

PLASTICS AND RUBBER ASIA

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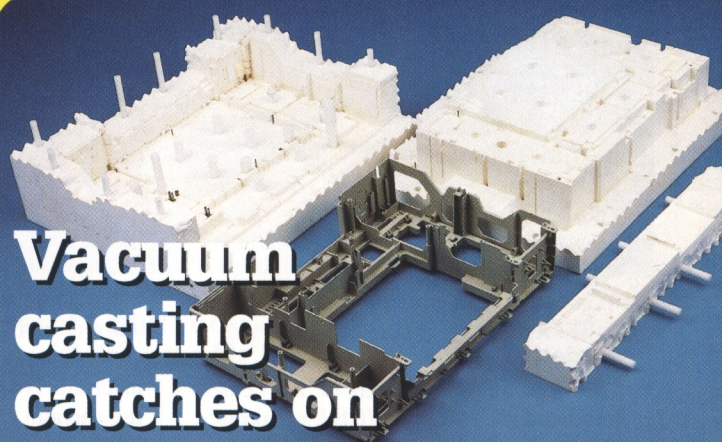
PRA at
UTECH Asia '97
Stand G14

Singapore **fights cost battle**



Building blocks:
plastics in
construction

Designing
efficient
barrier film



Vacuum
casting
catches on

《亚洲聚合物与橡胶》的中文概要见第二、三页

HEK makes inroads with vacuum casting



Firms and educational organisations in Indonesia, Singapore and Malaysia are all catching on to German company HEK's MCP-Vacuum Casting System for making highly accurate and durable prototype products.

HEK training teams were recently on site with a manufacturer of television casings in Indonesia and with a firm in Malaysia making housings for electronic goods, teaching staff to use VCS. Other VCS units are in operation with educational establishments in Singapore, such as the German Singapore Institute, and Australia.

One of HEK's customers in Europe is Porsche, which is using VCS for making prototype parts for the new Boxster sports car. Porsche engineers note that the tech-

This mould took three days to make with HEK's MCP-Vacuum Casting System, and produced 20 prototypes in five days (photos: HEK).

nology of prototyping and model building has made a quantum leap in the past five years. In the 1980s it could take four to eight weeks between designing and completing a prototype part, whereas now it can take just 24-48 hours with the new technology.

Originally, time-consuming model making by hand was replaced by computer-aided design (CAD) and manufacturing methods and machining on a CNC machine. Now rapid prototyping through the vacuum casting of poly-oil resin parts in silicone moulds is giving development engineers much more flexibility.

The first stage of the process requires a model to be made using stereo lithography. In this, components designed by CAD are built up in layers, direct from liquid photopolymer, by means of a laser scanner. This makes a firm, three-dimensional basic model. Once pouring and the separation surface of the silicone mould has been determined, the model is set into a casting frame.

Evacuated silicone rubber is then cast around the model and hardened in a heat chamber. Following this the model is removed from the mould. Depending on the complexity of the shape this mould can be used from 10-40 times,

ideal for making prototypes to use at exhibitions, demonstrations and for functional tests.

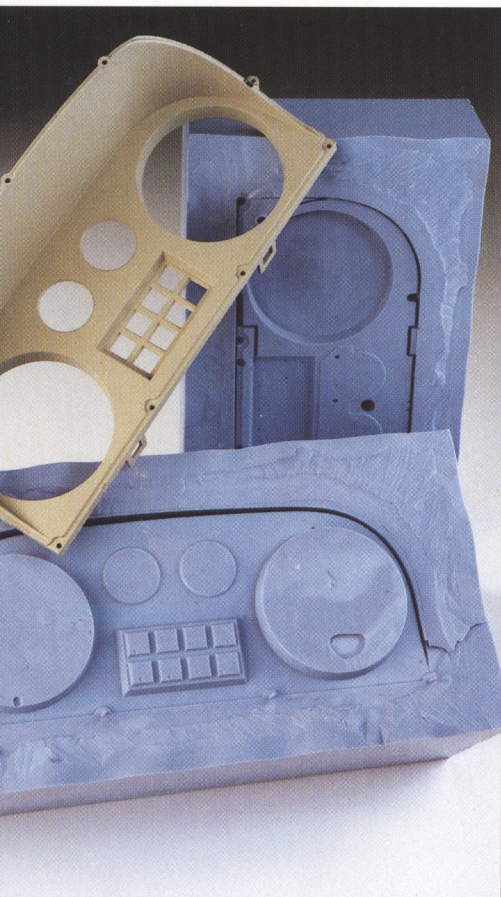
The production of the prototype parts starts by dosing a two-component material based on a poly-oil resin, with colour added as needed. These are mixed under computer control and poured automatically into the vacuum chamber. Following hardening in the heat chamber, the moulds are removed.

The prototype products are very similar to the quality made in thermoplastic from the injection moulding process. Parts for cars, washing machines, cameras and other consumer goods can all be made using VCS.

A new development from HEK is SG 95, a base material for producing prototypes with ABS properties that are completely clear and can be pigmented for any colour.

The price of an MCP-VCS starts from US\$60,000 for a system capable of making prototypes of 400 x 400 x 400mm, up to \$400,000 for one capable of casting parts of 2m x 1m x 1m. The latter can include car bumpers or TV casings. The price includes the machine, a pack of material with which to start making prototypes and on-site training.

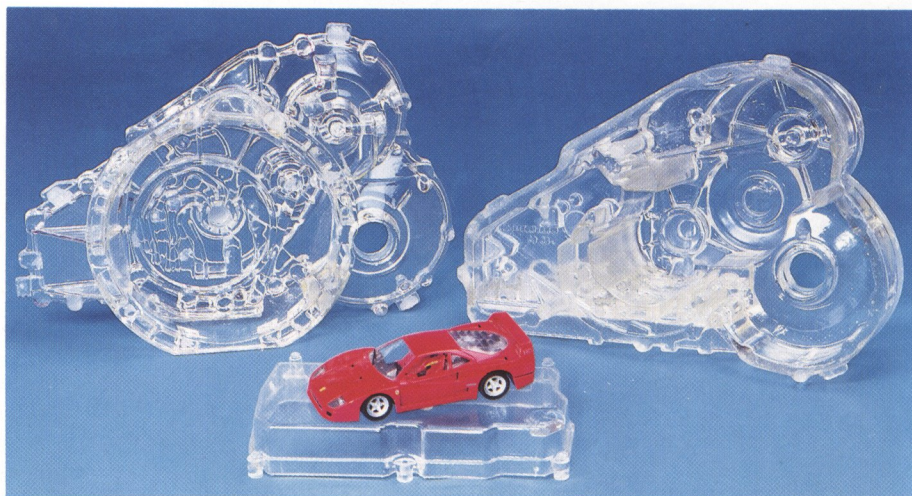
Reader Enquiry No 62.



This shot shows a car light cluster prototype.



Virtual-Reality Visers produced with the MCP Vacuum Casting Process. The visers consist of up to seven different vacuum plastics ranging from very soft 40 Shore A to ABS-like materials. The models were produced by Rapid Prototyping



Truck Gear Box

These large vacuum castings weighing 1.5kg, 6kg and 8 kg respectively were produced to allow the observation of oil levels during working tests. The castings were ready within 3 days of receiving the Rapid Prototyping Models



A working prototype of a labeller consisting of 7 pieces produced in SG 95 clear material using the MCP Vacuum Casting System

*Consistent
quality everytime
from **MCP***

*Meeting the
world's demand
for precision
Plastic and
Sheet Metal
Rapid Prototype
Tooling Systems*

Equipment

Materials Technology

Customer Training

On-going Technical Support

MCP Vacuum Casting Systems

- State of the art process for plastic prototyping.
- Extremely accurate and rapid.
- Replicate and reproduces complex shapes, fine detail and textures from any model type.
- MCP Vacuum Casting Resins formulated to various shore hardness, heat resistance, pigmentable, simulate most plastics, rubber and glass.
- 20-30 prototypes within 2-3 days.

MCP/TAFA Metal Spray Mould Technology

- Worldwide the most widely used metal spray mould system.
- Quick tooling for plastics.
- Low investment.

Sheet Metal Tooling with MCP Low Melt Alloys

- Quick and dimensionally accurate prototypes.
- Clean process-no resins, food safe.
- 100% reusable material.

Lost Core Technology

- Internally undercut injection mouldings and vacuum cast components.
- For prototypes and high volume production.

MCP Injection Moulding Machines

- Precision low-cost mouldings in engineering thermoplastics.
- 7g-200g capacity.
- Purpose built for prototypes.

MCP 
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