

WELCOME TO THE

Critical Manufacturing Partner Network

Welcome to the Critical Manufacturing Partner Network

Critical Manufacturing's Partners are a valued part of our go to market strategy. That's why we partner with Best in Class firms, around the world. Through the power and flexibility of our Manufacturing Execution System (MES) and the expertise of our partners, we deliver solutions that exceed our customers' expectations and ensure success.

Over the past years, we've added the leading global consulting and implementation firms that specialize in the complex discrete industry to our roster of partners and we are pleased that you have chosen to work with us and share your expertise.

Partners are a critical element in our customer care methodology, as we see customers traveling on a continuum—they are also our partners in their journey to reach Digital Transformation. We believe that you as an implementation or consulting partner will provide the means for our customers to reach that transformation, with your proven methodologies and practices, unique to your company, but always following the Critical Manufacturing approach for successfully executing and maintaining a project as a result of our Certification program.

In this Welcome Book, that we suggest you to read in advance, you will find the basics about Critical Manufacturing and our modern MES. As well as some useful tips when staying in Porto for the Partner training program.

We hope you enjoy your time with us, and please feel free to contact me for anything you may need.

Best regards,

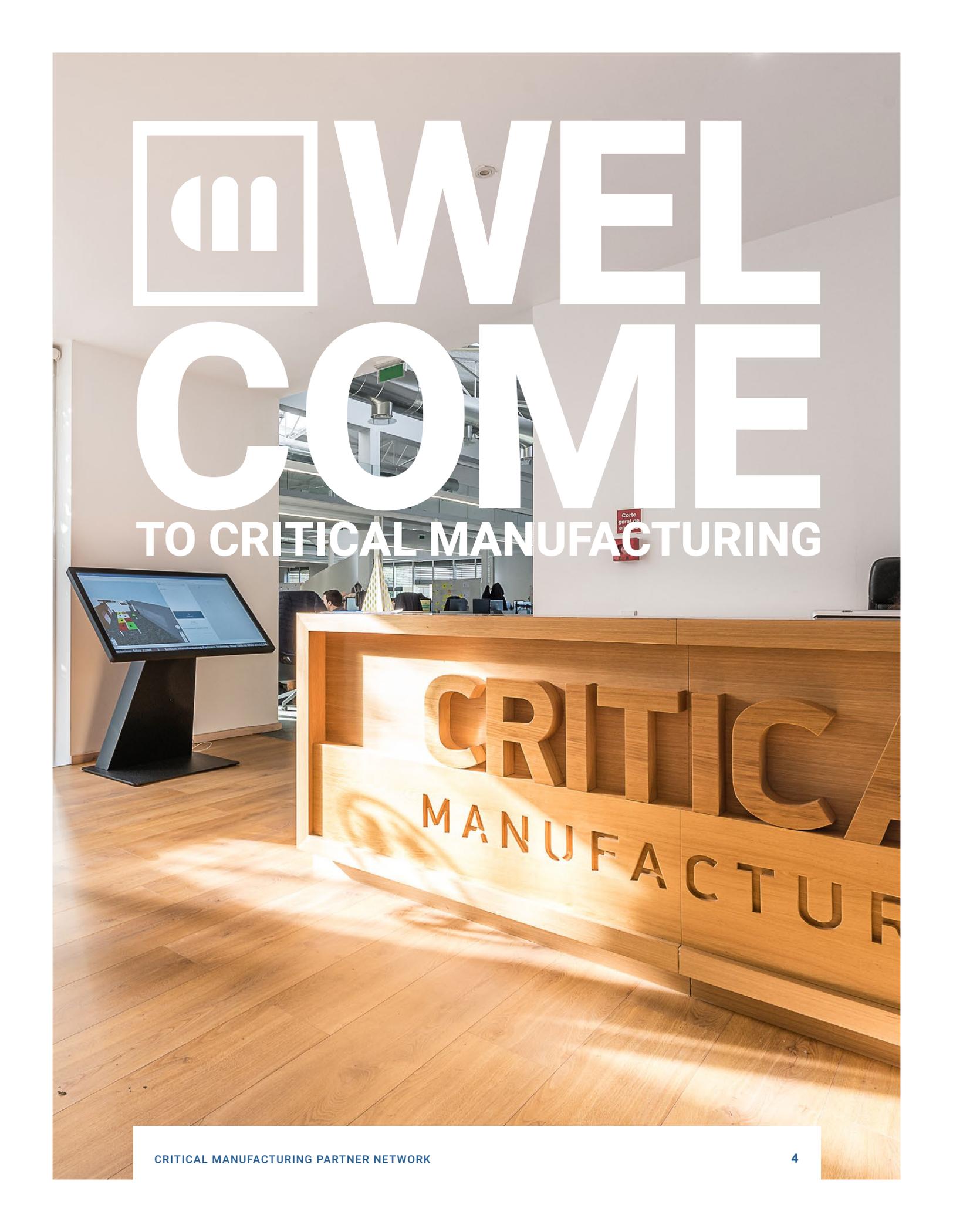
Will Trogdon

VP Partner Ecosystem

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Contents

Welcome to Critical Manufacturing	2
Meet Critical Manufacturing.....	5
Quick Facts	7
About ASM.....	8
Scope of Activity	9
Our Industries	10
Main Segments for Critical Manufacturing MES	11
2022 Gartner Magic Quadrant for MES	12
2022 Gartner Critical Capabilities for MES report.....	13
Critical Manufacturing MES	14
MES is a Critical Element of the Industry 4.0.....	15
Why Critical Manufacturing’s MES is Industry 4.0-ready.....	16
Critical Manufacturing’s Modern MES.....	16
The Industry 4.0 Paradigm Shift.....	17
Competitive Differentiators	18
Our Customers	19
A Few of Our Global Customers	20
What Our Customers Say	21
Our Partners	22
Who Are Our Partners.....	23
Thought Leadership – MES for Industry 4.0.....	24



WEL COME TO CRITICAL MANUFACTURING

Meet Critical Manufacturing

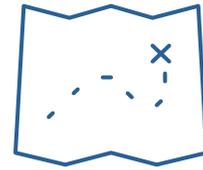
Critical Manufacturing, a subsidiary of ASM PT, provides the most modern, flexible and configurable manufacturing execution system (MES) available.

Critical Manufacturing MES helps manufacturers stay ahead of stringent product traceability and compliance requirements; reduce risk with inherent closed-loop quality; integrate seamlessly with enterprise systems and factory automation, and provide deep intelligence and visibility of global production operations.

As a result, our customers are Industry 4.0 ready. They can compete effectively and profitably by easily adapting their operations to changes in demand, opportunity or requirements, anywhere, at any time.

Vision

**Make Industry 4.0 a reality
for all manufacturers**



Mission

**Drive business value through the convergence
of intelligence, operations, and automation
technologies for Industry 4.0**



Values

- Innovation
- Agility
- Commitment





Quick Facts

2009

COMPANY
FOUNDED

+70

CUSTOMERS

+150

PLANTS
RUNNING
OUR MES

24

COUNTRIES
RUNNING OUR MES

+400

EMPLOYEES

>35%

CAGR 5 YEARS
YOY GROWTH
2021 ~70%

+100

PERSONS OFFICIALLY
TRAINED WITHIN
PARTNERS

100%

SELF-FINANCED
PROFITABLE
OPERATION SINCE
2011

Locations

- 1 Portugal (HQ)
- 2 Germany
- 3 USA
- 4 China



Segments

-  Semiconductors
-  Electronics
-  Medical Devices
-  Other Discrete

Some Customers

Infineon, Intel, Huawei, ASE, OSRAM, Philips, B. Braun, Panasonic, GE Healthcare, Jabil, Honeywell, Vishay, AT&S, Medtronic, PREH, Integer, Convatec, Micron, Teleflex, TDK, Danfoss, Foxconn, Elekta, ABB.

Global Partners

ATS Global
HCL Technologies
Cognizant
TCS
DXC Technology

About ASM

+12,000

EMPLOYEES

+2.8B

US\$ ANNUAL SALES (2019)

+2,000

TECHNOLOGY PATENTS

12

MANUFACTURING FACILITIES

+2,200

R&D STAFF

12

R&D CENTERS WORLDWIDE

10%

OF REVENUE ON R&D P.A.

TOP100
GLOBAL TECH LEADER

2018 THOMSON REUTERS



Headquartered in Singapore.



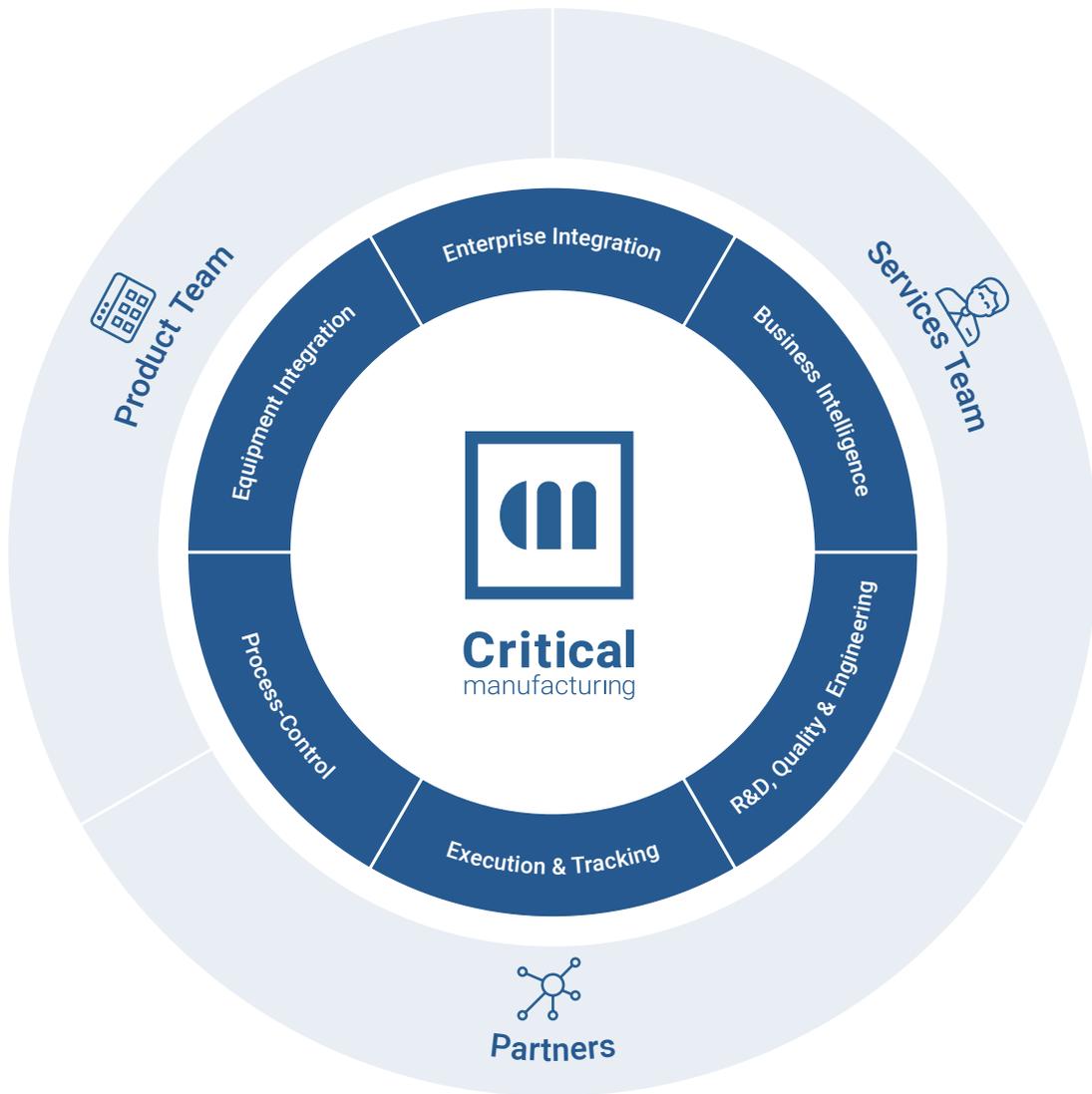
Listed in the HK Stock Exchange.



Present in more than 30 countries.



Scope of Activity



Product Team

Strong know-how in MES, Equipment Integration, Factory and Systems Integration



Services Team

Strong knowledge in various domains, developed by years of joint work with strategic customers



Partners

Global, regional and local partner network provides multi-site, segment, regional and even customer-specific knowledge and experience

Our Industries

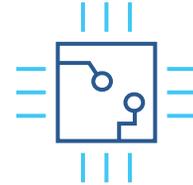


Main Segments for Critical Manufacturing MES

Semiconductors

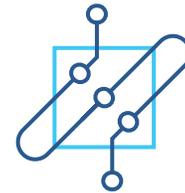
Semiconductor must migrate from aging legacy systems to deal with constant permanent change and meet increasingly complex customer requirements, to achieve 'connected and knowledge-intensive production.'

MES plan and control production in real time, enhancing efficiency, manufacturing flexibility and asset utilization.



Electronics

Faster, smarter, more sophisticated devices are released with ever growing frequency and Electronics manufacturers producing printed circuit boards (PCBs), printed circuit board assemblies (PCBAs), complex assemblies, and box build must improve manufacturing speed and lower the cost of innovation.



Medical Devices

Pricing and margin pressure from reimbursement and purchasing practices are driving companies to seek new ways to become more efficient, speed innovation and decrease costs, while being compliant within stricter guidelines.



	America	DACH	EMEA	Greater China	SE Asia
Medical Devices					
Semiconductor	Front End	Front End	Front End	Back End	Back End
Electronics	PCB / SMT	PCB / SMT	PCB / SMT	PCB / SMT	SMT
Automotive					
Aerospace	Partner - Led Industry Practices				
Other Discrete					

CM Strategic - Direct
 CM Strategic - Indirect
 Discrete Multi-Site

Critical Manufacturing Named as a Leader in the 2022 Gartner Magic Quadrant for MES

According to Gartner, “MES solutions are a fundamental building block of smart manufacturing strategies and digital business for manufacturers. MES technology is evolving and propelling the market in a new direction. By 2025, 60% of new manufacturing execution systems (MES) solutions will be assembled by manufacturers or implementation providers using composable technology.”

Critical Manufacturing believes its modern MES delivers on the new advanced capabilities and technologies needed for manufacturers to gain rapid benefits from their digitalization initiatives.

Critical manufacturing
an ASM PT company

**CRITICAL MANUFACTURING
NAMED AS A LEADER IN THE
2022 GARTNER® MAGIC
QUADRANT™ FOR MES**

[GET REPORT](#)

Figure 1: Magic Quadrant for Manufacturing Execution Systems

Completeness of Vision	Ability to Execute	Quadrant	Companies
Low	High	Challengers	MRV, Paros, Tulp, Dassault Systemes
High	High	Leaders	Critical Manufacturing, ANVIS, GE Digital, Siemens Digital Industries Software, Rockwell Automation (Plex), Kierulff (Nurun), BAEI
Low	Low	Niche Players	Dischi, Sepura, Aggreko
High	Low	Visionaries	SAP, Rockwell Automation, KAC, Honeywell, ABB Ability, Emerson

Source: Gartner (May 2022) © Gartner, Inc

Critical Manufacturing scored highest in 3 out of 4 Use Cases in 2022 Gartner® Critical Capabilities for MES

For the second consecutive year Critical Manufacturing has received the highest scores in 3 out of 4 use cases in the Gartner® Critical Capabilities for Manufacturing Execution Systems report.

Critical Manufacturing received the highest scores of 19 vendors included in the research, based on Gartner evaluation of the 'Critical Capability' Use Cases for:



Batch/Repetitive Flow Manufacturing Use Case



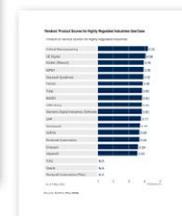
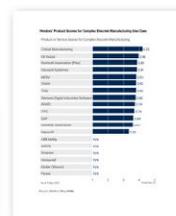
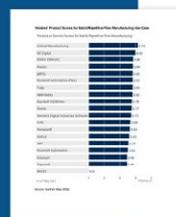
Complex Discrete Manufacturing Use Case



Highly Regulated Industries Use Case

Critical Manufacturing scored highest in 3 out of 4 Use Cases in the 2022 Gartner® Critical Capabilities™ for MES

[READ THE REPORT](#)



Gartner

Critical Manufacturing MES



MES as a Critical Element of Industry 4.0

Connecting factories internally and externally through an integrated MES is essential

Connecting machines and other assets to communicate across a common infrastructure is the first step to digitization. MES plans and controls production in real time, enhancing efficiency, manufacturing flexibility and asset utilization. MES systems need to be integrated with ERP for organization-wide optimization. Digitize not just internal processes, but across the entire supply chain as well.

Main Benefits of MES

Improve quality of products



Use it as a platform for continuous improvement



Reduce operational costs



Improve productivity



Better respond to customer demands



Improve flexibility of operations



Why Critical Manufacturing MES is Industry 4.0-ready

Critical Manufacturing MES represents a step change for manufacturers of complex, high-tech discrete products concerned with keeping up with increasing customer demands while simultaneously error-proofing and future-proofing their operations against constant change.

Is the most modern and complete modular MES available, including Digital Twin, Augmented Reality, Advanced Scheduling, Factory Automation and IIoT Integration, Closed-Loop Quality and more.

Has all the advanced functionality and capabilities to create true competitive advantage for innovative, complex industries.

Critical Manufacturing's Modular MES

Low Code Platform				Critical Manufacturing MES V9 for Complex Discrete Industries		
 Change Management						
Manufacturing Operations	Batch, Lot and Unit Tracking	Traceability and Genealogy	Routing and Dispatching	Data Collection and Acquisition	Operator Training and Certification	Bill-of-Materials (BOM)
	Consumables Management	Tooling Management	Work Instructions / SOPs	Label and Document Printing	Task Management	Order Management
Process Engineering	NPI	Recipe Management	Experiment Management			
Equipment Engineering	Equipment Tracking	Maintenance Management	Calibration			
Quality Management	Statistical Process Control (SPC)	Corrective and Preventive Action (CAPA)	Non-Conformance Reporting and Dispositions	Sampling Based Inspection / AQL	Document Management	Electronic Signatures
Planning & Logistics	Advanced Planning & Scheduling	Materials Management	Costing			
Visibility & Intelligence	Dashboards	Reporting & Analytics	Operational Data Store & Data Warehouse	Alarm Management	Factory Digital Twin	Augmented Reality
Automation & Integration	Equipment Integration	Factory Automation Workflow Management	Enterprise Integration (ERP, PLM, ...)			
 IoT Data Platform						
Low Code Platform						

The Industry 4.0 Paradigm Shift

Industry 4.0 represents a paradigm shift, where discrete manufacturers need to transform their production lines into supply-chain integrated smart factories. A modern MES is critical to provide manufacturers with a core technology that enables a true Industry 4.0 strategy. Critical Manufacturing MES capabilities evolve with your business to create a competitive advantage.



Connectivity

- Connect bidirectional to different equipment types and vendors using an array of possible protocols
- Connect to IoT-enabled products and equipment
- Manage and control untethered devices



Mobile

- Work anywhere with complete access to operational data
- Design and deploy screens for mobile phones, tablets or other devices with multiple form factors
- Use augmented reality for assets and products



Advanced analysis

- Connect, ingest, store and process data from multiple data sources
- See real-time plant performance metrics or store data for future analysis
- Add contextualized information to enterprise big data



Horizontal integration

- Integrate seamlessly between plants
- Collaborate dynamically with suppliers
- Share selected data efficiently and securely with customers



Vertical integration

- Integrate seamlessly with equipment, IoT, and automation
- Flow information to and from enterprise systems



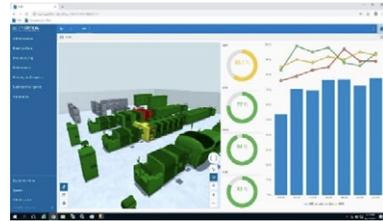
Easy deployment on cloud, on-prem or hybrid

- Reliably deploy software, dependencies, customization, and master-data from a center of excellence (CoE) to multiple plants
- Available cloud, on-prem or hybrid infrastructures

Competitive Differentiators

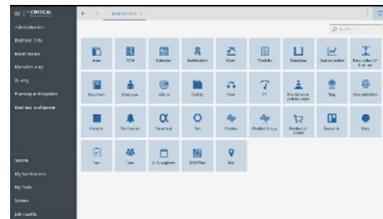
Industry 4.0-Ready

- Manufacturing Execution Digital Twin (fabLIVE 3D)
- Native support for IIoT devices
- Support for cyber-physical systems
- Full mobile experience for all shop floor functions
- Unique shop floor-level Augmented Reality



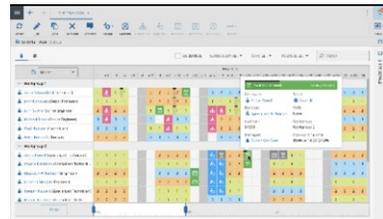
Single Solution

- Single, modular solution
- Single technology stack
- Single user experience for administration, configurations and execution of all functions
- Broad functionality of native modules
- No integration efforts



Broadest functionality

- Advanced Planning and Scheduling
- Hierarchical Material, Container, Equipment, Data Collection and Checklist models
- Quality: SPC, Exception Protocols, Experiments, Sampling, Documentation
- Efficiency: Labor, Maintenance, Costing and Warehouse
- Visibility and Analytics, Data Warehouse, fabLive, Alarms, etc.



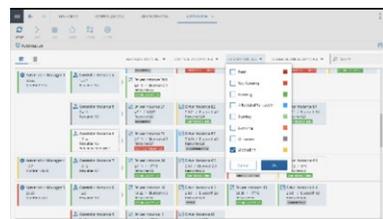
Integration and Automation

- Same solution to integrate standard (OPC, SECS/GEM,...) and IoT (BLE, MQTT) interfaces
- Configuration of automation workflows with drag-and-drop and no code
- Debug automation workflows without external simulators
- One-click central deployment (mass, selective and rollback)

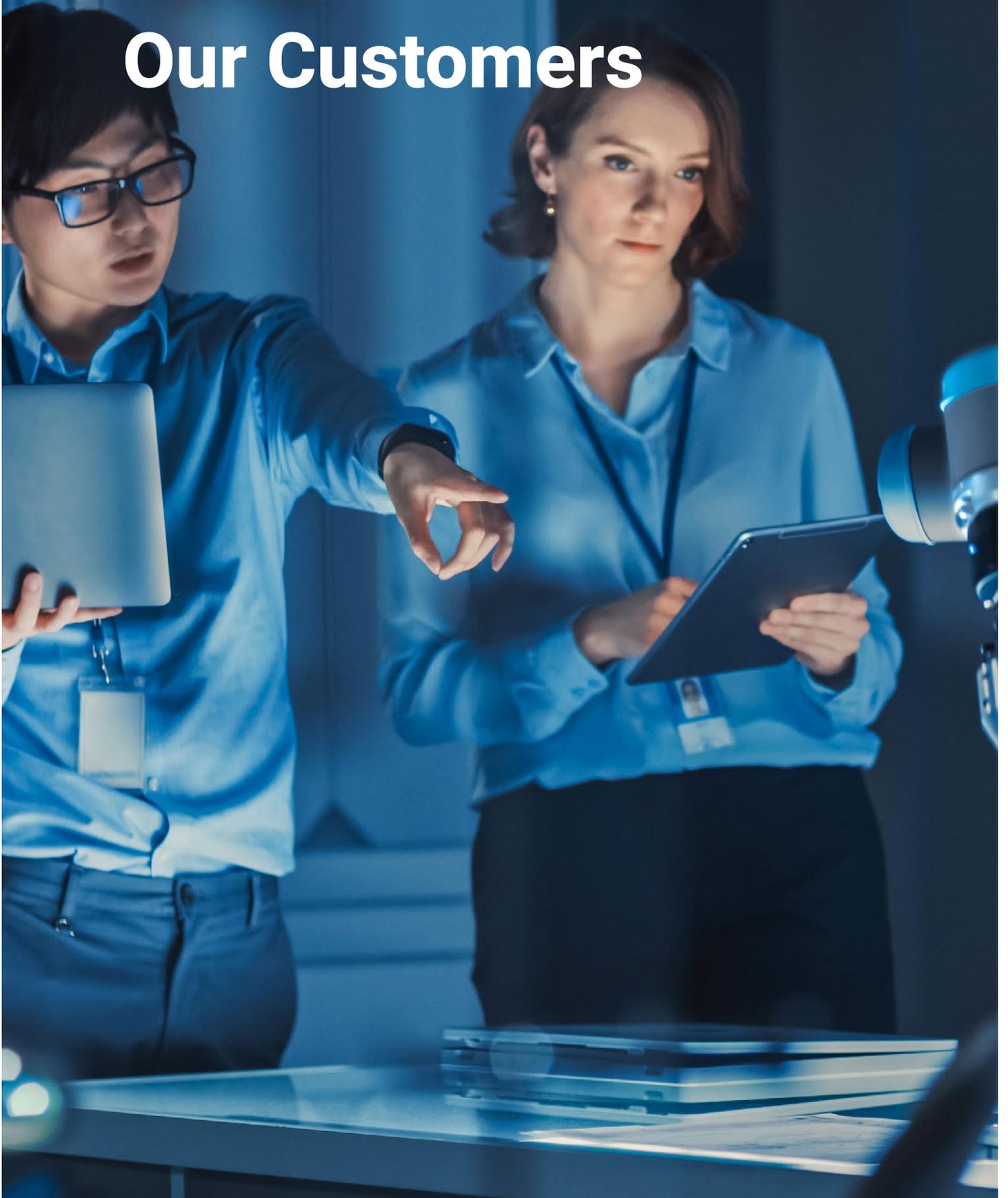


Flexibility and Ease of Use

- Flexible Configuration
- Easy setup (e.g. flows, rules, transactions, wizards, data views)
- User-configurable Advanced Operator Interfaces
- Easy configuration done by Process Owners
- Handle all levels of manufacturing complexity and processes within the same system
- Low code / No code



Our Customers



A Few of Our Global Customers

North America

Semiconductors



Medical Devices



Other Discrete



South America

Semiconductors



Germany & Austria

Semiconductors



Electronics



Other Europe

Semiconductors



Medical Devices



Other Discrete



Electronics



China

Semiconductors



Electronics



Other Asia

Semiconductors



Medical Devices



Electronics



What Our Customers Say

“Without the right partner it’s impossible to achieve our goals. Together with Critical Manufacturing we have a phase and sprint approach to cover all our needs in a very tough time frame.”



Alois Schacherl
Group Manager, IT
Manufacturing Services
AT&S

“This is the start of a new future for Elekta. The payback on the MES is already coming from cost savings, increased efficiency, and easier compliance. We also benefit from freeing up resources to enable our business to innovate more and greater agility to respond to our customers’ demands.”



Mark Kaak
Elekta’s VP Global
Manufacturing

“The biggest benefit of this solution compared to others we have used is that real-time visibility into machine state. Understanding this state immediately and at all times allows a much greater control to ensure high yield at low cost.”



Fred Lu
Advanced Semiconductor
Engineering Group

“We needed a system that would allow us the right levels of flexibility, reliability in data collection and feature richness as well as automation. From the different systems we looked at during our evaluation, Critical Manufacturing was the more promising. We’re now confirming the choice was absolutely right and will yield outstanding results for our customers.”



Prof. Dr. Peter Kücher,
Director of
Fraunhofer CNT

Our Partners

A photograph of two people in a professional setting. On the right, a man with a beard and a wide smile is wearing a dark blue button-down shirt and a watch. He is holding a black pen. On the left, a woman with dark hair is wearing a dark sweater and is holding a large white sheet of paper. The background is bright and out of focus, with warm bokeh lights. The overall mood is positive and collaborative.

Who Are Our Partners?

Global Partners



Regional Partners

North America



Europe



China



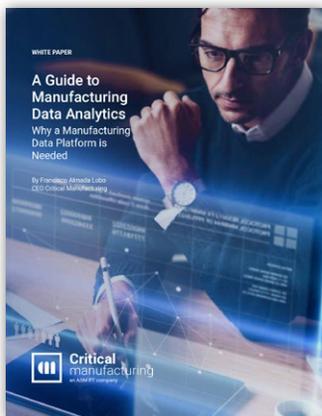
Other Asia



Thought Leadership – MES for Industry 4.0

We invite you to read and share our thought leadership content.

On our [Customer Portal](#) you will find a wide range of white papers and case studies about the most important topics for Industry 4.0, reflecting the crucial role of MES. You'll also find datasheets and brochures of Critical Manufacturing MES.



A Guide to Manufacturing Data Analytics



8 Reasons Why Manufacturing IIoT Projects Fail



IIoT Has a "Thing" for MES. Why IoT Platforms Won't Replace MES for Industry 4.0



APS Goes Native for Industry 4.0. Why Advanced Planning and Scheduling Must be an MES Capability



MedTech must embrace Industry 4.0 to thrive in the outcome economy



Digital Twin and Augmented Reality: From Ideal to Real with MES

See you soon!

