

# Case Study



## IMO JAGUAR DRIVE STOPS LARGE INERTIAL MASS IN LESS THAN HALF THE TIME OF COMPETITORS ON HIGH VELOCITY GRINDING MACHINE.

IMO has demonstrated the superior control and braking qualities of its Jaguar VXR drive on a demanding grinding wheel application for a customer that manufactures and refurbishes machine tools. The Jaguar drive has succeeded, where several others failed, in meeting the customer requirement to control a very high inertial wheel mass (30kgs and 300mm diameter), and decelerate it from nearly 6,000rpm to a complete stop in less than 20-seconds.

IMO was asked to help with the grinding machine application, following unsuccessful trials with competitors' drives. The high speed machine is equipped with an 8kW, 400V motor, driving a large 300mm diameter wheel weighing 30kgs. As the wheel is driven at speeds up to 5,860rpm, this presents a very high inertial mass in braking terms.

Initially, the machine builder had tried a 7.5kW inverter from a European manufacturer to control the load, but found the control provided by this unit to be totally unsuitable. Subsequently, a second state-of-the-art inverter from a Japanese manufacturer was trialled.

The best performance that could be achieved with this drive, a 7.5kW 18A unit, with a 47ohm brake resistor, was 50% speed (3000rpm) and a 40-second deceleration time. Attempting to raise the speed or shorten the deceleration time resulted, in both cases, in over-voltage trips. The builder was not happy with this level of performance, and at this point invited IMO to trial.

The invitation was impromptu, as the IMO engineer was visiting on another job. However, he did happen to have a VXR13A-4 (5.5kW equivalent rating) in the boot of his car. He calculated that,

### IMO Jaguar Drives deliver greater control

#### The application:

To solve reduce the stopping time of high velocity grinding wheel.

#### The solution:

IMO Jaguar Drive

#### The result:

Proved better than twice as good at stopping, and this with one size smaller drive and a 60% higher resistance! Moreover, these results were achieved at less than 100% motor FLC rating, so there were no stresses or strain on the motor.

using this unit with an 80 ohm resistor, the drive could deliver full speed and a deceleration time of around 20-seconds.

The resulting trial immediately vindicated the calculations; the VXR13A-4 proved to be better than twice as good at stopping, and this with one size smaller drive and a 60% higher resistance! Moreover, these results were achieved at less than 100% motor FLC rating, so there were no stresses or strain on the motor.

This performance demonstrated conclusively the excellent control in braking mode provided by the Jaguar drive compared to typical competitors. Moreover, in this application the Jaguar drive had plenty in hand with its rating, as for testing a smaller rating drive was used with no problems.

On the strength of the successful trial the customer purchased a 7.5kW VXR18A-4, 7.5kW Jaguar drive. This unit, in common with all IMO Jaguar drives, offers the security of a 5-year guarantee.

## Where technology and engineering excellence come together

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### IMO Precision Controls Limited

1000 North Circular Road  
Staples Corner,  
London NW2 7JP  
United Kingdom

Tel: +44 (0)20 8452 6444  
Fax: +44 (0)20 8450 2274  
Email: [imo@imopc.com](mailto:imo@imopc.com)  
Web: [www.imopc.com](http://www.imopc.com)

### IIMO Jeambrun Automation SAS

Centre D'Affaires Rocroy  
30, Rue de Rocroy  
94100 Saint-Maur-Des-Fosses  
France

Tel: +8000 452 6444  
Fax: +8000 452 6445

Email: [info@imopc.fr](mailto:info@imopc.fr)  
Web: [www.imopc.fr](http://www.imopc.fr)

### IMO Automazione

Viale A. Volta 127/a  
50131 Firenze,  
Italia

Tel: +39 800 783281  
Fax: +39 800 783282

Email: [info@imopc.it](mailto:info@imopc.it)  
Web: [www.imopc.it](http://www.imopc.it)

### IMO Canada

Unit 10, 1 Whitmore Road  
Woodbridge,  
Ontario L4L 8G4  
Canada

Tel: +1 905 265 9844  
Fax: +1 905 265 1749

Email: [imocanada@imopc.com](mailto:imocanada@imopc.com)  
Web: [www.imopc.com](http://www.imopc.com)