

Quadra, 74130 Contamines-sur-Arve, France

# New production unit for the manufacture of innovative concrete blocks with high performance

**Pomel Beton manufactures a large range of concrete products intended for industrial, residential, agricultural construction and also used in the landscaping industry. To be able to produce technical blocks and use new technologies the company invested in technical installations provided by the leading manufacturer of machinery Quadra. Pomel Beton was looking not only for a supplier but also for a partner able to assist in the manufacture of new value-added products such as a grinded block or the insulation block "Air'Bloc".**

During the last 10 years, the construction industry has been changing to technical products with high thermal, mechanical, acoustic, seismic and environmental performances. The concrete industry has been recently providing innovative products which combine technical reliability, aesthetic finishing, and easy implementation. These new products are largely approved by the manufacturers that are submitted to the new energetic and environmental regulations buildings. The concrete block is promoted, and regains market shares. The company Pomel Beton, group Bomeil/Boulard Verdier since 2010, and member of the Groupement Gedimat, manu-

factures a large range of concrete products intended for industrial, residential, agricultural construction, and also used in the landscaping industry. Pomel Beton's old production unit did not allow the manufacture of technical blocks or the use of new technologies. Therefore the group took on a strategic position in investing in technical installations provided by Quadra.

As part of this investment, the company Pomel Beton defined several specifications. More than a supplier, Pomel Beton was looking for a partner able to assist them in the manufacture of new value-added products such as a grinded block, and the insulation block "Air'Bloc".

Following a strong investigation of all aspects of the project such as the existing environment, the current and future production requirements, and a rational implantation, Quadra provided the following equipment: batching and mixing plant, vibrating press, grinding machine, palletising robot, handling equipment, and dosing and filling system feeding the hollow block with a mineral foam for the manufacture of the product Air'Bloc.



*Pomel Beton, manufacturing plant based in Vergongheon.*

**Vibrating press - versatility, flexibility, operating flexibility**

Faced with a changing market, the objectives of manufacturer Pomel Beton were the extension of their range of products, and particularly the technical development of their products. The replacement of their production unit by equipment from supplier Quadra enables them to upgrade their plant and manufacture new products that are on the rise on the French market.

Further to a detailed assessment of the existing environment, including the surface area, Quadra managed to rationally implement the vibrating press production unit, as well as the complementary equipment designed for the manufacture of their new products (grinding machine, dosing and filling system). In addition, thanks to an adaptation regarding the clamping system, Pomel Beton was able to use all of their existing molds without making any modification.

The core component of the plant is the vibrating press type "Quadra 5" using steel pallets with the dimensions 1,200 x 650 x 14mm. Mounted on anti-vibration feet, the frame (large and heavy one-piece steel structure), is protected from vibrating solicitations, and the lateral position of the motors allows no civil engineering for the set-up. Thanks to this rational configuration, no vibrations are transmitted to the ground, and the elevated and ventilated architecture of the machine allows easy cleaning and maintenance operations.



Vibrating press type Quadra 5.

Fully automatic, this machine allows reliable and multi-product production, with a consistent quality, within production rates of 12s (blocks 20cm high), and 14s (blocks 25cm high). Quadra's expertise in mechanical development, as well as Quadra's new generation of vibration technologies, make the vibrating press stand out with high technical features.

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 French Manufacturer of Equipment for the Concrete Industry

**Blocks and paving stones machine**  
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The manufacturing conditions allow the control of the dimensional features of the finished products (height, weight, density and resistance), whilst providing consistent production rates.

The block machine is equipped with a mold changeover system which enables Pomel Beton to shorten the production changeover and increase production significantly. The system allows the reduction of setting-time and to optimize machine operation. In ensuring probably the shortest time for mold changeover in the industry, Quadra enables Pomel Beton to support their client service with short delivery time.

The block machine of the latest generation was designed to receive the accelerometers sensor allowing the assessment of the vibration in order to determine the optimum conditions of operation: manufacturing product with regular quality, within an efficient cycle time and the slightest solicitation of the equipment.

### **Dosing and filling system - filling the hollow blocks with mineral foam**

One of the key points of the specifications required by Pomel Beton was the commissioning of a dosing and filling system feeding the hollow blocks with a foam type "Air'Bloc".

The manufacturing and dosing equipment for the foam have been integrated on the conveyor for the fresh products, that is coming out of the vibrating press.

Once manufactured, the blocks are cured, then reintroduced to the production line and conveyed to the foam filling station.

The tailor-made dosing system moves forward on a welded crane. The mobile reception hopper is fed with the insulating material called "Air'Mousse" which is made of cement, water and admixture (foaming agent). An agitator is driven by motors, and located at the bottom of the hopper avoiding any stagnation of the material.

The dosing and the quantity of foam is volumetric, and achieved via measuring laser in order to be accurate and clean. The filling of the five blocks is carried out simultaneously. Each block is filled with foam by a pump with a flow that is handled and driven carefully. A closing cap is maintained on the upper face of each block during the filling operation. Once filled, the blocks are moved and they undergo a second curing operation. Then they are retrieved and transported to the grinding and cubing station.

The manufacturing and dosing stations can be integrated and adapted within any type of existing installations from any brand of machinery. Several implantation solutions can be applied according to the production requirements.

### **Grinding machine - adapted and customized equipment considering the type of production**

The manufacture of the "Air bloc" blocks was a key requirement of Pomel Beton. Air bloc needs to be grinded to achieve the requested thermic resistance of the product.



*Mineral foam dosing system.*



*Manufacture of the insulating block "Air'Bloc".*

The grinding machine type "diamond rollers", was perfectly adapted to the production of Pomel Beton. The grinding operation is completed in line, between the lowerator and the palletization. The equipment is integrated in the process, and the rates of the machining operation follow the rates of the vibrating press. The grinding operation is completed by two diamond rollers.

The first roller ensures the roughing operation. The second roller ensures the finishing operation. The grinding operation is completed directly on the pallets without any interruption (ensuring maximal productivity) and can be executed after 24h of curing. With a conception type "machine - tool", the settings of the machine are straightforward for a secured precision of +/- 0.5 mm.

Thanks to the architecture of the machine, and the rational process, the maintenance is easy with good access, and quick tools change.

All the settings are input from the control console. The settings of the grinding operation such as the speed and the motion are adjustable and recorded per recipe. All the components are managed, and the production tracing and follow-up is also included in the software.

Finally, a dust collection and treatment system is commissioned in order to preserve the work atmosphere. A safety

covering contains the dusts which are directly vacuumed, filtered, and then retrieved outside of the building. This machine guarding makes up a physical barrier to secure the space. The door opening is controlled through cells, and the light beam secures the entrance to the machine.



*This grinding machine type "diamond rolls" was perfectly adapted to the production of Pomel Beton.*



# The perfect partnership FOR CONCRETE CURING SYSTEMS

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*According to Quadra the grinded concrete block could revolutionize the construction industry.*

Quadra is currently able to handle any kind of grinding project. Fully developed within the company's in-house design offices, the grinding machines are designed and customized according to the production needs and conditions (type of aggregates, type of pallets, cycle times), and integrated into any existing installation.

**Palletising robot - reliability, precision and versatility**

Cubing of the products is executed by Kuka KR470 PA four axis robot with a load capacity of 470 kg. The robot is equipped with two clamps designed, developed and manufactured by Quadra: one 4-axis pneumatic clamp ensures the grip of all products with high precision, speed and thoughtfulness, another clamp is equipped with turning device. The robot is adapted to any kind of product and the clamps are designed for the loading of large and heavy loads.

A continuous control of the position of the clamp results in very high rates and accurate products placement. The robot is controlled with a software that is integrated within Quadra's interface. The recipe settings are easily adjustable from the control desk. The operator determines the number of layers, the position of the product on the pallet, the placement and the number of products on each layer. As Quadra designs and integrates the automation programs within the interface, the software is adapted and updated to follow the manufacturing evolutions of the clients.

**«Enhanced» client service**

Quadra always strives to follow and assist its clients during the whole lifetime of their equipment. A high-quality customer service is ensured by skilled technicians. Remote maintenance allows access to all machine settings and provides effective and quick answers to operators.



*The cubing of the products is completed by a Kuka KR470 PA four axis robot with a load capacity of 470 kg.*



*The robot is controlled with a software that is integrated within Quadra's interface. The recipe settings are easily adjustable from the control desk.*



*Quadra provides its clients with a user-friendly, interactive and intuitive platform.*

Recently Quadra enhanced its service and provides its clients with a user-friendly, interactive and intuitive online platform that enables them to quickly and easily forward their requests (information request, quotation request, and incident report). Clients also have the possibility to display and download their online spare-part catalogue and all the technical documentation related to their equipment, as well as user manual and learning tutorials.

The visio-maintenance service is also provided to Quadra's clients in order to assist them in real time during the adjustment or the troubleshooting of their equipment. This service makes discussions between the operators and the technicians much easier and allows more effective assistance.

### Prepared for the future

Pomel Beton was looking for an industrial partner able to provide the technical solution for meeting their ambitious objectives. Now equipped with solid technologies, that could be adapted to future innovations, the group is satisfied with their investment that allows an optimal operation of the plant, as well as the development of their presence in the market.

Pomel Beton organised the inauguration of their plant, and enabled lots of clients, but also many concrete products manufacturers', members of "club Air'Bloc" to discover and find out about the manufacturing process of this new product. More than 350 people attended the event and were convinced by the high operation and performance of the installation.

Thanks to its continuous innovations and the quality of its equipment, Quadra is one of the leading manufacturers of

equipment for the concrete industry. Their expertise in terms of modernisation and development of new production processes is now recognised. As an industrial partner Quadra is involved in the development of new products and provides equipment and processes to open up new possibilities. ■

### FURTHER INFORMATION



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