

# MEGAMILL Series

High Performance Double Column Machining Centres



M 2011 | M 2214 | M 2714 | M 3214 | M 2218 | M 3218 | M 4218 | M 3223 | M 4223

# Crafting Machines of **Tomorrow**

Bringing precision and innovation to the forefront of industrial manufacturing, Cosmos has been a pioneer in the machine tool industry since 1987. Providing versatile and high-performance solutions, including vertical machining centres, drill tap centres, surface grinding machines, vertical lathes, and many more, Cosmos provides Indian and global industries with the latest technological advancements.

At Cosmos, growth is driven by more than just innovation; it's guided by a deeper purpose - bringing joy and meaning to people's lives. Every machine we create reflects this philosophy, blending precision with heart to ensure progress isn't just about staying ahead but about sparking happiness along the way. For us, every advancement is a step toward a future where innovation and fulfilment go hand in hand.



**India's Largest  
Exporter of Vertical  
Machining Centres**



**Leading Business  
Enterprise of  
Tomorrow**



**Best Metal  
Cutting Brand of  
2024-25**

**Industries  
We Serve**



Die & Mould



Aerospace



Medical Implants & Equipments



Automotive Industry



Pumps & Valves



Steel & Energy



Electronics & Semiconductors



Oil & Gas Industry

# ***Core Values***

*At Cosmos, our guiding principles are not just statements, they are promises. They define our aspirations, guide our path, and reflect our commitment to excellence. By aligning with these, we strive to make a positive and lasting impact.*

***At Cosmos, our values are the core of who we are.***

## **SINCERITY**

*Drives our relationships, building trust with every interaction.*

## **DISCIPLINE**

*Ensures precision and excellence in all we do.*

## **INTEGRITY**

*Forms the backbone of our identity, as we stand by our commitments.*

## **ETHICAL PRACTICES**

*Underpin every decision, reflecting our moral compass.*

## **HARMONY**

*Guides our teamwork, fostering collaboration across boundaries and providing best customer experience.*

## **SUSTAINABILITY**

*Fuels our responsibility towards future generations.*

# Cosmos proudly presents the **MEGAMILL Series**

The **MEGAMILL Series** CNC Bridge Type Vertical Machining Centres set a new benchmark in precision and performance, incorporating cutting-edge features and advanced capabilities.

The **MEGAMILL Series** excels in industries like **Precision Die & Mould, Aerospace, Energy, Pump & Valve,** and more, consistently delivering outstanding performance and reliability.





**Step Type Beam**

Minimises deflection and significantly improves the precision of the cutting process.

**Ball Screw**

Precision-ground ball screws with preloaded double nuts ensure smooth, accurate drive.

**Heavy Duty Column**

Wide-base column, combined with rib reinforcement maximises rigidity and cutting forces transfer.

**Column Rested on Base**

Resting on the base, helps maximise rigidity and a more efficient force transfer.

**Headstock**

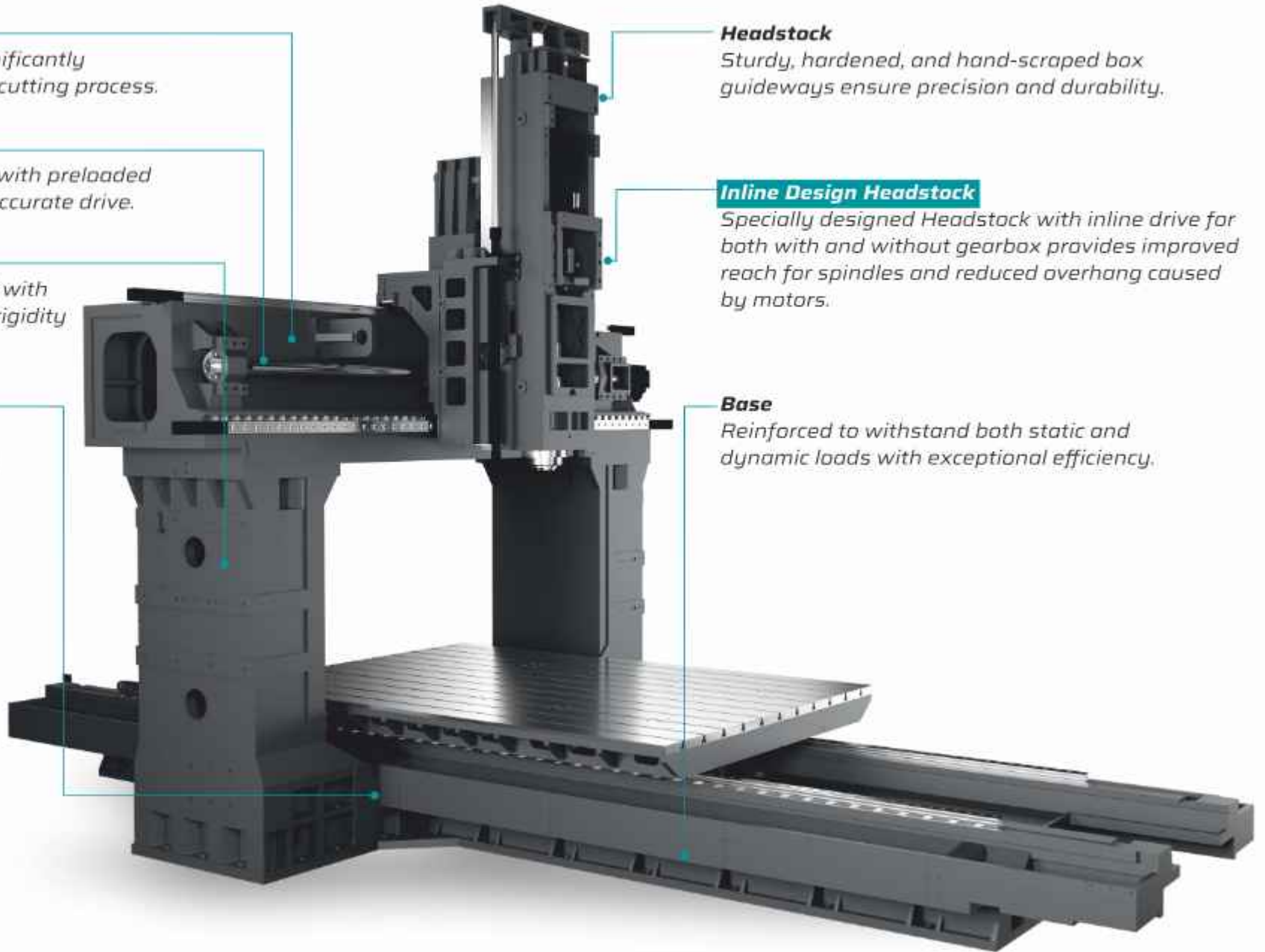
Sturdy, hardened, and hand-scraped box guideways ensure precision and durability.

**Inline Design Headstock**

Specially designed Headstock with inline drive for both with and without gearbox provides improved reach for spindles and reduced overhang caused by motors.

**Base**

Reinforced to withstand both static and dynamic loads with exceptional efficiency.



# Key Features



## **Box Guides**

The Z-axis is equipped with robust, induction-hardened box guideways that are precisely ground and carefully hand-scraped to ensure exceptional surface quality. The enlarged contact surface of the guideways is perfectly suited for handling the demands of heavy-duty cutting.



## **Step Type Beam for Improved Cutting Stability**

The oversized beam is a step-type construction that allows for better stability of cutting.



## **Direct Drive Spindle**

BBT 50 Taper is standard with the 22/26 kW spindle motor and 6000 rpm.

## **Two Speed Gearbox (Only for 6000 rpm Spindle) 1:5.5 Ratio**

The 22/26 kW geared drive spindle delivers up to 913 Nm of torque, offering excellent cutting flexibility for diverse applications.



The gearbox with a high/low gear ratio handles both high-speed machining and heavy cutting applications.



## **Hydraulic Weight Balancing**

The Z-axis movement is precisely balanced using dual hydraulic cylinders, ensuring smooth and stable operation across various loads.



## **Accumulator**

A bladder accumulator is strategically incorporated to regulate hydraulic pressure fluctuations, effectively mitigating the impact of sudden power disruptions.





# Optional Accessories

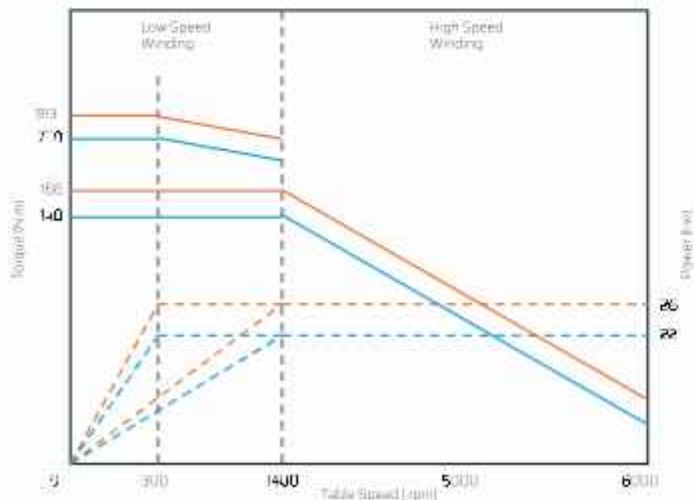
## 90° Angle Head

- Auto 5° Indexing
- Semi-Automatic Loading
- Hydraulic Head Clamp with 4 Pull Stud
- Hydraulic Tool Clamping (Manual Tool Change)
- Parking Station with Manual Movement
- Cover for Hirth coupling



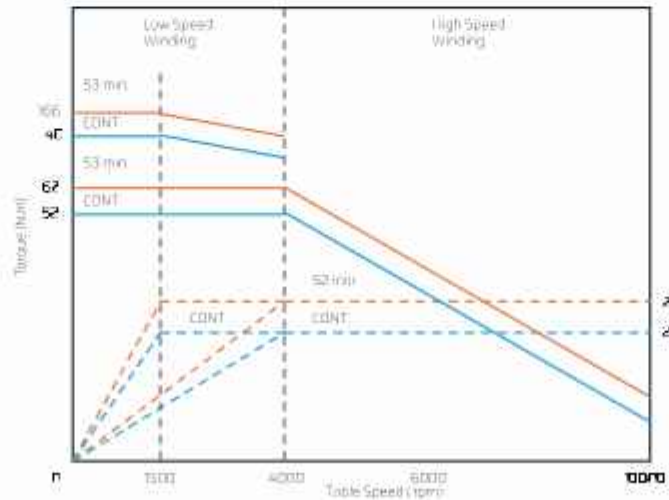
## Spindle Speed / Torque Diagram

- 6,000 rpm with Gearbox
- 22/26 kW
- Mitsubishi / Fanuc

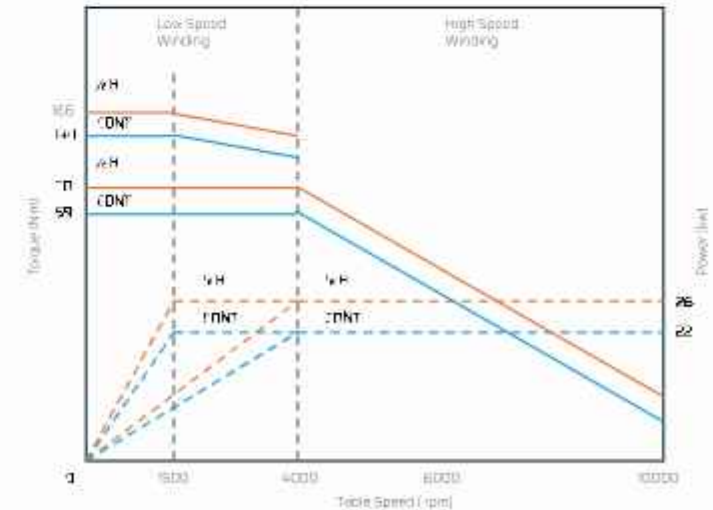


22/26 kW Low Speed (FSSL High Speed II)

- 10,000 rpm (Opt)
- 22/26 kW
- Mitsubishi

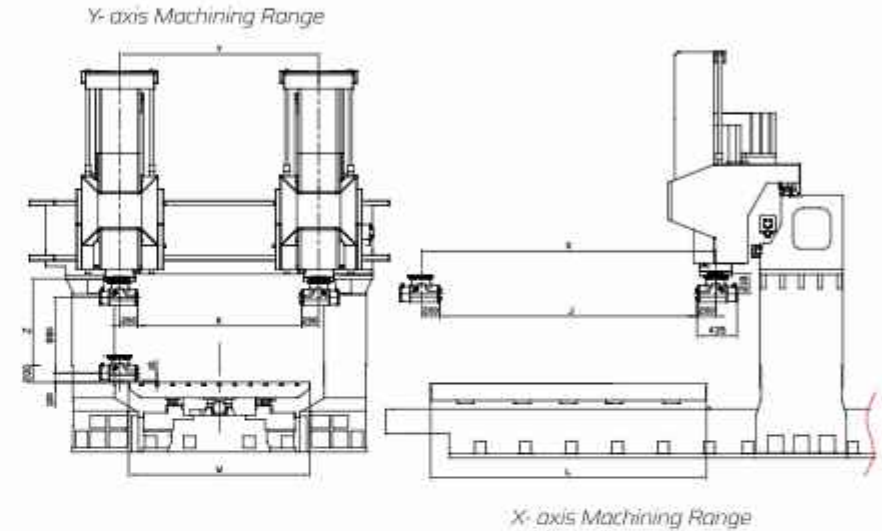
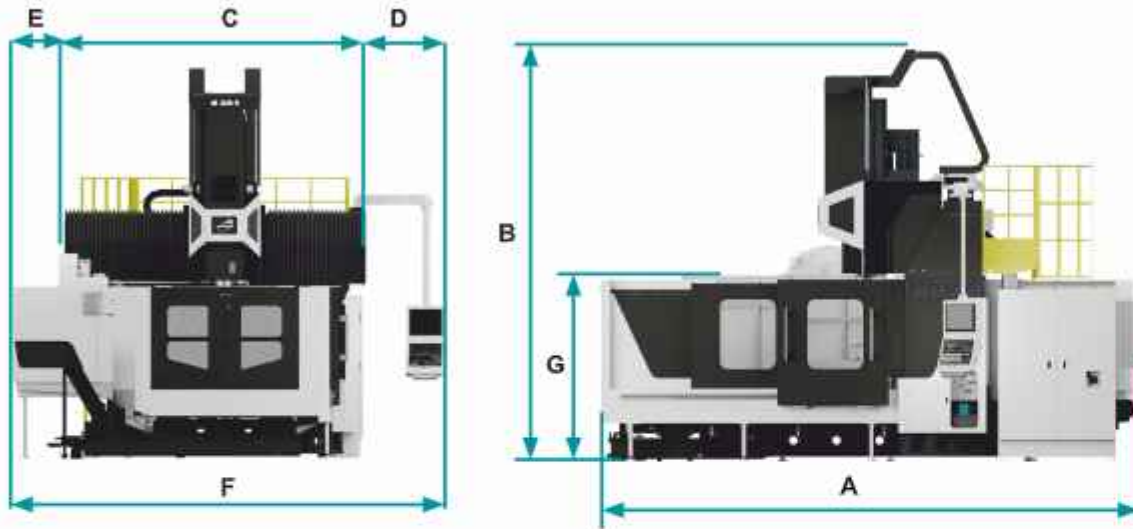


- 10,000 rpm (Opt)
- 22/26 kW
- Fanuc





# Machine Layouts



| Model  | A     | B    | C    | D    | E   | G    |
|--------|-------|------|------|------|-----|------|
| M-2011 | 6720  | 4100 | 1970 | 920  | 900 | 2100 |
| M-2214 | 7050  | 4090 | 2060 | 910  | 900 | 2100 |
| M-2714 | 8050  | 4090 | 2060 | 910  | 900 | 2100 |
| M-3214 | 9050  | 4090 | 2060 | 910  | 900 | 2100 |
| M-2218 | 6200  | 4800 | 3700 | 1200 | 900 | 2100 |
| M-3218 | 8200  | 4800 | 3700 | 1200 | 900 | 2100 |
| M-4218 | 10200 | 4800 | 3700 | 1200 | 900 | 2100 |
| M-3223 | 8200  | 4800 | 4200 | 1200 | 900 | 2100 |
| M-4223 | 10200 | 4800 | 4200 | 1200 | 900 | 2100 |

| Model  | L    | W    | X    | Y    | Z    |
|--------|------|------|------|------|------|
| M-2011 | 2200 | 900  | 2000 | 1100 | 800  |
| M-2214 | 2000 | 1200 | 2200 | 1400 |      |
| M-2714 | 2500 | 1200 | 2700 | 1400 |      |
| M-3214 | 3000 | 1200 | 3200 | 1400 |      |
| M-2218 | 2000 | 1500 | 2200 | 1800 | 1000 |
| M-3218 | 3000 | 1500 | 3200 | 1800 |      |
| M-4218 | 4000 | 2100 | 4200 | 1800 |      |
| M-3223 | 3000 | 2100 | 3200 | 2300 |      |
| M-4223 | 4000 | 2100 | 4200 | 2300 |      |

# Machine Specifications

|                       | SPECIFICATION                     | UNIT               | M-2011   | M-2214    | M-2714    | M-3214    | M-3218    | M-3218    | M-4218    | M-3223    | M-4223    |  |
|-----------------------|-----------------------------------|--------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| TABLE                 | Table Size                        | mm                 | 2200x900                                       | 2000x1200 | 2500x1200 | 3000x1200 | 2000x1500 | 3000x1500 | 4000x1500 | 3000x2100 | 4000x2100 |  |
|                       | T-slots size                      | mm                 | 22   |           |           |           |           |           |           |           |           |  |
|                       | Maximum Load                      | tons               | 2.4  | 4         | 6         | 6         | 8         | 10        | 12        | 12        | 13        |  |
| TRAVEL                | X Axis                            | mm                 | 2000   | 2200      | 2700      | 3200      | 2200      | 3200      | 4200      | 3200      | 4200      |  |
|                       | Y Axis                            | mm                 | 1100   | 1400      |           |           |           | 1800      |           | 2300      |           |  |
|                       | Z Axis                            | mm                 | 800  |           |           |           | 1000      |           |           |           |           |  |
| SPINDLE               | Spindle motor (Mitsubishi)        | kW                 | 15/18.5  |           |           |           | 22/26     |           |           |           |           |  |
|                       | Spindle motor (Fanuc)             | kW                 | 15/18.5  |           |           |           | 22/26     |           |           |           |           |  |
|                       | Speed                             | rpm                | 6000 (8000, 10000)                             |           |           |           |           |           |           |           |           |  |
|                       | Taper                             | type               | BT-50  |           |           |           | BBT-50    |           |           |           |           |  |
| DISTANCES             | Between two columns               | mm                 | 1100   | 1400      | 1400      | 1400      | 1900      | 1900      | 1900      | 2400      | 2400      |  |
|                       | Spindle nose to table surface     | mm                 | 140-940  | 70-870    |           |           |           | 200-1200  |           |           |           |  |
| FEED RATE             | Minimum setting                   | mm/min             | 15/15/12                                       |           |           |           |           |           |           |           |           |  |
|                       | Cutting feed rate                 | mm/min             | 1-10000  |           |           |           |           |           |           |           |           |  |
| ATC                   | Tool change time-T to T (approx.) | sec                | 4.5 (Arm type)                                 |           |           |           |           |           |           |           |           |  |
|                       | Max. tool-diameter /length        | mm                 | Ø 110/Ø 220 (Without adjacent tool)/length 350 |           |           |           |           |           |           |           |           |  |
|                       | Max. tool weight                  | kg                 | 18   |           |           |           |           |           |           |           |           |  |
|                       | No. of Tools                      | Nos.               | 24   |           |           |           |           |           |           |           |           |  |
| COOLANT & LUBRICATION | Coolant tank volume               | L                  | 640  | 640       | 640       | 640       | 450       | 450       | 450       | 640       | 640       |  |
|                       | Hydraulic tank volume             | L                  | 70   |           |           |           |           |           |           |           |           |  |
|                       | Lubrication Oil Volume            | L                  | 8  |           |           |           |           |           |           |           |           |  |
| MISCELLANEDUS         | Power required                    | KVA                | 50   |           |           |           |           |           |           |           |           |  |
|                       | Pressurized air                   | Bar                | 7  |           |           |           |           |           |           |           |           |  |
|                       | Hydraulics required               | kg/cm <sup>2</sup> | 70   |           |           |           |           |           |           |           |           |  |
|                       | Machine Weight (approx)           | tons               | 16   | 18        | 20        | 22        | 22        | 26.5      | 31        | 29        | 32        |  |
|                       | Controller                        | type               | Mitsubishi MBO, Fanuc DIMF, and Siemens 828D   |           |           |           |           |           |           |           |           |  |

## Standard Accessories

- Mitsubishi/Fanuc
- Crystal Keys for MDP
- Direct Drive Geared Spindle with BBT 50 Taper (M2218 - 4223)
- Belt Drive Spindle with BT 50 Taper (M2011 - 3214)
- Spindle Speed - 6000 rpm
- Oil Cooler for Spindle and Gearbox
- X & Y with Roller Guideways
- Z Axis with Box Guideways
- 24 Tools ARM Type ATC
- Manual Pulse Generator
- Coolant Splash Guard (Top Open)
- Two Chip Screw and One Belt Type Chip Conveyor with Bucket
- Air Conditioner for Electrical Cabinet
- Automatic Lubrication Unit
- Coolant System
- Spindle Air Blast
- Work Lamp
- Tower Lamp
- Step Down Transformer
- Auto Power Off
- Maintenance Ladder

## Optional Accessories

- Spindle Speed - 8000/10000 rpm
- 32/40 Tools ATC
- Linear Scales for X, Y, & Z Axes
- Coolant Through Spindle 20/40/70 Bar Pressure
- Tool Length Measurement System
- Work Piece Measurement System
- Semi-Automatic 90° Angle Head (M2218 - 4223)
- 500 mm Extended Beam (Recommended with 90° Angle Head)
- 4" Axis Rotary Tables
- Column Riser 200/300 mm
- Enclosed Guarding (Top Closed)
- Gearbox for M2011 - 3214

Note: Specifications and features are subject to change without prior notice. Please refer to the offer document, as it has precedence.



## Dashboard Monitoring

- ▶ Live information of the entire factory.
- ▶ Categorise machines (Unit-wise).
- ▶ View regular utilisation of the machine.



## Program Transfer

- ▶ Upload programs from the computer to machines directly.
- ▶ Download programs and edit them from anywhere around the globe.



## Alarm Analysis

- ▶ Alarm history by code or machine.
- ▶ Time and duration of all alarms generated by a separate machine.



## Production Information (Utilisation)

- ▶ Detailed production information report.
- ▶ An automated daily production report.
- ▶ All reports are available in Excel format.



## Downtime Analysis

- ▶ See total machine downtime.
- ▶ Monitor downtime and the reasons for it (Macro Downtime Feature).
- ▶ Focus and can easily get the classified major losses/downtimes and work on optimisation.



## Tool Cutting Time Information

- ▶ No more unidentified dry-runs.
- ▶ Program path optimisation in-sight.
- ▶ Tool usage clarity.
- ▶ Shorter cycle-times (if modified).
- ▶ Eliminate NVA air time and improve your process.



## Feed-rate Override and Underride Report

- ▶ Monitor adjustments in real-time.
- ▶ Understand impact on cycle times, output & efficiency.
- ▶ Records to speed up production or breaks ensures transparency and control.
- ▶ Ensuring faster production doesn't sacrifice precision.



## Email Alerts

- ▶ Set a time for machines' idle condition and receive or get alarm notification on email.
- ▶ Management Reporting: Receive daily production report and downtime analysis report by email on daily basis.



## Live DEE Monitoring

- ▶ Automate data collection and reporting.
- ▶ Imagine and display real-time DEE on the shop floor.
- ▶ Execute cross-functional daily reviews and conversation sessions.
- ▶ Use Root-Cause Analysis.





**Corporate Office**

Cosmos House, Plot No. 85/2, Padra Road, Atladara, Vadodara, Gujarat - 390 012

**Manufacturing Facilities**

**Plant - I**

Cosmos Impex India Pvt. Ltd., Plot No. 847, 848 Village Ranu, Ta. Padra, Vadodara, Gujarat - 391 445

**Plant - II**

Plot No. 68-B, Sigil Compound, Padra Road, Atladara, Vadodara, Gujarat - 390 012

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