of the study were conducted in three different laboratories—Research and Consulting Company Ltd. in Switzerland, Gesellschaft für Schadstoffmessung und Auftragsanalytik (GSA) in Germany, and Rogers Imaging Corporation in the United States.

This is the first study on Quebec chrysotile to focus on biopersistence, a key parameter in determining the specific hazards associated with a fibre, and to compare different fibres with respect to this variable. Biopersistence is the measurement of the rate at which fibres are eliminated from the lungs. In 2001, it was confirmed as a crucial parameter by a task force of 19 experts from 11 countries reporting to the International Agency for Research on Cancer (IARC-WHO) and incorporated by the European Union into its evaluation protocol. According to the concept of biopersistence, if a fibre rapidly dissolves and disappears from the lungs, it does not have a carcinogenic effect.

Based on the preliminary results of this study, Quebec chrysotile fibres appear to be far less hazardous than amphibole fibres. The preliminary data show that Quebec chrysotile has a biopersistence of several days, compared with several years for amphibole fibres.

The study's main finding was that chrysotile fibres are eliminated very rapidly from the lungs: 92% of fibres of all dimensions disappeared within one month of exposure.

For the potentially carcinogenic longer fibres ((greater than) 20 (micro) m), 50% were eliminated within two weeks, and less than 5% remained after three months.

These findings, although highly interesting in themselves, must be interpreted in light of a 2003 report issued by the Expert Panel on Health Effects of Asbestos and Synthetic Vitreous Fibres, which concluded that the overall data collected in epidemiological studies, analyses on laboratory animals and in vitro genotoxicity studies, com-

bined with the lung's capacity to eliminate short fibres, tended to prove that it is unlikely that asbestos and vitreous synthetic fibers shorter than 5 (micro) m were the cause of human cancers.

"We have known for many years, thanks to epidemiological studies, that chrysotile fibres are less hazardous to health than amphibole fibres», explained Dr. Jacques Dunnigan, Ph.D. "This new study on biopersistence not only confirms these results, but also provides us with powerful support for this argument. The biopersistence shows that chrysotile compares favourably with replacement fibres, such as cellulose, whose biopersistence has been evaluated at 1,000 days. We have therefore assembled solid evidence enabling us to reopen the debate on the use of Quebec chrysotile." The final results of this study should be made public in early 2004.

Source: The Asbestos Institute

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Source: Dessau-Soprin Inc.

The Tamrock Hole Checker Impacts The Excavation Process

Sandvik Tamrock proudly presents the latest development in drill hole measuring - the Hole Checker drill hole measuring system. This advanced device makes hole measuring quick and easy.

Knowing where the drill holes have gone is utterly important for the whole excavation process. Planning of the process will get much easier and, as a consequence, costs will significantly decrease. Explosives will be saved as blasting plan can be adjusted to the measured drilling pattern. Furthermore, the need for secondary blasting as well as the formation of toes and floor humps will decrease, too. Pre-splitting quality will be improved and, thanks to the reduced risk of fly rock, the blasting phase becomes significantly safer.

The Hole Checker is extremely easy to use so it is simple to include measuring in the operator's normal working cycle. Because of the device's small size and light weight, it is easily handcarried by one person to the job site.

The Tamrock Hole Checker has a unique,

patented construction and an electric winch which descends and lifts the probe in the hole - there is no need to do that manually. The probe automatically knows its orientation, providing accurate measurements without the need for orientation rods or the necessity of maintaining the same axial position throughout the survey. It stores accurate readings of dip and direction at measuring stage. separation. The probe does not need to be removed from the wire because the measured values are transferred to the Data Logger via radio link.

The results can be exported to commercially available software for reporting. It is also possible to produce export files for utilizing the hole data in other software such as 3-D designing or blast planning software. The results can also be printed in three different projections for immediate use at the charging stage.

The Hole Checker consists of four components; the winch, the probe, the data logger and the adapter. The winch unit is battery-powered, and it automatically lowers and raises the SenselT



probe in the hole. The unit can be charged using either its charger or a car outlet adapter. The probe stores up to 5,000 measurements. The handy StoreIT Data Logger is a pocket-size unit that organizes, stores, and retrieves hole measurement data. It can be used in the dark thanks to its backlit LED display. The TransIT adapter provides easy data transfer to printer or pc. The adapter has a industry-standard RS232 connection.

Source: Sandvik Tamrock Corp.

Dainong and EastRock Offer a New Breaker for 11 to 18 Ton Excavators!

The new K-55 from Dainong is the perfect answer for the light to medium weight excavator.

This new DNB K-55 is a silent breaker. Like all the Dainong series II breakers, it features a mono-block design casing eliminating the need for expensive «plate bolts» and the regular maintenance required.

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Alexandre Lalancette, Denis Marcotte, and Mario Brodeur, respectively presidents of MAESTRO Technologies Inc., MARCOTTE Systems Ltd and CONTEK Inc., have the pleasure of announcing the perfect integration of their products creating the most advanced solution presently available on the market.

MAESTRO Technologies Inc. is the most important creator of software designed specifically for the construction sector of Canada. They offer top of the line financial systems with a vast choice of modules essential to construction: management of projects, garage, quotes, tickets, invoicing for concrete, asphalt and quarries. Maestro also offers necessary modules to manufacturers and distributors.

MARCOTTE Systems Ltd is quickly becoming the number one provider of fully Windows compliant customized batching and plant control software in North America. Some features of the

Marcotte system include: remote or central batch capabilities; automatic temperature and moisture control; "No Limit" on the amount of admixtures, cements, aggregates, scales or equipment to control.



CONTEK Inc. offers software that has become the tool of choice for QC/QA departments in the management of their construction materials. Their

flagship application LABsys, was created to save time and money by using the power of your personal computer for analyzing and optimizing material production and mix designs.

No other product permits this much efficiency for business management in this sector. Thanks to the integration of these three "LEADERS", the results translate into the reoccurring savings of thousands of dollars for users.

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Source: Marcotte Système Ltée,
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Goodyear Rolls Out Revolutionary Two Piece Assembly

Joe Gingo doesn't fire off with descriptive words such as «revolutionary» like a loose cannon. For just the third time in his 30-plus years with Goodyear, Gingo, executive vice president, quality systems and chief technical officer, is using the term revolutionary about a new product. That revolution is Goodyear's new Two Piece Assembly.

«I define a revolutionary product as one that changes the consumer's buying habits,» says Gingo. «Both the radial tire and the all-season tires were revolutions in the tire industry. Today, Goodyear is introducing another revolutionary product in the Two Piece Assembly.»

Goodyear is initially offering the Two Piece Assembly in a 45R57 size for large haulage trucks. Insiders at Goodyear are quick to clarify that its newest product is not a tire.

«It's a multifaceted assembly meant to solve many of mining's challenges,» said Tom Walker, general manager of off-the-road tires. «It offers many benefits such as reduced downtime from tire changeovers, higher payload capabilities, improved traction, handling, stability and ride on haul trucks, not to mention increased productivity and cost per ton savings.»

«I would compare it to buying a stereo,» said Perry Martenny, team leader for off-the-road tire programs. «You can buy a stereo as an all-in-one unit or buy it a piece at a time. Think of the Two Piece Assembly as a component system.»

Like the name suggests, the Two Piece Assembly consists of two separate but vital pieces. The assembly consists of a casing and a treadbelt package.

The two pieces have corresponding grooves

that interlock during assembly.

Once assembled, the two pieces are held together by the air pressure in the inflated assembly.

Goodyear's Two Piece Assembly provides many favorable benefits to mine operators. No longer does a rock cut mean the end of the life for one of the most expensive types of tires in the industry. With the Two Piece Assembly, mine operators can change out just the damaged tread in a fraction of the time and for a fraction of the cost of removing a complete conventional tire. «Normally, tire changes on a large mining truck can take as much as eight to nine hours,» said Walker. «With the Two Piece Assembly, you can change a treadbelt package in a fraction of the time.

«No longer do operators need to destroy an entire tire after damage to just the tread or sidewall. Because the assembly consists of two pieces operators are given the option of replaceable parts. Damage the sidewall with a large rock gouge – replace just the casing. Damage the tread with a large railroad spike -- replace just the tread. This reduces waste taken to the landfill, which makes the Two Piece Assembly environmentally friendly too, an added bonus.»

Storing dozens of huge tires are a thing of the past, as well, added Walker. Replaceable parts and their ability to compact into smaller storage spaces than traditional tires, means only keeping a few treadbelt replacements and even fewer casings on hand.

The Two Piece Assembly also provides intriguing options for the future.

«Mine operators will soon be able to change



the treads on their haul trucks based upon conditions. For example, one tread for arid-dry conditions and one for soft-wet conditions,» said Walker.

Martenny, who has a Ph.D. in polymer physics, says the Two Piece Assembly's benefits are rooted in its simplicity. «It's more radial than a radial tire,» he said. «The unique, yet simple design prevents outside diameter growth. The footprint is 11% greater than a traditional 57-inch off-the-road tire which provides a more uniform pressure distribution and leads to much improved traction.»

Because the treadbelt package protrudes beyond the sidewall more than a traditional tire, it provides added protection for the casing as well.

All of these benefits and features may sound too good to be true. But, after nearly two years of field testing Goodyear is convinced that the Two Piece Assembly will do everything that the company claims, says Walker.

«Our customers who have tested the Two Piece have raved about its performance,» said Walker. «Now we are ready to fully launch this new and exciting product to more customers.»

Source: Goodyear Tire and Rubber Company

New EX1200-5C Large Hydraulic Excavator

Hitachi Construction Machinery Co., Ltd. announced the release the EX1200-5C large hydraulic excavator (standard backhoe type, with a bucket capacity of 5.0 cubic meters and an operating weight of 108 tons), which meets Class 2 emission standards.

The EX1200-5C replaces the EX1200-5, which was released in February 2001. Since its release, the EX1200-5 has won a solid, international reputation among user industries which employ it for a wide range of tasks that include rock crushing and quarrying, large-scale earthworks and demolition, collection and loading of scrap materials and dredging of harbors and rivers.

Building on the legacy of its predecessor, the EX1200-5C is equipped with a new engine that meets the Class 2 emission standards set by Japan's Ministry of Land, Infrastructure and Transport and the U.S. Environmental

Protection Agency. The EX1200-5C has also been made easier to maintain, through the provision of air-cleaner elements and airconditioner filters that can be used for longer periods before replacement.

The worldwide sales target for the EX1200-5C is 50 units a year.

Source: Hitachi Construction Machinery Co.



Changes in Show Dates for World of Asphalt 2004

World of Asphalt show management announces a change in the dates for the 2004 event – World of Asphalt 2004 will be held March 15-18, 2004. The previously announced dates were March 17-19, 2004. As planned, the event will return to the Nashville Convention Center in Nashville, Tennessee. World of Asphalt 2004 will



bring together professionals from all segments of the asphalt industry for next year's only asphalt showcase to offer such a comprehensive range of education, exhibits and networking.

The date change will allow expanded on- and

off-site World of Asphalt 2004 activities and better accommodate the busy schedules of attendees and exhibitors.

"A date change was the only way to balance our desire to deliver more attendee activities and exhibitor value," explained World of Asphalt Show Managing Director Peter T. Vlahos.

Expanding Education Appeals to a Broad Industry Base

In addition to exhibits of the latest equipment design solutions, leading-edge materials technology and industry services, plans for World of Asphalt 2004 include expanded industry-specific education. In 2004, World of Asphalt will again feature the Asphalt Pavement Alliance (APA) Asphalt Pavement Conference and the People, Plants and Paving Training Program, as well as new sessions currently being planned to further widen the appeal of the event's educational offerings. A new quarry open house and a warm mix asphalt paving demonstration are also in the



planning stages.

World of Asphalt 2004 is expected to feature over 180 exhibitors using in excess of 50,000 net square feet and attendance of more than 3,500 industry professionals.

For more information, visit the show's website at: www.worldofasphalt.com

Source: World of Asphalt 2004



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Up to 2500 Tons of Jurassic Limestone per Daily Shift...

Today, many mineral producing companies are faced with the problem that environmental regulations either prohibit or very strictly regulate the past practice of blasting in quarries. This is also true for the limestone quarry Schleith GmbH in Egletingen, which produces Jurassic limestone in the southern foothills of the Swabian Jura approximately 15 km from the lake of Constance. The daily production is up to 2500 t of raw material, which is primarily used for road construction. Beyond that, rip-rap for waterway construction and landscaping is recovered.

Liebherr hydraulic excavators well tried for decades

Because economical blasting activities are no longer feasible, considering all required conditions, a Liebherr hydraulic excavator R 991 with an operating weight of 160 t with backhoe attachment was utilized until mid 1995 in order to loosen and load the rock, which exists in layers of 10 to 80 cm thick. The material was directly mined and loaded. However, breaking the rock using the bucket produced a large portion of boulders, which very often had to be crushed with a drop-ball. In order to make the mining and loading process more economical, the companies Schleith, early-on in close cooperation Liebherr, found a technique that improved the ripping and loading process of the raw material. As a result, a large hydraulic excavator R 984B Litronic with an operating weight of 100 t was used in 1995 fitted – a first in this class of machine – with a hydraulic quick coupler.

This solution made it possible to utilize the machine with a ripper tool as well as with a bucket, substantially improving the process and noticeably reducing the portion of boulders.

After a service life of seven years and 11,000 operating hours without appreciable downtime, the Schleith Company decided to replace this proven machine with a state-of-the-art hydraulic excavator of the latest generation. Considering the good past experience, the choice of a R 984C Litronic was an easy one.

The new R 984C Litronic features even more punching power

With the new R 984C Litronic, Liebherr has set new benchmarks in this class of machine. The R 984C has an operating weight of 116 t and is powered by a Cummins diesel engine. This engine meets the latest and foreseeable emission

requirements. High digging and breakout forces and fast cycle times are made possible by the 504 kW (685 hp) of power.

The R 984C Litronic is equipped with a 7.80 m gooseneck boom, a 3.40 m stick and a hydraulically operated Liebherr QC 105 quick coupler. Depending on the requirements, a 5,2 m³ capacity heavy-duty bucket or a Liebherr ripper tooth is attached. The digging and breakout forces of the backhoe attachment are 416 kN and 550 kN respectively. Those for the ripper tooth are 427 kN and 565 kN. The quick changeover from the ripper tooth to the buckets takes only a few seconds with the quick coupler actuated by simply pushing a button inside the cab. Part of the quick coupler is the shell shaped tool holder featuring a particular heavy-duty design.

Whether ripping the rock layers, loading the trucks, sorting out the boulders or reducing their size with a drop-ball, the R 984C Litronic always provides an excellent stability due to a low center of gravity and the large support area of the undercarriage.



Protective covers in front of the hoist cylinder as well as armored glass in the windshield of the cab offer the required safety for the operator and machine in this severe application. The wear rails inside the heavy-duty bucket provide certain guidance for the drop-ball.

Economical advantages due to direct mining

The quarry face is split in benches of approximately 4 m each, an ideal condition for the optimum penetration of the bucket and ripper tool as well as the utilization of the enormous digging and breakout forces.

The material layers are first broken with the ripper tooth and shortly before the arrival of a dump truck, the changeover to the bucket is



made. The dump trucks, with a payload of 40 t, are loaded with 5 buckets in an average of 2 minutes. After a truck is loaded, the bucket is changed back to the ripper tooth in about 10 seconds. The rock layers are now methodically broken from the top down. The operator chooses the spacing of the ripping pattern and this determines the aggregate size or rip-rap as needed.

This mining technique reduces greatly the unwanted portion of boulders and minimal aggregate size as well. Only occasionally is the use of the drop-ball required. The number of blasting is reduced to about 10 per year and is only required for the removal of the toe area.

Source: Liebherr

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Power and Freedom in a Compact Package

Sandvik Tamrock Surface Drills Division is proud to present the new Commando 120 series with better-than-ever features. The advancements are based on the extensive practical experience Tamrock has gained by working with the previous Commando series for the last 14 years.

The Tamrock Commando 120 represents the fourth generation in its family of mini-sized drilling rigs. Like its ancestors, the new Commando is completely self-contained and has the unique ability to meet the demands of drilling at jobsites where the space for the equipment is very limited or where it is difficult to access.

In spite of the increase in the machine's capacity and power, and its more robust look, the new

Commando is as compact as its predecessor is.

The Commando 120 is a dependable partner for the demanding driller. It is easy to operate; the driller can get straight into the matter and make profit. The machine is equipped with a new HEX1 drifter that brings more torque and power to drilling. This rock drill produces holes in diameters from 22 mm to 45 mm. Power for the machine's compressor and hydraulics is provided by a robust four-cylinder Cat 3024C diesel engine.

The Commando is welcome to work in urban areas. A new appealing city design of the carrier makes the Commando more pleasant to the eye than before. But that is not the only advantage the design offers – thanks to the better component layout, the design vastly increases the machine's serviceability as well as protects its vital parts against van-

dalism.

The Commando 120 is suitable for city locations also because of the optional zero dust system that will be available in the future units. This means that the machine does not produce any visible dust. In addition, the noise level will be decreased with a silencer for the rock drill. The machine can use biodegradable oils so it is a friend to the environment, too.

The new Commando has an optional radio



control system. Customers can choose a radio control only for the drilling functions or for both the drilling and tramming functions, whichever suits better for their purposes. Thanks to the radio control system the machine can be operated from as far as 100 m distance, which makes



Commando is as compact as its predecessor is. There is a hydraulic motor for each wheel – a practical feature greatly increasing the Commando's mobility and making it easy-to-use even in the roughest terrain. The four-wheel drive also significantly lengthens the maintenance cycle of the drive system. The Commando is not only mobile but also excels in transportability; the machine can simply be moved from one location to another by loading it on a trailer of a 4x4 vehi-



the driller's working conditions significantly more comfortable.

The first Commando model was launched in 1988. It was a success right from the beginning. Nowadays there are over 800 units in use all over the world.

Source: Sandvik Tamrock Corp.

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«Pulverization»



up the surface course and mixing it, on site, with a certain thickness of the subbase material.

The resulting aggregate can be used in the pavement subbase. It can be kept and used on site when an increase in the thickness of the subbase is required or when a certain thickness needs to be removed to respect the surrounding peripheral constraints (sidewalks, curbs, etc.).

This technique is often accompanied by a stabilization operation (see Fact Sheets 4.2.1 to 4.2.6), which is carried out following the pulverization but prior to the installation of the new surface course.

Fields of Use

This technique is used to eliminate widespread cracking and other types of non-structural deterioration.



It can also be used to correct the grading and homogeneity of the existing subbase materials and to prevent reflective cracking.

This method is appropriate for rehabilitating roads where the traffic is light (e.g. in rural environments).

Materials and Equipment

Use of insitu material and addition of aggregate for applications designed to correct grading, should the proportion of fine particles exceed 15%.

A pulverizer is required, in addition to the usual roadwork equipment.

Restrictions and Limitations

This method is not recommended when deterioration is due to structural problems within the

Fact Sheet CS 4.1.1

Maintenance and Rehabilitation Techniques
Flexible Municipal Pavements - Pulverization

Description of the Technology

Disintegration of the existing bituminous surfacing and its simultaneous mixing into a specified thickness of the granular subbase.

This technique makes it possible to eliminate the pattern of cracking in a pavement by breaking



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pavement or distortion caused by stress from freezing originating deep in the pavement. As a rule, when a transverse crack is wider than 20 mm, it is likely that the problem originates in the supporting soil.

In order to meet grading standards and to ensure adequate compaction, it is recommended that the subbase layer be sufficiently thick and free of coarse aggregate.

Moreover, this technique cannot be used correct longitudinal variations in the properties of the subbase aggregate over the length of the project (cuts in the street and other repairs to the pavement).

The planning process must focus on determining the thickness of the surface to be pulverized, grading specifications and the percentage of humidity of the aggregates.

Appropriate compacting must also be planned for, and any surface thicker than 150 mm must be milled and removed.

- Pulverize the entire existing surface course and mix the resulting mill with a predetermined thickness of the subbase
- Remove excess quantities of materials, if necessary (because of peripheral constraints)
- Correct the grading, if required

- Prepare the surface, including the formation of aggregate, and level street appurtenances
- Compact material (using pneumatic and cylindrical rollers)
- Apply preventive measures to protect pulverized aggregates from contamination, distortion and other types of damage until the new asphalt surfacing has been laid or the course has been stabilized.

It is important to decide on a compaction verification procedure that takes into consideration the longitudinal and transverse variations in the properties of the aggregates along the length of the route.

Given that the pulverized material layer must be covered by a surface course, the finished product may vary depending on the characteristics of this new asphalt layer.

The rehabilitated pavement should be designed to last for about 10 to 15 years.

The pulverized material itself does not require any specific maintenance.

References

Ministère des Transports du Québec (Quebec Transport Ministry) - Guides et manuels techniques: retraitement en place des chaussées

(Technical Guides and Manuals: Reprocessing Existing Pavement).1996, p.121

Disclaimer

It is recommended to consult the explanatory notes accompanying the fact sheets to ensure proper use.

CERIU assumes no responsibility whatsoever concerning the application of the techniques and procedures described in the present fact sheet.

To obtain a copy of the CERIU Compendium of Infrastructure Technologies, please contact CERIU's Céline Forest at (514) 848-9885, extension 272, at the Centre d'expertise et de recherche en infrastructures urbaines (CERIU).

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