Adapted from article published in BFT, October 2010

Increased Demand for Smaller Plants
Mini Plant Solution from Denmark

The Danish company fibo intercon a/s, clearly notices that many companies in the concrete industry find new ways and concentrate their efforts on new products to adapt to the current market conditions. Lately the company is experiencing an increased demand for smaller plants and it has just delivered a small mixing plant to a Norwegian customer.

Recent market developments have inspired fibo intercon to develop a series of new solutions to meet the customers' changing needs. At fibo intercon they see a clear tendency in the market. Many companies seek to differentiate themselves and find niches, and the trend is to focus on special products and concrete types. This means that many companies reorganize their production and invest in new equipment, which has not least created an increased demand for smaller plants.

Weber Leca Lillestrøm (Norway) has decided to start production of special lintel elements for windows and doors in high-quality concrete. In order to carry through this strategy it has been necessary to purchase a mixing plant for small quantities at a low price which can produce special concrete consisting of several types of cement, silica and fibres. For this purpose fibo intercon has developed an affordable solution which is fully equal to a larger mixing plant. The "mini-plant" which fibo intercon has just delivered consists of two units: a mixing station mounted on a platform and the Big Bag silos.

Mixing station
The mixer itself consists of a small but efficient counter flow mixer equipped with an inlet funnel with an air-driven gate for reception of the pre-weighed aggregates from the connected silos. In addition to the mixer, a cement pre-weighing system, water dosing equipment and a control system are mounted on the platform.

The counter flow mixer has a volume of 375 litres gross/250 litres net and is driven by a 9.2 kilowatt electric motor and is thus very compact in size. It is equipped with an air-bag to ensure pressure equalization and minimize dust emission from the mixer. The cement pre-weighing system and the inlet funnel are placed above the mixer and are designed to ensure a fast and effective dosage of aggregates to the mixer. The plant also has parallel dosage of water and

aggregates reducing cycle time, wear and tear on the mixer and energy consumption. Water is furthermore dosed via a two-pronged system: one for coarse water and one for fine water. This leads to a high dosing accuracy.

The choice of system has fallen on a Siemens PLC based control system with touch screen which has been made very user friendly. This system also has the advantage that it can easily be adapted if the need arises to extend the plant with other components such as more aggregate silos. The control system ensures fully automatic monitoring and control of all processes and connected equipment, and moreover data can be transferred to an ordinary PC making it possible to store and process data as desired.

Big-Bag-Silos
Each of the silos has a volume of 3 m^3 and they are used for both aggregate, cement and silica. They are equipped with a cutter for big bags and a top hatch, which can be operated from the floor. Attached vibrators facilitate discharging and air-bags reduce dust emission.

Design and placement of the silos are adapted to the special concrete used in the production in question. In the case of Weber Leca Lillestrøm the plant has two silos for cement, one for silica, one for leca and one for sand. Fibres and additives are added manually, but in principle the plant could just as well have been equipped with an automatic dosing system.

All aggregates and binders are weighed before transferred to the mixer. They are dosed by means of frequency controlled motors to ensure high dosing accuracy. From the two aggregate silos furthest away from the mixer, aggregates are dosed via dosing conveyors down unto a weighing belt mounted on load cells. The other three silos are equipped with augers that transfer the cement and silica to the cement pre-weighing system.

The mixed special concrete is emptied out through the hydraulic discharge gate at the bottom of the mixer and down into a concrete bucket which by the aid of a crane is transported to the place where the lintels are cast.

Conclusion
Smaller and specialized plants are increasingly in high demand in the concrete industry. fibo intercon has developed a series of cost-efficient “mini-plants” to meet the changed needs of the market. First and foremost the plants are designed to produce various types of concrete in smaller quantities and for a very small investment. It is also possible to add fewer or more aggregate materials, so that the plants can be adapted to the task at hand. Further, it takes only a few days to install and run in the plants since they are fully mounted and tested before delivery. Finally, it is easy to transport the plants. All components can be packed together so they take up minimal space, and that results in a substantial reduction in transport costs.