Increased efficiency in manufacture and improved product quality

Eifeler Betonbauteile GmbH from Hellenthal/Losheim has one well-known customer, Deutsche Bahn, that at the same time takes delivery of the major part of the concrete products the company produces. Eifeler manufactures concrete cable ducts, precast foundations, platform edges and supporting brackets at two production sites. These products are installed in the national network of the Federal German Railway - Deutsche Bahn. Others customers are, of course, also supplied with these types of products by Eifeler. However, Deutsche Bahn is without doubt this German company’s major customer. Eifeler previously relied on an egg-layer and a small stationary machine for manufacturing cable ducts and their appropriate covers, which have to be produced in very great numbers due to continual high demand. It was occasionally possible for bottlenecks to occur since the quantities needed were not always able to be covered in normal scheduled operations. Any potential undersupply has now been averted without problems on a permanent basis after commissioning a new stationary manufacturing system from Bouter-Krobo in the summer of last year.

Eifeler Betonbauteile GmbH was founded in 1993 and began manufacturing concrete products for Deutsche Bahn at a production site in Cologne. Due to local conditions, the production was later moved to Mechernich, approximately 50 km southwest of Cologne. Just like the old production site, the new site also possesses a connection to the railway network, which is one of the prerequisites for being at all taken into consideration as a supplier to Deutsche Bahn.

Since the turn of the year 2001/2002, Eifeler has had a second production site in East Germany. Its production facility in Calau, to the west of Cottbus, simplified transport logistics for supplying Deutsche Bahn on a national scale and the company’s overall capacities were expanded substantially. At the current time, the company has its headquarters in Hellenthal/Losheim. Only sales and distribution are managed from this site; production is carried on solely at Mechernich and Calau.

The managing partner of Eifeler Betonbauteile GmbH, Mr Thomas Manderfeld, additionally possesses a second strong presence in the concrete sector with “Thoma Beton” in Cologne.

Certified and monitored

As supplier to Deutsche Bahn, Eifeler does not just meet the stipulations of ISO 9001 with its corresponding certification. Eifeler has been named a Q-1 supplier by Deutsche Bahn as one of only two manufacturers of this type of concrete products in Germany. With this quality competence classification for a supplier, Deutsche Bahn is documenting the fact that the prerequisites have been met for satisfying their high quality requirements with such products.

However, Deutsche Bahn does not simply rely on their certified suppliers delivering the necessary quality. All products from Eifeler are closely inspected and their production monitored.

If a company is able to fulfil such strict quality guidelines, it is hardly surprising that its products arouse great interest outside of Deutsche Bahn. Eifeler has already made...
CONCRETE PRODUCTS & CAST STONE

deliveries to railway projects in Belgium, Luxembourg and Switzerland, for example, with concrete products for new railway platforms.

Other buyers for Eifeler products essentially include Telekom and general industrial construction companies. Amongst their ranks are to be found firms purchasing cable ducts, precast foundations up to 10 tonnes and supporting brackets.

Pure “railway products” include e.g. railway platform edges, which are manufactured complete with foundation according to Deutsche Bahn specifications as well as concrete cable ducts, which can be produced still more efficiently on the new Bouter-Krobo system.

Stationary Bouter-Krobo MP-F-405-RT concrete machine brings new momentum to the production line

The new MP-F-RT system enables a variety of reinforced or unreinforced concrete products to be manufactured that can be demoulded immediately. These products include, for example, reinforced concrete posts for fences, reinforced concrete piles, kerbstones, bank revetments, cable ducts, manholes for drainage and grease separators, beams, lintels, piling boards for channels, wall base elements (e.g. for noise abatement), gullies, reinforced base slabs, concrete products for traffic engineering, slatted floors for cattle and pig slats.

The system is supplied by Bouter-Krobo in three different standard sizes for product...
lengths of maximum 3.20 up to maximum 5.20 m. At Eifeler, a type MP-F 405 RT machine was installed that permits product lengths up to 4.0 m. The company makes use of this production width in order to manufacture several products simultaneously in one cycle.

All procedures utilised in this machine have been tried and tested over many years in the precast concrete component industry. The MP-F-RT is rated as a powerful, diversified machine with low running costs despite its high output.

One of the system’s essential components is a travelling concrete spreader, which is supplied by a bucket conveyor at Eifeler. This conveyor was installed specifically for the new production line. The concrete spreader has a pneumatic gate which enables the quantity of concrete and filling width to be controlled precisely. Filling can be adjusted and adapted to any product.

A dosating box ensures that the entire mould is filled uniformly. A travelling disc attached to the concreting bucket moves continually over the mould to create a smooth surface. This travelling disc can be moved both manually and automatically over the mould.

One other core component is a gantry frame which travels on rails and is driven by two electric motors with an automatic stop mechanism. This part of the system takes care of demoulding the fresh products. The gantry frame is equipped with an electrically driven turnover device whose speed can be regulated.

Production is carried out on a vibrating table with high-frequency motors. Mould changes are easy to perform. The vibrating table is additionally equipped with an electrically driven lifting device.

The electrical control panel with PLC enables automatic operations to be monitored or else manual operations to be controlled directly.

Manufacturing on the wet side with the MP-F-RT

Mould preparation is the initial stage of a production cycle. The mould is first cleaned to be subsequently sprayed with release agent on its inner areas. If necessary for a particular product, in the next stage reinforcement can be positioned in the mould before it is filled with concrete.

Filling the mould with concrete is carried out using a concreting bucket, which can travel freely above the entire mould. This allows the concrete to be discharged into the mould in a very targeted manner. Its pneumatically operated flaps permit dosage according to need. If the concrete in the concreting unit’s storage container is coming to an end, replenishment is ordered from the main mixing unit and the bucket conveyor brings fresh concrete to the production line on time.

Then vibration is commenced to compact the concrete. The concrete settles in the mould and some more concrete is added until the mould has been completely and uniformly filled. The travelling disc, as has been previously mentioned, ensures that the overall surface is smooth and even. Production is carried out “upside down”. The visible concrete surface will later on be the concrete products’ lower part.

The fresh concrete products are now ready and can be immediately demoulded. The
CONCRETE PRODUCTS & CAST STONE

The base plate
for the concrete and pumice-stone industry

Once demoulded, fresh concrete products remain on the steel pallet.

system positions a steel pallet on the mould for this purpose. The pallet is then locked together with the mould by means of a pneumatic locking cylinder. The following stage involves lifting this unit composed of mould and steel pallet from the MP-F-RT’s vibrating station and conducting it to the turnover procedure. Both the mould and the pallet are brought with a rapid feed mechanism to the demoulding station, whilst the whole unit is turned at 180°, and set down. This turning results in the mould now being positioned on top of the steel pallet at the demoulding station.

Once demoulded, fresh concrete products remain on the steel pallet.

Available in all dimensions, max. length 1800 mm, max. width 1430 mm, max. 80 mm thick.

Version with or without tongue and groove.

Pine or larch from best forest stands.

With throughgoing twisted round steel 10 mm (special steel III a) or with threaded rods M 8 and M 10 mm, U disks and self-locking nuts.

Edge protection with galvanized profiles in different dimensions and forms.

The base plates are planed on both sides, impregnated with colourless biodegradable forming oil.

Technical wood drying guarantees that wood humidity can be adjusted to the local conditions.

We consider customer’s requirements in production.

Eckart Holz GmbH
Holzbe- und -verarbeitung
Kollbachstraße 48
36088 Hünfeld-Michelsrombach, GERMANY
Tel.: +49 (0) 66 52 - 25 77 · Fax: +49 (0) 66 52 - 55 55
E-Mail: Info@eckart-holz.de · www.eckart-holz.de
The locking devices are now released and the mould slowly lifted off. Fresh concrete products are demoulded by this means and remain on the steel pallet. The mould is lifted off, again automatically turned and set down once more in the vibrating station. The next production cycle can begin.

These steel pallets have legs and so can be stacked with their products on top of each other. The leg height thus, of course, predetermines maximum product height. When several pallets have been stacked to an appropriate height, the whole stack is then conducted for hardening to the system’s transport route and subsequent packaging. The curing area can accommodate an entire day’s production. With each completed stack of pallets on the wet side, all pallet stacks are shifted forward by a pallet’s width until pallet stacks with hardened products are ejected at the end of the curing section.

Once the hardened products have been removed, the empty steel pallets are hoisted, automatically turned through 180° and set down on a roller conveyor.

The packaging crane is equipped with grabs covering a steel pallet’s entire width.

At Eifeler, three wooden pallets are always packed at the same time.

Packaged concrete cable ducts on the dry side.

Once the hardened products have been removed, the empty steel pallets are hoisted, automatically turned through 180° and set down on a roller conveyor.

Packaging on the dry side

The hardened concrete products can now be hoisted from their steel pallets with the production line’s packaging crane and set down on wooden Euro pallets. At Eifeler, three wooden pallets are always packed at the same time. An employee places three wooden pallets next to each other at defined positions. The packaging crane is equipped with grabs covering a production pallet’s entire width. This means that it can

Eifeler also manufactures concrete products for Deutsche Bahn at its second production site in Calau.
hoist all products from one steel pallet at a time and then set them down on Euro pallets.

The next Euro pallets are always positioned ready in a further defined row to maintain a continuous packaging process. Whilst the finished packages are being transported to outside storage by means of a forklift, or even if there should be delays in their removal, the system can still continue packaging and thus create space for fresh products moving up from the wet side.

Roller conveyors have been set up at both outer bays on the transport line for the pallet stacks. Once the hardened products have been removed, the empty steel pallets are hoisted, automatically turned through 180° and set down on these roller conveyors. Uniform gradients over the entire length of the roller conveyors allow the pallets to be conducted by the force of gravity back to the wet side, where they are again available for use in production.

System running to complete satisfaction

The new Bouter-Krobo system was ordered in February 2013 and Eifeler was already able to start manufacturing in August. Mr Manderfeld, whose life’s work is concrete, was delighted with the investment in the new production line from the outset. The system has made manufacturing substantially more efficient at one go. Downtimes due to repairs are now a thing of the past when compared with the old production method using an egg-layer. And – another essential factor – concrete product quality has been improved still further. Indeed, alongside the strict outside monitoring, the company’s own continual in-house checks provide clear evidence that this quality is not just a matter of appearance. In this case, too, Eifeler leaves nothing to chance…