

Quadra, 74130 Contamine-sur-Arve, France

Bespoke block making machine designed for manufacturing hemp blocks

Located in Etalans in the east of France, **Vieille Matériaux** was founded in 1963 by René Vieille. Currently headed by his grandson, **Sebastien Vieille**, this family-owned company has been specializing in the manufacture and trading of precast concrete products for more than 60 years. Recognized throughout its area for the quality of its products and its ability to innovate, **Vieille Matériaux** achieved a resounding success with the launch of its insulating blocks called "NRJ block" and their high thermal and acoustic performance. **Vieille Matériaux** is continuing to grow and has expanded its product range with the manufacture of hemp blocks called "Biosys". This is a special building solution with a globally unique product, mechanically assembled when it is dry, with a high-precision vertical and horizontal interlocking system allowing fast and simple use.

With the launch of this product **Vieille Matériaux** invested in its production equipment and has commissioned **Quadra**, a leading French manufacturer of equipment for the concrete industry. In fact, this new product has involved the building of a complete plant based in Mérey-sous-Montrond, dedicated to the manufacture of this product.

Specialised in designing and manufacturing customised production units, **Quadra** took on this technical challenge that required the complete design and customization of the equipment, from the reception of the raw materials to the packaging of the finished products on pallets. **Quadra** has therefore supplied the following equipment: the batching and mixing

plant, the custom-made block machine and the handling equipment.

Biosys: innovative, high-performance, durable and ecological building material

The **Biosys** product is perfectly in line with the current trends that seek to link and combine technical performance and environmental compliance. This product is the result of a patent owned by the **Vicat Group**. In fact, the **Vicat Group** has been committed to sustainable development for some years and is always on the lookout for new building solutions suitable for an eco-construction approach. The hemp block turned out to be a good answer to the current requirements in terms of eco-responsible, "clean" and ecological construction.

Vieille Matériaux, a long-time client of the **Vicat Group**, was chosen as the industrial partner for ensuring the manufacture and the commercialisation of the product.

Produced from a mixture of hemp and cement, this innovative product named **Biosys** was initially locally configured. Hemp is not new in the construction industry, but the **Biosys** hemp block is unique thanks to its ease of assembly that allows a smooth setup. This process also offers full alignment. Since there is no need to use mortar or any other material, the quality and the precision of the setup is improved.

The hemp block is both ecological and bio-based, and exhibits high thermal and acoustic performance, without any additional insulating materials. This product benefits from a local production chain. The hemp is provided locally by the **Eurochanvre** company. Based in Haute-Saône, **Eurochanvre** is a collective of more than 120 farmers from Bourgogne, Franche-Comté.

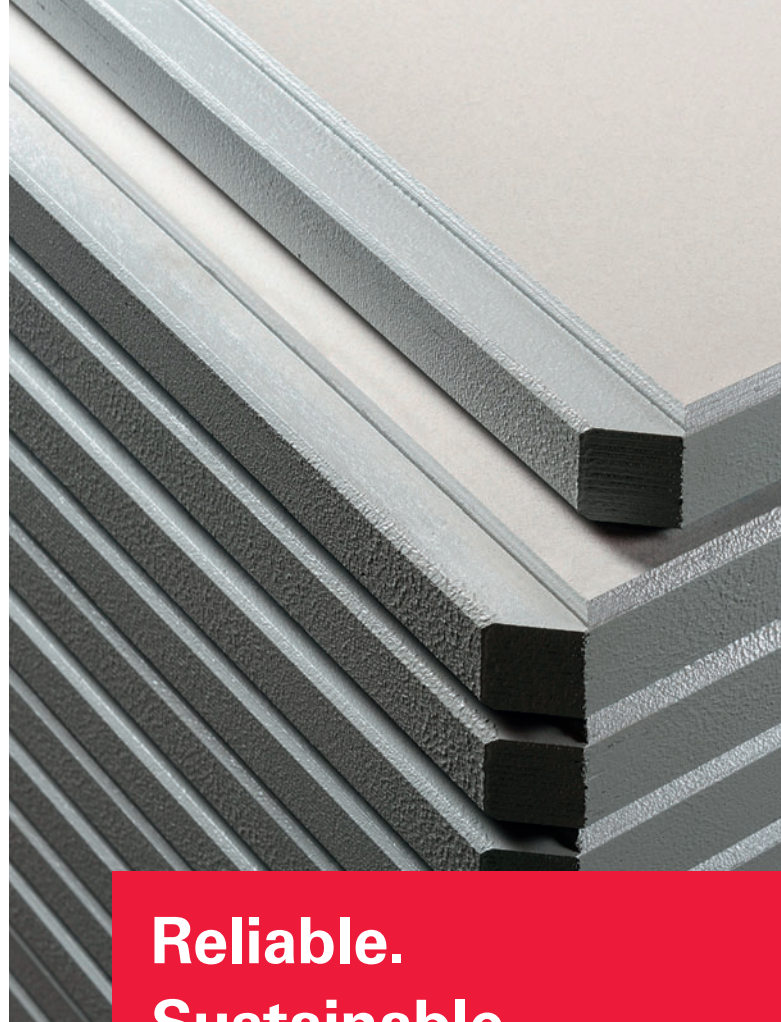
Hemp is a renewable and recyclable material. It does not require weed killer, irrigation or phytosanitary product and has a very low ecological impact. Mixed with fast-setting cement without admixtures (natural cement provided by the **Vicat Group**) it weighs the same as a classic material, but requires only 5.4 blocks per square metre. The hemp block uses a binder that has been adapted and manufactured for more than 150 years in Massif de la Chartreuse. Its mineralogical composition has all the required qualities for the perfect formulation of the **Biosys** and its durability.



Vieille Matériaux manufactured a complete plant based in Mérey-sous-Montrond, dedicated to the production of hemp blocks.



Hemp blocks called "Biosys": innovative building solution allowing fast and simple use.



**Reliable.
Sustainable.
Economical.**

PERI Pave

The production pallet for the concrete paving industry

Our highest goal is satisfying our customers. We want you to have a real benefit with our products and services and in particular with our cooperation to be one step ahead in the market – both technically and economically.

You can rely on a partnership based cooperation before, during and after your project. And on permanent first-class quality – because your additional values are our motivation.

Please find further information on www.peri.com/pave



The hemp is stored in a box.



The hemp is transported by 2 conveyor belts equipped with strips.

Reception, preparation and dosing of the raw materials

The design of the batching plant involved a comprehensive assessment in order to consider the specific features of the hemp, which is different compared to conventional aggregates. The hemp, stored in a box, is discharged gravitationally and then removed by a stripped belt. Once discharged, the hemp is then transported by 2 conveyor belts equipped with strips. The hemp is discharged into a hopper with a capacity of 1500 l. This aggregates hopper is equipped with a guillotine, and is designed for allowing full discharge and facilitating the emptying of the hemp.

The mixer that was chosen is a mixer type OMG P1000 which produces 1 m³ fresh concrete per cycle. The mixer is charged by the aggregate hopper containing the hemp, the cement hopper and the water hopper. The quantity of each of them is precisely measured according to the selected manufacturing recipe. The water hopper is oversized due to the high amount of water needed during the cycle and is equipped with a pump for quick discharge.

Quadra provided one cement silo with a capacity of 63 m³, including a concrete screw pump of 13 metres in length that charges the cement hopper.

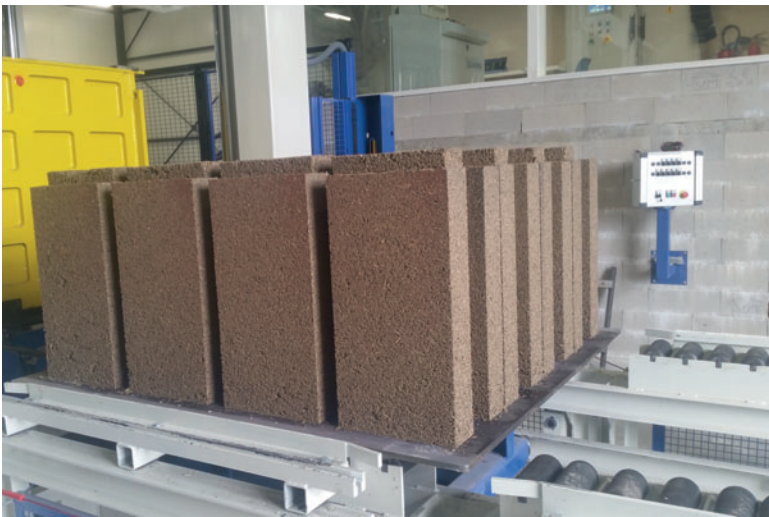
The mixer is discharged via only one outlet, and the batch is taken to the block machine by a belt conveyor driven by geared motors that are servo-controlled by frequency inverters.

The batching and mixing plant is computer-controlled, enabling the following of the mixing process and the selection of the manufacturing recipe.

Like all other batching plants designed and installed by Quadra, all the equipment provided is galvanised in order to increase its durability and minimize maintenance.



Mixer type OMG P1000.



Custom-made vibrating press designed for manufacturing hemp blocks of 300 x 600 x 300 mm

Block machine: unique and bespoke design

The block machine was fully designed to meet the new manufacturing needs of Vieille Matériaux. This equipment allows the fully-automated manufacture of hemp blocks (300 x 600 x 300 mm) with a highly efficient and patented vibrating system. Using steel pallets measuring 1400 x 1550 x 14 mm, this machine currently manufactures half a house per shift. The manufacturing conditions provided by this equipment ensure finished products with high dimensional accuracy.

Like all other block machines supplied by Quadra, this equipment is mounted on anti-vibration feet in order to avoid the transmission of vibrations to the ground. The frame (large and heavy one-piece steel structure) is protected from the vibrating excitation and the lateral position of the motors allows protection and access. No construction work is required for setting up the machine, and the elevated and ventilated ar-

QUADRA
HIGH TECHNOLOGY
TURNKEY PLANT

French
Manufacturer

BLOCK & PAVING STONE MACHINE
STATE-OF-THE ART HANDLING SYSTEM



ASEAN
INTERMAT
8-10 June, Bangkok
Booth F17

QUADRA
40 route de Findrol - 74130 Contamine-sur-Arve - France
Tel. +33 4 50 03 92 21 - Fax. +33 4 50 03 69 97
www.quadra-concrete.com

PUK Limited
Unit 1, Stratford Agri - Park -
Clifford Chambers - Stratford upon Avon - Warwickshire CV37 8LP
Tel +44 (0) 1789 721655 - www.pukservices.co.uk

chitecture of the block machine allows easy cleaning and maintenance operations.

This block machine was designed for manufacturing products with a height of 600 mm. The height of the mould is 1100 mm. The design of the machine is impressive mainly due to its height (frame height 6050 mm, 7500 mm with the tamper head) and its overall large dimensions. Unlike traditional block machines, this machine manufactures and demoulds vertically (height 600 mm).

Manufacturing process

The preparation (mixture of hemp and cement) is transported from the batching plant to the block machine, and discharged into a receiving hopper. The emptying of this hopper is performed by four cylinder conveyors which are driven by geared motors that are servo-controlled by frequency inverters. Each conveyor is equipped with pilot valves that ensure quick emptying and high-precision dosing.

Each of the four cylinder conveyors discharges the mixture into one of the four chambers located below the hopper and mounted on electronic load cells. Each chamber receives the exact quantity of the preparation. This filling operation is performed four times in order to fill the 16 chambers of the feed box. The feed box then moves above the mould and starts filling the mould. Each chamber is discharged into one cavity of the mould that produces one block. The movement of the feed box is ensured by geared motors and its continuous movement is done by means of linear measurement. Once the 16 chambers of the mould are filled with the exact quantity of the mixture, the vibration, compaction and demoulding steps take place. The steel pallets carrying the finished products hold 16 hemp blocks. Hemp blocks are vertically manufactured and demoulded.

In order to compact the hemp with consistency and precision at all the product heights, Quadra has equipped its block machine with cutting-edge vibration technology. The features in terms of tampering and guidance were also designed for meeting the longer movement and the longer guidance. The movement of the tamper head is servo-controlled and continuous monitoring is ensured by means of linear measurement.

The vibrators are lubricated in oil baths and screwed to the vibrating table. They transmit unidirectional vertical vibrating forces. All Quadra’s vibrators are designed to this closed-box model and have proven themselves over many years.

The demoulding step is designed for ensuring maximum effort coupled with a slow speed at the beginning, then a faster speed during the final movement. Once demoulded, the products are moved via a conveyor and retrieved by the forklift truck that carries them out to a storage area for a curing process lasting 24 hours. The products are then palletised and undergo a final drying process lasting 45 days (without curing).

Plant supervision

The plant is controlled by high-end control software that is fully designed by Quadra. The whole plant is graphically displayed, which enables the operator to easily and quickly supervise the production cycle.

A touch screen terminal allows the adjustment and viewing of all parameters. A clear, intuitive and user-friendly interface allows easy modification of the block machine settings without interfering with the production.



Hemp blocks during curing



A touch screen terminal allows the adjustment and viewing of all parameters. A clear, intuitive and user-friendly interface allows easy modification of the block machine settings without interfering with the production.

Machine settings are stored and recorded by production recipe for easy retrieval of the manufacturing parameters related to a type of product. This control device is also a suitable tool for managing the overall production since it provides current operating data (cycle time, filling level, daily production rates, etc.), and other information such as production shut-downs, etc.

All current operating data are shown (cycle time, filling level, daily production rates, shutdowns, etc.). This information is stored and can be viewed anytime. Recipes and production data are recorded in the SQL format and can be analysed, stored and processed by most programs.

Conclusion

With the commissioning of this block machine, Quadra once again managed to meet the specific needs of its clients. Quadra shows its ability to innovate for designing and manufacturing for a pioneering process. In fact, whatever the product to be manufactured (design, finish), Quadra is able to design and manufacture sustainable and rational bespoke solutions.

Vieille Matériaux is once again fully satisfied with its partnership with Quadra. Confident from the outset, Vieille Matériaux particularly appreciated being able to rely on the technical competence of the Quadra team and their availability. The advance manufacturing features offered by this new equipment enable Vieille Matériaux to achieve the quality of the products that was expected and for which the market is genuinely promising. ■

FURTHER INFORMATION



Quadra
40, route de Findrol
74130 Contamine-sur-Arve, France
T +33 45003 9221
F +33 45003 6997
info@quadra-concrete.com
www.quadra-concrete.com



Vieille matériaux
1 rue des planches
ZA la croix de pierre
25580 Etalans, France
T +33 381 592365
F +33 381 592608
www.vieille-materiaux.com



Groupe VICAT
4 rue Aristide Bergès
Les trois vallons
BP 35, 38081 L'Isle d'Abeau Cedex, France
www.vicat.fr

Yipin Pigments

is a leader in the pigment industry.

- Yipin specializes in all types of pigments.
- Yipin has a worldwide customer base with customers in Germany, Australia, Russia, Turkey, USA and China.
- Yipin is ISO-9001 quality certified and ISO-14000 environment certified.
- Yipin supplies to a host of different industries such as Construction, Paint, Coatings, Plastics, Rubber, Ceramic, Printing, Paper, Cosmetic and Pharmaceutical to name a few.

Yipin 

YIPIN PIGMENTS



Iron Oxide Pigments

Complex Pigments

Granula Pigments

Liquid Color

Shanghai
Yipin Pigments CO., LTD
4839 Jiansonbei Rd.
Shanghai, China
Tel.: +86 21 6257 0666
Fax: +86 21 6257 8818
www.yipin.com