



## OVERVIEW

OPTIDRIVE PLUS 3GV helps virtually eliminate production downtime in the production of plastics in the Netherlands

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## COMPANY

### POLYPLASTIC BV

Eliminating downtime in plastics manufacturing

Netherlands

Rotterdam-based Polyplastic BV and its subsidiary operations have virtually eliminated production downtime in two of its plastic product processing functions thanks to the introduction of Optidrive variable speed drives from Invertek Drives.

Polyplastics BV is a plastic processing company that deals with the manufacture and sale of acrylic windows and skylights. The highly flexible production process employed allows all types of shape and size to be produced. Delta Glass, the subsidiary operation based in South West Netherlands, markets the cast acrylic as an alternative to glass. This provides a much lighter and safer material that can be produced in any shape applications such as caravans, mobile homes, boats and overhead doors.

The Rotterdam production facility boasts a large number of presses, furnaces and a range of milling machines. In this application, a CNC milling machine had been breaking down at least every six months due to the failure of an inverter used to control the spindle motor, causing major disruption to production.

This application features a motor with a rated speed of 36,000 rpm / minute, requiring a variable speed drive that offers a frequency of at least 1200Hz. In addition to coping with this high frequency the application also requires the drive to maintain precise and reliable control despite high temperatures and frequent fluctuations in the load. The solution was found in the form of an 18.5 kW Optidrive Plus 3GV and Invertek's special High Speed Application Software which enables the required output frequency to be met. Since installing the Optidrive Plus 3GV there have been no further problems or breakdowns.

The second process to benefit from Invertek Drives technology was the automatic gluing system, involving a series of conveyors, stackers and corner tables. A total of 14 Optidrives are used in this gluing process to control the transportation of windows through the drying tunnels and subsequent stacking.

The process begins when two custom milled screens are glued together to precise tolerances and then transported to the screen printing department. This is followed by final assembly of rubber seals, bolts and hinges. The windows are then ready for installation into caravans and motor homes.

Historically the gluing process suffered from breakdowns and inefficiencies, with inverters failing and EMC problems being very common. A core issue was the extremely high temperatures being reached within the enclosures in which the drives were situated.

The control system builder appointed for this application was B3 Industrie, who had already developed a strong relationship with Invertek's Sales Partner in the Netherlands, Hiflex. This relationship and the success of Invertek Drives in the CNC Milling application led to Optidrives being specified for the replacement control system.

A key criteria in selecting the new drives was usability, with careful attention paid to how quick and easy it would be to install and commission the new drives.

Polyplastic Service Technician Hans Overgoor confirms: "There were four days scheduled for total conversion and commissioning of the old enclosures to the new control cabinets.

email: [sales@invertek.co.uk](mailto:sales@invertek.co.uk) web: [www.invertek.co.uk](http://www.invertek.co.uk)

### Invertek Drives Limited

Offa's Dyke Business Park, Welshpool, Powys. UK. SY21 8JF  
Tel:+44 (0)1938 55 68 68 Fax:+44 (0)1938 55 68 69



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Thanks to the professional preparation of B3 Industrie and the good usability of the Optidrive Plus 3GV inverters we were ready within one and a half days.”

“With the old controllers we had books of 150 pages or more and we had a lot of parameters. The complete handbook of Optidrive Plus 3GV comprises 36 pages and during commissioning we had only 13 parameters to change for the elevator application. We also noted a striking reduction the heat generated with the control cabinet and have no doubt this will contribute to the long term reliability of the new system.”

Key Facts – Why Optidrive Plus 3GV was specified:

- Patented Vector Control with 200% torque from 0 Hz. 4 of 14 drives are lifts in which accurate torque is essential.
- Open Loop speed accuracy of 0.5%. Flutter of the belts needs to be eliminated during the drying process.
- Internal brake resistor with a duty cycle of 100%. For the elevator application this means no external brake unit needs to be purchased.
- Integrated EMC mains filter internally. Requires no external input filter which saves space and installation costs.
- Maximum switching frequency of 32 kHz. Leading edge technology means low switching losses (heat) and a smooth running motor.
- User friendly and easy to commission.

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