Press Release

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Greenhouse panel manufacturer completely satisfied with battenfeld-cincinnati extrusion technology

High-speed production line for “Danish trays”

“We always keep a step ahead of the market. We don’t do things by halves,” is the motto of Jacob Sörensen, Managing Partner of the Danish company Staal og Plast A/S. A glance into the production halls in Ringe impressively underscores his statement. Here stands the world’s largest thermoforming line with a footprint of 20 square meters, which transforms about 3 mm thick, extruded, HI-semi-finished PS sheet into what is known as ebb & flow trays for greenhouseshothouses. To produce the up to 8 m long and 2.5 m wide semi-finished boards, battenfeld-cincinnati Germany, Bad Oeynhausen, installed an ultra-modern sheet extrusion line with throughput rates of up to 3,000 kg/h just under a year and a half ago.

In addition to the rising world population and the resulting added demand for flowers, shrub and vegetable seedlings for professional and amateur gardeners, fresh herb pots for modern kitchens and the increasing cultivation of cannabis are all contributing to the booming greenhousehothouse construction. The Danish company Staal og Plast supplies precisely this niche market with made-to-measure high-impact polystyrene (HIPS) trays. The company, founded in 1984 by the father of today’s Managing Partner, concentrated right from the beginning on greenhousehothouse products, which during the first years included steel profiles as well as plastic trays, as the company’s name suggests. “Today, we process exclusively plastics, since we are convinced that this is our core competence”, explains Jacob Sörensen. “We are concentrating on what we can do best, which means on just

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one product.” Obviously a concept which makes sense, for the relatively small company with just 15 employees makes 60 to 70% of all sheet products required for greenhouseshothouses worldwide. And the market leader continues to grow. This is why it increased its production capacity at the Danish facility fourfold with the installation of the high-speed line and established a subsidiary in Chicago/USA, equipped with a thermoforming line to start with. “Especially in North America, there is an enormous demand for our so-called ‘Danish trays’. The reason is the increasing cultivation of cannabis, which is not only grown for medical purposes, but due to its legalization in several federal states also more and more in demand for leisure applications”, explains Jacob Sörensen, suggesting that he may further expand his overseas facility in the near future and install an extrusion line there, too. Until that time, the company will continue to transport its Danish trays to the United States to have them thermoformed locally. “This is the only way we can guarantee our high quality standards to our customers.”

High quality standards and …

For the 3-layer sheet line from battenfeld-cincinnati installed in 2018, Staal og Plast first built an entirely new hall to house the line with a total length of 65 meters and also to provide enough space for the huge thermoforming machine and extra space for handling the largest boards, which measure 2,500 by 8,000 mm. In the new co-extrusion line, the high-speed extruder 1-75 T6.1 is responsible as main extruder for the total capacity of up to 3 t/h. It alone reaches an output of about 2 t/h for HIPS. High-speed extruders come with a very compact design and reach their enormous output rates with high screw speeds. The melt’s residence time inside the extruder is long enough to achieve optimal homogenization, yet short enough to prevent mechanical or thermal damage and thus ensure optimal melt attributes. In Denmark, the high-speed extruder plasticizes the material for the main layer, with in-house scrap resulting from changeovers and cuttingstamping being added to the virgin material. The material for the outer layers of the 3-layer composite is provided by two 1-75 T2.1 co-extruders. These, too, are high-speed extruders, each reaching outputs of up to 500 kg/h. “The outer layer, which comes into contact with the plant pots, is a distinctive feature of our trays. It is approved for food production as well as resistant to UV radiation and chemicals. We developed its formulation in cooperation with a Danish partner company”, the Managing Partner emphasizes.

… knowledge of customers’ needs as success factors

While the requirements for food safety and UV-resistance of the outer layer are a matter of course for greenhousehothouse trays, the need

for resistance to chemicals is a specific consequence of working with ebb & flow trays. These trays, on which the plant pots stand, are flooded at regular intervals with water containing the fertilizers needed by the plants. After a specific period of time, the water and the additives it contains are drained and returned to the tank. Naturally, the irrigation medium is recycled to minimize water consumption. “To ensure the correct dosage, the water is tested and replenished with fertilizers each time prior to flooding”, Jacob Sörensen reports. He also knows that mobile table systems are today’s trend for modern hothouses. In contrast to conventional rolling tables, which are still being used and can be pushed to and fro on a frame, the mobile tables can be pushed in every direction. This enormously facilitates handling for the operators. Staal og Plast offers the right trays for every type of greenhousehothouse in the desired size and, above all, in high quality. For absolute flatness must be ensured as a prerequisite for even watering of every plant. Sörensen is confident: “Thanks to our know-how of more than three decades, our customers can rely on us”, and he regards this as the main reason for his market success.

Set for further growth

“Although the market for ebb & flow trays is booming and we have a good order situation”, says Jacob Sörensen, “at present we still have some free capacity on the new line.” He can therefore well imagine that he could make polystyrene sheet as a service provider for other industries. Possible products are mono-layer, 2-layer or 3-layer boards in virtually any desired dimensions with thicknesses ranging from 2 to 5 mm, and even in different colors if desired by customers. By the way, most of the ebb & flow trays are gray. The equipment in Ringe includes another sheet extrusion line for this purpose in addition to the new line, as well as a total of four thermoforming lines. The new line has replaced the second older line since 2018 and, apart from its high capacity, its main advantage is its low energy consumption, about 40% below that of the old line. In addition to the extruders already described, the new line includes a 3000-mm-wide flat sheet die, a roll stack with three main rolls and three post-cooling rolls, as well as a roller conveyor with thickness gauge and longitudinal cuttingtrim saws. At the end, there is a crosswisehorizontal cutting device for the up to 8m-long boards and a stackerstraddle carrier. “The line from battenfeld-cincinnati has even exceeded our technical requirements. We are perfectly satisfied and well prepared for our customers’ future enquiries”, Jacob Sörensen states with pleasure, and concludes with a big word of praise: “Over recent years, battenfeld-cincinnati has been one of our most reliable partners.”

About battenfeld-cincinnati:

battenfeld-cincinnati has production facilities in Bad Oeynhausen and Kempen (Germany), Vienna (Austria), Shunde (China) and McPherson, KS (USA) and is a leading manufacturer of energy-efficient, high-performance extruders and complete extrusion lines according to customers' specifications. Our customers' end products can be found in infrastructure and construction (pipe, profile, sheet), packaging (thermoforming sheet), pelletizing, as well as calandering and lamination equipment. battenfeld-cincinnati's customers benefit from an extensive global sales and service network.

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Pictures:
PR 20200429_Highly modern 3-layer flat film sheet line.jpg
PR 20200429_Precision calender with special high-performance rolls.jpg

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