



# TECHNICAL CERAMICS

H I G H P R E S S U R E C A S T I N G

# WORLD LEADERS IN PRESSURE CASTING TECHNOLOGY



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# INTRODUCTION

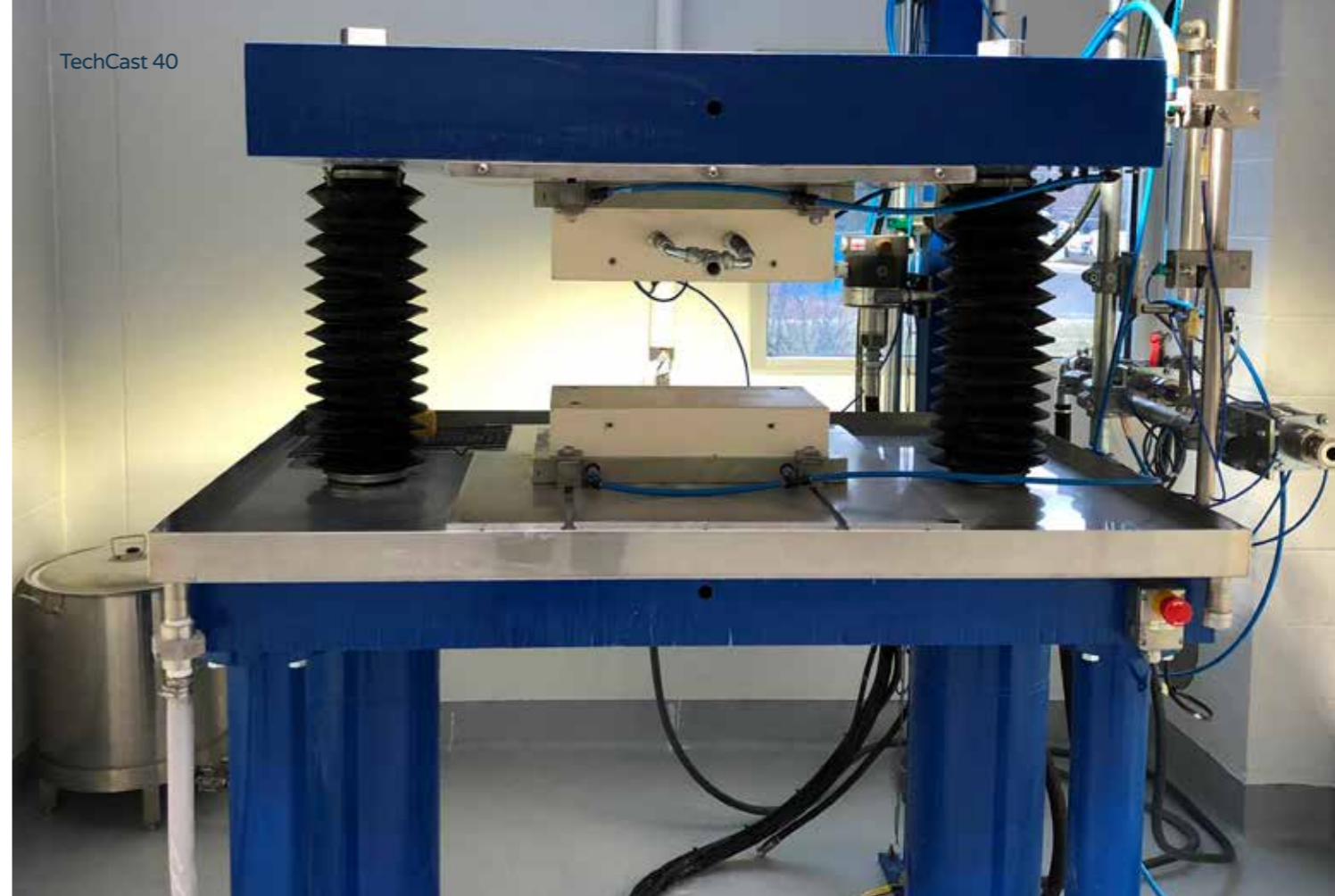
The use of Technical Ceramics is currently expanding as new opportunities continue to open in the automotive, medical, defence and electronics industries. As the demand for these products grows it is important to develop a more suitable, economical and repeatable manufacturing process, High Pressure Casting is that process. Pressure casting is a proven high speed reliable casting process. When combined with the benefits of PCL's resin moulds, as a replacement to plaster, it provides the perfect solution.

Using our extensive experience accumulated in the ceramic and moulding industries, PCL are able to offer services for the casting and production of technical ceramics. This process requires a high level of product quality and specialist knowledge. PCL are ideally placed to meet these specific manufacturing needs. Typical applications of PCL's technical ceramic expertise include the manufacturing of tiles, crucibles and various

styles, sizes and shapes of ceramic body armour.

We work with a range of slurries including alumina, fused silica, silicon carbide, boron carbide and other oxide and non-oxide bodies. We offer a personalised service to test your slurry, provide moulds, materials and machinery to produce any item to your exacting standards.

As a customer of PCL you will also be provided with a wide range of advice, support and services on all aspects of casting technical ceramics.



## ADVANTAGES AND KEY FEATURES OF PRESSURE CASTING TECHNICAL CERAMICS

High-pressure casting provides a number of benefits when producing complex items for the technical ceramic industry. Some of the advantages of our casting systems, moulds and materials when compared to conventional casting include:

- Increased output and a significant reduction of casting time.\*
- Higher green density and more uniform manufacture, giving more homogenous physical properties
- Tighter dimensional tolerances to reduce the need for expensive and complex finishing processes
- Negligible contamination of the finished product compared to other methods, saving on waste and costs
- Extended resin mould life
- Improved surface finish and dimension stability of the cast product
- Increase product quality and consistency due to the strength and stability of the PCL resin moulds
- Reduced space requirements and a much higher output per square metre
- Reduced energy and disposal costs

*Note: \*PCL Ceramics offer an initial slip testing and review service. We will cast your slip at our site and investigate the basic casting characteristics, casting rates and suitability for high pressure casting.*

These are just some of the advantages of using PCL's moulds and equipment when making technical ceramics.

## TECHNICAL CERAMICS; SUPPORT, TESTING AND PRODUCT DEVELOPMENT.

PCL invest heavily into research and development projects to ensure the technology and services we offer are on the cutting edge of the industry, keeping us a step ahead of our competitors and putting us and our clients at the forefront of innovation. PCL Ceramics provides a wide range of services to support our customers' projects from inception through to implementation and production, including:

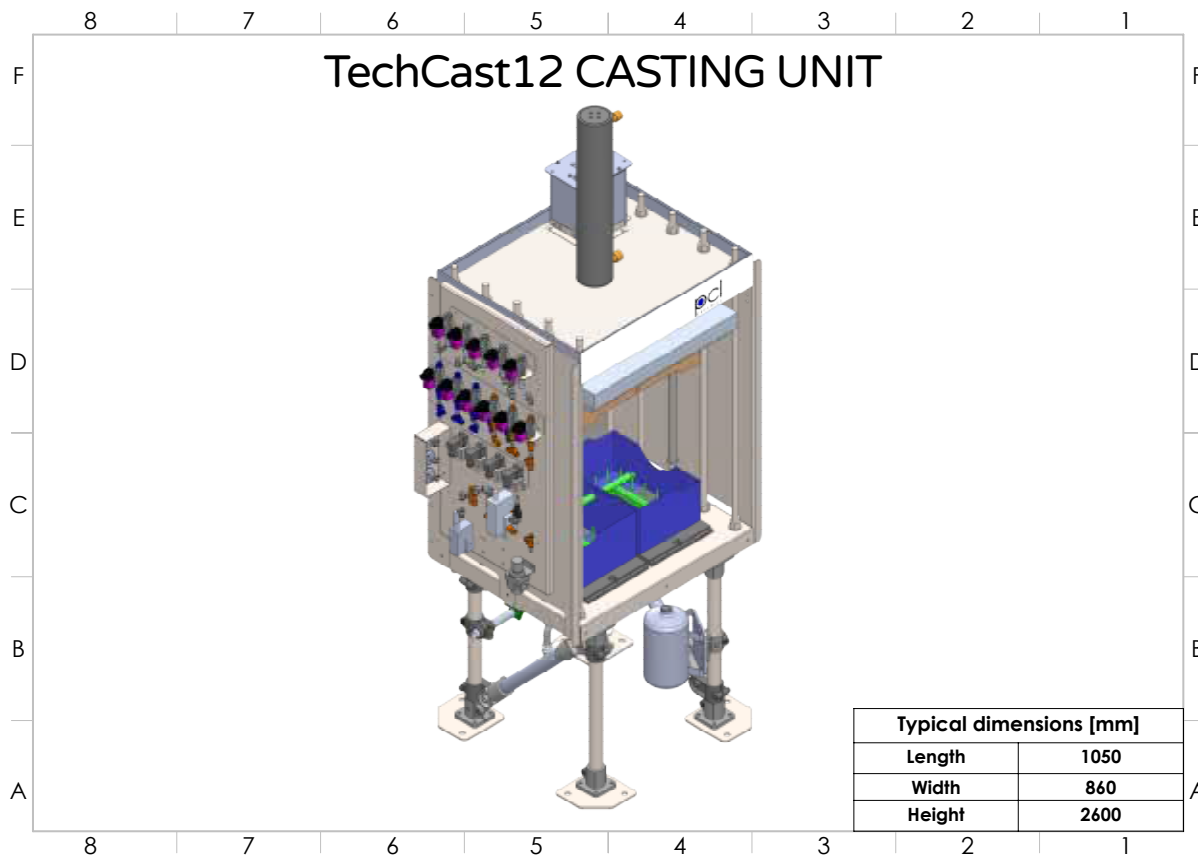
- Initial slip testing and review of casting performance
- Research and product development
- Specialist mould design, modelling and manufacture
- Design, manufacture and supply of bespoke casting systems
- Project management, machine installation, commissioning and training
- On-going technical service assistance
- Servicing and spares supply for casting systems.
- Replacement moulds

Our expertise in ceramic production, materials technology and machine design enables us to address any issues

that technical ceramic manufacturers are likely to face. With the recent introduction and upgrading of our 3D scanning, printing, modelling and CNC systems we are able to develop and progress new and more complex mould designs than ever before. PCL is now able to undertake rapid prototyping and model development, dramatically shortening the lead-time in mould design and production. Design improvements and modifications can now easily be introduced into existing designs for customers.



Typical in house test samples.



TYPICAL MACHINE SCHEMATIC.

TechCast12 is only one of PCL's standard casting machines. Both TechCast12 and TechCast40 include a PLC, operator interface, pneumatic and hydraulic systems. These systems are also supplied with a slip tank and mould washing system.

## PCL'S STANDARD RANGE OF TECHNICAL CERAMIC CASTING SYSTEMS

PCL currently manufacture a range of standard high pressure casting systems for technical ceramic casting. These units may be customised or integrated into more complex systems with multiple casting units with full automation, piece handling systems, Robots and conveyors. They include; LabCast, the TechCast12 and TechCast40.

### LabCast

The LabCast is a portable cost effective high pressure casting unit. It enables prototype slip formulations to be rapidly developed in a pressure casting environment. Your production slip may now be easily tested on a daily basis to ensure quality and monitor any variations in properties allowing you to change your casting parameters accordingly. It is also suitable for the casting of small pieces in lower volumes at pressures up to 15 bar.

### TechCast12

This casting system is a stand-alone unit for the production of small and medium size pieces.

- 12 bar casting pressure (33 Tonne closing force)
- Max mould cavity area 980 cm<sup>2</sup>, Single or multi cavity moulds

### TechCast40

This casting system is larger than the above.

It is a stand-alone unit for the production of small and medium size pieces at a higher pressure.

- 40 bar casting pressure (140 tonne closing force)
- Max mould cavity area 3,025cm<sup>2</sup>, Single or multi cavity moulds

FULL DETAILS OF THESE AND OTHER CASTING SYSTEMS ARE AVAILABLE ON REQUEST.

## CONTACT US:

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