Introducing Temper Flex - the new PUJOL tempering oven

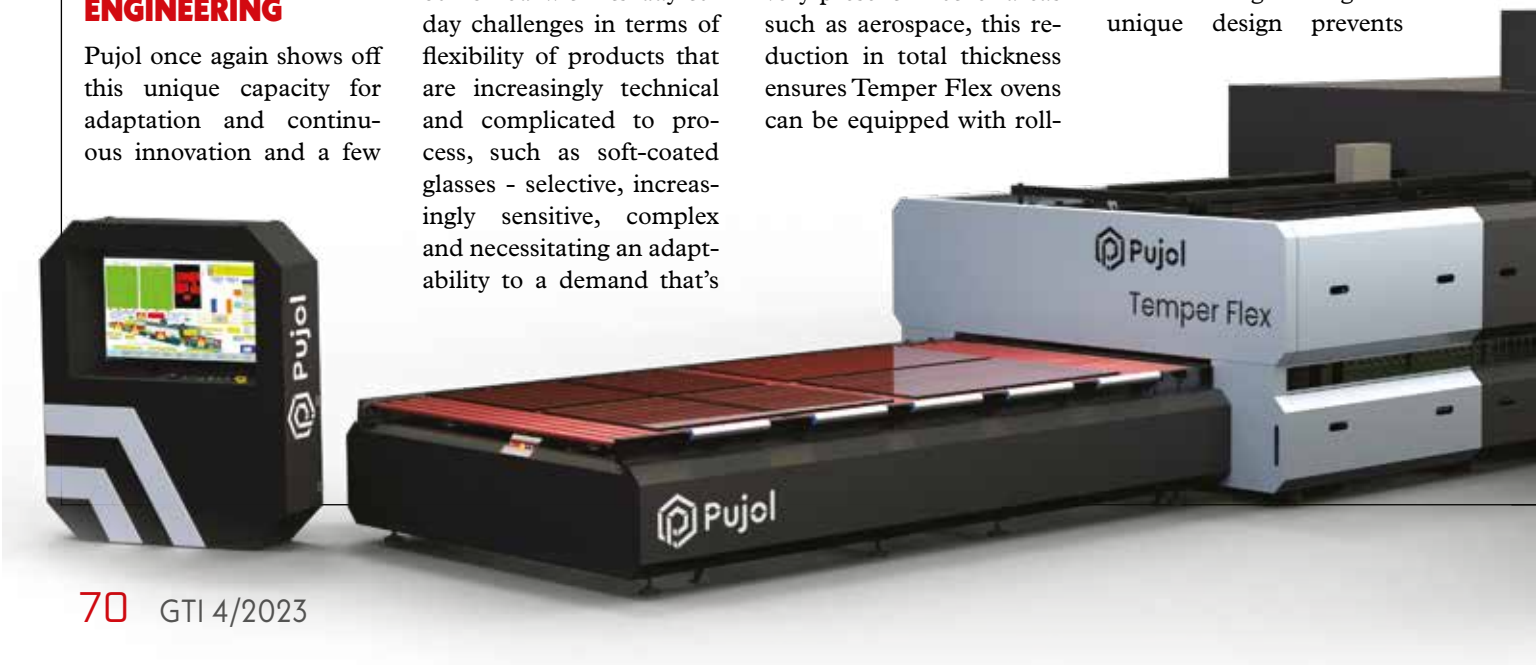
With more than 110 years of experience, Hornos Industriales Pujol, S.A. has built its high reputation in the thermal engineering industry - continuously demonstrating great adaptability and a high capacity for innovation in the manufacture of top-level furnaces. Hitherto in the glass sector it has stood out for its reputation in the manufacture of furnaces and integral systems for glass lamination, glass bending and systems for process execution: Heat Soak Test.

EXPERIENCE IN ADVANCED ENGINEERING

Pujol once again shows off this unique capacity for adaptation and continuous innovation and a few months after the acquisition of the glass division of the Italian company Teknokilns, announces the market launch of its new Temper Flex oven - a tempering solution unique and innovative glass product developed on the technological basis and long experience of Teknokilns Engineering, but above all providing the approach that glass professionals demand today on their global vision of the business related to the importance of maintaining the lowest possible energy costs continuously, perfect optical quality of the resulting products, all combined with its day-to-day challenges in terms of flexibility of products that are increasingly technical and complicated to process, such as soft-coated glasses - selective, increasingly sensitive, complex and necessitating an adaptability to a demand that's typically very unstable and fluctuating.

ENERGY FACTORS

Temper Flex stands out for its high thermal efficiency and low energy consumption. Above all that's thanks to the fact that advanced engineering has been worked on in-depth that allows the heating chamber to have a higher degree of insulation but with half the thickness of the other manufacturers and models on the market, this is due to the use of high tech materials. Not yet widely introduced to the traditional industry but very present in other areas such as aerospace, this reduction in total thickness ensures Temper Flex ovens can be equipped with rollers with a smaller diameter than others on the market. The pitch between axes are thereby reduced - offering optimum planimetry. Secondly, in terms of the design of the Thermal-Heating Systems set, it's worth noting how an advanced system of high-performance matrix panels has been incorporated into the upper part which, together with the integrated design of the resistances, provides both high thermal efficiency by using a high diameter Kanthal rod with a high power W/cm2 which offers a high transfer and heating speed. Also, because this engineering and unique design prevents



When it comes to manufacturing state of the art furnaces, PUJOL is now well-renowned for both adaptability and innovation. The company's new Temper Flex oven, developed on the technological basis and long experience of Teknokilns Engineering, offers high thermal efficiency, low energy consumption, superior optical quality and advanced control systems for glass tempering.

mechanical deformation of the resistances, it offers a useful 12-year life span of the heating equipment and a five-year warranty on its heating equipment. Regarding the lower heating solution, unlike many other solutions on the market that use metal floors, Temper Flex equips a singular solution on the market that makes it conspicuously innovative with spectacular results after more than five years in the hands of Teknokilns Engineering. The lower heating system of the chamber is designed and equipped with a system of ceramic modules with embedded resistances of high density and thermal transfer as well as high mechanical resistance with a final layer of a non-stick glass coating that helps to uniformly transmit the heat on the rollers and glass - a solution with lower energy consumption and greater speed and energy efficiency than traditional systems that protect inferior resistances based upon metal sheets on the screed. In the long run this offers lower energy consumption and lower maintenance costs - both in terms of sheet replacement and cleaning maintenance times when there is a break in the oven.

RAISING THE BAR WITH QUALITY

Final optical quality of the glasses is another differentiating factor between Temper Flex and many other solutions, especially in oven solutions with widths that exceed 2.2 m. Here the answer lies in the distance between the rollers inside the heating chamber of the oven. Temper Flex uses unique

thermal insulation solutions that allow for the use of diameter rollers that are smaller than those of today's industry standard. Consequently, with the smaller roller diameter, the reduced distance between them, and a greater number of support rollers, distortion is minimized to impressively low levels. Optionally and as a reinforcement to the radiation system mounted as standard, in the Temper Flex - IR models the oven can be configured with the inclusion of a high-efficiency convection system based on the blowing of preheated air at 500°C inside the heating chamber. This system, which incorporates the Temper Flex - Proconv Series, provides greater flexibility, speed and quality while allowing the tempering of all types of layered glass: low emissive, selective and coefficient 0.01.

COST SAVING

Throughout the tempering process, Temper Flex takes maximum care of the quality of the finished product and its possible effects on the final quality of the product obtained. As such, much effort has also been invested in optimizing highly elaborate engineering in the tempering section - equipping it with an efficient sectional ventilation system that helps both to reduce the generation of anisotropies in the glass and to increase and maintain optimal planimetry, especially in glass with lengths in excess of 2.5 m. Not only. Thanks to this technical solution, Temper Flex allows the use of a single turbine to complete the tempering process more efficiently and with a higher quality of planimetry - giving the added benefit of making it possible to reduce the total length of the oven and, above all, to reduce costs both in the contracted electrical power needs and in the cost of the electrical installation by installing alternating current motors that offer lower maintenance costs than direct current motors offered by various other manufacturers.

PROGRAMMING

Regarding the solution of regulation and control of the process, Temper Flex is equipped with easy and intuitive programming - using a supervision system that facilitates process management for the oven operator. By way of a large 55" screen, the temperature of all sections of the oven is controlled and the thermal profile of its interior is defined. The temperatures of the glass are through a scanner on the surface of the glass when it leaves the oven and access to the registration and storage of process data, which allows the operator to track each finished workload as well as create the desired recipe base according to different new glass types that are being processed together with the load provisions. Temper Flex also incorporates the Pujol e-Connect system as standard - thereby facilitating remote and secure process traceability, as well as remote assistance and production control. In sum, Temper Flex is a solution that offers low production cost, low maintenance, high quality of tempered products and high production flexibility.