

Prinzing GmbH, 89143 Blaubeuren, Germany

## Precast for the Belgian railway

The first railway connection in Belgium was put into operation between the cities of Brussels and Malines on 5 May 1835. This stretch, which was then operated with steam locomotives, has since developed into one of the most up-to-date and complex railway systems in Europe with an overall length of 3,536 kilometers including high-speed sections for trains travelling at speeds up to 300 km/h. Having administered the Belgian railway infrastructure since 1 January 2005, Infrabel relies on its state-of-the-art concrete production facility in Roeselare to produce almost all the precast required for the Belgian railway, except for the concrete sleepers. The main products are cable ducts, concrete pits, platform edges and concrete blocks for railway overpasses. An automatic production machine for cable ducts and covers, a Blizzard from Prinzing GmbH, Blaubeuren in Germany, was purchased in 2007 and accounts for the high degree of automation of the production cycle.



*The Infrabel concrete production facility in Roeselare featuring the latest equipment*

Infrabel administers the entire Belgian railway infrastructure which, apart from the tracks, includes the power cables and signal technology for controlling the railway traffic, the stations, underpasses and footbridges. Infrabel constantly aims to provide a high quality railway infrastructure with the optimum level of safety.

Precast was being produced at Roeselare for the Belgian railway system even before Infrabel was set up in 2005. Until 1991, production was carried out on classical vibrating tables alone. The building of a new production hall began in 2002 to replace the semi-open timber-built hall which was previously used while work started on re-equipping the entire site. Production started in the new hall with its fully automated mixing machine in 2004. The new hall and up-to-date equipment enables the precast facility to adapt to current needs quickly and manufacture products which are of higher quality and larger than before. The quality of the cable ducts and associated covers produced on the new Blizzard production machine from Prinzing is also impressive.

### **Blizzard – turning system for the stationary production of different products**

#### **High degree of automation**

The Blizzard turning system supplied by Prinzing for stationary production is largely automated and is used to produce sophisticated concrete products and precast. The turning process also enables products which previously required labour-intensive manual processes using vibration tables or moulds to be manufactured automatically. The Blizzard maximises the efficiency of producing drainage channels, cable ducts, covers, frame elements, pot elements and manhole bases and the entire plant is designed to be operated by just one person. Servo-controlled removal and placement of products in the curing rack, servo-controlled de-stacking onto Europallets and the strapping and transport of finished product packets on Europallets from the hall are all fully automated.

If different concrete products have to be produced during one production shift, it is only necessary to change the mould – no



*Cable ducts for the Belgian railway*



Low-noise pollution due to sound-insulated production with the Blizzard



All the production parameters can be viewed on the control desk monitors

other adaptation or adjustment work is needed. It only takes 10-15 minutes to change the mould using the hydraulic mould clamping system, so lengthy and costly downtimes are avoided. The Blizzard is designed for product sizes up to 1,500 x 1,500 x 1,400 mm and product weights up to 2,000 kg and the cycle times vary between 1.5 and 4 minutes depending on the product.



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*Background: fresh concrete products being transported from production to the warehouse.  
Foreground: empty pallets being returned to the production circuit via the automated pallet cleaning machine*



*Impressive external appearance of the Roeselare cable ducts*

Supplied by a skip conveyor, Infrabel's Blizzard places the concrete in the mould and compacts it on the high-performance vibrating table, subsequently de-moulding the fresh products onto the steel pallets by means of the special turning process. The steel pallets used at Roeselare are 1.20 x 1.20 m. During the turning process, the pallets are only used to support and store the fresh concrete products. Since the steel pallets are not supplied to the production circuit until compaction is finished, they are not exposed to the high forces during vibration. Since the cycle time is approximately 2 to 3 minutes for the cable ducts and covers produced in Belgium, a crane robot places 20 to 30 new steel pallets with fresh concrete products in the curing rack every hour. At the same time, the robot removes the pallets with the already cured products and takes them to the packaging machine. The normal storage time for a fresh concrete product is one day and, after the cured products have been removed from the pallet, they are cleaned and returned to the production circuit via the pallet store automatically. The ingenious design of the crane robot and rack system means that only a small space is required for the entire plant.

**High performance vibrating table with continuous amplitude control**

The Blizzard machine has been a mainstay of the product range of Prinzing GmbH for some years, proving its worth in numerous concrete production facilities around the world. However, new knowledge and innovative engineering are constantly fed into the plant manufacture at Prinzing so that customers are always supplied with plants with the latest technology. The high-perfor-

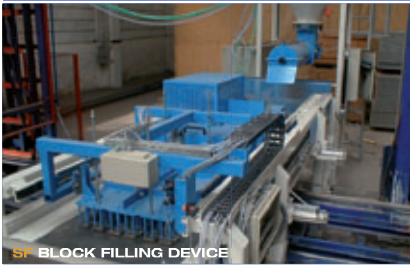


*The ingenious design of the crane robot and rack system means that only a small amount of room is required for the entire plant*

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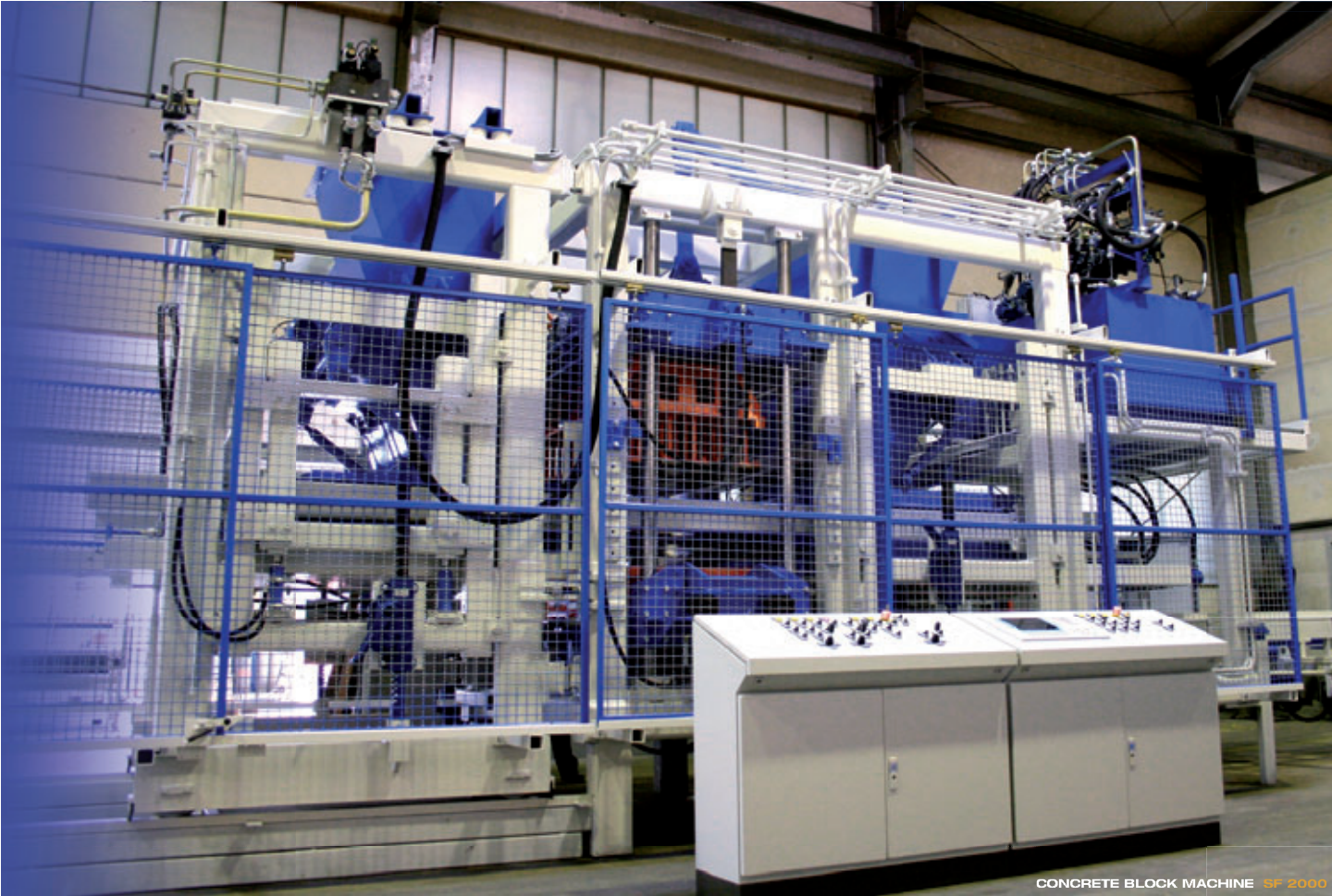
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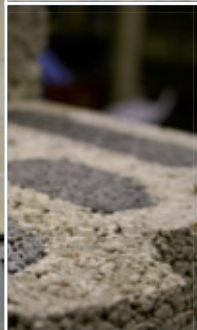
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Packaging different products is no problem for this brilliantly designed system



At Roeselare, the plant was designed to allow the curing rack to be enlarged to cater for possible two-shift operation

mance vibrating tables of the Blizzard in Belgium are therefore fitted with a new, continuous-amplitude controller.

This new future-oriented vibration technology uses 4 external electric vibrators which, when used in combination, are able to produce vibrations in all directions. The vibration width of the table can therefore be selected at will during operation. The new system enables the amplitude and frequency to be controlled on a continuous basis and is easy and convenient to operate. The benefits of amplitude regulation are as follows:

- The amplitude can be regulated during operation (0-100%)
- Amplitudes from 0-100% can be introduced within 0.5 second - this means that vibration can be switched on and off within the shortest time possible.
- Upstroke and downstroke of the entire plant is resonance-free so that all the mechanical parts, such as the hydraulic rams, are protected from wear.
- Product and mould are not exposed to resonances.
- When changing the applied loads or the mould, time consuming unbalanc-

- cing adjustments are not necessary.
- Noise produced is significantly reduced by the resonance-free upstroke and downstroke.
- Energy is saved (no starting and braking currents)

The benefits of synchronous operation are as follows:

- Full centrifugal force of the drives is introduced in the required direction of vibration.
- Synchronous operation avoids producing resonances and, therefore, noise.

### Conclusion

The Blizzard system enables Infrabel to produce very high quality concrete products in high numbers and with a high level of flexibility. Since the Blizzard is operated by just one person, the entire plant can be operated using the minimum number of personnel. Production is therefore extremely cost effective.

The entire plant is, of course, designed for long-term, economical operation. This is achieved by using high quality machine components, by having a mould technology designed to offer a long service life and low wear, by supplying the entire plant from one source, and by providing rapid service from a reliable plant supplier. Investing in the new production machine has also enabled Infrabel to respond to current requirements quickly and to manufacture the corresponding products without delay.

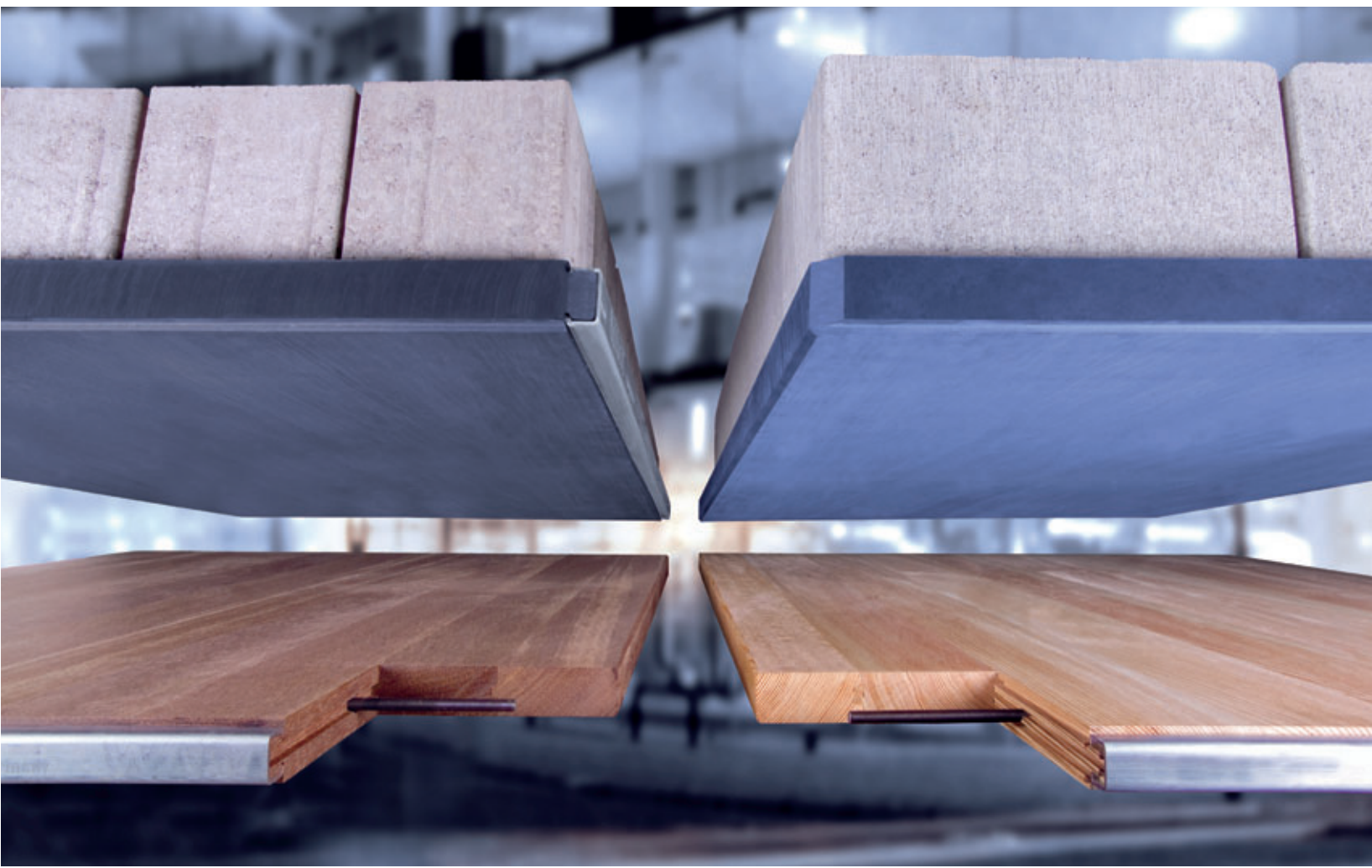
### FURTHER INFORMATION

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# WASA UNIPLAST® WASA UNIPLAST® ULTRA



## WASA HARDWOOD

## WASA SOFTWOOD

### WASA UNIPLAST®

- ▶ excellent vibration transmission due to solid material
- ▶ flat, smooth, join-free surface
- ▶ extremely long service life
- ▶ profile on the longitudinal sides (protection against pusher damage)
- ▶ on-site re-grinding service

### WASA UNIPLAST® ULTRA

- ▶ improved characteristics compared to **WASA UNIPLAST®** standard but material completely microfiber reinforced
- ▶ increased load-bearing capacity
- ▶ extremely impact resistant
- ▶ possible to design without profiles

### WASA HARDWOOD

- ▶ wood types: Yellow Balau/Bankirai or Azobé/Bongossi
- ▶ individual boards with tongue and groove joint and 10 mm steel bars with self-locking nuts (self-securing)
- ▶ 1.5 to 3 mm C profiles, riveted
- ▶ level ground surface

### WASA SOFTWOOD

- ▶ wood types: European fir/spruce or pine
- ▶ individual boards with multi-toothed glued joints
- ▶ additional steel bars upon request
- ▶ 2 to 3 mm C profiles
- ▶ 1-3 full rivets per profile
- ▶ level ground surface and treated with special impregnation

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