

WEL COME BOOK

Critical Manufacturing Partner Network



Critical
manufacturing
an ASM PT company

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,

Maryanne Steidinger

Head of Partner Management

maryannesteidinger@criticalmanufacturing.com

Contents

Welcome to Critical Manufacturing	5
Meet Critical Manufacturing	6
Quick Facts	8
About ASM	9
Scope of Activity	10
Our Industries	11
Main segments for Critical Manufacturing MES	12
2020 Gartner Critical Capability 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	17
Why Critical Manufacturing Industry 4.0 MES	18
Competitive Differentiators	19
Our Customers	20
A Few of Our Global Customers	21
What Our Customers Say	22
Our Partners	23
Who Are Our Partners.....	24
Thought Leadership – MES for Industry 4.0	25



WEL COME TO CRITICAL MANUFACTURING

Meet Critical Manufacturing

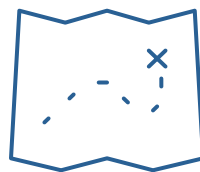
Critical Manufacturing, a subsidiary of ASM PT, provides the most modern, flexible and configurable Manufacturing Execution System (MES) available.

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

+50

CUSTOMERS

+60

PLANTS
RUNNING
OUR MES

+1B

DATABASE
TRANSACTIONS
PER MINUTE

+250

EMPLOYEES

35%

YoY SALES GROWTH
(2019)

26%

EBITDA/SALES
(2019)




0

FINANCIAL
DEBT

Locations

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

Segments

-  Semiconductors
-  Electronics
-  Medical Devices
- Other Discrete

Customers

Infineon, Intel, Huawei,
ASE, OSRAM, Philips,
B. Braun, Panasonic,
GE Healthcare, Jabil,
Honeywell, Vishay,
AT&S, Medtronic

Global Partners

Accenture
ATS-Global
HCL Technologies
TCS

About ASM

16,300

EMPLOYEES

+2B

US\$ ANNUAL
SALES (2019)

1,400

TECHNOLOGY
PATENTS

12

MANUFACTURING
FACILITIES

2,000

R&D STAFF

10

R&D CENTERS
WORLDWIDE

10%

OF REVENUE
ON R&D P.A.

TOP100
GLOBAL TECH LEADER

2018 THOMSON
REUTERS



Headquartered in Singapore.



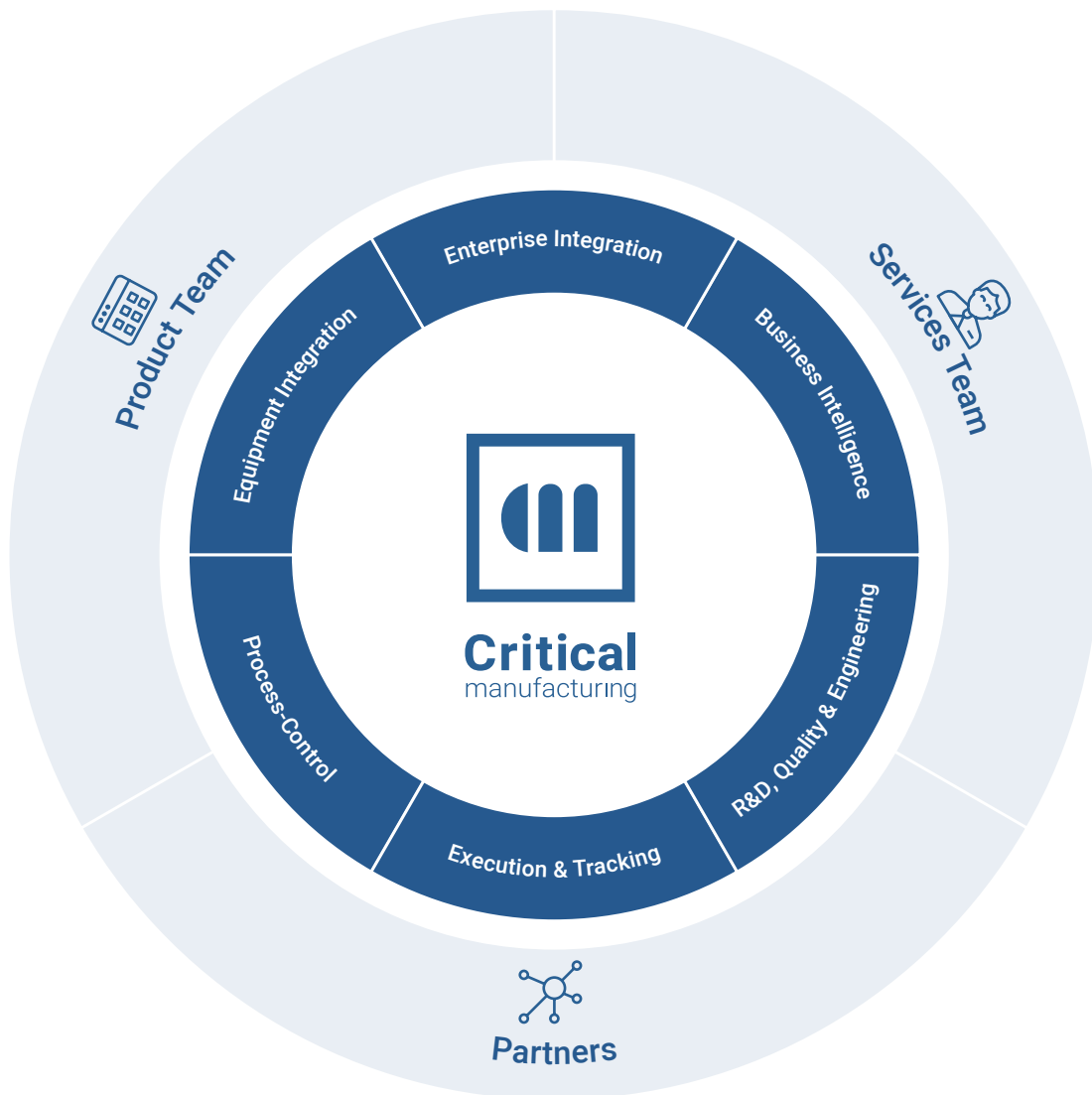
Listed in the HK Stock Exchange.



Present in more than 30 countries.



Scope of Activity



Product Team

Strong know-how in
Manufacturing Execution
Systems, 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

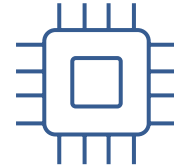
A woman in a blue lab coat and safety glasses is working on a smartphone in a factory setting. She is using a screwdriver to work on the internal components of the phone. In the background, other workers are visible, also working on similar devices. The scene is brightly lit with overhead industrial lights.

Main Segments for Critical Manufacturing MES

Semiconductors

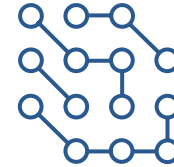
Semiconductor must migrate from aging legacy systems to deal with constant permanent change and meet increasingly complex customer requirements, to achieve 'connected and knowledge-intensive production.'

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 2021 Gartner Magic Quadrant for MES

According to Gartner, “there is a fundamental technological shift taking place in the MES market, driven by evolving new technologies that challenge the MES status quo and driven by vendors with the agility and talent to accelerate the adoption of those technologies.”

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 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 V8 General			
<div> Change Management</div>							
<div></div> 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	
<div></div> Process Engineering	NPI	Recipe Management	Experiment Management				
<div></div> Equipment Engineering	Equipment Tracking	Maintenance Management	Calibration				
<div></div> Quality Management	Statistical Process Control (SPC)	Corrective and Preventive Action (CAPA)	Non-Conformance Reporting and Dispositions	Sampling Based Inspection / AQL	Document Management	Electronic Signatures	
<div></div> Planning & Logistics	Advanced Planning & Scheduling	Materials Management	Costing				
<div></div> Visibility & Intelligence	Dashboards	Reporting & Analytics	Operational Data Store & Data Warehouse	Alarm Management	Factory Digital Twin	Augmented Reality	
<div></div> Automation & Integration	Equipment Integration	Factory Automation Workflow Management	Enterprise Integration (ERP, PLM, ...)				
<div> IoT Data Platform</div>							
Low Code Platform							

Why Critical Manufacturing Industry 4.0 MES?

Industry 4.0 initiatives need a modern MES as the foundation to bring the vision to life and realize the full benefits. Critical Manufacturing MES has all the advanced functionality and capabilities to create true competitive advantage for innovative, complex industries.

Connectivity

- Connect to IoT-enabled products and equipment
- Manage and control untethered devices
- Secure physical and digital assets



Mobile

- Work anywhere
- Leverage location data effectively
- Use Augmented Reality for assets and products



Cloud

- Leverage hosted infrastructure
- Use up-to-date versions at all times
- Focus on strategy, not IT management



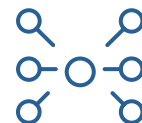
Advanced Analysis

- See real-time plant performance metrics
- Prevent problems with predictive and prescriptive analytics
- Feed contextualized data to enterprise big data



Decentralization

- Manage complex distributed plant floor processing from a unified system
- Record events in context for complete, accurate genealogy



Vertical Integration

- Use a dynamic, rule-based workflow engine
- Integrate seamlessly with equipment, IoT and automation
- Work with enterprise systems



Horizontal Integration

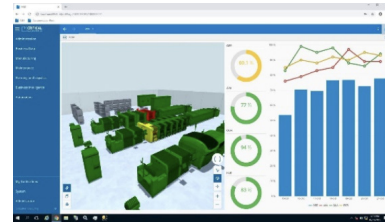
- Integrate seamlessly between plants
- Collaborate dynamically with suppliers
- Share efficiently and securely with customers



Competitive Differentiators

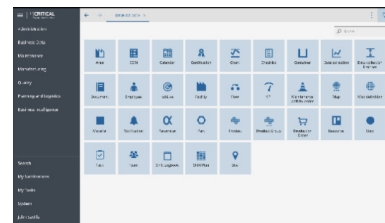
Industry 4.0-Ready

- 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



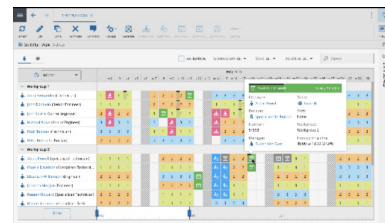
Single Solution

- 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.



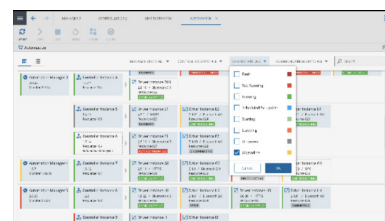
Integration and Automation

- Same solution to integrate standard (OPC, SECS/GEM,...) and IIoT (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.”



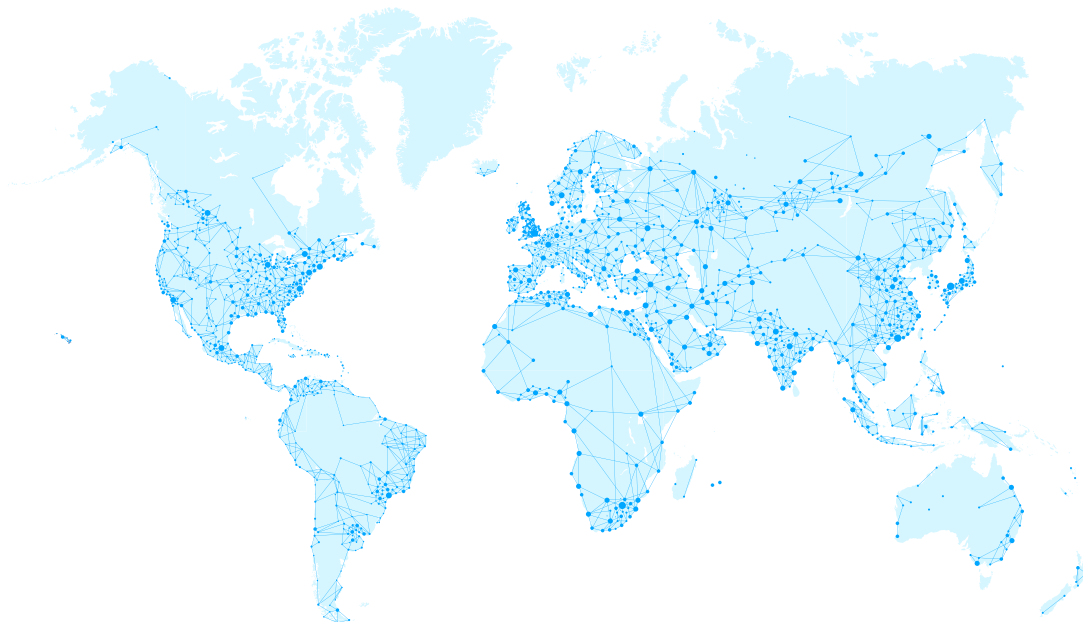
Prof. Dr. Peter Kücher,
Director of
Fraunhofer CNT

Our Partners

A photograph of a man and a woman in a professional setting. The man, on the right, is smiling and wearing a blue button-down shirt, grey trousers, and a brown belt. He is holding a black pen in his right hand and a white document in his left. The woman, on the left, is wearing a blue sweater and is looking down at the document. The background is blurred with warm, golden light bokeh.

Who Are Our Partners?

Global Partners



Regional Partners

North America



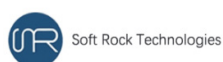
Europe



China



Other Asia



Thought Leadership – MES for Industry 4.0

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

On our [website](#) 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.



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!



Critical
manufacturing