MAHABIR
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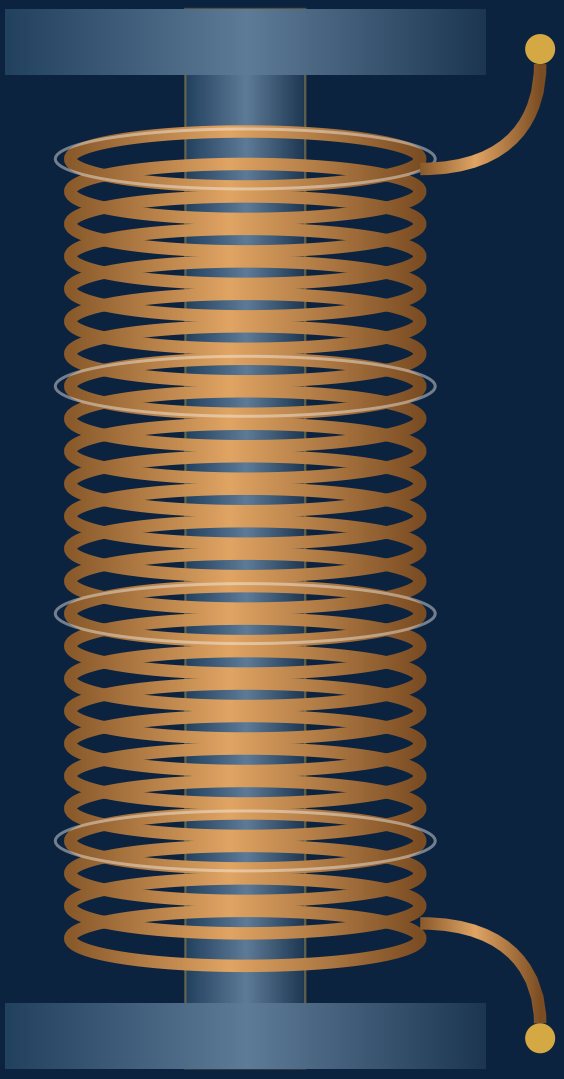
We equip the factories that build a power grid.

Transformer manufacturing is not one machine. It is a core shop, a winding shop, an insulation shop, a tank shop, a drying plant and a test bay — each sized against the others, each capable of stopping the whole line.

Mahabir plans, equips, commissions and supports transformer manufacturing capacity. We work from the product range backwards: what you intend to build, at what output, to which standard — and then the plant that makes it.

We supply single machines to established works, and complete shop-by-shop capability to those building for the first time.

- PLANT PLANNING
- EQUIPMENT SUPPLY
- COMMISSIONING
- OPERATOR TRAINING
- LIFETIME SUPPORT



600m
People in Sub-Saharan Africa still without electricity

2×
Required increase in global grid investment by 2030

30%
Global power transformer supply deficit in 2025

127
Weeks of quoted lead time on power transformers

Sources: World Bank Mission 300 · IEA, Electricity Grids and Secure Energy Transitions · Wood Mackenzie, August 2025.

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The transformer is the bottleneck. Increasingly, so is the factory.

Grids are being rebuilt everywhere at once. Order books at the established manufacturers are full into 2028, lead times have stretched past two years, and a utility that cannot get a transformer cannot connect a customer. For a country importing every unit, that is not a procurement problem. It is a development problem.

USD 64.9bn
Global transformer market in 2025, forecast to reach USD 98.8bn by 2031

+36%
Growth in Chinese transformer export value in a single year, 2025 over 2024

~60%
Share of global transformer production capacity concentrated in one country

USD 600bn
Annual grid investment required by 2030, against roughly USD 300bn today

The answer that keeps being reached, from Lagos to Luanda to Riyadh, is the same one India reached forty years ago: build them here. A transformer is heavy, bulky, specified locally and serviced locally. It is one of the few pieces of grid hardware where domestic manufacture is genuinely the cheaper answer, not merely the patriotic one.

What stops it is rarely capital and rarely demand. It is the plant itself. That gap is where we work. We are not selling a catalogue. We start from the product range you intend to build and the output you need, and we work backwards to the shop list, the layout and the machine specification. Then we supply it, install it, commission it, train the people who will run it, and stay after the warranty expires.

> Most equipment failures in a new plant are not machine failures. They are balance failures — a core shop that outruns the winding shop, a drying plant sized for the transformer you build today and not the one you will win the tender for next year.
>
> Getting the balance right costs nothing at the drawing stage and cannot be corrected afterwards.

How a plant actually comes into being

01 — Study
Product range, output, capex and payback

02 — Layout
Material flow, bays, pits, services, utilities

03 — Specify
Machine list balanced across every shop

04 — Supply
Manufacture, factory acceptance, shipping

05 — Erect
Foundations, installation, alignment

06 — Commission
Site acceptance, interlocks, calibration

07 — Train
Operators, maintenance, design office

08 — First article
First core, first coil, first transformer

09 — Certify
Type test, laboratory accreditation, approvals

10 — Support
Spares, service, second-phase expansion

Not every client needs all ten. An established works usually needs three — specify, supply, commission. A first-time manufacturer needs all of them, in order. We will tell you plainly which one you are.

Six shops. One balanced plant.

Machines are sourced against the specification, not against a preferred supplier. We work with established builders in India, China, Europe and Turkey, and we are candid about where each is genuinely strong. Every machine listed here is supplied with factory acceptance testing, installation, commissioning and operator training as standard.

Core shop

Where the silicon steel becomes a magnetic circuit. The most capital-intensive shop in the plant, and the one that sets the loss figure the customer will be measured on for thirty years.

- CRGO and CRNGO slitting lines
- Cut-to-length lines, mitre and step-lap
- Centre-limb cutting lines
- Automatic and robotic stacking systems
- Core building, banding and turn-over tables
- Amorphous ribbon cutting and annealing

Winding shop

Where the transformer is actually made. Everything else in the factory exists to hold, cool and connect what is produced here.

- Horizontal winding machines, 1 to 35 tonnes
- Vertical and pit-type winders for disc and CTC
- Automatic wire-guiding and layer-insulation winders
- HV wire winders with full-width paper feed and cut
- LV and HV foil winders, cold-weld and TIG
- Instrument transformer, CT and PT winding machines
- Condenser bushing winders and narrow-band taping

Insulation shop

Small machines, disproportionate consequences. Insulation geometry is electrical design expressed in pressboard.

- Pressboard and paperboard shearing, CNC and manual
- Insulation paper slitting
- Spacer and oil-duct strip making and bonding
- End-ring milling and CNC insulation centres
- Cylinder rolling, pasting and scarfing

Tank shop

The part the customer sees. Corrugated wall lines have replaced radiators across most of the distribution market.

- Corrugated fin forming and seam welding lines
- Corrugated tank wall production lines
- Radiator production and welding fixtures
- Shearing, bending, plasma cutting and welding
- Shot blasting, painting booths and curing ovens

Drying, vacuum and impregnation

Moisture is the enemy of every transformer ever built. This is where it is removed, and where warranty claims are prevented.

- Vacuum drying ovens and variable-pressure ovens
- Vapour phase drying plant
- Vacuum oil-filling and oil treatment plant
- Vacuum resin casting for dry-type, CT and PT
- VPI plant for cast-resin and HV coils

Test bay

Nothing leaves the factory without passing through here. Also the shop that decides whether a utility will register you as a vendor.

- Ratio, vector group and winding resistance sets
- No-load and load loss measuring systems
- Power-frequency and induced withstand plant
- Partial discharge measuring systems
- Impulse voltage generators and dividers
- Test hall screening, earthing and interlocking

Semi-automatic HV coil winding machine for potential transformer coils

One machine from the winding shop, given in full, because a specification says more about a supplier than a brochure paragraph does. Two units of this machine are currently in manufacture for a leading South African high-voltage equipment manufacturer, for delivery CIF Durban.

PARAMETER	SPECIFICATION
Application	High voltage coil winding for potential and voltage transformers
Coil envelope	Diameter to 500 mm, axial length to 1200 mm, coil weight to 200 kg
Conductor	Enamelled copper wire, 0.10 mm to 0.50 mm, single conductor
Tension control	Closed-loop AC servo, 75 to 1250 grams, capstan roller with dancer feedback
Inter-layer insulation	Full width, three dereelers, roll width to 1200 mm, automatic feed and automatic cut
Traverse	AC servo on ball screw and LM guide, 500 mm, 0 to 10 m per minute
Control	PLC with colour touchscreen, power-fail recovery, OEE data
Spindle	Servo motor and gearbox, to 500 rpm, spindle centre height 1000 mm
Power	415 V, 3 phase, 50 Hz. Installed 7 kW, average consumption under 4 kW
Machine	Approximately 2800 x 1700 x 1400 mm, 3000 kg

COMMERCIAL	STANDARD POSITION
Pricing	Quoted per enquiry, against a completed requirement data sheet
Incoterms	Ex-works, FOB, CIF or DAP, INCOTERMS 2020
Inspection	Factory acceptance testing at the builder's works. Third-party inspection, SGS or client-appointed, provided free of cost
Delivery	8 to 24 weeks depending on machine class and degree of customisation
Installation	Supervision, commissioning and operator training quoted with every machine
After sales	Spares held against the installed base. Remote support standard, site attendance on request

Why clients keep us in the room.

We specify before we sell

Every enquiry starts with a requirement data sheet — the coils you will actually wind, the paper you actually stock, the voltage at your machine position. A machine specified from a catalogue is a machine that disappoints in month three.

We are supplier-agnostic

We are not the exclusive arm of one builder. Where a Swiss machine is the right answer we will say so, and where an Indian machine at a third of the price does the same job we will say that too.

Support where there is none

Across most of Africa there is no agent for transformer manufacturing machinery. When a machine stops, there is nobody to call. Our proposition is that there is somebody to call.

We have built things ourselves

Mahabir is an ISO-certified manufacturer and a project developer across four countries. We have commissioned our own plant, met our own payroll and argued with our own suppliers. It informs how we buy for you.

Four countries. One conversation.

Transformer plant and equipment sits inside a group that already ships steel, machinery and complete factories into these markets — with the banking, logistics and documentation already in place.

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Tell us what you intend to build.

Not which machine you want — what you intend to manufacture, at what output, to which standard. From that we will come back with a shop list, an indicative layout and an equipment specification. There is no charge for that conversation and no obligation attached to it.

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