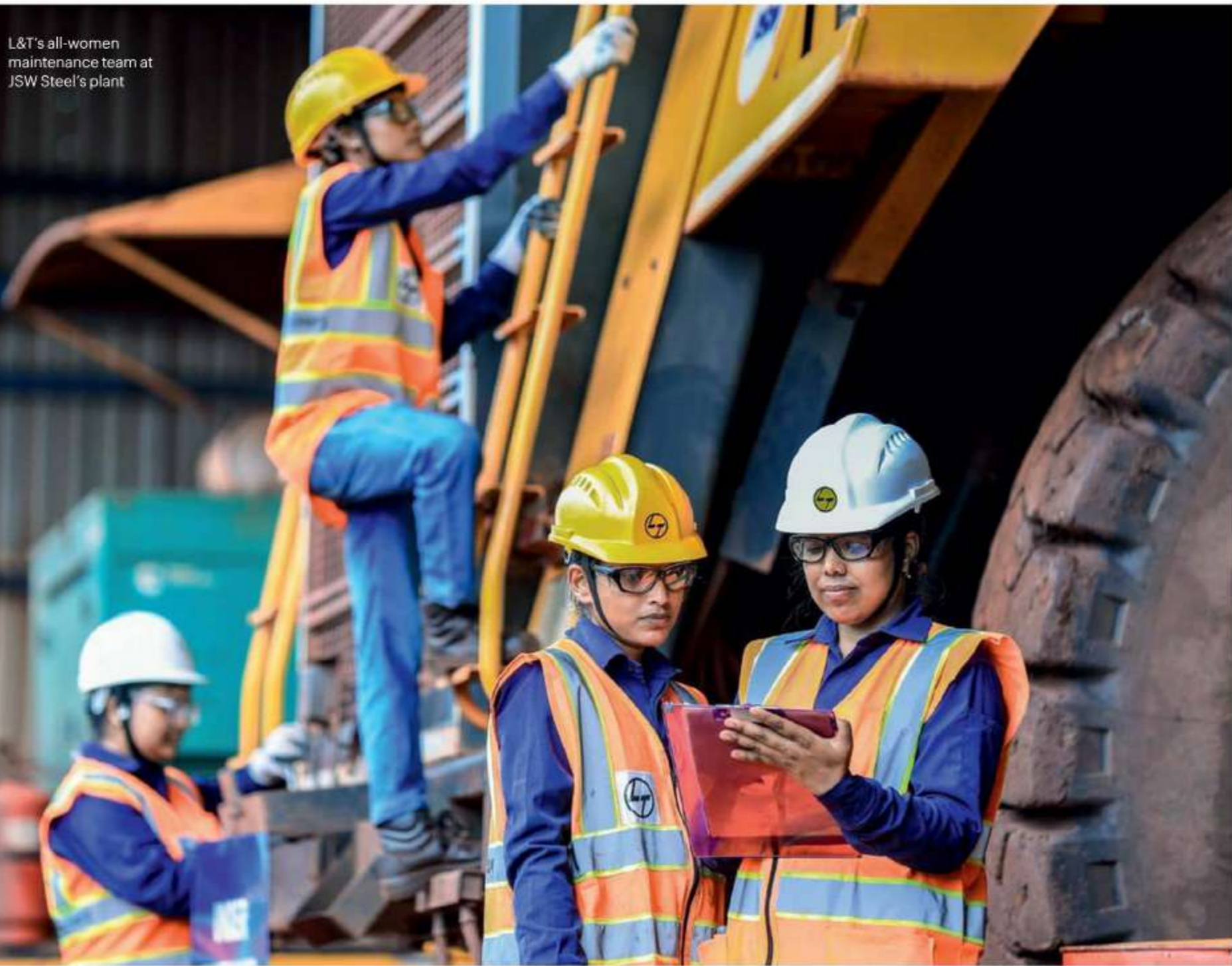


THE RISE OF WOMEN ENGINEERS

L&T's all-women maintenance team at JSW Steel's plant



PHOTOGRAPH BY LAXMI PRASAD MAHARANA

Large Indian firms are hiring more women engineers in a push for diversity. But overcoming societal and educational biases is key.

BY ARNIKA THAKUR

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KONERU BHAVANI joined L&T in 1993 as its first woman engineer graduate trainee. The 53-year-old civil engineer clearly remembers her first day at work. "Everybody was asking the same question—how did you come here? That's when I realised I was the first woman engineer to join the company. There were no policies restricting women. It was an unwrit-

ten rule," K. Bhavani tells *Fortune India*, alluding to an acute shortage of women engineers at some of India's largest construction, engineering and mining firms at the time as the job was considered only for men. K. Bhavani, an L&T lifer, moved up the ranks, getting experience in design, construction methods, supply chain and mobility. Now, as executive vice president and head of urban transportation, she is leading the Mumbai-Ahmedabad bullet train project, one of L&T's biggest ever contracts. She also mentors younger women engineers. Things are, of course, different now. In FY24, L&T hired 2,600 graduate engineer trainees and post graduate engineer trainees, of which 30% were women. The percentage of women employees, however, was just 8.1% in March 2024. The

company aims to increase it to 10% by 2026. At Tata Projects, women representation increased from 3% in FY18 to 6.8% in FY23. The company's aim is to cross double digits in two years. Public sector Engineers India's FY23 annual report says women comprised 11.7% of its employee base. JSW Steel had 12,856 employees in FY23 of which 743 were women. In FY24, 26% new graduate engineer trainees hired by JSW Steel were women. In services, things are better. Women are 35.6% of employee base at TCS. The number is 39% at Infosys and 36.6% at Wipro. The number of women in engineering jobs is still way less than ideal but the overall trend is clear—companies are hiring more women engineers as they follow their diversity, equity and inclusion (DEI) goals. According to a report by consulting

firm Avtar, participation of women in manufacturing is 3% (core engineering). The number is 12% in other engineering streams and 27-40% in services. The report pins this down to social, economic and policy factors. "In manufacturing, these are compounded by challenges related to physical safety, infrastructure gaps, legal/regulatory challenges, shift working, conscious or unconscious biases in recruitment and promotion, lower access to digital technology and lesser participation in science, technology, engineering and mathematics (STEM) streams," says the report.

More than 100 women, including scientists and engineers, played a significant role in designing, testing and executing India's lunar mission Chandrayaan-III, says ISRO. But it will take greater effort from India Inc. if it wants to move the needle on recruiting and supporting women engineers.

What is India Inc. Doing Companies with substantial financial resources are working on inclusivity. Tata Steel, for example, started a programme called Women of Mettle in 2017 to attract women in engineering and R&D. It recruits women from over 50 colleges and technical institutes. Some get pre-placement offers and positions as technical interns. "The turnout at these events has increased. The last edition had almost

3,000 participants," says Jaya Singh Panda, chief learning and development and chief diversity officer, Tata Steel. The company is also hiring more women in mining and even setting up an all-women battery plant in Jamshedpur. "Hiring managers are being trained how to avoid biases. Small efforts like these have resulted in a huge increase in number of women at the entry level," she says.

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The company has also inspired others to hire more women in technical roles. In 2019, it deployed women (including engineers) in all shifts at Noamundi iron ore mine in Jharkhand, for which L&T had a full maintenance contract. L&T saw this as an opportunity to create an all-women maintenance team for its client, says Arvind Garg, senior vice president and head, construction and mining machinery, L&T, which has trained close to 50 women. At present, its team of about 30 women maintain heavy mining machinery, including dump trucks and excavators, for JSW Steel and Tata Steel. Garg says L&T made numerous changes in physical infra-

structure and worked on changing the workforce's mindset. It also created wellness areas for women and added new women to its Prevention of Sexual Harassment Committee. "We wanted them to have pride in their work. We kept talking about them as making a difference. At exhibitions, the team operated the machines and talked to customers," says Garg.

Wipro, TCS and Siemens are also hiring more women in engineering and supporting their career growth as part of DEI initiatives. Sunita Rebecca Cherian, chief culture officer, Wipro, says the key is supporting women at different stages of careers. For example, the company runs an initiative called Begin Again, focused on hiring women who want to restart career after a break. "Ensuring that women who join in manufacturing stay and grow continues to remain a challenge," says Panda of Tata Steel. "Earlier, the kind of roles women got were peripheral to core manufacturing. To ensure retention, we have to ensure career progression. That requires more focused effort from everyone," she says.

STEM Underrepresentation L&T's K. Bhavani, first graduate from her family, joined a newly-opened engineering college near her village in Vijaywada. The decision was guided by her family's hesitation about sending her far from

WOMEN IN WORKFORCE

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At Engineers India, women are 11.7% of the workforce.

JSW Steel says 26% new graduate engineer trainees it hired in FY23 were women.

Services firms fare better. At TCS, women are 35.6% of employee base; at Wipro, it is 36.6%.



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PERCENT representation in manufacturing (core engineering)



12

PERCENT in other engineering streams



27-40

PERCENT in services sector

More than 40% graduates in STEM are women, compared to 35% globally

home. Her class of 60 had seven girls. Things have improved since but challenges persist. According to a World Bank report, more than 40% STEM graduates in India are women. The global average is 35%, according to UNESCO. However, a recent study of 100 Indian universities found that only 16.6% STEM faculty was women. According to the All India Survey on Higher Education 2021-22, out of 39 lakh students in engineering and technology, 29% were women. "Girls' parents are not always willing to send them to coaching institutions," says Ajit Pratap Singh, senior professor, department of civil engineering, and dean-academic, undergraduate studies, BITS Pilani. To overcome these challenges, the institution runs scholarship schemes for high achievers under which it admits first rank holders of state and central boards. "About 80% students who get admis-

sion through this mode are women," says Singh, adding that the institute also offers scholarships to its top 25 women students. In undergraduate courses, 16% students are women. In masters and higher levels, it is 30-35%. Indian Institute of Technology Bombay has launched a programme called WiSE (Women in Science Engineering from Rural Parts of India) for mentoring rural girls studying in Class IX. In 2023, the institution hosted girls from 40 schools in Maharashtra, Bihar and Odisha for a

week, to give them a feel of campus life. IITs have also created supernumerary seats in undergraduate programmes. The initiatives have boosted women enrolment from 8% in 2016 to 20% in 2022, according to the Ministry of Education. Women comprised 22.1% of students in National Institutes of Technology in 2021-22. Interestingly, before 2004-05, women accounted for about 42% students in BITS Pilani's undergraduate courses. But the number fell after it started

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admitting students on the basis of competitive exams, says Singh. "We should have different modes of admissions. When we prepare the merit list, we look at a mix of test and interview along with 10+2 marks or results from previous classes," he says, adding that offering interdisciplinary courses can attract more girls. Executives and experts say encouraging women in STEM and having broader women representation in engineering also depends on overcoming societal biases and large companies leading by example. "What you see is what you believe. We have seen the impact of hiring trans people and how it has helped them reconnect with their families, or women working in manufacturing roles. Many of their parents would say this is not the place for women. But when you see women progressing, leading a plant, that is where the proof of the pudding is," says Panda. ■