

## Pilkington Automotive Sees Clear Benefits of Control Techniques



**Major investment in Pilkington Automotive’s plant in Witten, Germany has resulted in the commissioning of a new advanced bending and toughening process and a new, world-leading lamination shaping and cutting line. As each new section is planned, designed, built and installed, one variable speed drives company is specified to provide the precision control required to meet quality and production targets. That company? Control Techniques!**

The huge plant is responsible for supplying the top end of the car market, primarily in Germany, with over 250 designs alone of windshields, as well as rear screens and side windows. The variation in specifications is enormous, with toughened, tinted and laminated glass, encapsulation of heating elements

and radio/satnav aerials as well as hundreds of sizes and shapes. Over 80% of the variable speed drives used in the plant are from Control Techniques – more than 700 different applications – cutting, moving, bending, polishing of glass – and, historically, some go back more than 20 years. Applications vary from simple fan and pump control to extremely high accuracy servo positioning systems and two large Mentor DC drives, coupled to diesel generators, provide protection for the huge investment of the two glass heating ovens, ensuring that, in the event of a power failure, material already in the oven is moved out to prevent melting of the glass and damage to the ceramic oven coatings.

One of the latest lines to be commissioned is the printing, bending and cutting line for the high value windscreen lamination material, a project that is a world first for the Witten plant. Conventionally, rolls of the material have to be wide enough to accommodate the curve of the windscreen, thus generating considerable amounts of waste after the material is cut to shape.

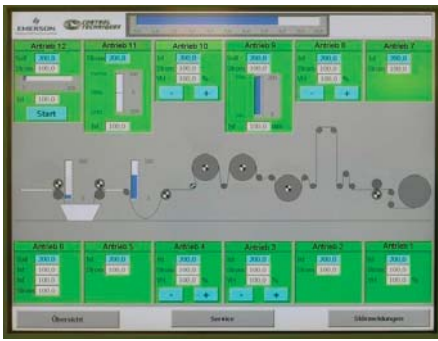
The ingenious design team at Witten came up with an alternative that all but eliminates this waste. The rolls of ‘plastic’ lamination material is much narrower and, after printing goes through a special bending line, where the material is carefully heated and stretched so that, on its exit, it forms a curve that corresponds to the required curve of the windscreen. Sections are then cut to length to give sections that give a precise fit for the subsequent ‘sandwiching’ operation with two layers of windscreen glass. All this, of course, is carried out in clean-room conditions.

### KEY BENEFITS

- FIVE OPERATING MODES
- FEEDBACK OPTIONS
- ONBOARD PROGRAMMING FACILITY
- RANGE OF CONNECTIVITY
- PRECISION CONTROL



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All of the movements of this machine are under the control of drives – 12 in all – from Control Techniques. All drives are Unidrive SP AC drives, varying in size from 0.75 to

4 kW and functions vary from positioning systems, linear movement controlling linear motors, conveyor control and cut-to-length. The drives all communicate with each other and the controlling PLC via Profibus, with all drives locked together in synchronism and absolute encoders providing closed loop feedback. “This project really shows the versatility of the Unidrive SP drives,” comments Pilkington Technical Design Engineer, Wolfgang Hundt. “One design of drive performs a variety of tasks within one line – with different types of motor and actuators, in closed loop and servo modes and all digitally locked and communicating together and with the machine controller. We like the fact that individual drives can be programmed using the application modules and whatever feedback we need, there’s the facility to incorporate it.”

After cutting to size, glass has to have its edges ground to a smooth profile and, again, it is 4 kW Unidrive SP drives in conjunction with Control Techniques Unimotor servo motors that provide control of the linear and cross motion of the glass to the grinding head, where each edge is ground smooth with a profiled diamond grinding wheel.

Another typical application is the complex servo application where heated glass is moved into vacuum-formers to produce the required windscreen shape. Five Unidrive SP drives in servo mode have to move the glass very fast – at 1 metre/second – over a distance of two metres and to a repeatable accuracy of  $\pm 0.005$ -mm.

The Unidrive SP AC variable speed drives are used by Pilkington for the most demanding of their operations, with Commander SK AC drives also being widely used for



general material handling and fan control.

Unidrive SP is the world’s most advanced ‘solutions platform’ AC drive, configurable into five operating modes – open and closed loop, vector, servo and regenerating modes – connectivity to most industry standard networks, configurable for all types of AC motors, including linear motors, and accepting 14 position feedback protocols. Its range of plug-in module options are widely used by Pilkington for adding connectivity, feedback, extra I/O and on-board programming.

The Commander SK family is around one third smaller than the competition, offering Pilkington Automotive unrivalled power to size ratio, yet gives exceptional dynamic response, connectivity and energy-saving efficiency as well as connectivity to all major fieldbus networks.



There are literally hundreds of other applications where Control Techniques drives help keep Pilkington Automotive’s Witten factory amongst the leaders in car window supply, both to the OEM and windscreen replacement markets.

Glazing adds aesthetic, functional and structural properties to vehicle design. Shortening development times require glazing suppliers to play an increasingly integrated role in the design and assembly of complex glazing.

Pilkington is one of a small number of automotive glass manufacturers with the technical capability and geographical presence to play this role to the full.

Pilkington Automotive glass production includes pre-processing, toughening, laminating, encapsulation, extrusion and assembly, adding functionality. The majority of the company’s production is focussed on the volume light vehicle industry, serving all of the world’s major car manufacturers. The company is also a world leader in the bus and truck sectors and in other parts of the specialised transport sector. The company has automotive glass facilities throughout Europe, USA, South America, Australia and China, 39 locations in total in 15 countries.



For further information please visit [www.controltechniques.com](http://www.controltechniques.com)



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