Factory filling - Modular plant technology

Based on bale conditioning machine, insulation blowing machine and injection panel
Industrial filling technology

Plant technology for the prefabrication of timber frame elements

Factory-made element production offers great advantages in terms of cost-effectiveness and consistently high quality, not only for timber construction companies, but also for prefabricated and eco-house manufacturers.

For reasons of both cost and value, manufacturers of timber frame elements, (prefabricated) houses and carpentries are increasingly opting to use loose insulation materials. With the modular X-Floc factory filling system—consisting of the GBF1050 bale conditioning machine, an insulation blowing machine, e. g. EM430 and the EP800 or EP1050 injection panel— the best insulation results can be achieved at minimum (personnel) cost.

The high degree of automation and the consistently high processing quality enable an optimal use of resources and give the products industrial quality. The X-Floc factory filling systems can be adapted to individual customer requirements and can therefore be integrated both in a small business and also in a fully automated production line.

The most important advantages at a glance:

- Industrial, consistent manufacturing processes
- Efficiency through automation
- Scalable modular system technology
- Compatible with different insulation material

![Graph showing costs vs. degree of automation]
X-Floc's industrial insulation system is designed for new equipment as well as for integration into existing production processes, thus ensuring an optimal production flow without interruptions. The system is modular and grows with the requirements of the timber construction company.

1. Insulation blowing material
2. Bale conditioning machine
3. Insulation blowing machine
4. Injection panel
Suspension: Gantry crane

Suspension: Slewing crane

Suspension: Multifunctional bridge
The GBF1050 bale conditioning machine ensures that the insulation blowing machine is filled with insulation material almost without interruption. For this purpose, so-called „big bales“ are used, which can be fed to the bale conditioning machine by means of a pallet truck, forklift or conveyor belt. Depending on the manufacturer, big bales consist of pressed insulation blocks of the appropriate size or loosely stacked, unpacked standard bales.

The milling unit, consisting of 18 milling blades, dissolves the big bale layer by layer and feeds the pre-loosened material to the blowing machine. The logical control system and the numerous sensors used on the GBF1050 and the insulation blowing machine ensure almost uninterrupted material transport.

Consistently high material throughput due to the use of proven material shredders and powerful, durable turbine technology for air generation make the EM430 insulation blowing machine the first choice for factory filling. Four rotating shredding shafts and the two chaff spindles of the two-stage agitator prepare each kind of loose insulating material optimally for its pneumatic conveying and professional installation. The large rotary air lock conveys the loosened insulation material into the air flow of the five-stage high-performance turbine, which provides the necessary material acceleration and conveyance.

All functions and parameters of the insulation blowing machine responsible for a successful blowing process can of course be taken over by the control of the factory filling system. Manual intervention is no longer necessary.
In the basic version, the EP800 injection panel has five large injection nozzles and four pneumatically driven material diverter valves (diameter = 3 inches), which allow material throughputs of well over 1 t/h, depending on the insulation material used and the desired installation density. The injection nozzles can be adjusted in height by several centimetres to achieve an optimum injection pattern for each insulation material used. The material diverter valves can be supplied with the required compressed air either at the factory or from an air compressor integrated in the injection panel.

EP1050 injection panel

In the basic version, the EP1050 injection panel has four large injection nozzles (diameter = 2.5 inches) and three pneumatically driven material diverter valves (diameter = 3 inches), which, depending on the insulation material used and the desired installation density, allow material throughputs of well over 1 t/h. The injection nozzles are movable in two directions to achieve an optimum distribution in the element to be filled for each insulation material used: horizontally (driven and guided by a pneumatic linear axis) for piercing the nozzle pipe into the element and vertically rotating (driven by an adjustable motor unit) to transport material to specific points on the element - for example into a corner.

The injection panel seals the element open on one side with a replaceable filter foam cover and its own weight during the blow-in process. The solid steel construction with steel sheed cladding gives the injection panel the necessary robustness to ensure the reliability required in daily use.

The injection panel is operated via a wireless tablet computer for maximum flexibility. The blow-in nozzles can be activated or deactivated individually, enabling the professional filling of any element geometry.

The control of the EP800 and EP1050 injection panels - as well as the other machines in a factory filling system - is handled by a high-quality industrial controller „Made in Germany“ and special software developed by X-Floc.

After placing the injection panel on the single-side unplanked element, only the dimensions (length, width, height) and the insulation material used must be entered, after which the blow-in process can be started. The respective program used (with the individually set injection parameters) and its signal evaluation of the connected measuring sensors ensure that the injection panel or the factory filling system is switched off at the right time. For archiving as well as for quality verification purposes, all settings and results used during a blow-in process (e.g. the insulation mass applied into the element) are logged in detail.
Modern plant engineering

Modular design

Industrial factory filling systems are modularly designed. In any case, an insulation blowing machine is necessary as a central element. This means that manual filling processes can already be carried out, for example with an injection lance, hoses or nozzles. A modular extension with a bale conditioning machine also allows the use of big bales. Alternatively or simultaneously, a modular extension by an injection panel the factory filling procedure automate.

Open system

The factory filling systems are designed in such a way that different insulation materials can be used. Typical product classes such as wood fibre, cellulose, glass wool and rock wool have been extensively tested. The adjustments required for the respective materials and applications can be made in the control system.

Simple operation

The entire factory filling system and also individual components are controlled centrally via a wireless tablet PC. After selecting the element geometry and the insulation material or individual parameters related to the insulation material, an automatic filling process takes place. The achieved installation densities are recorded together with the parameters used.

Handling technology

For further automation, there is the possibility of expanding the handling technology. Variants with manual control of horizontal, lifting and lowering movements as well as fully automatic positioning are possible. Please contact us about these and other equipment options, we will be happy to advise you.
<table>
<thead>
<tr>
<th></th>
<th>EP800 Injection panel</th>
<th>EP1050 Injection panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (WxHxD)</td>
<td>approx. 3000x900x490mm</td>
<td>approx. 3000x900x750mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 300kg</td>
<td>approx. 420kg</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>230V/50Hz/10A</td>
<td>230V/50Hz/10A</td>
</tr>
<tr>
<td>Cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of injection</td>
<td>standard: 5 injection nozzles</td>
<td>standard: 4 injection nozzles</td>
</tr>
<tr>
<td>nozzles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filling procedure</td>
<td>5 pcs. vertical filling nozzles, height adjustable 0-6cm</td>
<td>4 pcs. hub rotary nozzles</td>
</tr>
<tr>
<td>Handling</td>
<td>practical handle for manual guidance</td>
<td>practical handle for manual guidance</td>
</tr>
<tr>
<td>Control</td>
<td>tablet with touch screen and industrial control</td>
<td>tablet with touch screen and industrial control</td>
</tr>
<tr>
<td>Communication</td>
<td>via radio, alternatively wired</td>
<td>via radio, alternatively wired</td>
</tr>
<tr>
<td>Pneumatic supply</td>
<td>via integrated compact air compressor (alternatively external)</td>
<td>external: 6 bar – 8 bar compressed air</td>
</tr>
<tr>
<td>Material compatibility</td>
<td>insulation material based on cellulose, wood fibre, mineral fibre, rock wool and similar</td>
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</tr>
<tr>
<td>Options</td>
<td>quality assurance with load cells handling system LAN-to-LAN industry router</td>
<td>quality assurance with load cells handling system LAN-to-LAN industry router line laser module</td>
</tr>
<tr>
<td>Processing capacity</td>
<td>300-1000kg/h depending on insulation material and application</td>
<td>300-1200kg/h depending on insulation material and application</td>
</tr>
</tbody>
</table>

*Different designs/dimensions on request.*

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### Rational prefabrication of timber frame elements

1. **Cut insulation boards**
2. **Insert insulation boards**
3. **Fix insulation boards**
   - *without factory filling*
   - *with factory filling*
4. **Creating a frame**
5. **Cover the first side**
6. **Turning**
7. **Blow-in insulation material**
8. **Cover the second side**
9. **Storage and transport**

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X-Floc Industrial filling technology
Factory filling

Quality lead through technology

The optimization of individual work processes and the position in competition are a great challenge for every company. With our flexible factory filling system we enable you to realize high industrial quality in any size of company. We offer you exactly the tailor-made solution that is tailored to your requirements.

Fastest production for shorter cycle times

The X-Floc factory filling system enables an industry-wide unbeatable filling performance. The system is easy to operate, achieves strong insulation results and allows short cycle times with minimum personnel requirements.

Factory filling from one source

In every company the workflows, product range, degree of automation and cost structures are different. Therefore, we offer you competent and individual advice so that you can take full advantage of the plant.

Visit one of our reference customers and convince yourself of the many advantages of the X-Floc factory filling system:

„The element filling system was purchased for purely economic reasons. The system enables us to blow out roof, wall and floor elements quickly and without joints. All corners are completely filled. This saves costs and time, as no reworking is necessary. We are convinced of the quality of the insulation and the great blow-in picture. The same insulation quality is present everywhere, the accuracy of the system is right. That is a quality advantage. We can no longer imagine working without an element filling system“.