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## Müller-Steinag Group optimises the concrete plant in Rickenbach with two new turbine mixers

The Swiss Müller-Steinag Group is an owner-managed, independent and self-contained company operating in the fields of concrete products, natural building materials, precast elements, recycling, disposal and water technology. The three sales companies, Creabeton Baustoff AG (catalogue and technical products), Müller-Steinag Baustoff AG (natural building materials, ready mixed concrete and landfill sites) and Müller-Steinag Element AG (precast elements), support the credo of the group "networked, competent" for the Swiss construction industry. With over 750 employees, the Müller-Steinag Group is a reliable social partner for the local communities in central Switzerland and the foothills of the Alps, as well as in the cantons of Graubünden and Ticino. At the Müller-Steinag Group the emphasis is always on continuous improvements in the quality of the products. Accordingly, high quality concrete products require sophisticated mixing technology. For that reason, two facing concrete mixers in the Rickenbach plant were recently replaced by two Teka THT high-performance turbine mixers type C-1-II for high-quality facing concrete. Eltecna AG from Zurich, exclusive representative for Teka mixers in Switzerland and a long-standing supplier and partner of the Müller-Steinag Group, intensively supported the decision-making process at the plant in Rickenbach through consulting, project planning and installation services.

■ Mark Küppers, CPI worldwide, Germany ■

The Müller-Steinag Group uses only high-quality raw materials for the manufacture of its concrete products. The manufacturing plants make use of a comprehensive ISO quality system as a management tool and as a basis for the continuous further development and optimisation of production processes and products. The entire product range meets the requirements of Swiss-Beton, the Professional Association for Swiss Concrete Products, and European standards.

The sales companies continually adjust their full range to market changes. Periodic market observations are backed up by market investigations and serve as the basis for defining the range. The timely dispatch of all concrete products to building sites throughout Switzerland is guaranteed thanks to the modern transport fleet.

### Plant in Rickenbach, LU

The Rickenbach plant is one of the main suppliers of the various products that are distributed through the sales organisations. The gravel pit material has been extracted for decades in the neighbouring municipality and processed into high-quality aggregates for the production of ready mixed concrete and other building material products.

### Extensive modernisation over the years

At the Rickenbach site the Müller-Steinag Group operates a total of three concrete block lines in separate production halls, each with its own concrete control room, of which two were equipped with a new facing concrete mixer. The concrete products are manufactured on Omag block making machines, which have already been in use for many years and continuously adapted by means of conversions. Furthermore the

well-groomed facilities are regularly maintained by renowned mechanical engineering companies.

The older of the two Omag block making machines recently equipped with a new facing concrete mixer was built in 1984 and has thus been in use for more than 30 years. The second machine produced its first concrete blocks in the mid-1990s.

Depending on the season, concrete products with block heights of 4.0 to 30 cm and surface measurements ranging from 10 x 10 cm up to 50 x 100 cm are produced in Rickenbach in 1.5-shift operation.

Both production lines have been modernised at regular intervals. The older block making machine, for example, was converted to facing and dye metering in the year 2000. Following the installation of a binding machine and a top sheet placing



Exhibition garden of the Müller-Steinag Group in Rickenbach



Teka THT high-performance turbine mixer

device, plus the extension of the silo installation, the concrete block making machine was equipped in 2010 with a Siemens S 7 programmable logic controller. A further, more unusual modernisation measure was the installation of two packaging robots from Rekers for improved processes on the dry sides.

#### Reliable packaging with robots from Rekers

The Müller-Steinag Group found the right partner in Rekers, which is also represented in Switzerland by Eltecnica and has been demonstrating its expertise with robots in very demanding projects for many years. In addition, a wide variety of tasks have been successfully completed with Rekers in recent years and so a trusting relationship already existed.

First on the agenda was the installation of a Comau 4-axis robot with a working load of 800 kg and a gripper changer. A 2-sided gripper driven by servo motors is used for heavy products such as kerbstones, while a 4-sided gripper, similarly driven by servo motors, is used for normal pavers. Apart from the grippers, which are designed specifically for their particular task, standard components such as the conveying equipment also come from Rekers.

The installation has a control and operating level that is superordinated to the robot controller. This creates an HMI environment that is familiar to the operator in the concrete industry and thus dramatically simplifies the operation compared to a normal robot controller. In addition to the actual installation, Rekers also offered in-house robot programming, commissioning and training, which very much satisfied the needs and expectations of the Swiss company.



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Moisture measuring sensor in the base of the mixer



The specially designed scraper on the shaft is now installed as standard in all turbine mixers.

Following the successful installation of the first robot, the Müller-Steinag Group successfully realised a further robot installation together with Rekers a few years later. Since only pavers and concrete slabs have to be packaged here, a 6-axis Comau robot with a payload of 600 kg was the right choice.

### Teka THT high-performance turbine mixer

The investment in the Teka THT high performance turbine mixers type C-1-II represents the last modernisation step in the two concrete block lines to date. Prior to that they had been supplied with core concrete by Teka TPZ 1125 planetary mixers and with facing concrete by Teka THZ 750 turbine mixers. The two turbine mixers were then replaced by Teka THT high-performance turbine mixers.

The Teka THT high performance turbine mixers were presented for the first time at the bauma 2013 and have established themselves in many concrete plants for the production of high-quality products. The THT turbine mixer is mainly used for facing, coloured, fibre reinforced and polymer concretes as well as for self-compacting and ultra-high-performance concrete.

The development concept behind the patented mixing turbine was to build a special mixer that further increases the quality of the mixed product in the case of difficult mixing tasks, shortens the process times with regard to the mixing and emptying times and permits an immense variability of batch sizes for the same mixer size.

This resulted in the turbine mixer which can be configured very precisely for the respective product that is to be mixed thanks to the

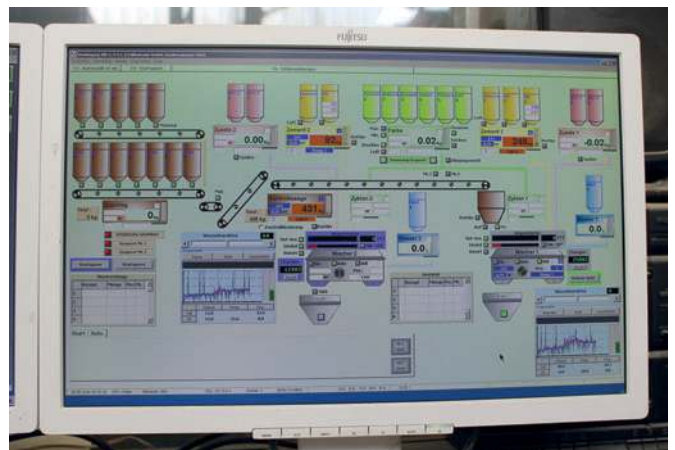
sophisticated modular system principle. The size of the trough, the drive power and the number of the mixing turbines themselves are accordingly variable.

The Teka turbine mixer, which is driven under frequency control, is characterised by intensive mixing in a very short time and the turbine mixer also achieves very good mixing results with absolute minimum quantities. According to the manufacturer the desired mixing results can still be achieved in practice with quantities as low as 10% of the maximum capacity of the respective mixer.

This high flexibility in the mixture sizes was one of the decisive reasons why the Müller-Steinag Group chose the high-performance turbine mixer. For the mixers in Rickenbach, for example, the mixture size is set between a minimum of 100 litres and a maximum of 375 litres.



General view of the mixer level: Teka THT high-performance turbine mixer for the facing concrete and Teka TPZ 1125 planetary mixers for the core concrete

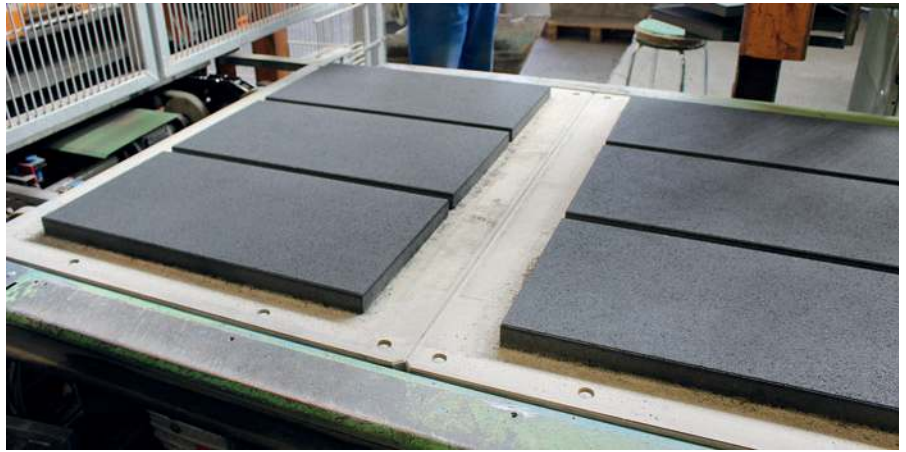


Visualisation of the Bikotronic controller





The admixtures are metered by the Finke system with visually inspectable weighing hopper in the dustproof cabinet.



Concrete slabs up to 50 x 100 cm are also produced in Rickenbach.

Another advantage that convinced the Müller-Steinag Group is the complete emptying and the low level of soiling. A reduction in the size of the contact surfaces of the mixing tools is intended to minimise soiling in the mixer and the cleaning of the mixer.

This point is very important, especially in cases where there are frequent changes of

product and colour. Mr Roland Erni, head of research and development at the Rickenbach plant, is very pleased with the short cleaning times and also praises the good accessibility of the mixer in this context.

The turbine mixer was improved still further in terms of cleanliness through the intensive

involvement of Mr Erni and his employees. The company was able to further improve the already low soiling level of the mixing turbine through practical experiments and experiences in the Rickenbach plant. In a close collaboration between the Müller-Steinag Group, Eltecnica and Teka, a scraper was developed for the shaft that reduced the level of soiling in the mixer

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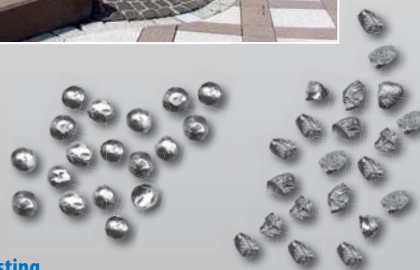


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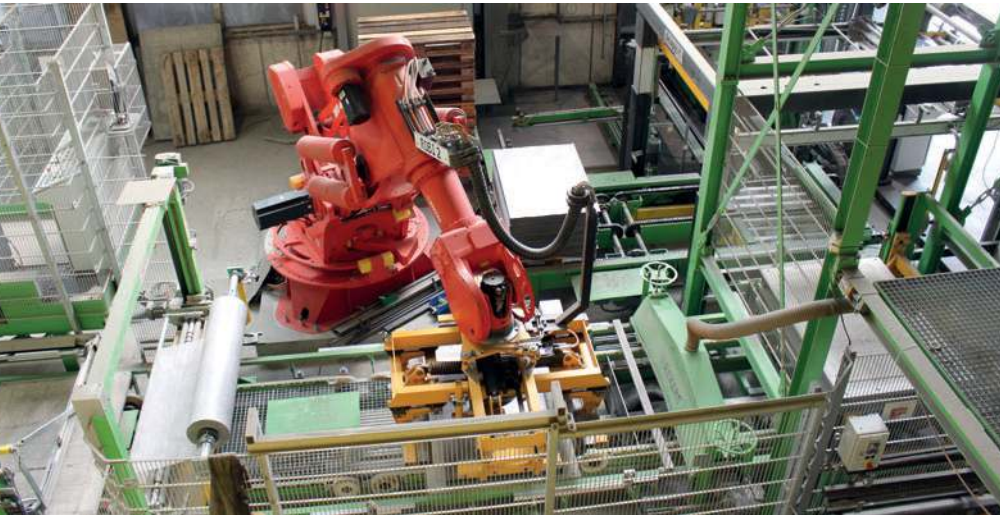
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Packaging robot from Rekers

even further and extended the necessary cleaning intervals. This scraper was so successful that it is now fitted as standard in all turbine mixers.

Mr Erni also regards the low wear and the associated low wear costs, as well as the low service and maintenance costs as further big advantages. In the standard version the mixing turbine is equipped with a wear-resistant cemented carbide coating and is easily adjustable in height, so that the turbine can be adjusted precisely to the base of the trough.

### Into the future with far-sightedness

With this investment in the two new facing concrete mixers, the Müller-Steinag Group has set the course for the coming years, so that firstly the production of high-quality concrete products that meet the company's own high requirements is ensured. Secondly, flexibility has been significantly increased with the new Teka mixers, which is reflected by the faster and easier cleaning

when changing colour and the variable batch sizes. Convincing properties for producers of concrete products in the high-end segment to be able to produce high-quality concrete products profitably even in small batch sizes

But it's not only mixing technology where the Müller-Steinag Group is looking resolutely ahead. The modernisations mentioned and others that the company is continuously making to its production lines are evidence that the company is not about to allow itself to be overtaken. With the market firmly in view, the company's own production facilities are always being tailored or supplemented to meet the current needs. Further proof of this is the new splitting line from Techno Split, which was put into operation in March. With this new splitting line the company is reacting to the growing demand for split concrete blocks. The Müller-Steinag Group can thus supply the customer quickly and reliably with the desired products in this product segment too.



The new splitting machine from Techno Split was put into operation in March.

Watch a video about the concrete plant in Rickenbach:



Simply scan the QR code with your smart phone and watch the video!

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