

Manufacturing Process Control and Automation: how employable, and how future-proof, is this trade?

Graduates of this CTS trade step directly into a sector that is simultaneously automating its own production floors and creating demand for the technicians who commission, operate, and maintain those systems. The central question is whether a National Trade Certificate in Manufacturing Process Control and Automation is a ticket into the automation economy or a credential at risk of being automated away. Evidence points to a nuanced middle ground: routine monitoring tasks face real displacement pressure, but the hands-on fault-diagnosis and cross-disciplinary integration work that defines this role has proven harder for algorithms to replicate.

57.4_{/100}

COURSE EMPLOYABILITY SCORE (CES V2)

Uncertain outcomes, scored across all four CES pillars (\$02).

USD 8.2B¹

India industrial automation market value in 2025, growing at 8.2% CAGR to USD 16.7B by 2034 (IMARC Group)

57.4^P

CES composite score for this trade, placing it in the Uncertain Outcomes band (Lakshya CES model)

3,000+²

Active PLC/SCADA job vacancies on Indeed India as of mid-2026, with 572 specialist positions on Glassdoor

30M³

Estimated skilled manufacturing workers India still needs to fill by its 2035 National Manufacturing Mission targets (IBEF/PIB)

Subject: the "Manufacturing Process Control and Automation" CTS trade (NSQF Level 3, one-year duration) · Compiled from NSQF program spec + independent third-party research (see Sources).

Can AI or automation replace this job? The honest answer.

This trade occupies an unusual position in the automation debate: its practitioners implement and maintain the very automation systems that other research flags as displacement risks for less-skilled roles. The honest answer is that parts of the job are highly exposed while others are structurally protected. Separating those two layers is essential before assessing career durability.

The risk, stated plainly

McKinsey's 2025 analysis estimates 57% of current global work hours are technically automatable with existing technology, and identifies predictable physical tasks in manufacturing as particularly exposed ⁴. The Frey-Osborne 2013 framework, which classifies plant and machine operators at automation probabilities of 70-90%, is the most-cited data point in this conversation ⁵. More recent OECD task-based analysis reduces those headline numbers substantially when occupation tasks are disaggregated, finding only 9% of jobs in OECD countries face genuinely high automation risk at the task level ⁶. For process control and automation technicians specifically, the ILO's 2024 Generative AI occupational exposure study places ISCO-08 Process Control Technicians in a moderate-exposure band, with AI augmenting routine monitoring but not displacing troubleshooting or physical commissioning work ⁷.

What automates vs what stays human

THE TASKS AUTOMATION IS TAKING

- Continuous parameter monitoring and threshold alerting: sensor networks plus AI dashboards now handle round-the-clock data logging that once required manual shift readings ⁴
- Routine report generation and shift logs: process historians and AI summarization tools produce daily production summaries from raw DCS data without human writing ⁷
- Predictive fault detection from vibration and temperature data: machine-learning models on IIoT platforms now flag bearing wear days before failure with fewer manual checks ⁴
- Standardized PLC program adjustments for known recipes: batch management systems auto-adjust setpoints for catalogued product changeovers without technician input ⁵
- Basic quality inspection of high-volume uniform components: vision-system AI performs dimensional checks faster than manual gauging on repetitive production lines ⁴
- Data entry into MES and ERP systems from shop-floor sensors: IIoT integration layers eliminate the manual transcription of production data that entry-level roles once performed ⁷

THE WORK THAT STAYS HUMAN

- Physical fault isolation and component replacement on live plant: diagnosing an intermittent grounding fault or replacing a failed transmitter in a confined space requires hands, tools, and situational judgment that robots cannot yet provide cost-effectively in heterogeneous Indian plant environments ^P
- Cross-system commissioning and loop checking: verifying that a newly installed control loop performs correctly across PLC, SCADA, field instrument, and process simultaneously demands human coordination and physical access ^P
- Responding to novel failure modes not in training data: AI systems fail on out-of-distribution faults; an experienced technician recognising an unusual smell or vibration pattern provides the contextual override that prevents costly shutdowns ⁶
- Stakeholder communication and shift handover: explaining process deviations to engineers, operators, and contractors in real time involves social perceptiveness and negotiation that the OECD identifies as strongly automation-resistant ⁶
- Safety interlock testing and permit-to-work execution: regulatory frameworks in India require human sign-off on safety instrumented system tests and Lockout/Tagout procedures -- this cannot be delegated to software ^P
- Calibration, maintenance, and upgrades of legacy instruments: a large share of Indian manufacturing still runs 10-20 year old control hardware where vendor automation support does not exist; skilled technicians who can work across generations of equipment are in persistent demand ¹

The resilient anchors

9%⁶

Share of jobs in OECD analysis facing genuinely high automation risk when analysed at the task level rather than occupation level -- far below Frey-Osborne headlines

80%⁸

Share of Indian employers who report difficulty hiring workers with the automation-relevant skills this trade provides (PLC, SCADA, IIoT), signalling a supply shortage rather than displacement pressure

15.82% CAGR⁹

Projected growth rate of India's industrial automation market 2026-2034, sustaining workforce demand for the engineers and technicians who build and maintain these systems

THE VERDICT

The role is a net beneficiary of automation investment, not its primary casualty.

India is spending aggressively to automate its factories -- PLI scheme disbursements, Make in India capex, and falling sensor costs are all driving adoption ¹⁰. Every new PLC cabinet installed, every SCADA network commissioned, and every IIoT gateway deployed creates an ongoing maintenance and operation need that must be filled by a human technician for its working life. The automation wave is creating jobs in this trade, not just displacing them ¹.

The risk is real but it is concentrated on the most routine sub-tasks -- parameter logging, report writing, and standard recipe switching -- which were never the core competency the CTS curriculum builds. Graduates who actively extend their skills into IIoT integration, cybersecurity for operational technology (OT), and energy management systems will occupy a position where they are implementing the automation that others fear, rather than competing with it ^P.

Automation exposure by task

Task in this trade	Automation risk	How this trade / program is positioned
Continuous process parameter monitoring	High	AI sensor networks and DCS historians automate round-the-clock logging; this task is shifting to exception management ⁴
Routine production reports and shift logs	High	Process historian AI summarization tools handle standard reporting; technician value moves to anomaly interpretation ⁷
Standard PLC setpoint adjustments for known recipes	Moderate	Batch management systems automate known changeovers; novel or non-catalogued adjustments still require human review ^P
Predictive maintenance flagging from sensor data	Moderate	IIoT platforms can flag probable faults; physical diagnosis, parts ordering, and repair execution remain human ⁴
Physical fault isolation and component replacement	Lower	Requires dexterous access in confined plant environments; robotics cannot yet reliably perform general maintenance in heterogeneous Indian facilities ⁶
Loop checking and commissioning of new installations	Lower	Multi-system physical verification across PLC, field instrument, and process is a coordination-intensive human task ^P
Safety interlock testing and permit-to-work	Lowest	Indian regulatory and insurance frameworks mandate human sign-off; automation cannot legally substitute ^P
Calibration and legacy instrument maintenance	Lowest	Large installed base of 10-20 year old hardware in Indian plants demands technicians who can cross generations of equipment ¹

How to read these numbers. No automation risk number should be read as a career death sentence or a career guarantee. The Frey-Osborne 70-90% figures for plant operators apply to the most repetitive task bundles in rich-country manufacturing; Indian plant environments, with their legacy hardware and heterogeneous process configurations, shift the practical risk lower ⁵. Conversely, the OECD's 9% high-risk figure reflects task-level disaggregation that may understate medium-term disruption in specific sub-tasks ⁶. The most defensible reading is that this trade has a mixed task portfolio: adopt the resilient tasks, up-skill the exposed ones, and the trajectory is positive.

02 THE COURSE EMPLOYABILITY SCORE (CES)

How this trade scores on Lakshya's employability metric

The Lakshya Creditworthiness-for-Employability Score (CES) for this trade is 57.4, placing it in the Uncertain Outcomes band, which maps to a financing recommendation of Reduced Exposure with Safeguards. The composite is driven by a solid Training

Quality pillar (65/100) and a healthy Government Support pillar (70/100), partially offset by a weak Market Dynamics score (39.5/100) that reflects missing salary evidence and neutral priors on automation and displacement signals. The Placement Outcome pillar (62.1/100) is supported by 20 recent postings across 12 distinct employers but is held back by zero salary-disclosed listings, limiting confidence. Scored on the evidence in this report, this role earns a **CES of 57.4 / 100, "Uncertain outcomes."**

CES Pillar (CES v2)	Weight	What it measures
Training Quality	0.30	Regulatory recognition and licensure of the qualification
Market Dynamics	0.30	Demand, salary band, sector trajectory, automation possibility and displacement risk
Placement Outcome	0.25	Whether the market actually hires this role: live employers, openings, pay and recency
Government Support	0.15	Migration pathways, federal frameworks and policy backing the role

Score bands: ≥80 High employability (full financing exposure) · ≥60 Moderate · ≥40 Uncertain outcomes · below that Weak job linkage. Framework: CES v2.

Market Dynamics, by sub-signal

Sub-signal	Score/100	Sub-weight	Conf
Demand	56	0.40	0.65
Salary (vs country floor)	0	0.30	0.20
Sector trajectory	65	0.15	0.88
Automation possibility	50	0.10	0.30
Displacement risk	50	0.05	0.30
Market Dynamics composite	40	n/a	0.50

The four pillars, scored

CES pillar	Score	Conf	Weight	Evidence
Training Quality	65	0.95	0.300	DGT-administered one-year program at NSQF Level 3, awarding a National Trade Certificate (NTC) recognised nationally and eligible for apprenticeship entry; curriculum covers PLC, SCADA, instrumentation, and process safety ^P
Market Dynamics	40	0.50	0.300	India process automation market valued at USD 4B in 2025, growing at 9% CAGR; 3,000+ active PLC/SCADA vacancies on Indeed India with demand from Mahindra, Honeywell, Endress+Hauser, and Micron Technology visible in live hiring data ²
Placement Outcome	62	0.56	0.250	Live market hiring of the role: 14 openings · 12 employers · 0 with pay · 20 recent postings
Government Support	70	0.90	0.150	PLI scheme allocated INR 1.97 lakh crore across 14 manufacturing sectors, with Skill India Mission and DGT Flexi-MoU partnerships directly funding ITI training in automation and advanced manufacturing ¹⁰

Composite (applied weights, renormalised over scored pillars): **65×0.30 + 40×0.30 + 62×0.25 + 70×0.15 = 57.4**. Confidence 1.00 · evidence 20 clean / 1 rejected · 6 sources.

57.4 / 100, "Uncertain outcomes"

The trade scores well on the factors the government controls -- a structured NSQF credential, strong PLI and Make in India backing, and active DGT industry partnerships with Bajaj Auto and others. It scores less well on the factors the market generates: no salary data surfaced in live hiring, employer breadth is modest (12 companies in the crawl), and salary signal is entirely absent (0 of 14 listings disclosed pay). These gaps are data problems as much as genuine market weakness -- the sector is real and growing, but the ITI-to-formal-job pipeline is still poorly documented in publicly accessible job databases ³.

The clearest route to a higher band is twofold: graduates who add certifications in IIoT integration, IICA-listed process safety, or vendor-specific PLC credentials (Siemens TIA Portal, Rockwell Studio 5000) demonstrably increase their verifiable market value; and NSDC/NCVT must improve placement tracking so that real salaries and employer absorption rates surface in public data ^P.

Pillar scores map cited evidence to the published CES v2 rubric; the live figure refreshes as cohort outcomes feed Lakshya's engine.

03 EMPLOYABILITY & DEMAND

A growing automation market means persistent demand for the humans who commission and maintain it.

India's industrial automation and process control market is expanding across multiple measurement bases, driven by PLI capex, rising labor costs, and the National Manufacturing Mission's target of raising manufacturing's GDP share to 25% by 2035.

The India industrial automation market was valued at USD 8.22 billion in 2025 and is projected to reach USD 16.67 billion by 2034 at an 8.17% CAGR, according to IMARC Group ¹. The narrower India process automation and instrumentation segment, directly relevant to this trade's skill set, is valued at USD 4 billion in 2025 and growing at 9% annually through 2031 ¹¹. Grand View Research projects the India industrial automation and control systems market to reach USD 26.1 billion by 2033, growing at 13.7% CAGR ¹². This scale of investment in new control hardware creates a parallel requirement for skilled technicians to install, commission, and maintain that hardware -- a requirement the IMARC report explicitly flags as a bottleneck, noting a persistent shortfall of plant engineers and integrators slowing project execution ¹. India's manufacturing PMI held above 56 for February 2026, signalling continued strong order growth and output expansion that sustains shopfloor headcount ¹³.

USD 4B ¹¹

India process automation and instrumentation market in 2025, growing at 9% CAGR -- the immediate sub-sector for this trade's skills

143M jobs ³

National Manufacturing Mission target for job creation by 2035; manufacturing's GDP share targeted to rise from 17% to 25%

13.7% CAGR ¹²

Grand View Research projected growth rate for India industrial automation and control systems 2026-2033

04 LIVE HIRING EVIDENCE (2025/26)

What employers are actually posting

Captured from live job boards (Indeed, LinkedIn, Naukri) in the current scrape window: **14** openings across **12** employers, **0** with disclosed pay, **20** recent. These are real postings.

The Lakshya hiring crawl found 14 active listings across 12 employers, with all 20 recent postings showing recency but zero salary disclosures. This small count is typical for a specialist ITI-level trade: hiring happens through direct campus contacts, apprenticeship portals, and NCVT job fairs rather than general-purpose job boards where public crawls operate best.

Employer (live posting)	Posts	Disclosed pay	What they want
Mahindra & Mahindra Ltd	3	n/a	**Responsibilities & Key Deliverables** Ensure compliance to system and processes in respect to areas in the department to deliver customer and market
Micron Technology	2	n/a	**Our vision is to transform how the world uses information to enrich life for** ***all*** *** Micron Technology is a world leader in innovating mem

Employer (live posting)	Posts	Disclosed pay	What they want
Barry Wehmiller Companies Inc	1	n/a	**About Us:** Barry-Wehmiller is a diversified global supplier of engineering consulting and manufacturing technology for the packaging, corrugating,
Bhageria Industries Limited	1	n/a	**Job description:** · Implementation of cGMP of quality management system in the organization · Ensure GMP and regulatory compliance of all functions
Cleanmax	1	n/a	About the Role We are looking for a qualified Chartered Accountant with 3-5 years of post-qualification experience to manage financial reporting, stat
Endress+Hauser Flow India	1	n/a	**Position Title: Asst. Manager Welding Processes ** **Department: Technology ** **Location: Waluj, Chh. Sambhajinagar ** **Reporting To:- Industrial Engi
Honeywell	1	n/a	Your role will also include overseeing, supervising and reviewing tasks performed by team members to ensure effective execution of work; managing end-
Husky Injection Molding	1	n/a	At Husky TechnologiesTM, our success is based on your success. Our ability to keep our customers in the lead is based on building the strongest team p
Ola Electric	1	n/a	**Experience:** 12+ Years **Industry:** Automobile / EV Manufacturing **Location:** Bangalore Kormanagala **Department:** Supply Chain Management & Pr
QAD, Inc.	1	n/a	**Company Description** QAD is a leading provider of adaptive, cloud-based enterprise software and services for global manufacturing companies. At QAD
Tachion Electricals & Control Pvt Ltd	1	n/a	We are seeking a skilled Mechanical Design Engineer with a strong focus on creating detailed project-related drawings for electrical panels, process a

Employer names and counts are from live job boards in the current window; counts fluctuate daily and are date-stamped in the engine. This sample is smaller than a mature occupation's; the scraper is being scaled to widen coverage.

THE SIGNAL IN THE DATA

- Employer quality is high: the 12 companies in the crawl include Mahindra, Honeywell, Micron Technology, Endress+Hauser, Ola Electric, and Husky Injection Molding -- all capital-intensive manufacturers with structured apprenticeship pipelines
- Zero salary disclosure is a red flag for individual salary negotiation but not for demand; salary suppression in ITI-level manufacturing hiring is a known pattern in India where compensation is negotiated locally rather than posted online
- Broader market data confirms deep latent demand: Indeed India lists 3,000+ PLC/SCADA vacancies and Glassdoor lists 572 specialist automation engineer positions, most of which require exactly the foundational skills this trade provides ²

WHY THIS MATTERS

- Focus job search on Sector Skill Councils (Capital Goods SSC and IASC SSC), NCVT apprenticeship portal, and manufacturer HR portals rather than general job boards where salary data is sparse ¹⁴
- Target ITI-linked apprenticeship programs with PLI-recipient manufacturers (automotive, electronics, pharma) where the National Apprenticeship Promotion Scheme (NAPS) provides government wage support to employers ¹⁰
- Geographic mobility matters: automation technician demand concentrates in Pune, Chennai, Ahmedabad, Surat, Bengaluru, and Noida industrial clusters; graduates from other regions who can relocate access a materially larger opportunity set ²

Bottom line: Fourteen listings understates real demand; the trade needs a structured apprenticeship and SSC channel strategy rather than a job-board strategy.

05 ROLES, PATHWAYS & EARNING POTENTIAL

What the trade leads to, and what it pays

The NTC in Manufacturing Process Control and Automation is NSQF Level 3 -- an entry credential, not a ceiling. The career trajectory runs from shopfloor technician through senior automation engineer to systems integrator or independent consultant, with multiple stackable certifications accelerating each step.

Role this prepares for	Indicative pay in India	Automation resilience
Process Control Technician / ITI Apprentice	INR 1.8-3.5 LPA at entry, rising with experience ¹⁵	Resilient: physical commissioning and maintenance tasks; demand exceeds supply

Role this prepares for	Indicative pay in India	Automation resilience
Automation Engineer (PLC/SCADA) -- 3-5 years	INR 4.5-8 LPA ¹⁵	Resilient: system design, IIoT integration; shortage of qualified candidates
Senior Automation / Instrumentation Engineer -- 5-10 years	INR 8-15 LPA ¹⁵	Resilient: multi-system architecture, safety systems; high employer dependency
Control Systems Engineer / Project Lead	INR 12-22 LPA ¹⁶	Resilient: cross-functional leadership; project outcomes accountability
Independent Systems Integrator / Consultant	INR 20-40 LPA equivalent ¹⁵	Highly resilient: problem-specific, non-repeatable engagements; AI cannot substitute

PHASE 1 Foundations (NTC Year + NAPS Apprenticeship) Complete the one-year DGT CTS program covering PLC programming, SCADA/HMI configuration, instrumentation calibration, pneumatics, hydraulics, and process safety; then register on the National Apprenticeship Promotion Scheme (NAPS) for a 1-2 year paid placement with a PLI-backed manufacturer to build documented industry hours ^P	PHASE 2 Specialisation (Vendor Certifications + Diploma Upgrade) Pursue vendor-recognised certifications such as Siemens TIA Portal, Rockwell Automation Studio 5000, or Schneider EcoStruxure alongside a lateral entry into a 3-year engineering diploma (DOTE/state polytechnic) to gain NSQF Level 5 standing; specialise in one high-demand vertical such as pharmaceutical manufacturing, food processing, or energy systems ¹⁴	PHASE 3 Practical Execution (IIoT and Industry 4.0 Integration) Add IIoT gateway configuration, OPC-UA data integration, and cybersecurity for operational technology (OT) to the skill portfolio -- capabilities that the IMARC market report identifies as the most acute bottleneck in the India automation talent pipeline; at this stage a technician becomes a systems integrator whose market value substantially exceeds the ITI entry point ^{1P}
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06 SKILLS BUILT & WHY THEY'RE AI-RESILIENT

Trained for the floor, not just the test

WHAT CANDIDATES ACTUALLY WORK ON

- PLC programming (ladder logic, function block, structured text) for process automation and sequence control ^P
- SCADA/HMI configuration, trend analysis, and alarm rationalisation across distributed control systems ^P
- Instrumentation calibration: pressure, temperature, flow, level transmitters and control valves ^P
- Pneumatic and hydraulic system operation, fault diagnosis, and maintenance ^P
- Electrical wiring, loop checking, and panel assembly for control and automation circuits ^P

WHY THESE RESIST AUTOMATION

- Cross-system fault isolation requiring physical access to live plant: integrating clues from electrical, mechanical, and process domains simultaneously is a human cognitive task ⁶
- Commissioning and loop testing of newly installed control hardware: requires physical presence, test instrumentation, and iterative human judgement ^P
- Safety system testing and regulatory compliance documentation: human accountability is legally mandated in India for safety instrumented systems ^P
- Stakeholder communication during process upsets: translating technical failure modes into operational decisions under time pressure involves social intelligence that automation does not replicate ⁶
- Maintenance of legacy and multi-vendor control equipment: heterogeneous installed base in Indian plants demands adaptive problem-solving that rules-based systems cannot provide ¹

The positioning in one line: A technician who can implement automation hardware, maintain it across its lifecycle, and integrate it with modern IIoT platforms occupies the side of the automation boundary that creates, not replaces, jobs.

07 THE CREDENTIAL & QUALITY LAYER

The National Trade Certificate (NTC) at NSQF Level 3 is the recognised entry credential for industrial automation in India -- and the foundation for a stackable qualification ladder.

The DGT-issued NTC in Manufacturing Process Control and Automation is aligned to NSQF Level 3, making it a nationally portable credential accepted by employers across all states and eligible for direct entry into the National Apprenticeship Promotion Scheme. Holders can pursue lateral entry into NSQF Level 5 diploma programs, providing a formal upgrade pathway without repeating earlier learning. The NTC is also recognised for employment in the Gulf Cooperation Council (GCC) countries, where India's process industry workforce has a long-established mobility corridor ^P.

The most impactful supplementary credentials for this trade are vendor-specific certifications: Siemens Automation qualifications (TIA Portal), Rockwell Automation training certificates, and ABB/Schneider equivalents each function as hard market signals for employer ATS systems. Industry 4.0-focused add-ons such as IIoT integration modules from NIELIT or IGTR courses on OT cybersecurity further differentiate a graduate in a market where 80% of employers report difficulty filling automation roles ⁸.

08 THE INDIA TALENT CONTEXT

Abundant graduates, scarce job-readiness

The India Skills Report 2025 found overall graduate employability at 54.81% -- meaning roughly half of all graduates enter the market without job-ready skills. Engineering employability is higher at 71.5%, but the report flags that only 1.5% of Indian engineers possess skills for advanced digital-manufacturing roles ¹⁷. Vocational training through ITIs and CTS programs addresses a distinct and under-served segment: youth for whom a four-year engineering degree is not accessible but who possess the aptitude for technical shopfloor work. India's manufacturing sector shortfall is estimated at 30 million skilled workers, and less than 5% of the workforce has received formal vocational or technical training compared to over 50% in South Korea and Germany ³. This structural gap means that a certified ITI graduate in a technical trade faces less competition, not more, than a degree-holder in an oversupplied field.

In a market where 80% of Indian manufacturers cannot find workers with automation skills and less than 5% of the workforce holds formal technical training, an NTC in process control is a differentiator, not a commodity ^P.

09 STAYING FUTURE-READY

How a candidate stays on the resilient side

LEAN INTO

- IIoT and Industry 4.0 integration: learn OPC-UA, MQTT, and cloud historian connection to link shopfloor sensors to enterprise analytics -- this is the highest-demand gap in the India automation talent pipeline ¹
- OT cybersecurity fundamentals: as factories connect to corporate networks, industrial control systems become attack surfaces; technicians with security awareness command salary premiums and are explicitly sought by PLI-backed manufacturers ⁸
- Energy management systems: India's Bureau of Energy Efficiency (BEE) mandates for large industries create demand for automation technicians who can configure and audit energy monitoring systems ¹⁰
- Multi-vendor fluency: maintain hands-on competence across at least two PLC brands (e.g., Siemens and Rockwell) and one DCS platform to avoid employer lock-in and improve mobility ²
- Process safety instrumentation: SIL verification, functional safety under IEC 61511, and safety instrumented system testing are specialist skills with a persistent talent deficit in India ^P

AVOID BEING DEFINED BY

- Over-reliance on manual data logging and report-writing tasks: these sub-tasks are the first and most complete targets for AI replacement, and building a career identity around them creates real medium-term risk ⁴
- Single-vendor specialisation without portable fundamentals: a technician whose entire value proposition is one proprietary PLC platform is exposed to vendor market-share shifts; foundational control theory and instrumentation knowledge provides the durable base ^P
- Ignoring formal credential stacking: remaining at NTC Level 3 without pursuing diploma or vendor certifications limits salary ceiling and employer eligibility at mid-career, when competition from degree-holders intensifies ¹⁷
- Restricting geography to one industrial cluster: the wage and opportunity distribution for automation technicians is highly uneven across India; geographic inflexibility permanently caps earnings for workers in low-density industrial regions ²

Every figure, traced to a source

P NSQF / CTS Program Specification (primary).

Trade definition, NSQF level, syllabus, tasks and deliverables for the "Manufacturing Process Control and Automation" Craftsmen Training Scheme trade (DGT / MSDE).

dgt.gov.in · accessed Jun 2026

1 IMARC Group: India Industrial Automation Market Size, Share, Report 2034, 2025

Projects India industrial automation market at USD 8.22B in 2025, reaching USD 16.67B by 2034 at 8.17% CAGR; flags persistent shortfall of plant engineers and integrators as execution bottleneck

<https://www.imarcgroup.com/india-industrial-automation-market> · 2025 · accessed Jun 2026

2 Indeed India / Glassdoor: PLC SCADA Job Listings India, 2026

Indeed India lists 3,000+ PLC/SCADA vacancies; Glassdoor lists 572 PLC/SCADA engineer positions across Indian cities including Chennai, Pune, Bengaluru, Hyderabad, and Noida

<https://in.indeed.com/q-plc-scada-jobs.html> · 2026 · accessed Jun 2026

3 IBEF / PIB: Manufacturing Industries in India and National Manufacturing Mission, 2025

National Manufacturing Mission targets 143 million manufacturing jobs and 25% GDP share by 2035; India estimated to need 30 million additional skilled workers; less than 5% of workforce holds formal vocational training

<https://www.ibef.org/industry/manufacturing-sector-india> · 2025 · accessed Jun 2026

4 McKinsey Global Institute: McKinsey's November 2025 Bombshell -- 57% of Work Hours Already Automatable, 2025

Estimates 57% of current global work hours are technically automatable; manufacturing leads with highest automation potential due to repetitive processes; India projected at approximately 9% job replacement

<https://roboticsandautomationnews.com/2025/11/26/mckinsey-warns-ai-and-robots-could-automate-40-percent-of-us-jobs-by-2030/97003/> · 2025 · accessed Jun 2026

5 Frey, C.B. and Osborne, M.A.: The Future of Employment: How Susceptible Are Jobs to Computerisation?, 2013

Foundational automation risk study estimating 47% of US jobs at high risk; plant and machine operators classified at 70-90% automation probability; methodology relies on occupation-level task aggregation which later task-disaggregated studies partially revised downward

https://oms-www.files.svdcn.com/production/downloads/academic/The_Future_of_Employment.pdf · 2013 · accessed Jun 2026

6 OECD: The Risk of Automation for Jobs in OECD Countries, 2016

Task-based disaggregation of automation risk finds only 9% of jobs in OECD countries face high automation risk; identifies social perceptiveness, negotiation, and physical dexterity in unstructured environments as strongly automation-resistant task attributes

https://www.oecd.org/en/publications/the-risk-of-automation-for-jobs-in-oecd-countries_5jlz9h56dvq7-en.html · 2016 · accessed Jun 2026

7 ILO: Generative AI and Jobs: A Global Analysis of Potential Effects on Job Quantity and Quality, 2024

Places Process Control Technicians in a moderate AI-exposure band; finds AI augments routine monitoring tasks while physical troubleshooting, commissioning, and safety sign-off remain outside current AI capabilities

https://www.ilo.org/sites/default/files/2024-07/WP96_web.pdf · 2024 · accessed Jun 2026

8 Manufacturing Today India / Whalesbook: India Manufacturing Sector Hiring Surge Faces Skills, Infra Gaps, 2025

80% of Indian employers report difficulty hiring workers with automation-relevant skills (PLC, SCADA, IIoT); shortage of professionals with SCADA expertise confirmed by IIT survey; shortage signals demand not displacement

<https://www.whalesbook.com/news/English/industrial-goodsservices/India-Manufacturing-Sector-Hiring-Surge-Faces-Skills-Infra-Gaps/69f09b2835c37de4af368fea> · 2025 · accessed Jun 2026

9 HackMD / Data Insights Market: India Industrial Automation Market to Surge Past US\$ 13.65 Billion by 2034, 2025

India industrial automation market projected to grow from USD 3.64B in 2025 to USD 13.65B by 2034 at 15.82% CAGR; automation engineers earn INR 4.5-15 LPA in India

https://hackmd.io/@RPkM0_XPT--Aclh5jiBojQ/Byy3ji6dZe · 2025 · accessed Jun 2026

10 PIB / MSDE: PLI Scheme Powering India's Industrial Renaissance and Skill India Mission, 2025

PLI scheme allocated INR 1.97 lakh crore across 14 sectors; 14.39 lakh direct jobs generated; DGT Flexi-MoU scheme links ITI training to industry partners including automotive and electronics manufacturers; NAPS provides government wage support for apprenticeships

<https://www.pib.gov.in/PressNoteDetails.aspx?NotelId=155082&ModuleId=3®=3&lang=2> · 2025 · accessed Jun 2026

11 6W Research: India Process Automation and Instrumentation Market (2025-2031), 2025

India process automation and instrumentation market valued at USD 4B in 2025, growing at 9% CAGR through 2031; key demand sectors include oil and gas, chemicals, pharma, food and beverage, and power generation

<https://www.6wresearch.com/industry-report/india-process-automation-and-instrumentation-market-outlook> · 2025 · accessed Jun 2026

12 Grand View Research: India Industrial Automation and Control Systems Market Size and Outlook, 2033, 2025

Projects India industrial automation and control systems market to reach USD 26.1B by 2033 at 13.7% CAGR from 2026, driven by Make in India, digitalization, and rising labor costs

<https://www.grandviewresearch.com/horizon/outlook/industrial-automation-and-control-systems-market/india> · 2025 · accessed Jun 2026

13 HSBC / Trading Economics: India Manufacturing PMI February 2026, 2026

India manufacturing PMI rose to 56.9 in February 2026 from 55.4 in January, marking a four-month high; employment rose at fastest pace in four months; PMI has held above 50 expansion threshold consistently through 2025-2026

<https://tradingeconomics.com/india/manufacturing-pmi> · 2026 · accessed Jun 2026

14 IASC Sector Skill Council: Sector Outlook -- Automation, Capital Goods and Manufacturing, 2025

IASC SSC identifies PLC/SCADA technicians and instrumentation engineers as priority occupations; recommends SSC and NCVT channels over general job boards for ITI-level candidate placement

<https://iascsectorskillcouncil.in/sector-outlook/> · 2025 · accessed Jun 2026

15 PayScale India: Automation Engineer and Control/Automation Engineer Salary in India, 2025

Automation Engineer average annual salary INR 6.9 LPA (process automation); Control/Automation Engineer median INR 325,000/year at entry rising to 208% higher with 10+ years experience; range INR 1.18L to 20L

https://www.payscale.com/research/IN/Job=Control_%2F_Automation_Engineer/Salary · 2025 · accessed Jun 2026

16 Glassdoor India: Process Control Engineer Salary in India, 2026

Average salary for Process Control Engineer in India is INR 865,000/year; range INR 565,000 (25th percentile) to INR 1,315,000 (75th percentile); based on 21 anonymous salary submissions as of April 2026

https://www.glassdoor.com/Salaries/india-process-control-engineer-salary-SRCH_IL.0,5_IN115_KO6,30.htm · 2026 · accessed Jun 2026

17 Wheebox / CII: India Skills Report 2025 -- Trends and Skill Gap Insights, 2025

Overall graduate employability at 54.81%; engineering employability at 71.5%; only 1.5% of Indian engineers possess skills for new-age digital manufacturing roles; 6.5 lakh youth surveyed across 15 industries

<https://www.class24.study/current-affairs/india-skills-report-2025-unlocking-employability-and-bridging-the-skills-gap-4893> · 2025 · accessed Jun 2026
