

INDIA'S INDUSTRIAL REVOLUTION PART II

## Feast of a moveable workforce

In the second of three articles, Peter Marsh looks behind the rise of companies offshoring product development to India

In an anonymous office building in India, the J-Team is on a mission to strengthen links between India and Japan.

H.B. Jayanthi heads the 60-strong group of Indian engineers who are working for Yokogawa, the Japanese industrial control systems maker, in Bangalore. They have been trained to speak – and even to think – in Japanese so they can communicate effectively with colleagues in Japan while collaborating on product development.

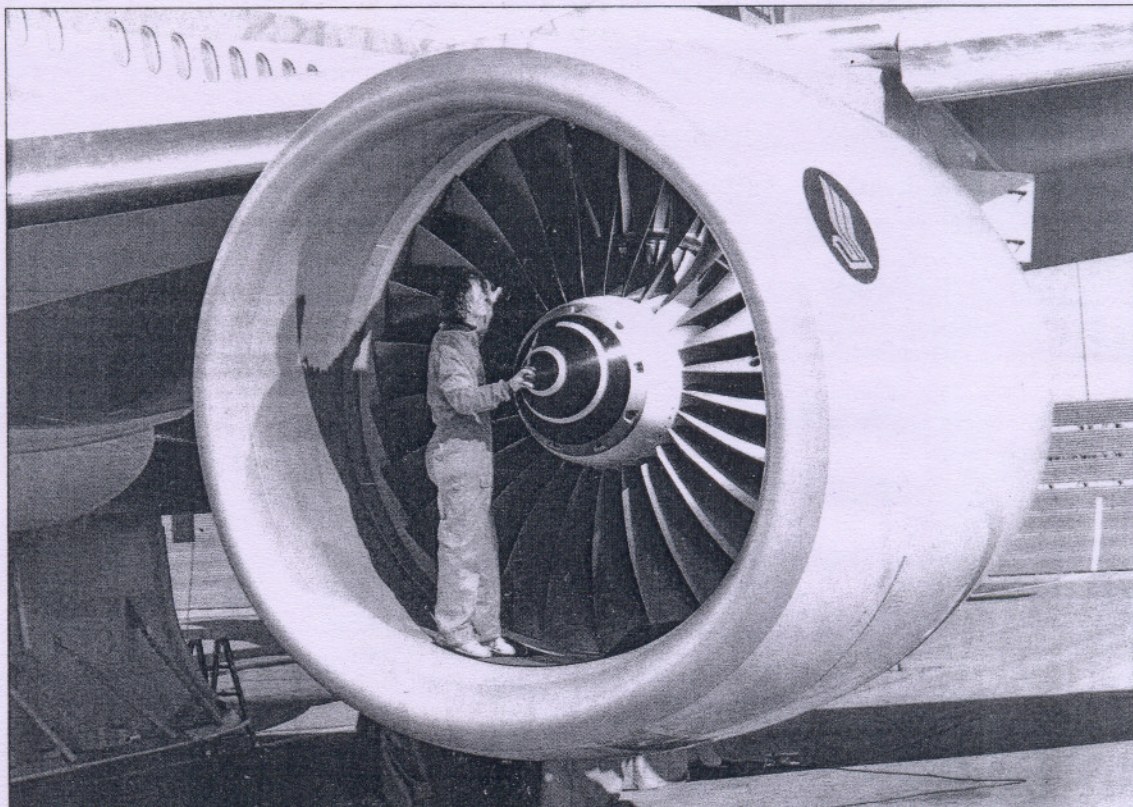
Yokogawa's J-Team is just one example of increasing activity in India in the development of new manufactured products. It is predominantly for the benefit of consumers and industrial users in foreign countries, although with an increasing focus on the growing domestic market. Purely "offshored" product development – for business operations based outside India, undertaken either in a company's own development centre or through an outsourcing contractor – yields estimated total revenues in India of about \$500m (£265m) a year, and is growing at 25 per cent a year.

Product development can be regarded as a service-based adjunct of manufacturing – and one increasingly vital to manufacturing companies' efforts to stay competitive.

Anil Chitkara, vice-president at US company PTC, a world leader in computer-aided design software used in product development for manufacturing, says that 30 per cent of all product development work in high-cost countries could be done remotely in lower-cost locations in the next five years. India is a leader in attracting such work, ahead of countries such as the Czech Republic, China and Russia.

"To do product development work in-house in a high-cost country can cost \$40-\$60 an hour," says Mr Chitkara. "Offshoring the work – either to part of the company's own operations or to a contracting company, via an outsourcing deal – can cut the costs to \$10-\$25 an hour."

But he adds that companies from high-cost countries are increasingly going to countries such as India for



Friends in high places: Rolls-Royce has 100 engineers in India working on its old aero-engine models. It wants to increase this figure to 200 by 2007

product development "on account not just of lower costs – even though, of course, these are attractive – but because in this way they can broaden access to a supply of technical people beyond that which is available in their home country".

Behind India's standing in product development outsourcing is the good quality of technical education in India that has provided large numbers of relatively cheap, capable engineers. Often, they can speak English, a useful communications tool in itself. And thanks to India having about 30 local languages, many Indians are good at picking up languages. This is a big help in offshoring services where not everyone may be comfortable speaking English.

Hiroshi Suzuki, a Japanese engineer and a technical adviser in India to Yokogawa's J-Team, says this is particularly true for Japanese, whose knowledge of English, even in business, is limited.

"The Japanese way of working is unique," says Mr Suzuki. "People in Japan aren't very good at interacting with foreigners. To be able to do this properly you have got to be able to speak in Japanese."

Yokogawa – with 350 development engineers based in India, compared with 1,000 in its main operations in Japan – started training its Indian engineers in Japanese 10 years ago so they could contribute more on product development projects led by Yokogawa engineers in Japan. A project could be, for instance, to design a complex piece of engineering equipment to automate a chemical works in Japan.

Ms Jayanthi, whose J-Team is expected to expand to 100 within a year, says learning Japanese was a challenge but also improved her engineering skills. Japanese engineers tend to work in a specific structured way, she says: "Learning the language has helped teach me a more systematic way of working."

The idea of teaching Japanese to Indian engineers is not confined to Yokogawa nor even to other Japanese companies with a strong Indian presence, such as Toyota. Of the 350 application engineers in India working for Emerson, the US motors and automation company, 10 per cent speak Japanese.

Johnson Controls, the US vehicle parts maker and a big producer of seats and vehicle interiors, operates a technical centre in Pune, employing 350 engineers. Of these, 50 work on product development focused on the Indian market, while the rest work on offshoring projects relating to work under way in other countries. Among these 300 engineers, 80 are "front officers" or "roving scouts" who spend much of their time on specific development projects in some of Johnson's other 25 technical centres around the world.

"The front officers may spend up to two years working away from India," says K. Murali, head of Johnson's India operations. "They act as an interface between what is going on in these places and the work their colleagues are doing in Pune."

The flexibility of Indian engineers is a good asset for the company, particularly

when it comes to languages, he says. The centre sent 10 of its engineers to Bratislava in Slovakia to work, and "within a short time half of them had learnt to speak Slovak".

Of the \$500m a year spent on product development in India, roughly half is estimated as being done by specialist outsourcing contractors. They work mainly for non-India companies and include large businesses such as Infosys – known mainly for more broadly based information technol-

'This way companies can broaden access to a supply of technical people beyond that which is available at home'

ogy contracting work – and smaller ones such as Quest, Harita and Rolta.

Quest is a US company with 650 of its 850-strong global engineering workforce based in India, working on product development outsourcing contracts on behalf of customers such as UK-based aerospace company Rolls-Royce and General Electric, the US industrial conglomerate.

"Our focus is not on doing core development work that we think the customer would want to do in its own in-house centres, often in a high-cost country," says Ajit Prabhu, Quest's chief executive. "Instead, we work on more peripheral work that

can be outsourced relatively easily – such as updates on the company's previous products that need some kinds of enhancements, or tooling design." By subcontracting parts of their development effort, "customers can do more with a set amount of R&D cash than they could in the past".

Rolls-Royce has given 100 Bangalore-based Quest engineers responsibility for modifications of earlier Rolls-Royce aero-engine models that are no longer in full production. Part of the work is to redesign "legacy" parts – which can be used in engine upgrades or when the original components wear out – for such engines in collaboration with Rolls-Royce's global team of 7,100 "in-house" engineers. The latter work mainly in high-cost countries – 4,500 are in Britain.

Rolls-Royce says it wants the number of engineers employed in India in this way to rise to 200 by early 2007. "We look on our link with Quest not so much as an example of outsourcing, but more as an arrangement by which we can gain access to valuable people in a field where supply is difficult," Rolls-Royce says.

In another variant on bridging the gap between the high-cost and low-cost nations, some industry experts believe India could have a big role in developing new products that use western technology but focus on the needs of people with low incomes in emerging economies.

Intel of the US, the world's biggest microprocessor producer, recently unveiled designs for a cheap computer, to be made by leading

Indian electronics groups Wipro and HCL Infosystems, that can be used in rural internet kiosks, run off cheap batteries and withstand extreme heat.

Tata, the big Indian industrial conglomerate, is working on a project to develop a cheap, high-tech "people's car" that middle-class Indians could afford and would retail at less than \$10,000. The vehicle would incorporate technical breakthroughs in the use of low-cost plastic composites for body panels, the use of adhesives to hold parts together and innovative transmissions and engines. The car could be in production later in the decade, says Ratan Tata, the company's chairman – and some factories may even be set up outside India.

K. Ramachandran, chief executive of the India operations of Philips, the Dutch electronics multinational, says about one-sixth of Philips's 5,500 employees in India are involved in the widest sense in developing new products – covering areas such as technical innovation and marketing. For example, Philips is working in India on low-power lighting systems for houses that work off rechargeable batteries. It is also developing transportable health screening equipment, connected by satellite to hospitals, that can be taken to remote towns and villages to deliver healthcare to people out of reach of a doctor.

"India – with its huge market and its high level of technology resources – is in a good position to develop a new source of products that mix innovation with low costs," says Mr Ramachandran.

### INDIA ON THE RISE: THE SERIES IN FULL

DAY 1: The growth of manufacturing services

DAY 2: A centre for product development

DAY 3: India vs China in the fight to take market lead

www.ft.com/indiarev