



MITSUBISHI ELECTRIC @
ModuleWorks
Insider
Conference

31.05.2022

A photograph of a modern Mitsubishi Electric building with a brick facade and large glass windows. In the foreground, a dark grey wall features the red Mitsubishi logo and the text 'MITSUBISHI ELECTRIC'. A paved walkway leads towards the building entrance.

Today.

- **01 Who we are**
- **02 Our Products**
- **03 About CNC Mechatronics**
- **04 Our Vision to IoT**
- **05 Collaboration with ModuleWorks**

ABOUT MITSUBISHI ELECTRIC



Ratingen

OUR EUROPEAN HEADQUARTER

MITSUBISHI-ELECTRIC-PLATZ 1, 40882 RATINGEN

- > 600 Employees
- > 16.000 M² office space
- > Leed-Certified



The history started with...

YATARO IWASAKI

... and three rented steamboats



OUR **LOGO** - THE HISTORY



三つ
ヒシ

Mitsu
Hishi



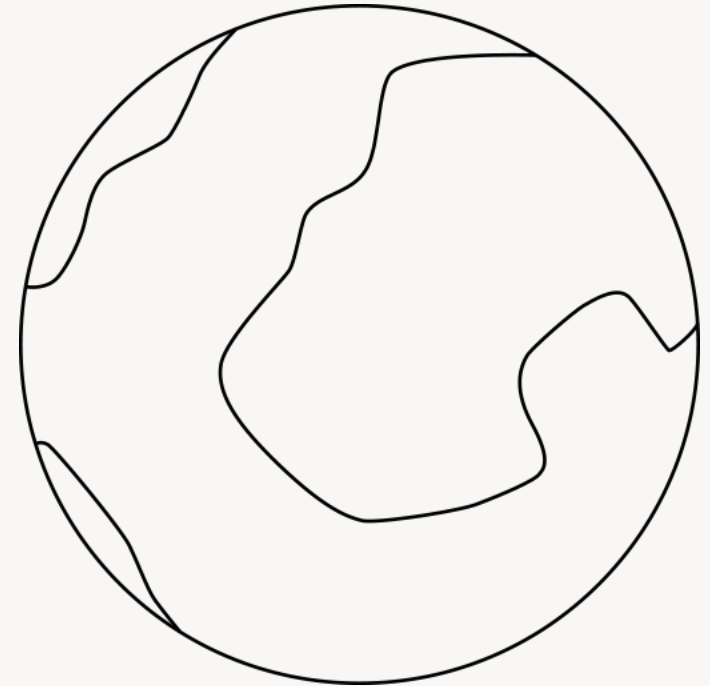
Drei
Diamanten

HISTORY – THAT UNITES



WORLDWIDE & MARKET LEADING

- > Fortune Global 500 Company
- > Employees: 146.500
- > Foundation: 15. Januar 1921
- > Consolidated net sales: 40,9 Mrd. US \$



ABOUT OUR PRODUCTS

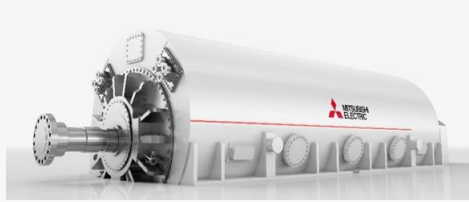


THE WORLD OF
mitsubishi electric

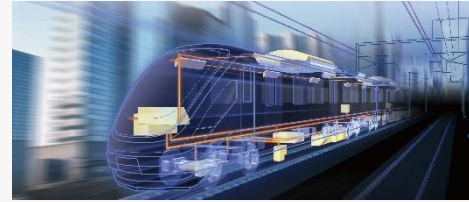
MITSUBISHI ELECTRIC GLOBAL.



BUILDING SYSTEMS



ENERGY SYSTEMS



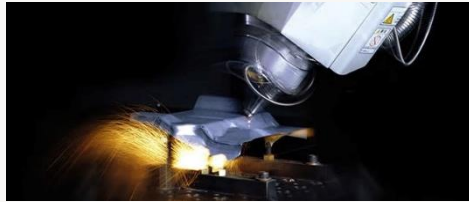
TRANSPORTATION SYSTEMS



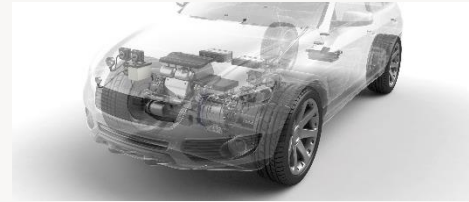
VISUAL INFORMATION
SYSTEMS



AIR CONDITIONING SYSTEMS



FACTORY AUTOMATION
SYSTEMS



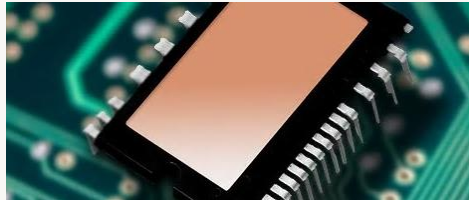
AUTOMOTIVE EQUIPMENT



PUBLIC SYSTEMS



SPACE SYSTEMS



SEMICONDUCTORS/DEVICES

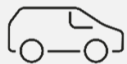


INFORMATION/
COMMUNICATION SYSTEMS



HOME PRODUCTS

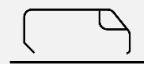
MITSUBISHI ELECTRIC **EUROPE.**



AUTOMOTIVE



**HIGH PRECISION
POSITIONING SYSTEMS**



RAILWAY



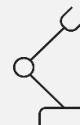
SEMICONDUCTOR



**LIVING ENVIRONMENT
SYSTEMS**



MECHATRONICS CNC

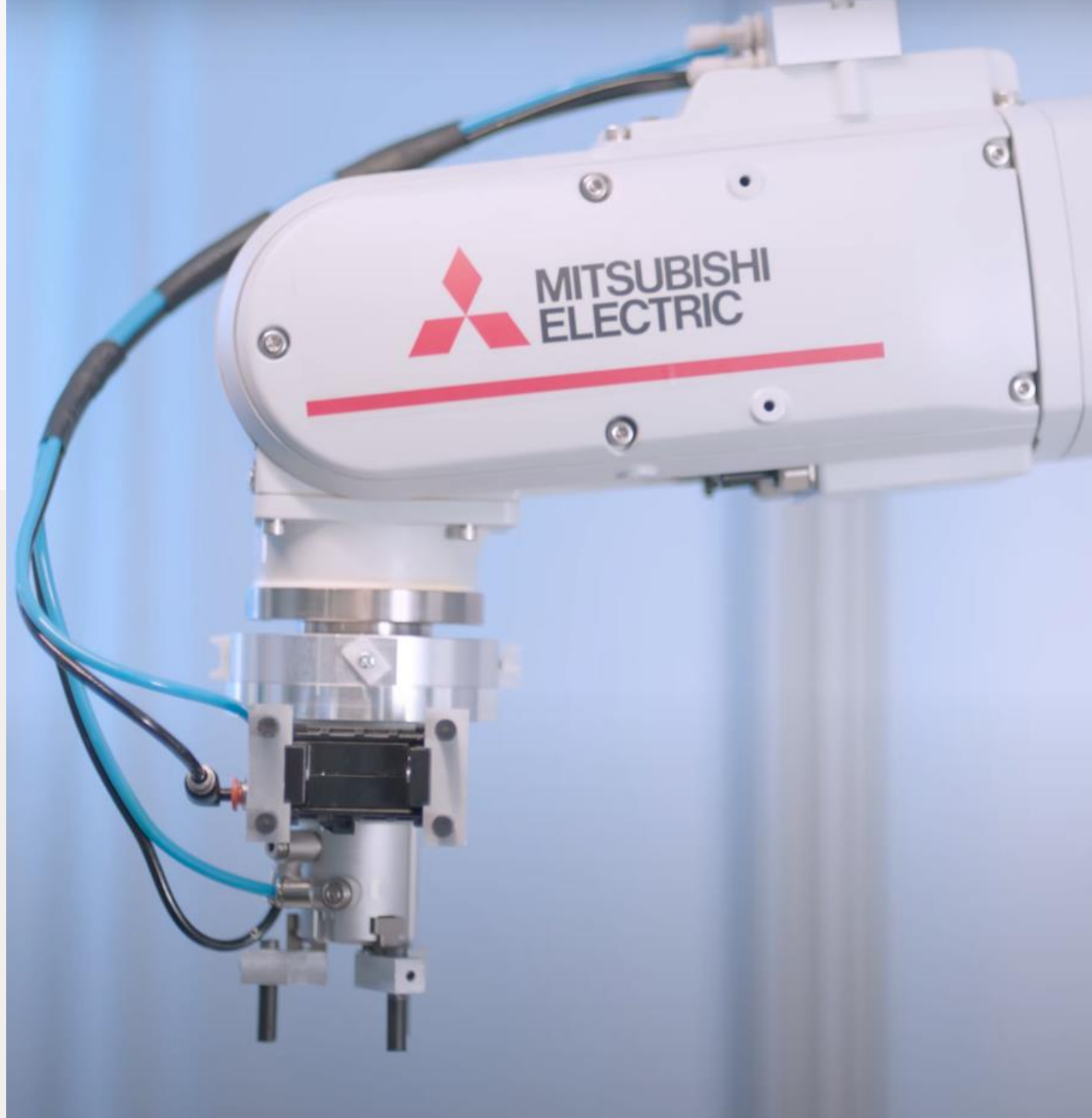


**INDUSTRIAL
AUTOMATION**



**MECHATRONICS
MACHINERY**

ABOUT FACTORY AUTOMATION



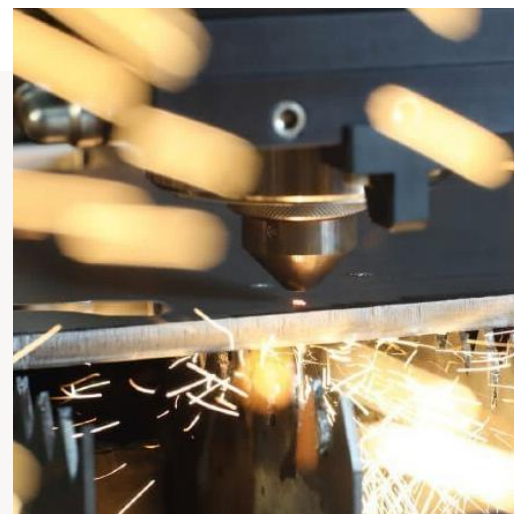
OUR SOLUTIONS



**INDUSTRIAL
AUTOMATION**



**EDM
SYSTEMS**



**LASER
CUTTING**

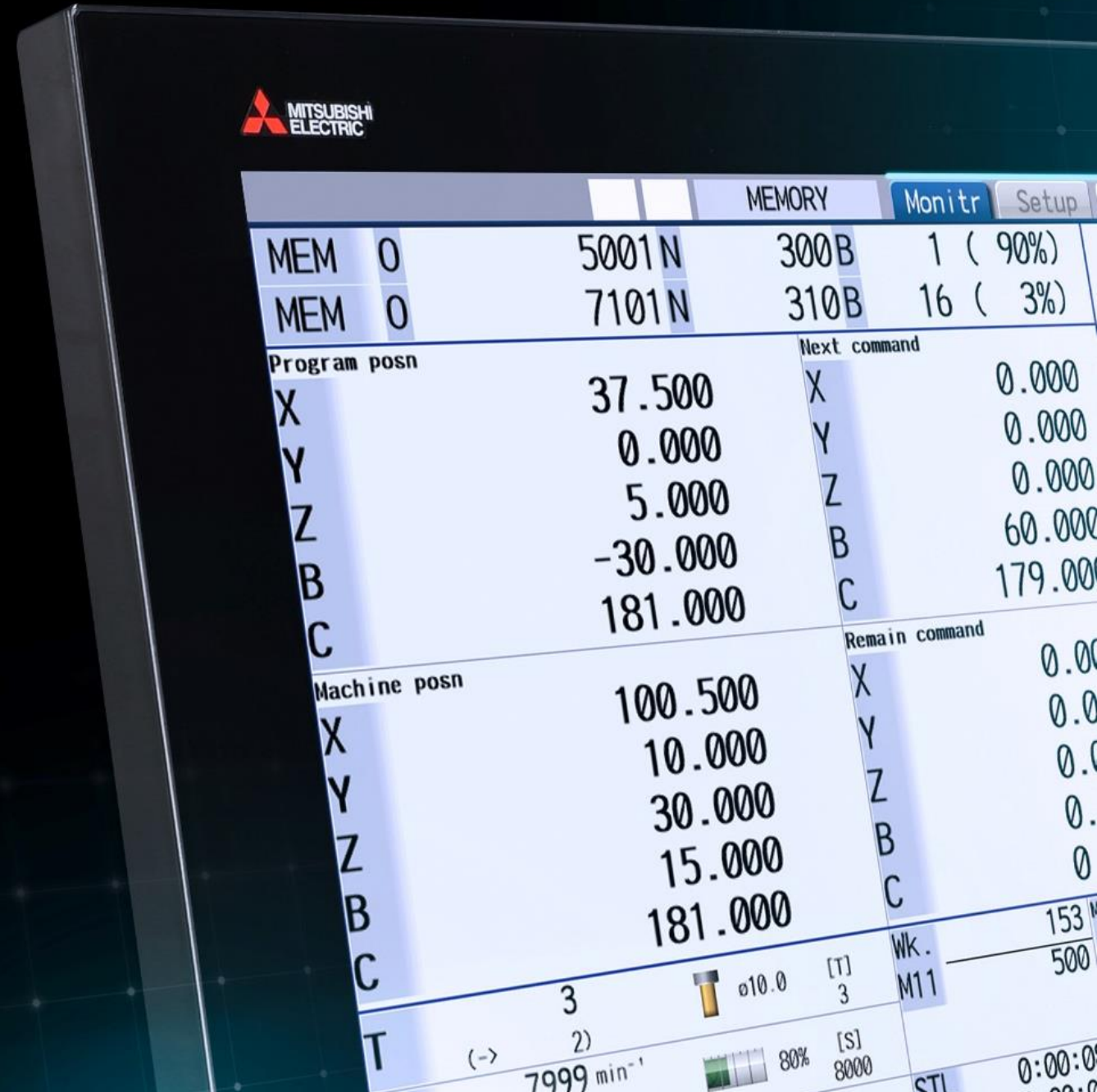


CNC

ABOUT

CNC

MECHATRONICS



POWERED BY **MITSUBISHI ELECTRIC**



FROM A SINGLE SOURCE - OUR **COMPONENTS**



CNC CONTROLS



DRIVE SYSTEMS



SERVO MOTORS



SPINDLE MOTORS

OUR CNC CONTROLS



Integrated Type

Our standard CNC control



Separated Typ

**Our Windows-based
solution**



Modular Type

**Our flexible & modular
solution**

Computerized Numerical Control

M80V

- > Integrated-Type
- > Mitsubishi Electric CNC - OS
- > All important functions in the standard version included

Standard CNC for high productivity & easy operability



Computerized Numerical Control

M80VW

- > Separated-Type
- > Windowsbased CNC
- > Two expansions slots are already included

Standard CNC with maximum flexibility



CNC STEUERUNGEN

M800VS

- > Integrated-Type
- > Mitsubishi Electric CNC - OS
- > Multi-CPU architecture for high performance

High performance CNC for high speed and precision machining



CNC STEUERUNGEN

M800VW

- > Separated-Type
- > Windowsbased CNC
- > Four expansion slots are already included

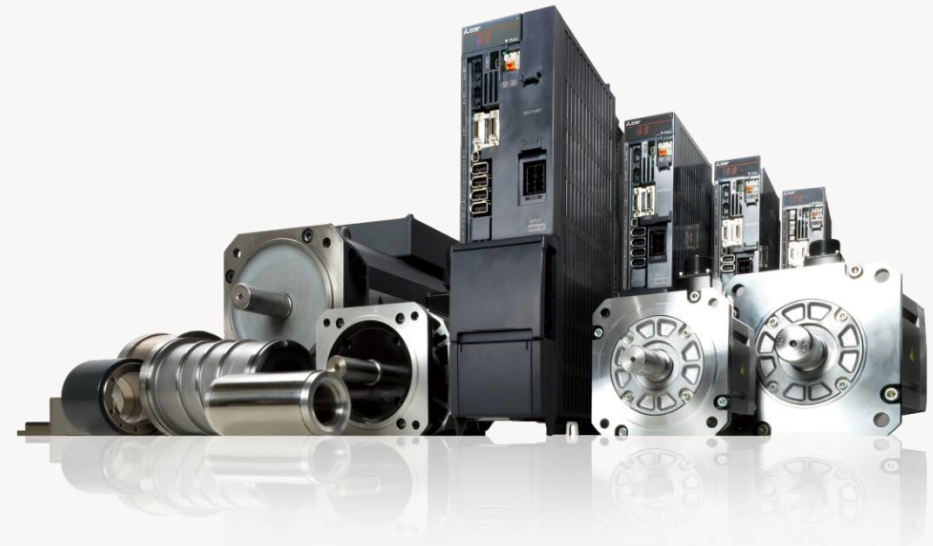
Premium CNC with maximum flexibility



TO BE AS PRECISE AS POSSIBLE

DRIVE SYSTEMS

- > High-speed communication via fiber optics between CNC and drive unit
- > Significant further development of the safety functions
- > The motor range enables the extensive flexibility of the M8V series



OUR DRIVE SYSTEMS



High-performance
servo/ high-
performance spindle
drives



Multi-hybrid drive units



Compact all-in-one
drive units



High precision and high
speed servo motors



High-performance
spindle motors



High-speed spindle
motors

KAI

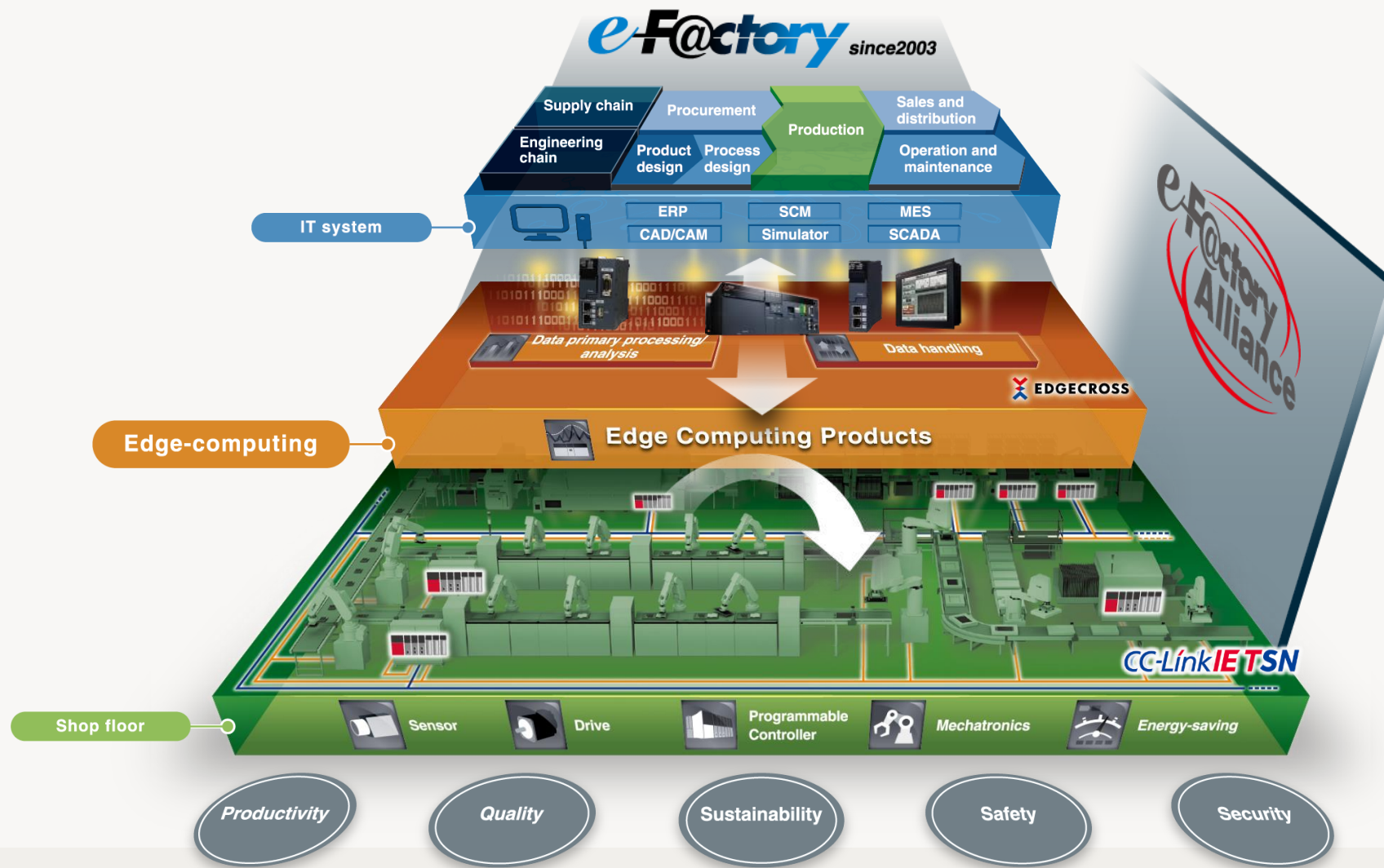
改

ZEN

善

CHANGES FOR THE **BETTER**

INDUSTRY 4.0 POWERED BY e-FACTORY



EDGE TO CLOUD

MITSUBISHI ELECTRIC

ICONICS SUITE

- > A common platform from the edge to the cloud for visualization, control, historization, event processing and analysis
- > Open and secure for interoperability with IoT, controllers

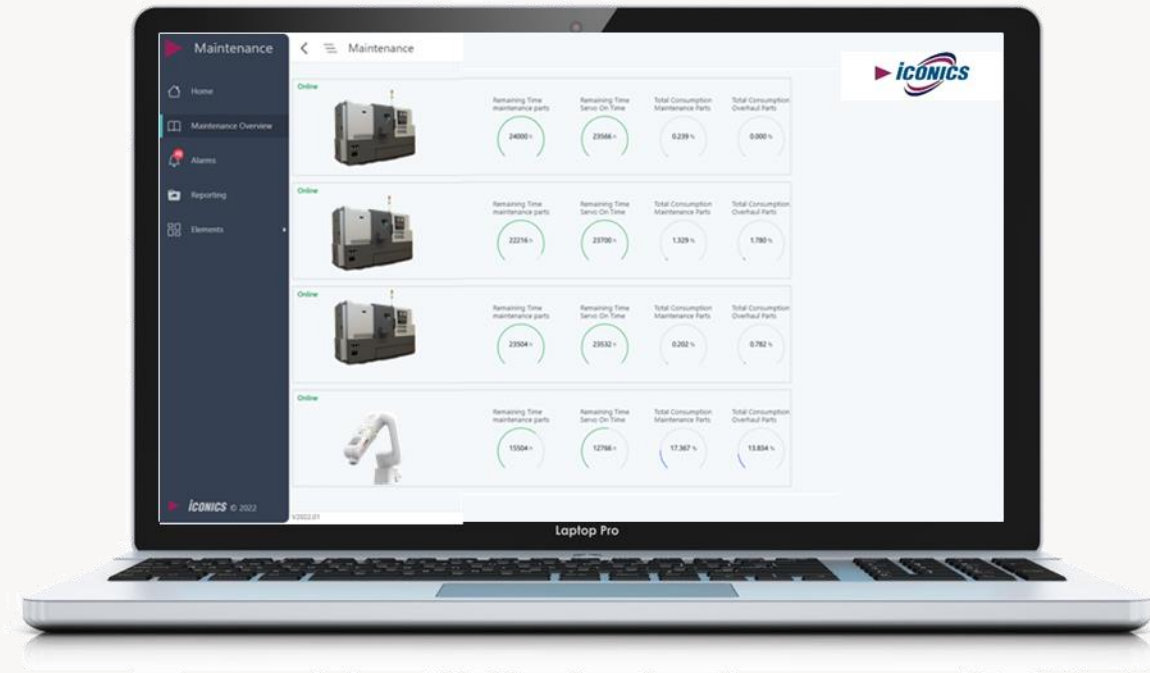


DESKTOP APPLICATION

// AZURE Cloud provides the ability to accurately
display all machine conditions



<http://meu-fa-pmd-cloud.westeurope.cloudapp.azure.com/AnyGlass/PubDisplay/ICONICS%20GENESIS64%20Robot%20Maintenance%20Demo/dev/main.gdxfx>



INDUSTRY 4.0 SOLUTION



VISUALIZE



HISTORY



MOBILE ACCESS



ANALYSIS



IoT CLOUD

SUITABLE & SCALABLE

MACHINE

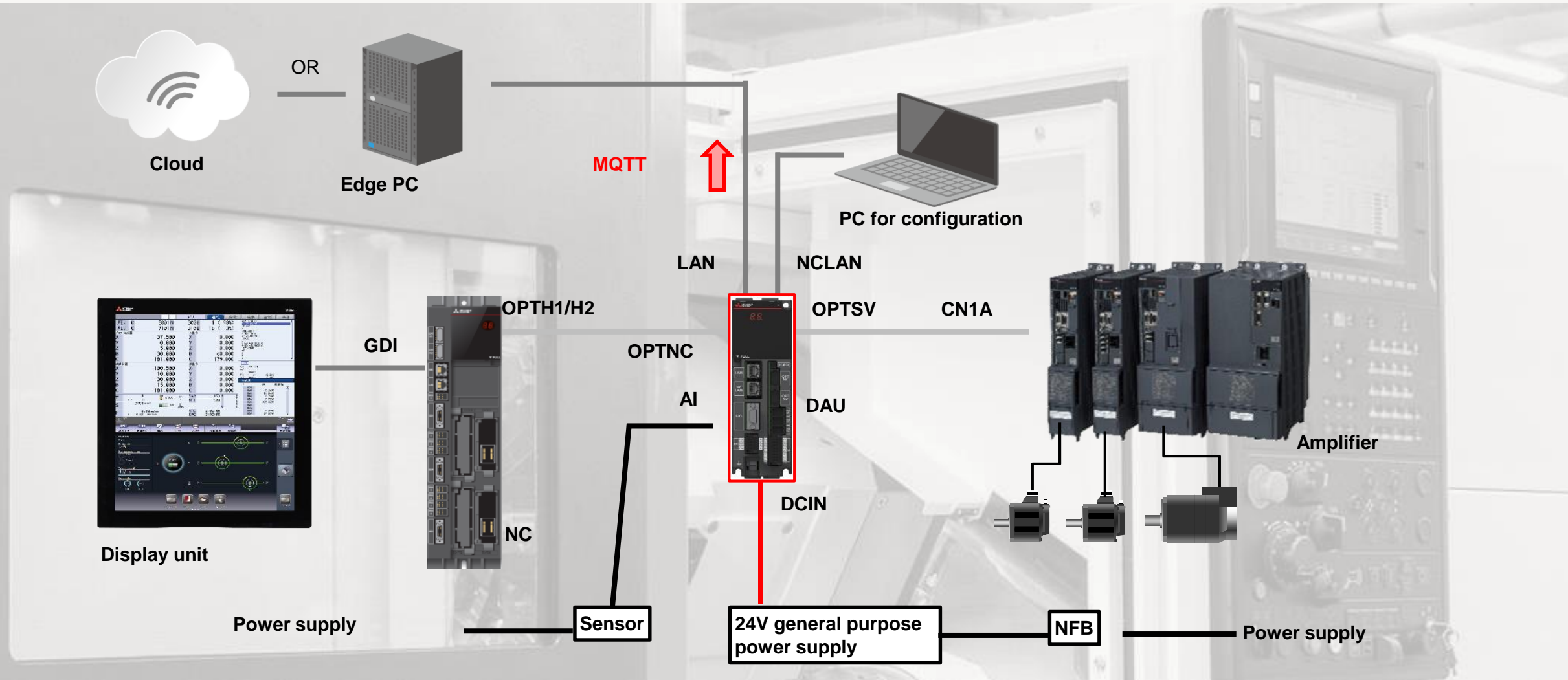
PRODUCTION

ENTERPRISE

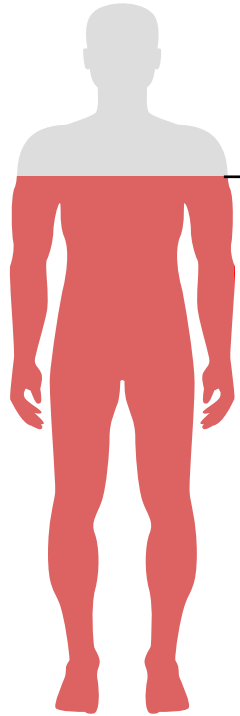
CLOUD



DATA AQUISITION UNIT – synchronized [timestamped] data transfer



COMPLETE DIGITAL TWIN SOLUTION



70%

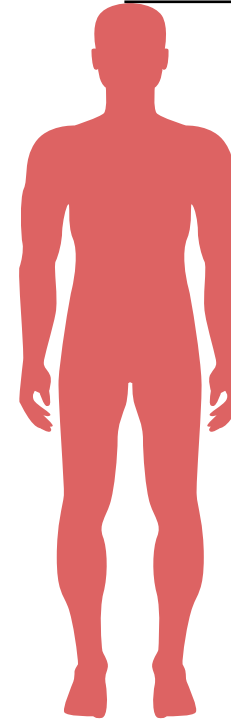
Only Mitsubishi Products

It is possible to use AI from Maisart with additional analytics for optimizations via Mitsubishi Electric ICONICS.

Simulation models and platforms can be integrated by partners.



100%



ME & e-F@actory

Together with our e-F@actory partners Mitsubishi Electric can provide a strong **Digital Twin** Solution.



Roadmap — Mitsubishi Electric & Module Works Collaboration

Sep 2019

Signing the *partnership agreement*
at EMO 2019

Oct 2021

M8V series premier at EMO 2021
with new **3D MACHINING**
SIMULATION

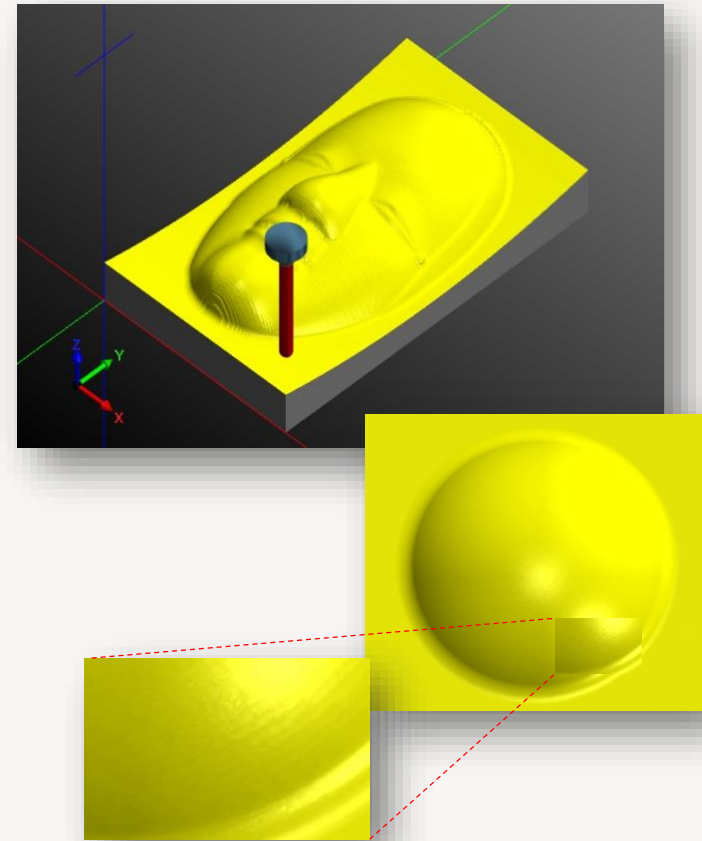
Feb 2022

REAL-TIME 3D MACHINE INTERFERENCE
CHECK (CAS) implementation on M8V
series

ABOUT OUR COLLABORATION WITH MODULE WORKS

3D MACHINING SIMULATION

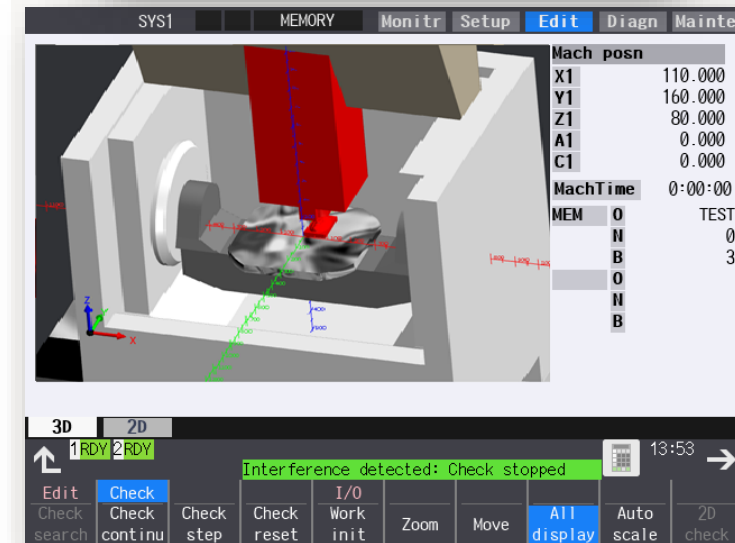
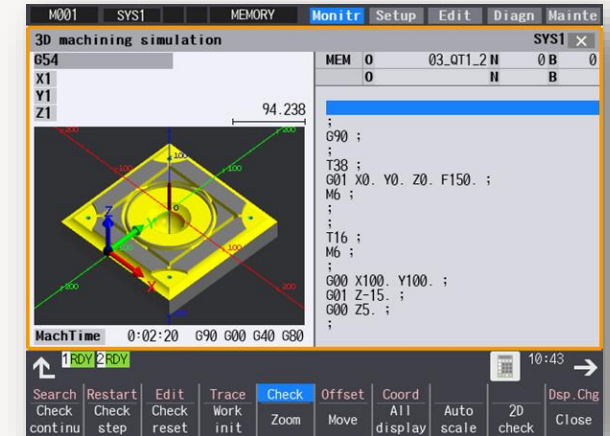
- > High-definition simulation image
- > To check the machine, tool, jig, or workpiece interference and the machining quality of the machining program prior to running actual operation
- > Dramatically reduced the time required for simulation



ABOUT OUR COLLABORATION WITH MODULE WORKS

3D MACHINING SIMULATION

- > To check the machine, tool, jig or workpiece interference in the program prior to the actual machining
- > Control stops the check when encountered an interference



ABOUT OUR COLLABORATION WITH MODULE WORKS

REAL-TIME 3D MACHINE INTERFERENCE CHECK

- > To check the interference on pre-registered 3D models (machine, tool, jig) with a look-ahead of position to which the machine goes
- > Predicted interference is coloured to visually identifiable

