



**Marshall**

**Marshall**  
**TECHNOLOGY**



**TRISHOOL**

**YOUR WEAPON FOR  
COMPETITIVENESS,  
PROFITS  
& PEACE OF MIND**

**SUPER-OPTIMIZED MACHINES**

**AFFORDABLE AUTOMATION**

**SmartFAC:  
INDUSTRY 4.0..REIMAGINED!**



**2019**

**TRANSFORMING Manufacturing... *Smartly!***

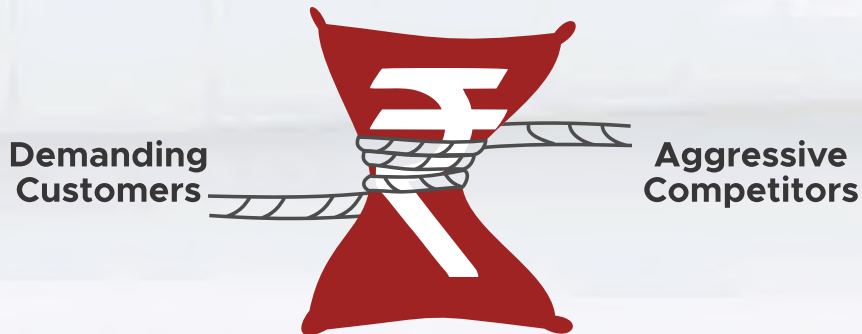


# WHY

# Manufacturing needs **TRANSFORMATION** TODAY?

## Problems of Manufacturing Sector

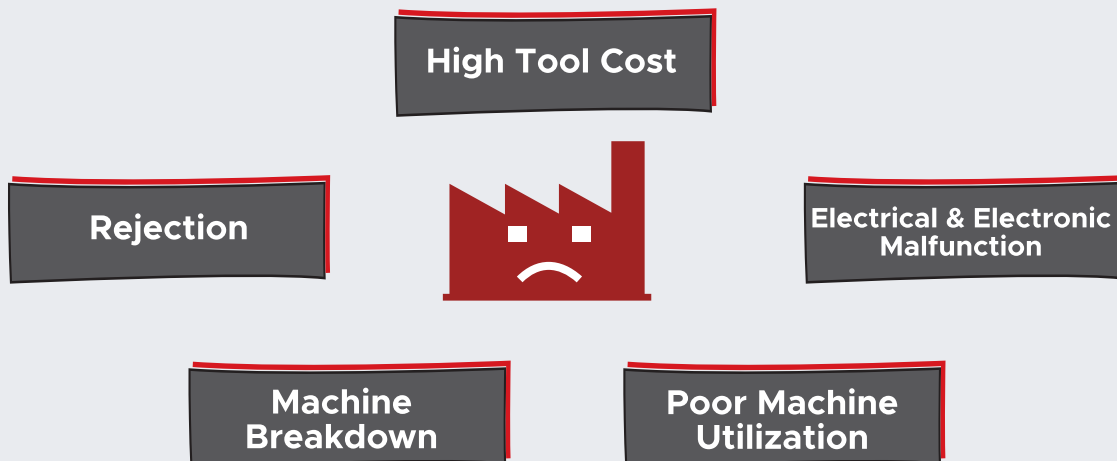
### #1 PROFITS UNDER PRESSURE



### #2 SHORTAGE OF MACHINE OPERATORS



### #3 Sub-Optimal Operation of Machine Shops



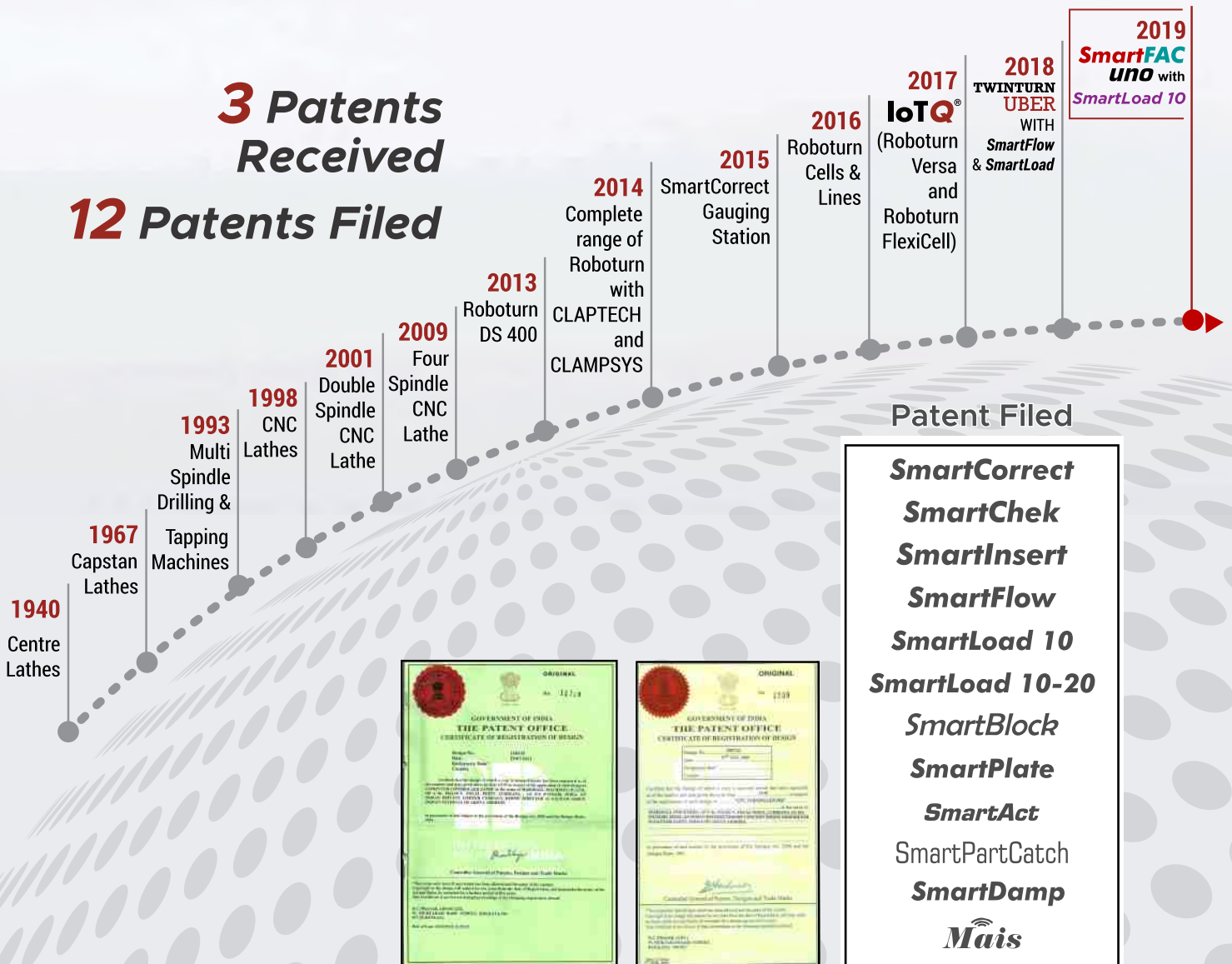
# HOW **Marshall** has DEVELOPED SOLUTIONS

## 78 YEARS OF INNOVATION

"MARSHALL MACHINES LTD, the most innovative machine tool manufacturer in India and the pioneer in 'Intelligent Automation' was started as Marshall Industries in 1961 by our visionary founder, Sh. Gautam Sarup. His father had built one of India's first lathes in 1940 in Lahore and instilled a love for machines in Sh. Gautam Sarup from a very young age.

"He was joined by his two sons Gaurav Sarup (in 1986) and Prashant Sarup (in 1989). From Bench Lathes to Capstan Lathes to Multi Spindle Drilling/Tapping machines to CNC Lathes to Intelligent, Automated CNC Cells, it has been a long journey fuelled by a passion for Excellence and Innovation."

**3 Patents Received**  
**12 Patents Filed**



**INTENSIVE R&D = PATENTED TECHNOLOGIES**



# Our World class Infrastructure



5 Axis CNC Universal Machining Center with Auto Indexing head with "A" & "B" Axis



World's Best STUDER CNC Cylindrical Grinder



Double column universal machining center



World Class German Mother Machinery



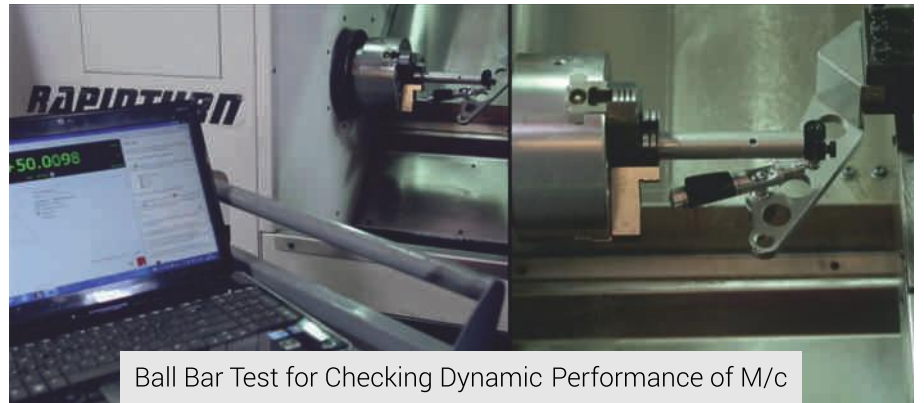
Inspection of Machine Parts



Latest Carl Zeiss CMM



Laser Calibration & Testing



Ball Bar Test for Checking Dynamic Performance of M/c

# WHAT are the SOLUTIONS

## Marshall TECHNOLOGY

YOUR WEAPON FOR  
COMPETITIVENESS,  
PROFITS  
& PEACE OF MIND



## TRISHOOL

SUPER-OPTIMIZED MACHINES

AFFORDABLE AUTOMATION

*SmartFAC:*  
INDUSTRY 4.0..REIMAGINED!

### 1st Shool

#### SUPER-OPTIMIZED MACHINES

##### SINGLE SPINDLE MACHINES

CAF (CITIUS-ALTIUS-FORTIUS) .....	6
UNO .....	6
RIGIDTURN Series .....	8-9
TMH Series TURNMILLS .....	7

##### DOUBLE/TWIN SPINDLE MACHINES

RAPIDTURN Series .....	10-11
TWINTURN T Series .....	12
TWINTURN UBER .....	7

### 2nd Shool

#### AFFORDABLE AUTOMATION

UBER + SMARTLOAD 10-20 .....	13
UNO + SMARTLOAD 10 .....	13
ROBOTURN Series .....	14

### 3rd Shool

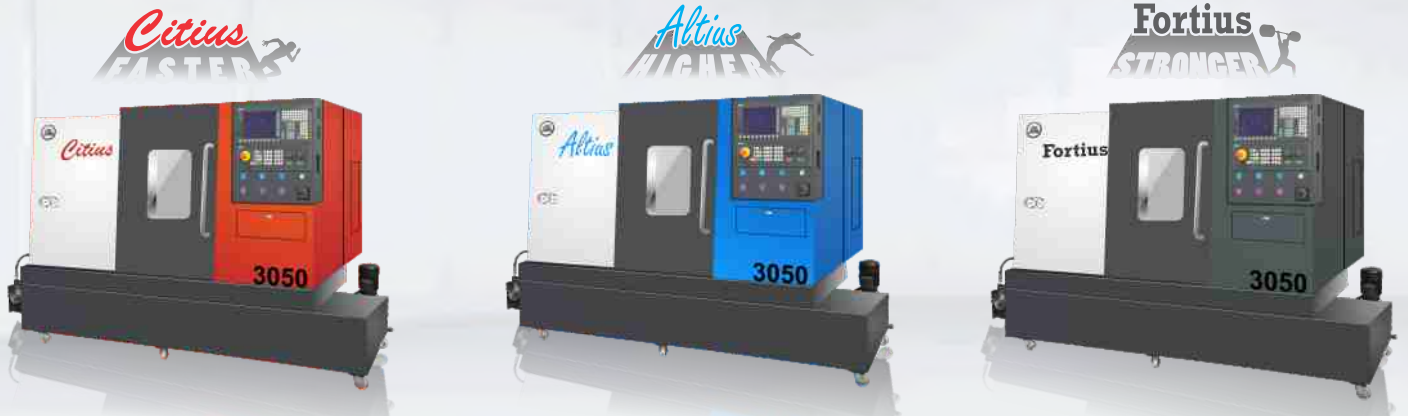
#### SMARTFAC :INDUSTRY 4.0 REIMAGINED !

SMARTFAC .....	15
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## SUPER-OPTIMIZED MACHINES

### CAF (CITIUS-ALTIUS-FORTIUS)



Inspired by the Olympic Motto: **Citius** - **Altius** - **Fortius** (Faster - Higher - Stronger) Marshall has studied the best compact turning centres in the world and created a TRIAD of class leading machines which raise the bar for performance in the three vital areas of SPEED, ACCURACY & RIGIDITY.

Please check the CAF catalogue for full details.

### UNO

#### The #1 Single Spindle Chucker



**uno**

**#1**

**RIGIDITY**

**SPEED**

**PRODUCTIVITY**

**TOOL LIFE**

- 60 Degree Slant Bed
- Monoblock Casting with 'Harcrete'
- 5500 RPM & 30m/min. Rapids
- Upto 8 tools per spindle with
- **SmartFlow** (Patented) Coolant System

Please check the *Uno* catalogue for full details.

# TMH

## HEAVY DUTY TURNMILL SERIES

Our design, manufacturing processes & selection of finest machine elements from the best manufacturers in the world ensure the following;

- **RIGIDITY of Bed & Base**
- **RIGIDITY of Head & Spindle Assembly**
- **RIGIDITY of Tailstock**
- **RIGIDITY of LM Guideways**



This Attribute of RIGIDITY is present in even our smallest models because RIGIDITY is vital for:

**PRODUCTIVITY ACCURACY**  
**SURFACE FINISH**  
**TOOL LIFE**



Please check the TMH catalogue for full details.

# TWINTURN UBER

Patent Applied

THE MOST IMPORTANT ADVANCEMENT IN

CNC TURNING IN INDIA

IN LAST 10 YEAR



THE MACHINE FOR

**SUPER-OPTIMIZED TURNING**

- 60 Degree Slant Bed
- Monoblock Casting with 'Harcrete'
- 5500 RPM & 30m/min. Rapids
- Upto 8 tools per spindle with
- SmartFlow (Patented) Coolant System

# TWINTURN UBER

Please check the TWINTURN UBER catalogue for full details.



## ***RIGIDTURN Series***

**Extra Heavy Duty CNC Turning Centre**



### ***With these 5 Advantages***

- #1 HEAVY RATE OF METAL REMOVAL**
- #2 BETTER SURFACE FINISH & LONGER TOOL LIFE**
- #3 BETTER POSITIONING REPEATABILITY RESULTING IN CLOSE TOLERANCES ON JOB**
- #4 MUCH LONGER SERVICE LIFE WITH ORIGINAL ACCURACY**
- #5 WIDEST RANGE OF MODELS AVAILABLE ALONG WITH CUSTOMIZED SOLUTIONS. ALSO ALL RIGIDTURN MODELS AVAILABLE IN TURNMILL CENTRE VERSION**

***Marshall Rigidturn slant bed heavy duty CNC turning centres offer highest value to our esteemed customers.***



Our Machine Rigidity is best exemplified by our model RIGIDTURN SL-40-2500 with 650 mm turning Diameter, 2500 mm turning length and 3000 Kg max. job weight. (pls. see attached pictures).

This machine is being used to Hard Turn (O.D.) and soft turn (Ends) of Chilled Rolls with weight of 2500 Kg.

Our design, manufacturing processes & selection of inest machine elements from the best manufacturers in the world ensure the following:

- **RIGIDITY of Bed & Base**
- **RIGIDITY of Head & Spindle Assembly**
- **RIGIDITY of Tailstock**
- **RIGIDITY of LM Guideways**



This Attribute of RIGIDITY is present in even our smallest models because RIGIDITY is vital for:  
**Productivity | Accuracy | Surface inish | Tool Life**

## Specifications

Model	SL-20	SL-25	SL-30	SL-40	SL-50
<b>CAPACITY</b>					
Swing Over Bed (mm)	630	750	800	850	1000
Maximum Turning Dia. (mm)	350	400	500	650	800
Maximum Turning Length (mm)	500/700/ 1000/1500	700/1000/1500 /2000	700/1000/1500 /2000/2500/3000	700/1000/1500 /2000/2500/3000	700/1000/1500 /2000/3000
<b>MAIN SPINDLE</b>					
Spindle Nose (Standard)	A2-8	A2-8	A2-11	A2-15	A2-15
Front Bearing Bore (mm)	110	110	150	180	240
Maximum Bar Capacity (Std.) (mm)	55/64	55/64	75/90	90/110	160
<b>SPINDLE DRIVE</b>					
Spindle Motor rated power (KW) Fanuc	11/15	11/15	15/18.5	18.5/22 (or as req.)	22/26 (or as req.)
Siemens	12/16	12/16	16/21	22/30 (or as req.)	22/30 (or as req.)
Inf. Variable speed range (rpm)	50-3000	50-2800	50-2000	20-1200	20-1200
<b>RAPID TRAVERSE</b>					
STANDARD					
X-axis (m/min.)	24	20	20	20	15
Z-axis (m/min.)	24	20	20	20	15
<b>TAILSTOCK</b>					
Taper in Quill (mm)	MF5	MF5	MF6	MF6	MF6
Adjustable Thrust (Max.)	600	600	750	1000	1000
<b>TOOL TURRET</b>					
No. of Stations (Std.)	8	8	8/12	12	12
Tool Cross Section (mm)	25x25	32x32	32x32	32x32	32x32
Max. Boring Bar Dia.	40	50	50	50	50
<b>POSITIONING REPEATABILITY</b>					
X-axis	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns	± 2 Microns	± 2 Microns
Z-axis	± 2 Microns	± 2 Microns	± 2 Microns	± 3 Microns	± 3 Microns
CNC Controls: SIEMENS / FANUC 0iTf					
Weight (approx.) (Kg)	6500/7500/ 8000/9000	8000/9000/ 10500/12500	8500/9500/ 11000/12500/ 13500/14500	8500/9500/ 11500/13000/ 14000/15500	9000/10000/ 11500/13500/ 14500/16000

Note : Product improvement is a continuous process at "Marshall".  
 Design & Speciications are therefore, subject to change, without prior notice.



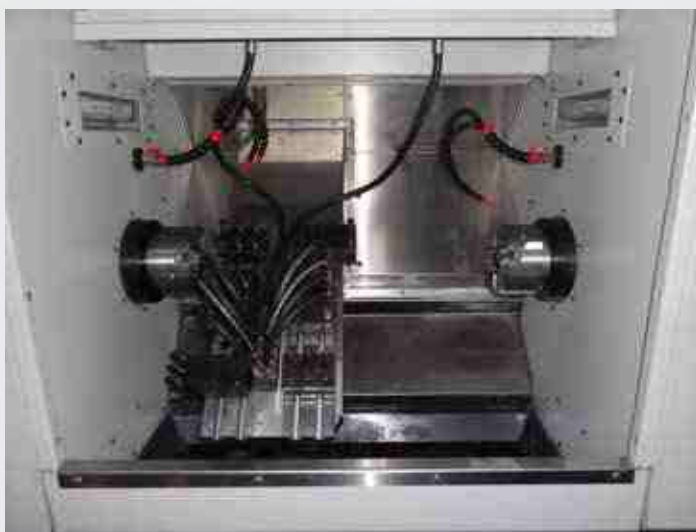
## **RAPIDTURN Series**

**Double Head Single Slide CNC Turning Centre**

Design Registered with Patent Office of INDIA



**Most Productive & Cost effective Turning Solutions for mass produced chucking jobs**



### **Advantages**

- NO IDLE TIME resulting in higher productivity
- WHILE MACHINING is going on at one head, the operator unloads completed job and clamps fresh job at the second head.
- TWO SET UPS available on one machine one half of a job can be completed on one spindle while the second half be completed on other spindle.
- ONLY ONE OPERATOR required & space taken is similar to one machine.
- LINEAR TOOLING SYSTEM used on "MARSHALL" DOUBLE SPINDLE MACHINES reduces machining time because of faster

## \*Productivity Comparison During Turning of Two Wheeler Gears Blanks

### Single Spindle machine

	Machining Time	Loading/ Unloading Time	Total Floor to Floor
1st Setup	20 sec	12 sec (Avg)	32 sec
2nd Setup	22 sec	12 sec (Avg.)	34 sec

Total Component Floor To Floor Time = 66 Sec

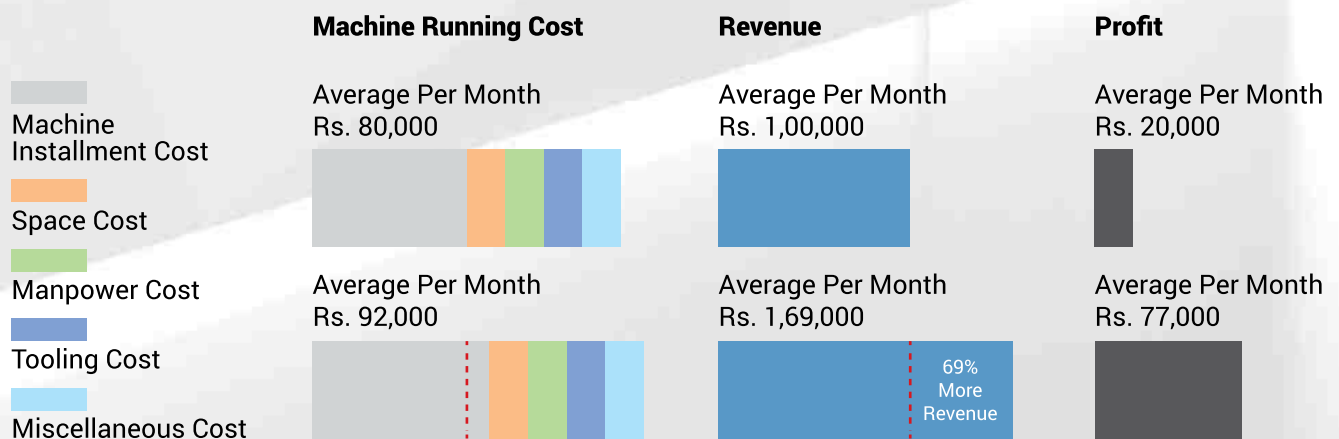
### Double Spindle machine

1st Setup Machining Time	Station to Station	2nd Setup Machining Time
18 sec	2 sec (Avg)	19 sec

Total loor to loor time =39 sec

\*Productivity Advantage =66/39=1.69. i.e. 69%

## EXTRA PRODUCTIVITY = MUCH HIGHER PROFITS!



### Specifications

Model	SL-11(D)	SL-12(D)XF	DS 450	SL-14 (D)	SL-16 (D) XF
<b>CAPACITY</b>					
Swing Over Bed (mm)	310	350	400	450	450
Maximum Turning Dia. (mm)	135	210	250	260	350
Maximum Turning Length (mm)	100	125	125	150	200
Stroke (mm)	300	300	400	600	900
<b>MAIN SPINDLE</b>					
Spindle Nose (Standard)	A2-4	A2-5	A2-5/A2-6	A2-6	A2-8
Front Bearing Bore (mm)	80	85	85/100	100	110
Maximum Bar Capacity (Std.) (mm)	32	38	38-45	45	55
(Optional) (mm)	32	42	42-52	52	64
<b>SPINDLE DRIVE</b>					
Spindle Motor rated power (KW) Fanuc	5.5/7.5	7.5/11	7.5/11	7.5/11	11/15
Siemens		9/12	9/12	9/12	12/16
Inf. Variable speed range (rpm)	100-4500	100-4000	100-4000	100-3500	50-2800
<b>RAPID TRAVERSE</b>					
STANDARD					
X-axis (m/min.)	24	24	24	20	20
Z-axis (m/min.)	24	24	24	20	20
<b>POSITIONING REPEATABILITY</b>					
X-axis	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns
Z-axis	± 2 Microns	± 2 Microns	± 2 Microns	± 2 Microns	± 2 Microns
CNC Controls: SIEMENS / FANUC 0iTf					
Weight (approx.) (Kg)	4000	4500	5000	6000	7000

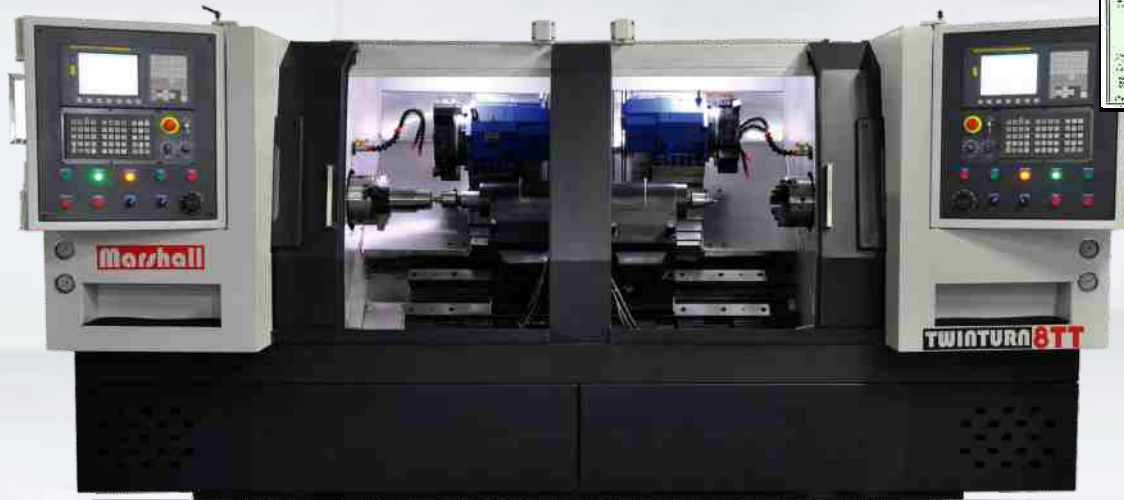
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# TWINTURN Series

Double Head Double Turret CNC Turning Centres

Design Registered with Patent Office of INDIA



*The '2 in 1' Turning Centres designed to meet the REAL needs of Component Manufacturers:*

- Saving in Space
- Saving in Manpower
- Saving in Shop Floor Material Movement

## Specifications

Model	TWINTURN 6T (90)	TWINTURN 6TT	TWINTURN 8T/8TT	TWINTURN 12TT	TWINTURN XL
<b>CAPACITY</b>					
Swing Over Bed (mm)	400	400	450	520	750
Maximum Turning Dia. (mm)	250	250	320	360	500
Maximum Turning Length (mm) with Tailstock	150	340	140/330	325	350
<b>MAIN SPINDLE</b>					
Spindle Nose (Standard)	A2-5	A2-5	A2-6	A2-8	A2-11
Front Bearing Bore (mm)	85	85	100	110	150
Maximum Bar Capacity (Std.) (mm)	38	38	45	55	75
(Optional) (mm)	42	42	52	64	90
<b>SPINDLE DRIVE</b>					
Spindle Motor rated power (KW) Fanuc	7.5/11	7.5/11	7.5/11	11/15	15/18.5
Siemens	9/12	9/12	9/12	12/16	16/21
Inf. Variable speed range (rpm)	100-4000	100-4000	100-3200	50-2800	30-1800
<b>RAPID TRAVERSE</b>					
STANDARD					
X-axis (m/min.)	24	24	24	20	20
Z-axis (m/min.)	24	24	24	20	20
TOOL TURRET					
No. of Stations (Std.)	8	8	8	8	12
Tool Cross Section	25x25	25x25	25x25	25x25	32X32
Max. Boring Bar Dia.	40	40	40	40	50
<b>POSITIONING REPEATABILITY</b>					
X-axis	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns	± 1.5 Microns	± 2 Microns
Z-axis	± 2 Microns	± 2 Microns	± 2 Microns	± 2 Microns	± 3 Microns
CNC Controls: SIEMENS / FANUC 0iTF					
Weight (approx.) (Kg)	6500	6800	7000	8000	11000

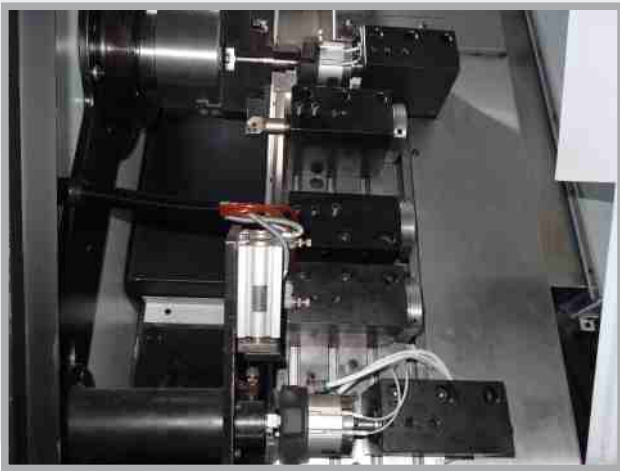
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2nd Shool

## AFFORDABLE AUTOMATION

Patented *SmartLoad* based on “TWIN GRIP TWIN RELEASE”

### TWIN GRIP



### TWIN RELEASE



**uno** + *SmartLoad 10*



**TWINTURN UBER** + *SmartLoad 10-20*

### **FIVE** Advantages of *SmartLoad* Technology

**RELIABLE** *Min. No. of Moving Parts*

**COMPACT** *Smallest Footprint*

**SAFE** *Mechanism inside machine. No risk to humans*

**FAST** *8-10 Sec. Load/unload time*

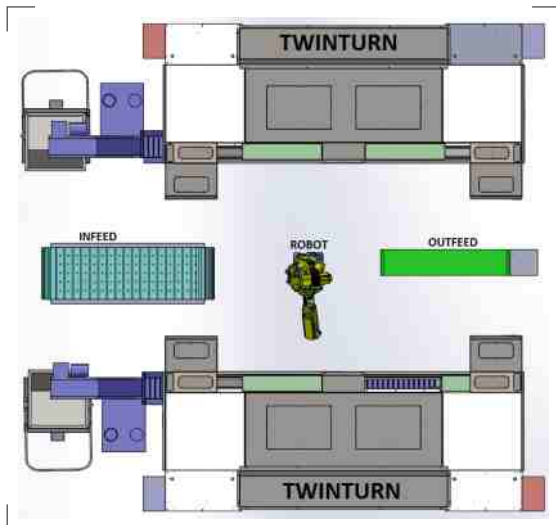
**ECONOMICAL** *50% the cost of Gantry or Robot based Automation.*

Please check the **uno** & TWINTURN UBER catalogue for full details.

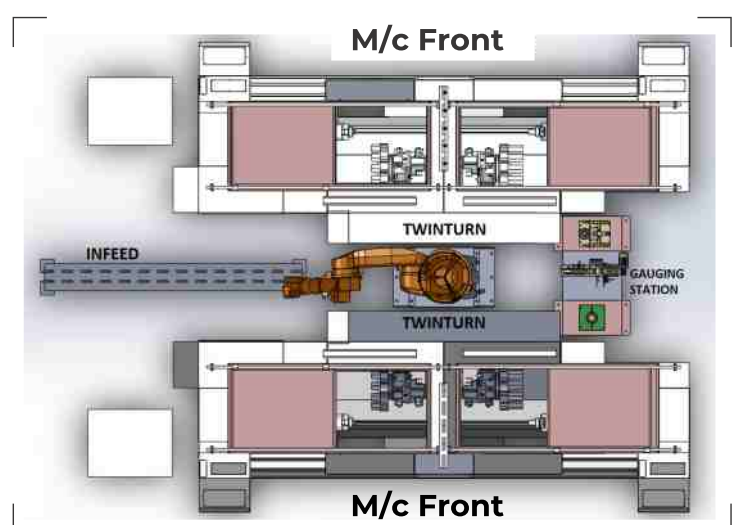


# Roboturn Cells & Lines *Concepts*

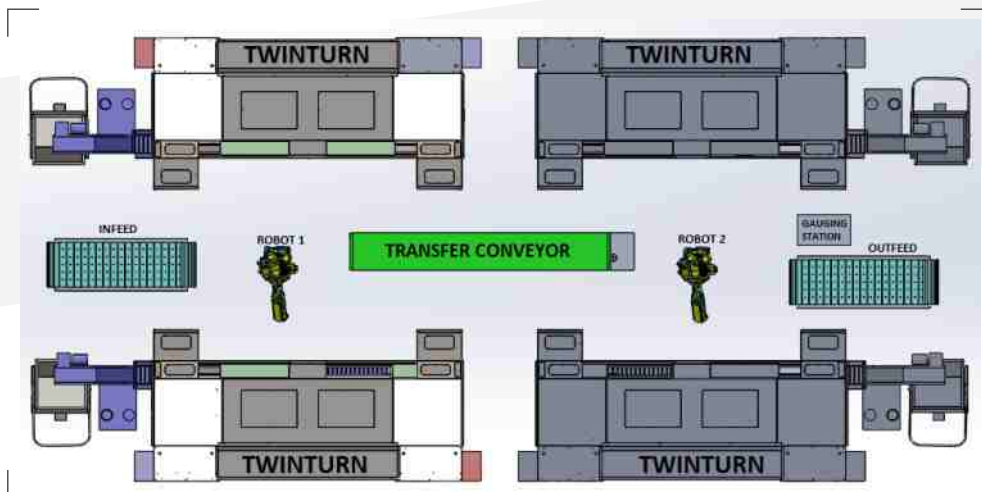
### 4 Spindle Cell (Front Loaded)



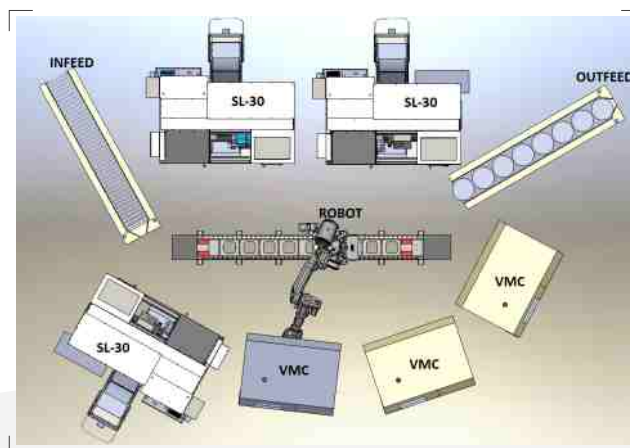
### 4 Spindle Cell (Top Loaded)



### 8 Spindle Line (Front Loaded)



### Roboturn + OTHER M/C Cell with 7<sup>th</sup> AXIS



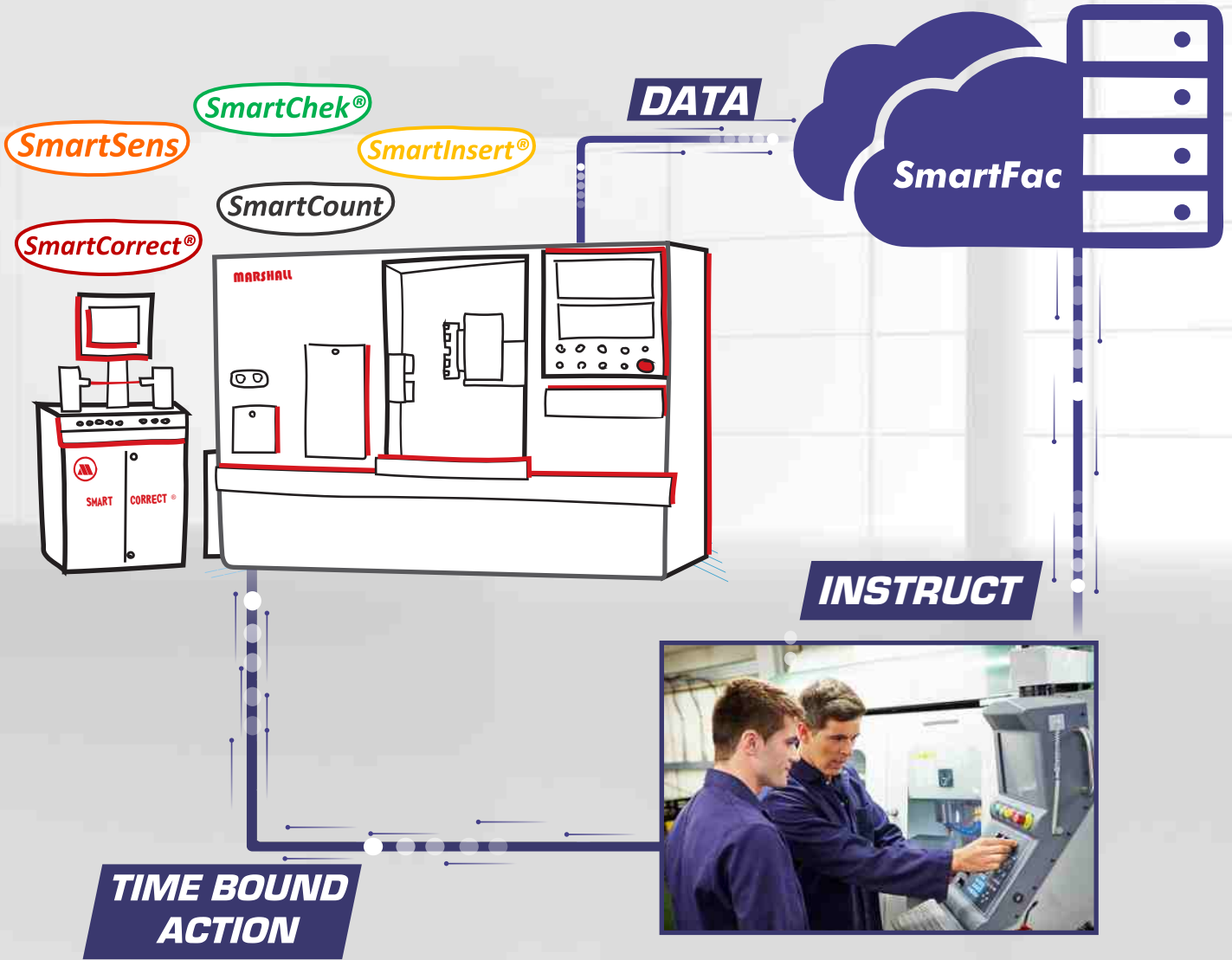
Please check the **Roboturn** catalogue for full details.

3rd Shool

**SMARTFAC :INDUSTRY 4.0 REIMAGINED !**

# SmartFAC

**'Smart' Industry 4.0 Tech for Closed Loop Operation of Machine Shops**



## The Smart Solution for '3 Pain Points' of every Machine Shop

- #1 Decline in Aptitude & Attitude of Skilled Operators
- #2 Exponential Jump in Quality demanded by Customers.
- #3 Poor Productivity (OEE) of machines, unplanned stoppages & frequent breakdowns

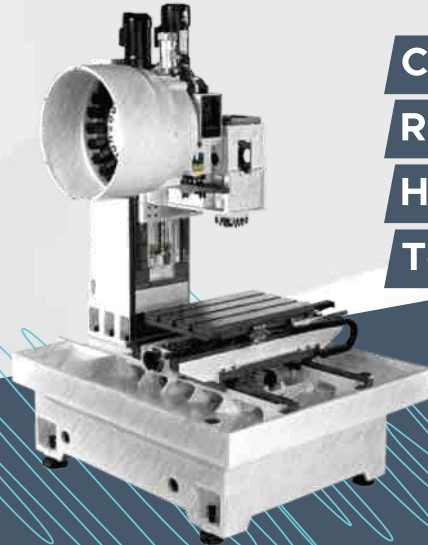
Please check the **SmartFAC** catalogue for full details.

**Launched**



**Marshall** Twinhorn

**Vertical Machining Centers (Made in Taiwan)**



**Compact**  
**Rigid**  
**High Speed**  
**Top Quality**

## **VF 500**

Table Size	650 x 380mm
No. of Tools	20
Max. Speed	15,000
Rapids	48 m/min.

**OUT PERFORMS Imported Drill Tap Centers**



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