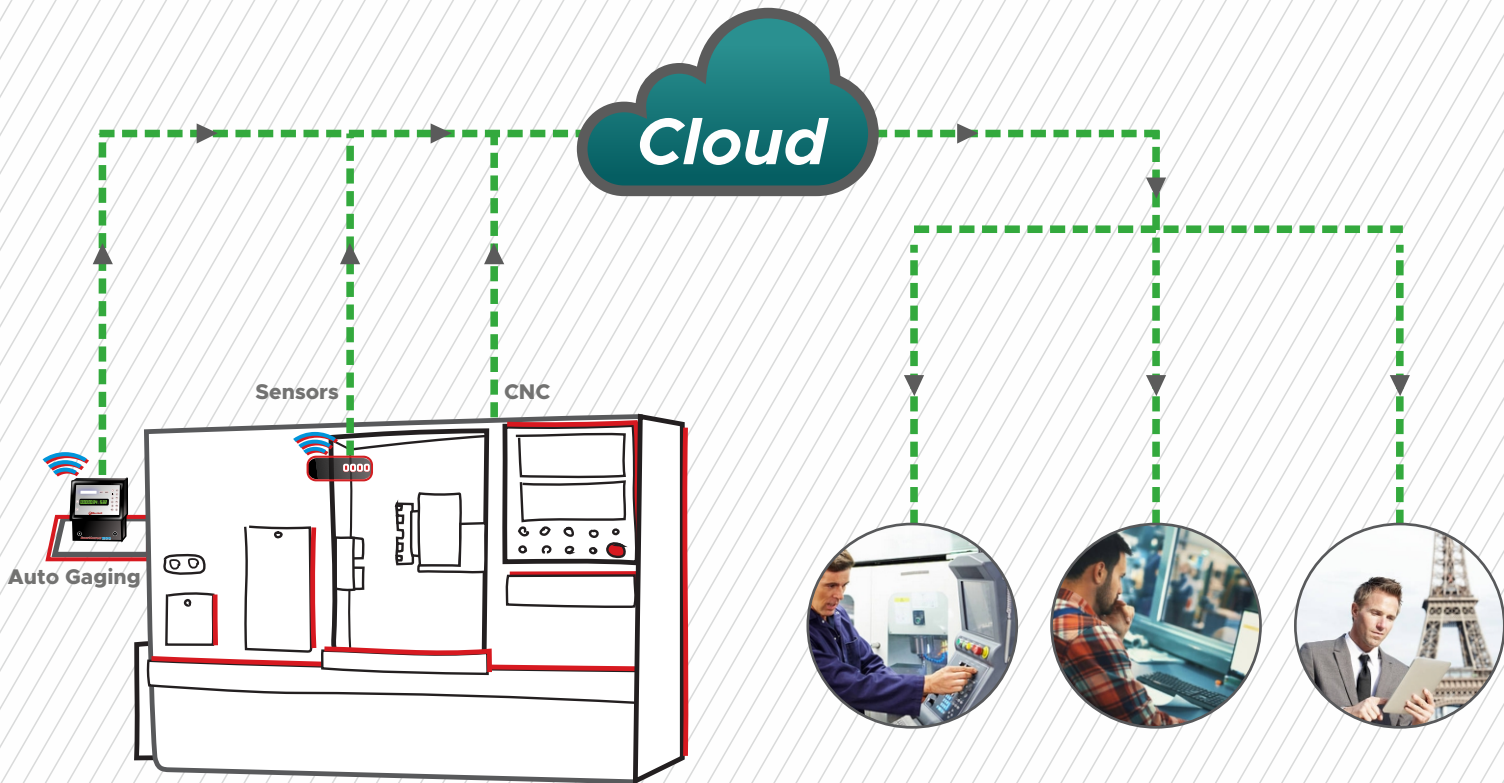


Unskilled Person Operable Machines



The #1 PROBLEM of Machine Shops

- Skilled workers were already in shortage before COVID. Now many have gone home.
- Replacement for 'Skilled Operator', eager to work but unskilled.
- Despite giving training to Unskilled Operator, Rejection jumps from 0.5% to 2.5% and employers also spend more time physically monitoring his performance to ensure that productivity does not drop.

Problem:
How to get better Quality & Productivity from Unskilled Operator!

The Solution



- UPM is Unskilled Person Operable Machine. Can be operated by Unskilled Operator.
- It is a high performance (super-optimized machine) which gives 20% extra output because of higher cutting & non-Cutting Parameters.
- It has 'Smart' Industry 4.0 Technologies embedded in it to ensure BETTER performance by Chandu than skilled operator in:

Quality

Productivity

Machine Health

UPM Pre-installed Industry 4.0 Technology #1

for **PRODUCTIVITY**



 machine**metrics** *the leading Machine Monitoring Platform*

- MachineMetrics powerful machine monitoring technology
- TAB for data entry & information display
- Very easy user interface. Many options of Dashboards
- PRODUCTIVITY monitored through reports & settable Alerts.
- INSIGHTS to guide actions
- More than 15% productivity improvement can be achieved in a few weeks

UPM Pre-installed Industry 4.0 Technology #2

for **QUALITY**

SmartCorrect ECO 1 Gauging Station with Auto-Correction



- SmartCorrect-ECO 1 is an economical auto-gauging station which checks one most important dimension of a job and auto-corrects the CNC to produce 'near ZERO' defectives from unskilled operator Chandu.
- (Option: ECO2/3 or 4)
- Input Air-Gauge measuring element (Plug for Bore & Snap for OD) or measuring fixture is provided by user.

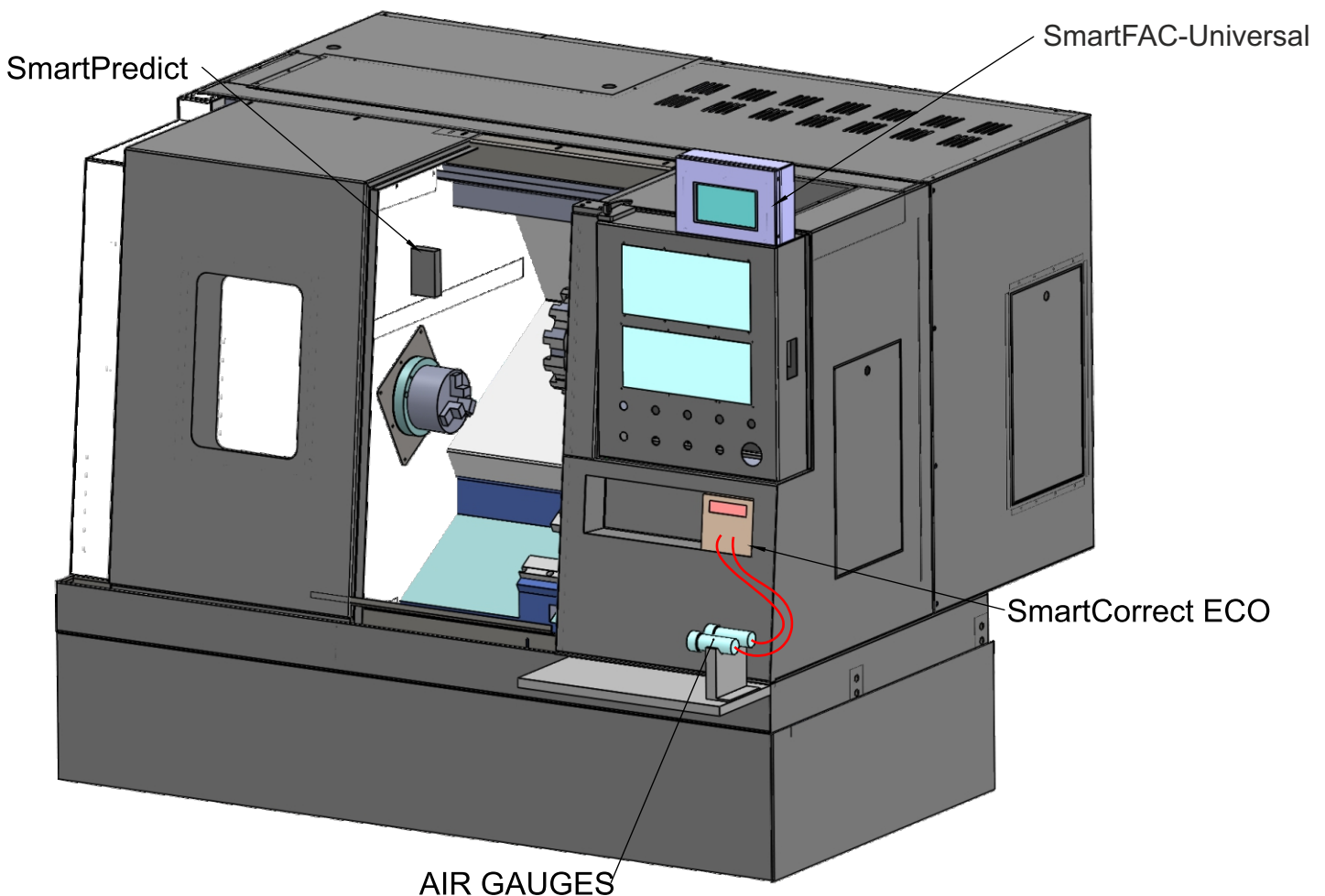
UPM Pre-installed Industry 4.0
Technology #3
for MACHINE HEALTH



SmartPredict
Crash Detection & Predictive Maintenance Sensors.

- One of the biggest fears of machine shop owners & managers is that Chandu will make an error and cause accident and then not inform his seniors. The machine will continue working 'Internal Injuries' and this will lead to sudden failure a few weeks after.
- UPM comes with Marshall's patented MAIS (Machine Accident Information System) technology pre-installed.
- Vibration, Noise & Temperature sensors help in predictive maintenance of the most vital part of machine, i.e. Spindle Assembly.

UPM (FORTIUS)



uno (Single Spindle)

CAPACITY

Swing Over Carriage Cover mm(In)	Ø 360 (14.17")
Maximum Turning Dia. mm(In)	Ø 200 (7.9")
Maximum Turning Length mm(In)	Ø 160 (6.30")
Maximum Boring Length mm(In)	150 (5.9")

SPINDLE

Chuck Size mm (In)	165 (6")
Spindle Speed (rpm)	6000
Motor (Max/Cont.) KW (HP)	15/11 (20/14.7 HP)
Torque (Max/Cont.) N.m (lbf.ft)	95.5/70 (70.4/51.6)
Spindle Type	V-Ribbed Belt
Spindle Nose	A2-5

FEED

Travel (X / Z) mm(In)	500/180 (19.70/7")
Rapid Traverse Rate (X / Z) m/min(ipm)	36/36 (1.41"/1.41")
Slide Type	LM GUIDE

BLOCK TOOL

No. of Tools	8
Tool Size OD mm(In)	Ø25 (Ø1")
Tool Size ID mm(In)	32 (1.2")

TANK CAPACITY

Coolant Tank	120 (31.7)
Lubricating Tank	1.8 (0.5)

MACHINE

Floor Space (L x W)	2,160 x 1,600 (85" x 63")
Height mm (In)	2,200 (86.61")
Weight Kg. (lbs)	4000 (8818 lbs)
CNC Controller	SIEMENS 828D / FANUC OiTF

TWINTURN UBER

CAPACITY

Swing Over Carriage Cover (mm)(In)	Ø360 (14.17")
Maximum Turning Dia. (mm)(In)	Ø 250 (9.84")
Maximum Turning Length (mm)(In)	Ø 200 (7.87")
Maximum Boring Length (mm)(In)	150 (5.90")

MAIN SPINDLE

Spindle Nose (Standard)	A2-5
Front Bearing Bore (mm)(In)	85 (3.34")
Maximum Bar Capacity (Std.) (mm)(In)	40 (1.57")

SPINDLE DRIVE

Spindle Motor rated power (KW)(HP)	7.5/11 KW (10/14.7 HP)
Inf. Variable speed range (Std.) (rpm)	100-4500
Inf. Variable speed range (Opt.) (rpm)	100-5500

LINEAR SLIDE

X-axis Stroke (mm)(In)	500 (19.68")
Maximum No. of tools /side	8
Tool Shank Size	25x25
Maximum Tool Bore Size (mm)(In)	40 (1.57")

RAPID TRAVERSE

STANDARD	
X-axis (m/min.)(ipm)	30
Z-axis (m/min.)(ipm)	30

POSITIONING REPEATABILITY

X-axis	± 1.5 microns
Z-axis	± 2.0 microns
CNC Controls: SIEMENS 808D / 828D / FANUC OiTF	
Weight (approx.) (Kg)(lbs)	8000 (17636 lbs)

UPM Models with Tool Turret & Tailstock

SMARTER



CAPACITY

Swing Over Bed(mm)(In)	Ø 450(17.71")
Max.Turning Diameter(mm)(In)	Ø 250(9.84")
Max.Turning Length(mm)(In)	Ø 330(12.99")

MAIN SPINDLE

Spindle Nose	A2-5
Spindle Bore(mm)(In)	50(1.96")
Max. Bar Capacity(mm)(In)	38(1.49")

SPINDLE SPINDLE

Spindle Motor SIEMENS	9/11 KW (12/14.7 HP)
FANUC	7.5/11 KW(10/14.7 HP)
Spindle Range	50-5500 RPM

RAPID TRAVERSE

X- Z Axis	30 m/min
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TAILSTOCK

TAPER IN QUILL	MT-4
ADJUSTABLE THRUST	600

TOOL TURRET

Nos. Of Stations	8-Stations
Tools Cross Section	25x25

POSITIONING REPEATABILITY

X-Axis	± 1 Microns
Z-Axis	± 2.0 Microns

FORTIUS



CAPACITY

Swing Over Bed(mm)(In)	Ø 500(19.68")
Max.Turning Diameter(mm)(In)	Ø 300(11.81")
Max.Turning Length(mm)(In)	Ø 500(19.68")

MAIN SPINDLE

Spindle Nose	A2-6
Spindle Bore(mm)(In)	65 (2.55")
Max. Bar Capacity(mm)(In)	45 (1.77")

SPINDLE SPINDLE

Spindle Motor SIEMENS	9/11 KW (12/14.7 HP)
FANUC	7.5/11 KW (10/14.7 HP)
Spindle Range	50-4000 RPM

RAPID TRAVERSE

X- Z Axis	30 m/min
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TAILSTOCK

Taper In Quill	MT-4
Adjustable Thrust	600

TOOL TURRET

Nos. Of Stations	8-Stations
Tools Cross Section	25x25

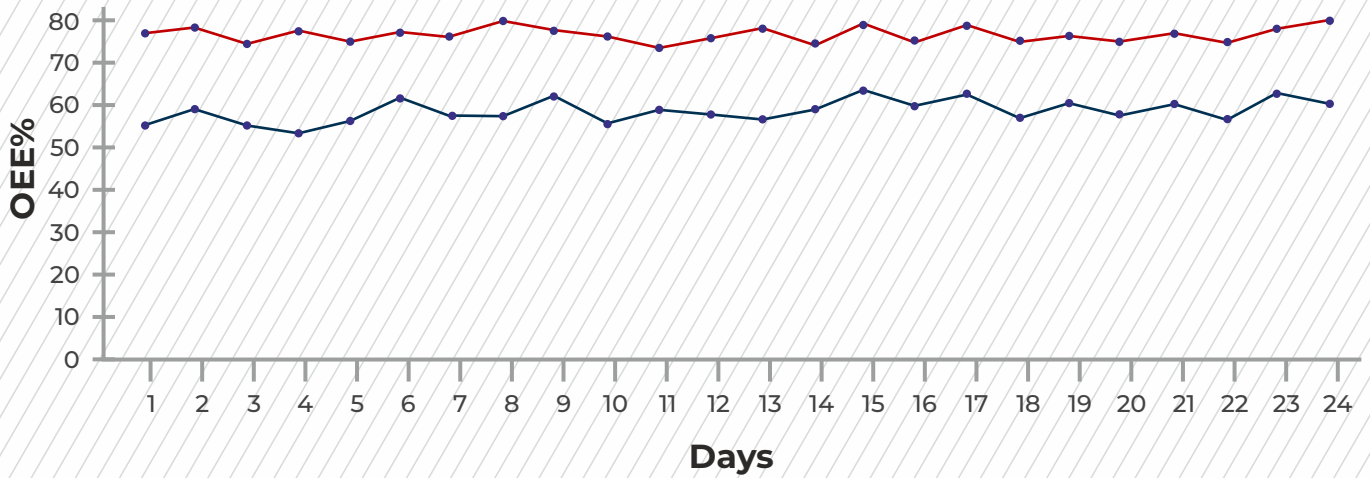
POSITIONING REPEATABILITY

X-Axis	± 1 Microns
Z-Axis	± 2.0 Microns
L X W X H	2400 x 1600 x 1700 (94 X 62 X 66)

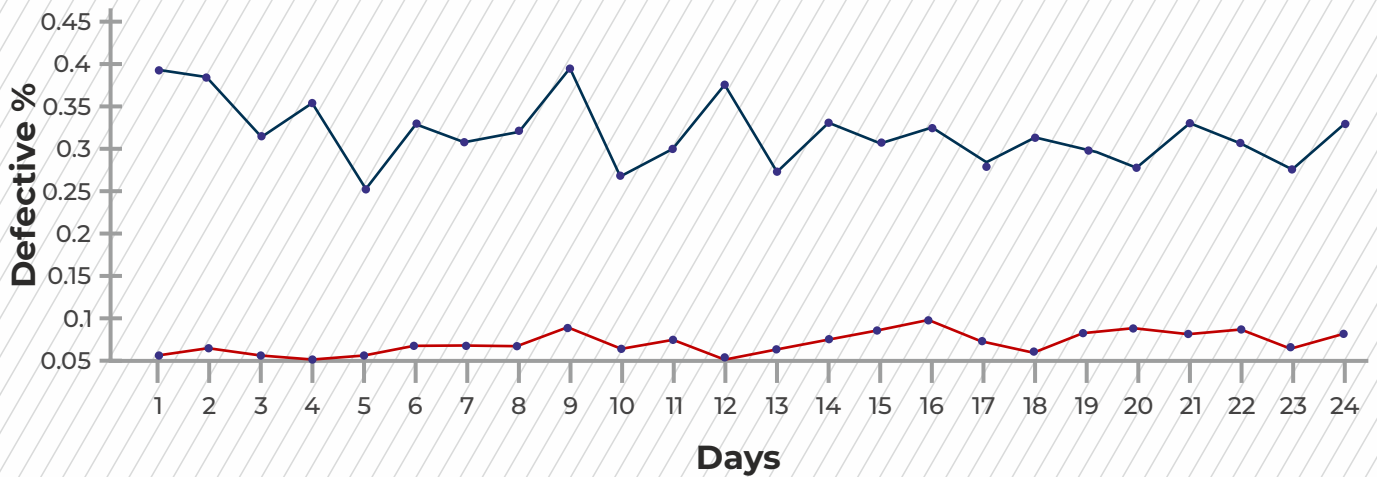
Note : Product improvement is a continuous process at "Marshall". Design & Specifications are therefore, subject to change.

Productivity Jump

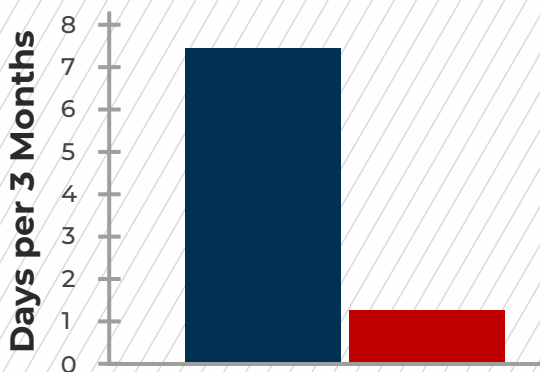
Skilled Operator Unskilled Operator



Quality Jump



Days Lost due to mech breakdowns



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