

Press Release

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Handling the delicate material glass A demanding task for production technology

For more than 40 years Grenzebach Maschinenbau GmbH, located in Southern Germany, has successfully supplied the Glass Industry with processing equipment, control technology, specialist cutting, handling and stacking systems as well as complete manufacturing lines and cold end equipment for float glass production. Grenzebach also supplies specialist technology, equipment and manufacturing lines for the Building Materials and Wood Veneer Industries. More recently the company has also focused on process technology and manufacturing equipment for the emerging Thin Film and Photovoltaics market.

Grenzebach equipment is synonymous with top quality and high end durability, intelligent control and optimization concepts. User-friendly graphic interfaces ensure efficient production and ultimate yield.

In float glass production, automatic stacking systems hold a key position at the Cold End in addition to cutting and conveyor technology. These stacking systems must satisfy a wide range of performance criteria with respect to glass size, payload, and cycle time. Glass orientation and the glass surface are also factors of growing importance in stacking technology. With its high variety of available stacking systems Grenzebach are well positioned to meet all these requirements with a range dedicated to particular applications:

Suction cup frames pick the glass to be off-loaded from its air or tin face and stack it accordingly. Bath/air stackers combine both approaches and are especially versatile. They can handle the glass in portrait or landscape arrangement and in single or multi-lane configuration. All systems include both stacking and unstacking features.

Swing Stacker

The traditional swing stacker is undoubtedly the most successful model. The crank gear at the heart of this machine, provides a characteristically smooth approach to both glass picking and stacking, with swift transitional movements for peak performance and short cycle times. Stacker types available can cope with glass widths from 800 mm to 8000 mm and up to 850 kg unit weight. They perform up to 20 working cycles per minute for small sized glass. Several hundreds of these systems are in use, worldwide, with many operating for over 20 years.

Jumbo Stacker

The Grenzebach VGS jumbo stacker is well known as the powerhouse for jumbo size glass with a capacity to handle single jumbo sheets up to 2500 kg/min with widths of 8000 mm and up to 1600 kg unit weight. Since its introduction to the market back in 1978, the Jumbo Stacker has developed a technical and functional sophistication level which ensures over 120 installed systems can withstand, harsh production conditions, day after day.

Overhead Gantry

Gantry stackers offer a highly versatile alternative for handling jumbo and medium size glasses. Placed across the processing line overhead gantries can off-load varying glass sizes and qualities to either side of the line. When located at the downstream end of the processing line, one gantry can serve 3 separate stacking locations. An ingenious operating principle dispenses with the requirement for glass rack indexing platforms, greatly reducing investment costs. 4-axes systems no longer require mechanical alignment of arriving sheets thereby preventing scratching.

Overhead gantries with a single lifting column handle glass sizes up to 9000 mm wide with unit weights up to 1250 kg at a rate of 3 working cycles/minute. Overhead gantries with twin lifting columns not only master the standard operation modes „Stacking, Unstacking, Flipping Over, and Repacking“ but can also off-load the glass tin or air side.

Overhead Stacker

Coated glass is increasingly demanded by the solar industry and stimulated Grenzebach to develop a dedicated overhead stacker series which picks and off-loads the glass solely from the bottom face so as not to impair the air side designated for further processing. The series comprises up to 16 different types, coping with glass widths up to 8000 mm and unit weights up to 1800 kg and capable of off-loading both single sheets and sheet pairs (twin stacking).

High Speed Stacker

The demand of glass makers in Asia and America wanting to extend the standard mainline cutting capacities for medium and jumbo sizes to small lites also, has had a dramatic impact on stacker development. Grenzebach's recently introduced high speed stacker successfully responds to all aspects of this demand. The HSS stacker can handle glass sheets measuring 305 · 460 mm through 1805 · 2460 mm in a matter of seconds. Larger sized sheets are delivered to the stacker in a single lane, smaller sizes arrive in two lanes. The centerpiece of the stacker is a horizontal suction belt, located over the glass, sucking up the glass, and forming a horizontal subpack of sheets. A tilting mechanism then tilts the subpack into a vertical position for a handling robot to off-load it using a patented special gripper. The stacker offers a wide variety of off-loading features, for example it can deliver the subpack with the tin side in or out or in landscape or portrait arrangement. Each rack can accommodate 5-pack rows up to 3 packs high.

Robotics

Under specific production conditions but also in conventional processing lines industrial robots offer a valuable and functional contribution to stacking technology. A novel technology, named “pick on the fly”, transforms the off-loading of glass into a dynamic process with no need to stop the glass. The robot has a reach of up to 4 meters and synchronizes itself with the conveyor speed to pick jumbo sheets with a maximum weight of 600 kg. The robot itself can step back to form packs and thereby, can also replace a rack indexing system. Load sharing is another application feature. Synchronizing two normally autonomous robots for off-loading jumbo sheets is a spectacular way of maximising the versatility of robot use. It goes without saying that static pick and place solutions are available as well.

Clean Room Stacker

Grenzebach has complemented the product range further with a recently developed clean room series. The conveyor and stacker for clean room applications have been certified to DIN ISO EN 14644-1 by the Fraunhofer Institute and are marketed as Tested[®] Device. A class 5 bottom face stacker can serve as stacker / feeder for display glass up to GEN10., Another overhead gantry for handling solar glass, is available meeting class 7 DIN ISO EN 14644-1.

Technological innovation hallmarks the Grenzebach product range of high performance stacking and handling equipment and highlights Grenzebach’s reputation as the world’s leading supplier of practicable solutions in flat glass production lines, Well-engineered and field proven conveyor technology combined with outstanding stacking technology produce crystal clear benefits to all customers and thus provide the key to their success.

With 10 business locations on 4 continents and agents in many countries, the Grenzebach Group offer the glass industry expertise and reliability for planning and design, project management, robust equipment and quality after sales service.

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