

Hess Group GmbH, 57299 Burbach-Wahlbach, Germany

## Barkman recently commissioned a new manufacturing facility

Barkman Concrete, located in Steinbach, Manitoba, has been a prominent precast concrete products producer in the Central Provinces of Canada and the Upper Midwest States since 1948. This experience has earned them the reputation for being a dependable yet innovative company that understands the importance of quality and durability for products of attractive architectural finishes. In order to both support and advance these requirements in a growing and more demanding marketplace, Barkman recently commissioned a new manufacturing facility with the Topwerk Hess Group for improvement in the operational capabilities of their existing products, and for innovations in new products so critical to take full advantage of important market opportunities.

Barkman understands the importance of advanced manufacturing techniques to both expand and maintain their reputation of market leadership and excellence. Efficient cycle times, rapid mold changes, frequent mix changes, and the capability to proficiently produce a wide range of surface finishes in response to market demand are paramount to their success. After their informed and extensive research, they identified Topwerk Hess Group as the unique source of proven equipment technology which delivered on their goals for operational excellence.

Karl Kohns, Managing Director of Operations for Topwerk Hess Group, defines the Topwerk Group's philosophy that informs all development for their performance equipment technology with the following concept: "The standard is to achieve outperforming results that can be realized on a consistent and reliable basis. The plant design must first reflect these requirements, be safe and easy to operate, simple to maintain, and less costly to run."

### Mixing and batching plant

Barkman prioritizes the quality management of concrete mix materials as the first step to assure the provide the highest level of quality in any finished product. Special attention is given to maintain the integrity of the material mix design and to avoid material contamination. This first begins with the installation of three dumping hoppers to eliminate the occurrence of larger aggregates infiltrating the sand storage bin. This separation of materials concept is carried through to the mixer. Together with the color dosing system from Standley Batch Systems, Inc., these bins feed a hopper also with two separate compartments to continue to maintain integrity of base mix materials and face mix materials.

The color material is embedded into the hopper in interval layers in between the aggregate material via traveling weigh bucket. This eliminates the dusting that otherwise occurs from blowing the color into the mixer, which would then create filming and build-up of color material on the inside walls and tool blade arms. The Topwerk Hess Group method minimizes the necessity of mixer cleaning to maintain color mix design integrity from one product to the next, and reduces the end of shift clean up. The result is higher quality mix designs and increased uptime during each and every shift.

Underneath the main mixer are three moveable hoppers with dosing shuttle belts. The shuttle belts can lay the different colored concrete in various cross directions onto the conveyor belt which transports the concrete to the concrete block machine. For example, the possibility to place the material in sequence, on top of each other, or even

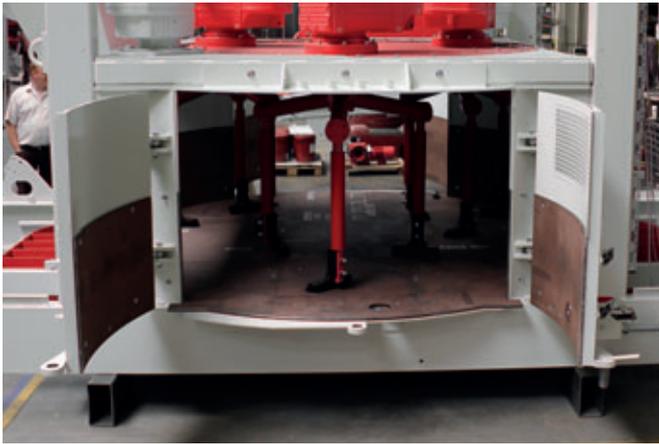
oscillated from side to side provides a most outstanding range of coloring options. The mobile hoppers can simply be moved aside for an easy cleanup and maintenance.

This advanced technique is also used for the face mix operation, with the added feature of the face mix being transported from the face mixer to the color mix dosing station by a flying bucket with three separate compartments to avoid color contamination. To assure consistent quality for all mix designs in colder seasons, all aggregates are heated using a vaporizing heat system; and, the mixing water is also heated with equipment technology systems supplied by Standley Batch Systems, Inc.

The mixing system technology of the Topwerk Hess Group includes advancements to the mechanical operation that set it apart. "Our approach to mixing technology is unique," adds Karl Kohns. "By incorporating smart mechanical principles, we



*Dosing shuttle belts for the facemix*



Full size doors allow mixer cleaning from outside



Base and face mixer

are able to keep the mixer clean while it operates. In our view, it is better to prevent the build-up from happening rather than creating more downtime associated with frequent mixer cleanings." The base and face mixers are also placed on a spacious platform which also makes maintenance easy. The two full size doors at the front and back of each mixer guarantee an easy and efficient cleanup from the outside resulting in improved safety conditions for maintenance staff. This technology makes a real difference during each and every shift, and the improved productivity that accumulates throughout the year is significant.

In the event of necessary mixer stops, the mixer can be switched off and then restarted within only a few minutes. The SM 2250-3 Mixer by Topwerk Hess Group is able to restart fully loaded by activating the mixing stars one-after-the-other prior to restarting the main rotation drive. These mixing capabilities create the material flow conditions necessary to advance the execution of production work orders. These dependable mix results and minimal cleaning time increase the operational equipment efficiency, and ultimately, product margins.

### Concrete Block Machine Hess RH 2000-3 MVA

Similar to more and more operations, the new Barkman plant needed to take great efforts to reduce the projection of noise levels from the production machine vibration. In addition to the usual protection of a sound insulating room, the machine foundation was embedded in a trough which was lined with anti-vibration panels. Therefore, the concrete block machine is completely isolated from the surrounding ground with no measurable noise and vibration going to the outside. These meas-

ures also improved the plant environment for workers and visitors.

The heart of the new plant is the RH 2000-3 MVA production machine. This machine incorporates numerous technological features which are operated with user-friendly controls. A patented vibration system is combined with an intelligent hydraulic system that harmonizes precise filling and forming operations through efficient movements of all critical components. "The advanced parameters of the RH 2000-3 MVA, from the filling operation to the distribution of vibration forces, delivers the lowest variation in density values across the entire production board and completes cycle more efficiently than any other production machine," explains Andre Kuersammer, Managing Director of Topwerk America. "It is a technology that pays for itself each and every cycle."

The RH 2000-3 MVA is one of the most advanced large-board high-performance machines in operation today. Barkman prefers using 1400 mm x 1100 mm x 60 mm plastic boards from Wasa. This production board size factors into the most cost-effective production output rate for concrete pavers. The concrete product height capability ranges from 25 mm to 500 mm (1" to 20") to enable a wide range of products to be accommodated, from thin set pavers to higher wall products. In the new plant, Barkman is using molds from their previous production machine along with new molds. This smooth adaptability for all molds is a big advantage presented by the production machines by Topwerk Hess Group.

The RH 2000-3 MVA production machine has an operating system that is intuitive, user-friendly, and includes a touch-screen monitor and panel control. Most adjustments are accurately controlled by one ref-



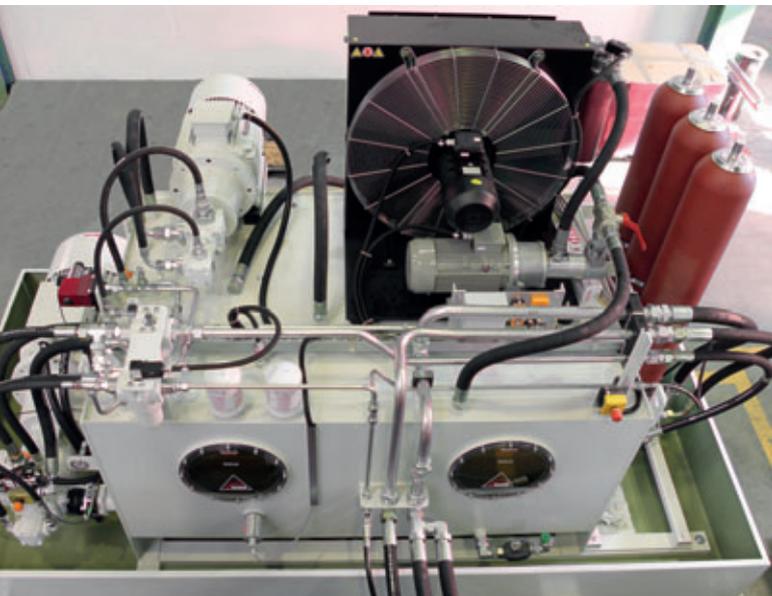
Touch Screen Operating Panel

erence only. There is no need to key in numerous values since all relevant values are calculated and pre-set by the program. These intuitive operating controls allow relatively new machine operators to confidently operate the machine program. This was an important consideration for Barkman Concrete as they recognize the skill-set most operators are now inclined to utilize.

During the automatic mold change a remote control panel enables the operator to monitor the operation right next to the machine. The machine has an automatic mold change system which reduces set-up times to a few minutes. When selecting another mold from the control inventory, the machine automatically adjusts all specifications (e.g. height, positioning, and settings). In addition, a mix design recipe can be stored for each mold setting and product grouping. The table plates are powered by two spindle drives to automatically adjust to different mold height requirements. "Our mold changing technology is unsurpassed when a true measurement of time is applied from last quality product made to next quality product." states Andre.

The machine filling process is another key operation that distinguishes the RH 2000-3 MVA production machine from other considerations. The base mix hopper above the machine has two discharge gates, with each being controlled by a laser to regulate the ideal filling level. This equipment design allows feed rates of mix design material to vary between the front of the filler box and the rear of the filler box. Adjustments can be made based on product shape and height dimensions for optimal filling requirements. The high speed motion of the filler box levels any material that may be above the mold. In addition, the hydraulic powered agitator can be set precisely on speed and position, which provide for critical adjustments in the filling cycle to assure the mold is optimally filled and ready for the compaction forces to be applied.

The RH 2000-3 MVA production machine features the Variotronic TM Vibration System. This patented vibration system is unrivaled for product density and height accuracy achieved on every cycle. Four inverter-controlled servomotors synchronize the vibrator weights, and the amplitude and frequency values can be adjusted during the cycle to achieve maximum filling levels and compaction density. Andre Kuersammer suggests that reliable results must also be



Hydraulic station

**DESIGNED BY EXPERIENCE AUS ERFAHRUNG GUT**

**INDIVIDUAL SYSTEM DESIGN · INDIVIDUELLE ANLAGENPLANUNG**

BIG Chamber solution-  
Outdoor or Indoor  
version  
Großraumkammer  
Konzepte - freistehend  
oder in vorhandenen  
Hallen



**ROTHO CLIP-IN™**  
System - the Original

**ROTHO CLIP-IN™**  
System - das Original

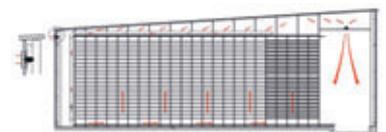


**CUSTOMIZED SOLUTIONS · KUNDENSPEZIFISCHE LÖSUNGEN**



**Air Circulation System -**  
Control your curing process

**Luftzirkulationssysteme zur**  
Steuerung des Aushärte-  
prozesses



accompanied by reduced maintenance requirements. "In addition to the very effective vibration technology, the individual vibrators are enclosed and all bearings are covered in oil to have a maintenance-free system," he points out. "This permanent lubrication of all bearings increases the service life and reduces related downtime."

Other time saving features incorporated into this high performance machine include the main frame unit of the RH 2000-3 MVA being attached to the face mix unit and base mix unit by clamps operated by pneumatic cylinders. They can be moved away from the main machine in a smooth and efficient operation, allowing safe and easy access to the central machine from all sides for periodic maintenance.

The RH 2000-3 MVA has an advanced and efficient hydraulic system. A CNC-controlled unit operates a hydraulic system with precise control of all axes movements. This pre-programmed processor synchronizes overlapping sequence movements to guarantee optimum cycle times and low-wearing machine operations. The processor possesses advanced logic to provide more accurate and harmonized operations. For example, both sides of each cylinder are permanently receiving pressure to eliminate uneven bumping movements which occur with other more conventional systems. The overall result is the highest accuracy is consistently achieved in all critical phases of the machine operation. Andre further describes, "There are no performance variations between production due to cold oil in the morning or hot oil during the day. Overall, with the constant pressure feedback to the processor, trouble-shooting is clearly defined in the main control diagnostics."

For demolding phase of the production cycle, the cylinders can be locked into position which eliminates the need for mechanical brakes. With the electronically set height control it is possible to achieve minimum height tolerances for high products. To further assure of high quality Barkman has a hydraulic driven drawplate system to maintain efficiency with retaining wall production. Therefore, it is possible to set very accurate mold release positions before pulling the draw plate. This has a positive effect on the quality of profiles on the bottom of the retaining walls. As an option the machine can also have a core puller which is mounted to an independent hydraulic cylinder and can be run simultaneously with the draw plate.

The RH 2000-3 MVA is equipped with a "new standard of face mix," the Filler Box Planing Roller TM. This patented device makes it possible to apply a wetter or more complex face mix designs with high color resolution and integrity - all without sacrificing cycle time! The filler box has a planing roller in the front which rotates correspondingly with the back movement of the filler box. The roller not only prevents the face mix from "digging out", but it also improves the soft natural look of the finish face of the concrete products. "This allows the producer to introduce innovative and attractive new products into their respective markets at a significant cost advantage relative to alternative methods," Andre offers. "It also achieves a level of quality for color-blended finishes that is not possible with previous technology."

The freshly made products are conveyed to an elevator rack along a belt conveyor that can accommodate a product height measuring device and a washing station to

impart that enhanced architectural finish. An automatic QC dumping station removes waste from mix cleaning and changeovers for unloading into a holding hopper. A finger car picks up a full rack from the elevator and delivers the fresh product to the curing chambers.

The finger car is designed for twenty-two storeys with a load of 14 tons. The positioning of the finger car is controlled with a laser system for the upper and lower car units. The curing racks are made of a galvanized steel structure supplied by ROTHO. An automatic air circulation system is also included. It has 14 chambers with 18 stacks each for a total capacity of 5148 boards. All products up to 8" (200 mm) height are stacked twenty-two levels high in the elevator. The machine can produce up to 20" (500 mm) height which then goes into every second storey.

An additional moving buffer rack augments the lowerator capacity to provide more line flexibility and greater balance between the wet production line and the dry processing/packaging line. The loaded boards are advanced out of the lowerator station area by a walking beam conveyor. There are three positions accessible for quality control where the walking beam can be stopped. The product board moves through a series of stations that prepare the products for processing or packaging.

Barkman has two line options for strapping the finish cubes: With a shipping pallet or without a shipping pallet. The outfeed of the finished product cubes is accomplished via a walking beam conveyor where a forklift picks up two cubed pallets or bundles at a time. The packaging system enables Barkman to handle a wide range of cus-



Wet side, products



Finger car in curing chamber



Dry side



Board buffer car two parts

tomized configurations in respond to product and customer needs.

The production line is completed by the board-cleaning, turning and stacking system. A stack may contain a maximum of 30 boards which may be directed back to the block machine; or alternatively, be placed in the buffer area which has a capacity of 960 boards.

The shipping pallet hoppers have adjustable sidewalls in case of different shipping pallet sizes and a buffer conveyor for up to five stacks.

The overall plant is designed to increase production efficiency and throughput volume while improving quality standards across a wide range of innovative products. The result is an improvement to the business operational metrics of Barkman, and ultimately to their ability to raise levels of customer satisfaction. ■

Watch a video about the new manufacturing facility

www.cpi-worldwide.com/en/cpi-tv/video/Barkman\_Hess

Simply scan the QR code with your smartphone and watch the video!

**FURTHER INFORMATION**

Barkman Concrete Ltd.  
Steinbach Office  
152 Brandt Street  
Steinbach, MB R5G 0R2, USA  
T +1 204 326 3445  
F +1 204 326 5915  
steinbach@barkmanconcrete.com  
www.barkmanconcrete.com

**TOPWERK**  
HESS GROUP

HESS Group GmbH  
Freier-Grund-Straße 123  
57299 Burbach-Wahlbach, Germany  
Phone +49 2736 4976776  
Fax +49 2736 4976620  
info@hessgroup.com  
www.hessgroup.com



**STANDLEY**  
BATCH SYSTEMS, INC.

Standley Batch Systems Inc  
505 Aquamsi St  
Cape Girardeau, MO 63703, USA  
T +1 573 3342831  
sales@standleybatch.com  
www.standleybatch.com

**WASA** Competence Leadership.

WASA AG  
Europaplatz 4  
64293 Darmstadt, Germany  
T +49 6151 7808500  
F +49 6151 7808549  
info@wasa-technologies.com  
www.wasa-technologies.com



**ROTHO**

Robert Thomas Metall- und Elektrowerke GmbH & Co. KG  
Hellerstraße 6  
57290 Neunkirchen, Germany  
T +49 2735 788 0  
F +49 2735 788 559  
sales@rotho.de  
www.rotho.de

