

TIWac

A division of
Walchandnagar Industries Ltd.

Walchandnagar Industries Ltd.



- A diversified Engineering company
- Sales Rs. 640 Cr. (\$ 135 Mn)
- 3 Plants, 1700 employees
- ISO 9001 Company
- Centenary Year 2008
- Business in more than 25 countries



TIWac

Division (ISO 9001 Certified)

- **Factory:** Dharwad, Karnataka, India
- Set up in 1962-63 to manufacture Mechanical Alarm Time Pieces in technical collaboration with **Louis Schwab of Switzerland.**
- Pressure Gauges and Temperature Gauges introduced the year 1992-93.



Our Values

Organisational Culture centres on:

◆ Quality

Quality in everything we do !

◆ Precision

High precision machinery
to ensure precision in products!
Imported from Germany, Switzerland
and England.

◆ Time

Timeliness !



Location

- Situated on a hill at 700 m height from mean sea level.
- Is known for its salubrious climate for precision work.
- Dharwad is a University Town.
- Well connected by Road (on Golden Quadrilateral road network)
- Connected by Air to Mumbai and Bangalore.



Social Side of Tiwac

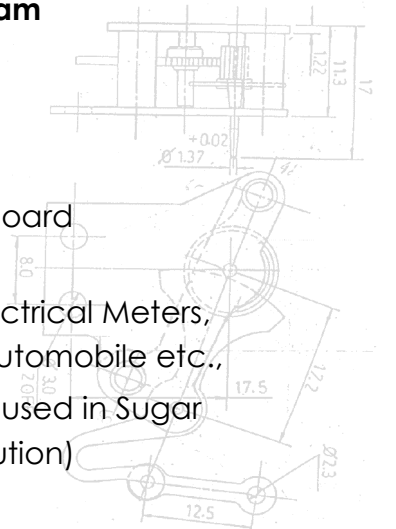
- TIWAC maintains a colony for technicians and officers.
- Guest house for visitors.

Product Development

• Strong Product Development team

Developed new products:

- Industrial Pressure Gauges,
- Temperature Gauges
- Sector Mechanism for Dash Board Instruments
- Precision Components for Electrical Meters, Timers, Electronic gadgets, Automobile etc.,
- Synchronous Multiplex Timer (used in Sugar factories as an import substitution)



People

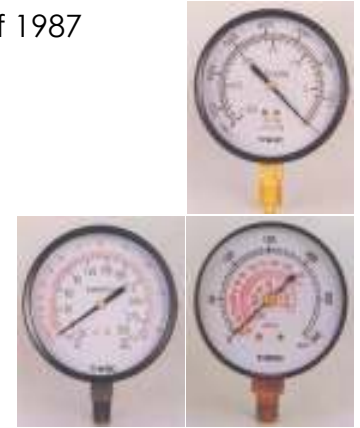
Committed and Devoted staff.

- Experienced Engineers & Supervisors
 - 48
- Trained technicians;
 - Precision Assembly and testing by Ladies Staff
 - 170 technicians
- Trainees & Apprentice
 - Young technicians regularly inducted.
 - Trained on the job.



Pressure Gauges

- **Sizes** from 40mm (1.5") to 250mm (10")
- **Range** 0 to 700 kg/cm² (10000 PSI)
- **Vacuum Gauges**
- As per Indian Standard IS 3624 of 1987 specifications.
- The **types** of gauges are,
 - Liquid filled,
 - Diaphragm seal,
 - Low pressure diaphragm,
 - Electrical Contact Gauges,
 - Master Gauges etc.



Temperature Gauges

- **Manufactured in various types,**
- Mercury in Steel Type in the size from 63mm to 250mm (10")
- Range: 38 °C to 600 °C
- Other types
 - Ether filled
 - Gas / Nitrogen filled
 - Bi-metal



Plant & Machinery

Automats

Gear Hobbing

Pivot Polishing

Power Press

Welding

Heat Treatment

Chemical Section

Second Operation

Tool Room

Automats

Automats	Bechler (Switzerland)	12mm bar capacity 7mm bar capacity 4mm bar capacity	2 Nos 5 Nos
	HMT Petermann - P7 - P7R		1 No 1 No
	Bechet (Switzerland)	10 mm with threading and drilling attachment	1 No
	Deobil (Swiss)	Tool Grinding and Laping machine	1 No
	Bechler (Switzerland)	Cam slotting machine (type CR 510)	1 No
	Spindle drilling and threading attachment available on the machines		

Gear & Pivot

Gear Hobbing	Wahli (Swiss) Gear Hobbing Machine type W 90 with W 25 Automatic Leader	Max. dia of work piece 40 mm, Max. cutting length 50mm, Module 0.05 to 1.00, Number of teeth cut 6 to 200 with automatic leader W25 type.	1 No
	Keoffer (West Germany) Gear Hobbing (Type 110)	Number of teeth 5 to 200 Dia of std hob 25mm x 10 x 8 Max Module 1.	1 No

Pivot Polishing	Hauser Pivot Burnishing Machine (type 241)
	Hauser Wheel Sharpening Machine (type 806)

Press & Weld

Power Press	75 Ton and 20 Ton geared mechanical power pressure of Indian Make
	42 Ton and 16 Ton geared mechanical power press of Swiss make (Beautler)
Welding	Arc / Spot Welding Machine Single & 2 Phase Combined 230 440 V, KVA 16.5
	Argon Arc welding
	Gas Cutting & Welding Set

Metallurgical Processing

Heat Treatment	Cynide Bath for Heat Treatment	Therelek Type
	Muffle Furnace	
	Tempering Furnace	

Chemical	Bright Nickel Electroplating	Chromating
	Chrome Electroplating	Blackening
	Phosphating	Spray Painting
	Zinc Plating	Stoving facilities

Tool Room

Tool Room	Full-fledged tool room with Jig Boring, Grinding and Heat Treatment facilities.
Second Operation	High speed Drilling machines, Precision Milling Machines, Spring Controlled Presses, Leg Presses, Pultra lathes, tapping machines.

Approvals

- **Steel Authority of India Limited.**
– BHADRAVATI; DURGAPUR; SALEM;
BOKARO; BHILAI
- **Nuclear Power Corporation Limited – NPCIL**
- **Goa Shipyard Ltd.**
- **MECON Ltd., Ranchi**
- **Indian Farmers & Fertilizers Co-op. Ltd.- IFFCO**



Approvals

- **Director General of Quality Assurance – DGQA**
- **Engineers India Ltd.**
- **Projects & Developments India Ltd. – PDIL**
- **Bharat Pumps & Compressors Ltd. – BPCL**
- **Bharat Heavy Electricals Ltd. – BHEL**
- **Bharat Heavy Plates & Vessels Ltd. – BHPV**
- **Avant Garde Engineers & Consultants Ltd.**



Chemical

Rastriya Chemicals & Fertilizers
Hindustan Petro Chemicals Ltd.
Chemfab Alkalies.

Cement

O C L India Ltd.
Rajashree Cement

Paper Mills

ITC Ltd.
Emami Paper Mills

Compressor

Atlas Capco
Ingersoll Rand
Southwest Compressors
Bharath Pumps & Compressors Ltd.

A Partial Customer List

Sugar Plants

Walchandnagar Industries Ltd.

National Heavy Engineering Corp.

Thyssen Krupp

Fertilisers

Indian Farmers Fertilizers Co-op.

Mangalore Chem. & Fertilizers Ltd.

Earth Moving

Bharat Earth Movers Ltd.

Projects

GAIL Ltd.

ONGC Ltd.

Hindustan Petro. Corp. Ltd

A Partial Customer List

Dash Board Instruments

Siemens VDO Ltd

Minda Stoneridge Instruments Ltd.

Tafe Ltd.

Instruments

Rishabh Instruments

Esbee Industrial

Corporation Ltd.

V R L Automation

Instrumentation Ltd

F R L

Anand Airlines & Access.

Janatics India Ltd

Veljan Hydrair

A Partial Customer List

Textile Machinery

Laxmi Electrical Controls Ltd

Steel Auth. or India Ltd.

Bokaro Steel Plant

Salem Steel Plant

Rourkela Steel Plant

Burnapur Steel Plant

Durgapur Steel Plant

Bhilai Steel Plant

Steel

Rastriya Ispat Nigam Ltd.

Visweswaryya Iron & Steel

Vizag Steel Plant

AC & Refrigeration

Rohini Refrigeration

Kirloskar Pneumatic Company

A Partial Customer List

Lubrication Systems

Lincoln Helios

CNG

Vanaz Engineers Ltd

Minda Instruments Ltd

Sagas Autotech

Waaree Instruments

D P instruments Ltd

D V S Instruments

Dynamic Gauges

Forbes Marshall

Gauges Bourdon (I)

Goa Thermostatic P.

Goa Instruments

M I C Instruments

Gear Box

Walchandnagar

Industries Ltd.

Flender Ltd.

Vulcan Gears

A Partial Customer List

Hydraulics

Bemco Hydraulics

Standard Engineering

Shipping

Goa Shipyard

ABG Shipyard

Garden Reach Ship Build.

Heinen & Hopmen

Hindustan Shipyard

Power

Alstom Power India Ltd.
Nuclear Power Corp.d
Kolaghat Thermal Pow
Neyveli Lignite Corp. L
West Bengal Power De
Damodar Valley Corp
Ennore Thermal Power
APGENCO

Refineries

Cochin Refineries

Sugar Mills

More than 100 mills

more
and
more ...



Product Range



PRESSURE GAUGES		Quality Pressure Gauges (Class IA)	
Weatherproof Aluminum Stove enameled case, Brass / SS internals, Aluminum White painted dial with hand marked graduations, Zero adjustment Black painted pointer, shatter proof glass, Heavy duty movement, Accuracy + / - 0.5% FSD (As per IS 3624, Clause 14.1.2).			
Size (mm)	Connection	Thread Size	Pres. Range
150 200 250	Bottom and back mounting.	½" BSP / NPT	0 to 700 Kg / cm ² (0 to 10000 PSI)



PRESSURE GAUGES		Special Type (Class B)	
Weatherproof Aluminum Stove enameled case, Brass / SS internals, Heavy duty movement, Aluminum White painted dial with black printing, Zero adjustment black painted pointer, shatter proof glass, Accuracy + / - 1.5 : 1.5% FSD (As per IS 3624 Clause 14.1.3)			
Options: SS casing Liquid filling, Electrical Contact, Diaphragm seal, Blow Off Disc, Toughned / shatter proof glass.			

Size (mm)	Connection	Thread Size	Pres. Range
63	Bottom, Back Direct, Pannel and clamp mounting	¼" BSP	Vac, 0 to 400 kg/cm ² (0 to 6000 psi)
100 150 200 250	Bottom Direct & Surface, Back 3/8" BSP Direct, Panel & Clamp Mounting	3/8" BSP	Vac, 0 to 400 kg/cm ² (0 to 10000 psi)

PRESSURE GAUGES	Low pressure diaphragm gauge
Weather Aluminum Stove enameled Case, Brass / SS Internals, Aluminum White Painted dial with black printing, Zero adjustment Black painted pointer, Crystal glass, SS 316 diaphragm element, SS flange Accuracy + /- 1.5% FSD (As per IS 3624, Clause 14.1.6)	

Size (mm)	Connection	Thread Size	Pres. Range
100 150	Bottom and Back Direct Mounting	--	600 mm Wc to 10000 mm Wc

PRESSURE GAUGES	STANDARD TYPE (CLASS-II)
MS Stove enamel painted case, Brass Internals, Aluminium white painted dial with black printing , MS Black Painted Pointer, Acrylic / Crystal glass, Accuracy +/-3:2:3% FSD (Better than IS 3624 Clause 14.1.4)	

Size (mm)	Connection	Thread Size	Pres. Range
40	Bottom, Back Direct, Panel and Clamp mounting	1/8"BSP	Vac & 0 to 21 kg/cm ² (0 to 300 Psi)
50	Bottom, Back Direct, Panel and Clamp mounting	1/8"BSP	Vac & 0 to 400 kg/cm ² (0 to 6000 Psi)
63	Bottom, Back Direct, Panel and Clamp mounting	1/4" BSP	Vac & 0 to 400 kg/cm ² (0 to 6000 Psi)
100 150	Bottom Direct and Surface Back, Direct Panel and Clamp mounting	3/8"BSP	Vac & 0 to 700 kg/cm ² (0 to 10000 Psi)

TEMPERATURE GAUGES	MERCURY IN STEEL THERMOMETER
Weatherproof Aluminum Stove enameled Case, Brass/SS internals, Aluminum White Painted Dial, Zero Adjustment Black painted Pointer, Crystal glass, MS/SS Stem, Bulb and Capillary, Accuracy +/-1% FSD	

Standard Bulb Size	Connection	Sizes mm	Temperature Ranges
Dia 12mm Stem size Dia 9mm Length 250mm adjustable.	a) Rigid Stem, Bottom and Back b) Distant Capillary Type, Std. Length 3 meters (Maximum Capillary Length 18 meters)	63, 100, 150, 250 of capillary length.	0 to 50 °C, 100 °C, 120 °C, 150 °C, 200 °C, 300 °C, 400 °C, 600 °C, -38 °C + 50 °C

SECTOR MECHANISM	Sector Mechanisms are used in Dash Board Instruments, Industrial Pressure and Temp. gauges.
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Assembly No.	Ratio	Material	Suitable for
TSM 40 BB	1: 9.8	Brass	40mm Pressure Gauge
TSM 50 BB	1: 10		50 & 63mm Pressure Gauge
TSM 63 BN	1: 9.8	Brass With	Pressure & Temp. Gauges used in Dash Board Instruments
TSM 100 BN	1:11.5	Nickel Silver Pinion & Axle	100 & 150mm Pressure Gauges
TSM 150 BN	1:11.3 1:11.4		Quality Pressure Gauge of 100 & 150mm
TSM 200 BN	1:11.5 1:18.7		Quality Pressure Gauge of 200 mm & above
TSM 150 SS	1:11.3 1:11.4		SS 304
TSM 200 SS	1:11.5 1:18.7	Quality Pressure Gauge of 200 mm & above	



Thank You