



# A matter of **time**

**As India's market for automobiles grows, so does its auto industry. And at Caparo Engineering's die-casting plant outside Chennai, robots help provide state-of-the art production.**

> The highway from Chennai airport in South India provides vivid proof of the country's love affair with the car. Aged autos with rusted bodywork vie for space with luxurious new limousines and, regardless of their age or condition, there's a deafening passion for the horn.

India's economic growth has resulted in more vehicles on its roads than ever before. By 2010 it's estimated one in every 100 Indians will drive – double the number a decade earlier.

It's hardly surprising, then, that the auto component industry has been one of the country's fastest growing manufacturing sectors. And the spiraling

domestic demand is boosted by a hungry international export market.

Chennai and its environs are South India's car and component manufacturing hub. And it's here, some 40 kilometers from the city center, that global manufacturing group Caparo recently opened a state-of-the-art aluminum die-casting production plant as part of its subsidiary, Caparo Engineering India Private Limited.

Headquartered in London, the Caparo group was founded in 1968 by Indian-born British industrialist Swraj Paul, now Lord Paul of Marylebone, while he was in the United Kingdom seeking

By Jean Macfarlane  
Photos Simon de Trey-White



Caparo Chief Executive A V Nandakumar (left) and engineer Kannan Mohan inspecting aluminum parts.

# and quality

medical treatment for his daughter, Ambika. Sadly, Ambika died, but the company went from strength to strength and the Chennai complex is now one of 21 Caparo operations in Lord Paul's homeland.

Built on 120 acres of greenfield land, the plant was inaugurated in October 2007. Based on current performance and orders, a 25 million U.S. dollar turnover is forecast by the end of 2009 and the company's 200-strong workforce is expected to triple.

The plant is the first and only Caparo operation in India to offer die casting. Key to the venture's ambitions has been the purchase of two ABB robots – an IRB 6600 and an IRB 4400.

**A V Nandakumar**, Chief Executive at the Chennai plant's aluminum foundry, says: "The auto component business is a highly competitive market. We are using ABB robots because consistency in production >

## >FACTS

### Caparo Engineering India Private Limited at a glance

**Headquarters:** Gurgaon, India – outside Delhi

**The company:** CEIPL was set up in 2003. It is a subsidiary of the Caparo Group, founded in the UK in 1968 by Swraj Paul, now Lord Paul of Marylebone

**Locations:** Caparo currently has 21 plants operational in India of which 18 come under CEIPL and the remaining three under Caparo Maruti Ltd.

**Annual Turnover:** INR 7 billion (USD 148 million)

**Employees:** Approximately 4000 (including permanent as well as contract labor)

**Products:** Automobile components (stamping, die casting and forging), fasteners, tubes and tubular parts

is a priority for us. It's our aim to be No. 1 in quality and also in technology.

"Our customers are very demanding and they do a lot of analysis before they select a partner to provide them with auto parts. We do the same thing when we select a company to supply us with robots. We compared various brands and manufacturers and we finally selected ABB."

Components in production at the foundry include clutch and transmission housing units, bracket casing, bed plates and oil pans. Among the company's clients are Hyundai, Volvo, General Motors, BMW, Cummins, and Tata Motors.

**Center stage** on the foundry floor is ABB's 6-axis IRB 6600 robot working in a production cell with a high-pressure die-casting machine.

The three-meter-tall robot first extracts the cast from the die and then holds it against a photo sensor to ensure it has been fully removed. Still controlled by the robot's gripper, the cast is then tapped to break off any overflow, dipped in a cooling tank and trimmed before being placed on a production chute.

The length of cycle varies depending on the component but the company estimates that, using ABB robots, production is increased by 5-10 percent.

This increased productivity is vital for the company's return on investment.

"The cost of HPDC (High Pressure Die Casting) machines is high," explains Nandakumar. "We need to use the machines in the most productive manner possible and that's why we are using ABB robots."

**In the making** of a transmission housing unit, the ABB robot completes a cycle in two minutes – 30 seconds less than it would take two, or possibly three, workers doing the same job manually. The robotic cell can produce 30 transmission housing units per hour compared with 25 using manual labor.

But there are advantages above and beyond those from increased production and time saved.

Nandakumar says: "Robots are especially useful when the environment is not good for manual operators. In this region summer temperatures rise to 42° C -



"It's our aim to be No. 1 in quality and also in technology"

A V Nandakumar, Chief Executive

add to that the fact that the temperature of the molten metal is around 650 to 700° C. These are not comfortable conditions for an operator to work in.

"In plants where this job is done manually, the productivity isn't as high as it is here."

Caparo in Chennai now intends to invest in two more ABB robots and to increase their applications by using them for fettling and placing cast iron inserts in components before the dies are cast. There are plans to introduce an around-the-clock Monday-to-Saturday operation by the end of 2008.

"Robots never get tired and they repeat the cycle in the same way every time so there is complete consistency in the operation," says Nandakumar, "These are the things we look for in order to produce a good quality component.

"Today the salaries in India are low but year on year they are increasing. So maybe the time will come when there will be more robots in India than manpower." ☉



#### Why robots?

- 5 to 10 percent increase in productivity - which helps in faster ROI for the die casting cell
- 30 transmission housing units produced per hour – as against 25 units with manual labor
- 120-second cycle time for transmission housing case – as against 144 seconds with manual production
- Consistency of quality
- Reliability
- Safer working environment