CLOOS open Day, Poland

NexT: new excellent Technology in welding, automatization and digitalization

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Application department

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Weld your way.

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Agenda

- Cloos Qineo NexT: **n**ew **ex**cellent **T**echnology
- Cloos Automatization: Examples of automated welding systems
- Cloos Gateway: The gate into our data world

CLOOS

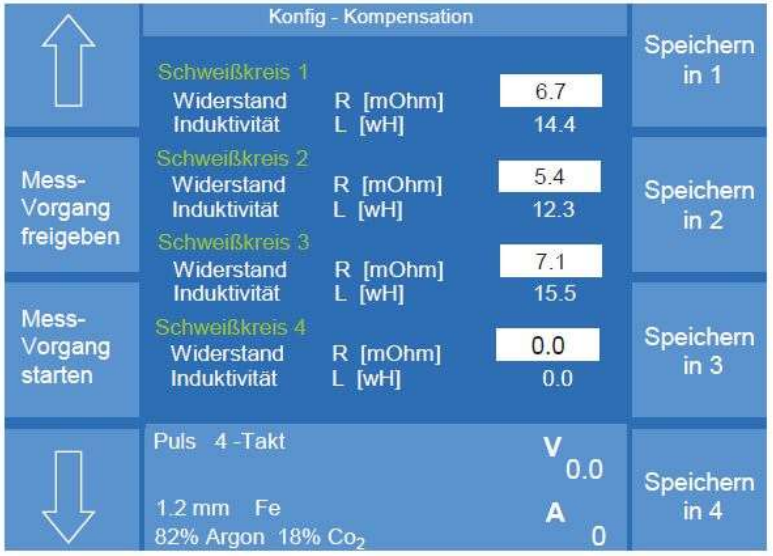
Qineo NexT

- NexT is the synonym for „**N**ew **ex**cellent **T**echnology“
- inverter power source
- for automated applications as well as for manual welding
- start with 450A power source
- basis for new product family

news

- main news:

1. best serviceability and new diagnose masks
2. compensation of up to 4 external welding circuits possible
3. weld monitoring (SD) integrated on the main board
4. new welding processes integrated



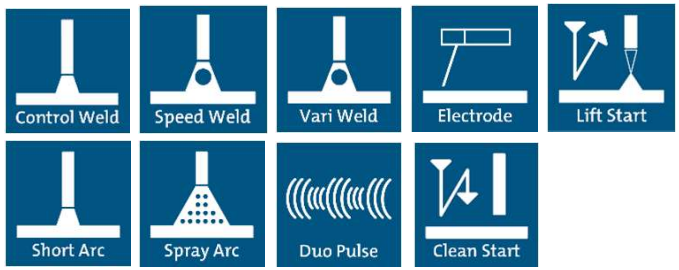
CLOOS

Manual welding

QINEO – NexT – Welding processes

DC-Power source - STANDARD

- Control Weld
- Speed Weld
- Vari Weld
- Elektrode
- WIG (DC) Lift-Arc



DC-Power Source – extended STANDARD

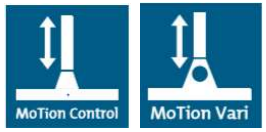
- RPC
- Rapid Weld
- Rapid Pulse

OPTION AC-Module (coming soon)

- Cold Weld (AC-Technologie)

OPTION Motion-Drive-System

- Motion Control Weld
- Motion Vari Weld



CLOOS

Manuell

Automatisiert

QINEO – NexT – Welding processes

Control Weld

MIG/MAG Standard Lichtbogen (ohne Puls)
Kurz-, Übergangs-, Sprühlichtbogen

Kurzlichtbogen: Dünnblech, Zwangslagen
Sprühlichtbogen: dickere Materialien

RPC

MIG/MAG Standard Lichtbogen (ohne Puls)
Gesteuerter Kurzlichtbogen
Speziell für Wurzelschweißungen im Stahl- und Behälterbau
V-Naht Wurzel auch in Fallnaht ohne Pendelbewegung sicher zu beherrschen
Gute Spaltüberbrückbarkeit

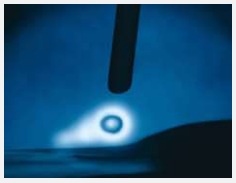
Speed Weld

MIG/MAG Impuls Lichtbogen
Spannungsgeregelt U/I
Für alle Materialien: Al, Fe, CrNi
Sehr hohe Lichtbogenstabilität auch bei hohen Schweißgeschwindigkeiten und bei Aluminium.
Nahtsuchen bei Stahl & CrNi möglich

Rapid Weld
Rapid Puls

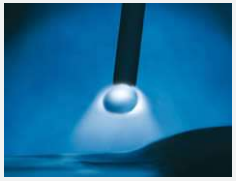
MIG/MAG Lichtbogen
Rapid Weld: Fokussierter Sprühlichtbogen
Rapid Puls: Fokussierter Impulslichtbogen (I/I)
Sehr tiefer Einbrand bei reduziertem Drahtvorschub durch extrem fokussierten Lichtbogen. (Fe, CrNi)
Rapid Puls ist weniger empfindlich bei Abstandsänderungen

Vari Weld



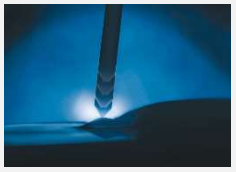
MIG/MAG Impuls Lichtbogen
Stromgeregelt I/I
Für alle Materialien: Al, Fe, CrNi
Gute Regeleigenschaften der Lichtbogenlänge im unteren Leistungsbereich (Dünnblech).
Sehr gute Tropfenablösung durch digitale Regelungstechnik.

Cold Weld



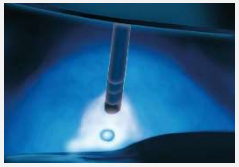
MIG/MAG Wechselstrom Impulslichtbogen (AC)
Energiereduzierter Prozess speziell für Aluminium.
Weniger Energie im Grundwerkstoff da nach jedem Impuls eine negative Pulsphase erfolgt und somit die elektrische Energie primär in den Draht eingekoppelt wird.
Sehr Richtungsstabil, Wärme gut steuerbar, reduziert Porosität bei Al. speziell bei Al-Guß

Motion Control Weld



MIG/MAG Lichtbogen (ohne Puls)
Energiereduzierter Prozess durch reversierenden Drahtvorschub für Al, Fe, CrNi
Speziell für sehr Dünnwandige Werkstoffe und Zwangssituationen & beschichtete Werkstoffe.
Minimierte Spritzerbildung bei sehr hohen Prozessgeschwindigkeiten.

Motion Vari Weld



MIG/MAG Lichtbogen (Puls I/I)
Energiereduzierter Prozess durch reversierenden Drahtvorschub für Al, Fe, CrNi
Speziell für sehr Dünnwandige Werkstoffe und Zwangssituationen & beschichtete Werkstoffe
Präzise Wärmesteuerung bei exzellenter Prozessstabilität.

CLOOS

QINEO – NexT – modules

Modulare design

- Power source with inverter technology
  - DC – Modul / digital power unit up to 200 kHz
- Wire feeder
  - QWD - metal, automatizatin, Motion-Drive, CDD
- MIG/MAG – Alternating current
  - AC – Modul
- Controlling / Operation modules
  - Master-Plus, Premium, remote control RC,
- Water cooled
  - Cooler module with pump and tank as plugin module
- Modular stackable
  - Stackable to various closed units
- Trolleys / brackets for compl. unit
  - Wandhalter, diversWall holder, various carriages, pallet base for stacking
- Compact design

QINEO – NexT – plattform based equipment









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QINEO – NexT – operation panels

Master Plus

- Intuitive operation for manual welding (also automation)
- Fast memory for recurring tasks
- User management as an option
- Plain text display of all parameters and messages

Premium

- Sophisticated automation tasks (also manually)
- Diagnostics and configuration menus
- Welding Data - Monitoring & Documentation
- User administration, plain text display

RC Plus / RPU

- Ideal supplement for manual welding - manipulated variables close to the torch
- Ext. Operation Module (RPU)

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QINEO – NexT – plattform based equipment

- well known wire drives
- same cable hose and torches
- back to Harting connectors
- well known spare and wear parts
- Premium and Master Plus with new masks
- no new learning or training required
- SD integrated on board (one Job/one Ethernet IP)
- external profinet module/ internal in preparation

CLOOS

QINEO – NexT – technology

- high precision regulation (actual values reading with 200kHz)
- best ignite-/ and welding properties
- high quality standard
- flexible concept
- interface between control board and power control unit
- modular system
- energy management
- high efficiency (close to 90%)

QINEO – NexT – technology

Standard Tools

- Bootloader for Updates - One interface for all components
- USB interface on board - For data backup and upload
- Multi Voltage - different mains voltages possible
- Ethernet
- Memory for different characteristic curve data sets
- Clean Start - process-safe ignition with reversing wire
- Duo Pulse - Superimposed pulse up to 10 Hz
- Compensation welding circle - Up to 4 different circles, e.g. for different device structures

OPTIONEN

- Welding data monitoring - integrated on board
- Expert Mode - single parameter operation for special welding tasks
- Operating data acquisition - e.g. for post calculation and traceability
- WLAN module - communication with QDM software for welding data monitoring and documentation
- User management - Welding approval only by authorized welders
- Search for seams - digital signals and digital evaluation
- Interfaces – Profibus, Profinet, OMI

CLOOS

QINEO – NexT – process technology

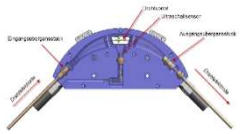
- **new welding process**

  - **processes + wire buffer**
    - welding process MoTion Control/Vari Weld (wire for-/backwards movement with up to 120Hz)
    - wire buffer compensation for wire movement

the main components are:

Cloos MoTion Drive with welding torch

MoTion Control Unit



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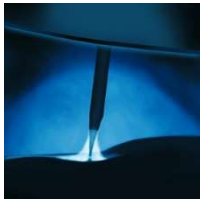
wire-drive

power-source

welding process



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Motion Control Weld & Motion Vari Weld

CLOOS

Motion Vari Weld: LAM generated plates

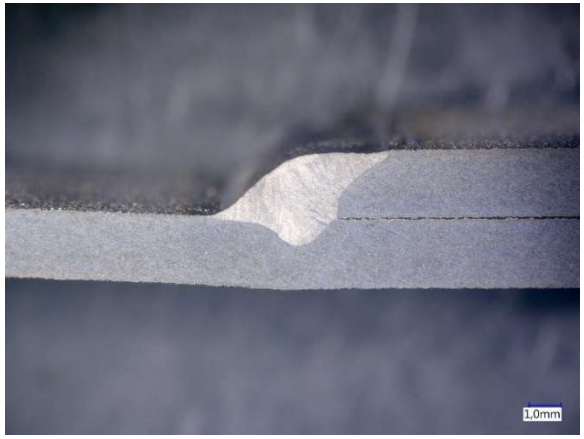
Motion Vari Weld: LAM generated sheets

- Process suitable for very thin to medium sheets
- For both thin and medium metal sheets you get visually appealing seams

- The LAM sheets (t = 2 mm) were welded with the following parameters:

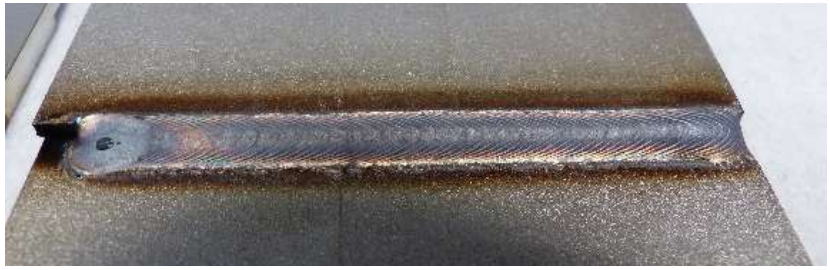
wire feed Speed	4,0 m/min
Welding speed	60 cm/min
voltage	15,2 V
current	85 A
Heat input	1,62 kJ /cm
Filler metal	1.4430, Ø 1,0 mm
Shielding gas	97,5 % Ar, 2,5 % CO_2

Lapp seam LAM in cross section



CrNi-sheet

LAM-sheet



CLOOS

StaVari

Motion Control Weld: LAM generated sheets

- Process suitable for very thin sheets
- For thin sheets (> approx. 1.5 mm), a convex, raised seam is created

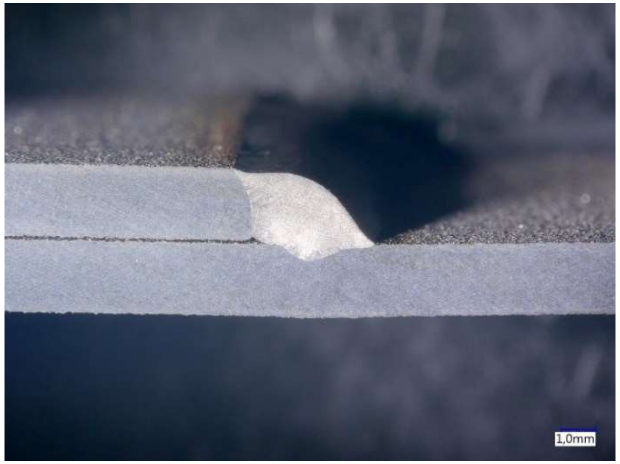
- The LAM sheets (t = 2 mm) were welded with the following parameters:

  - Wire feed speed 18,5 m/min
  - Welding speed 35 cm/min
  - Filler metal 1.4430, Ø 1,0 mm
  - Shielding gas 97,5 % Ar, 2,5 % CO_2

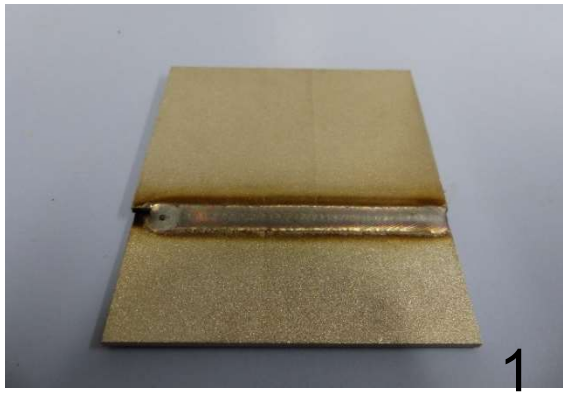
CrNi-sheet

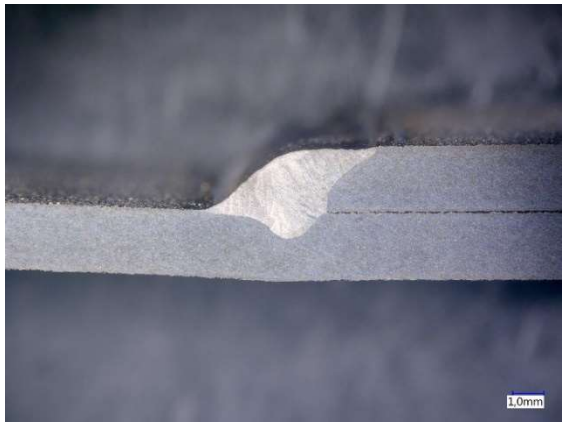
LAM-sheet

Lapp seam LAM in cross section

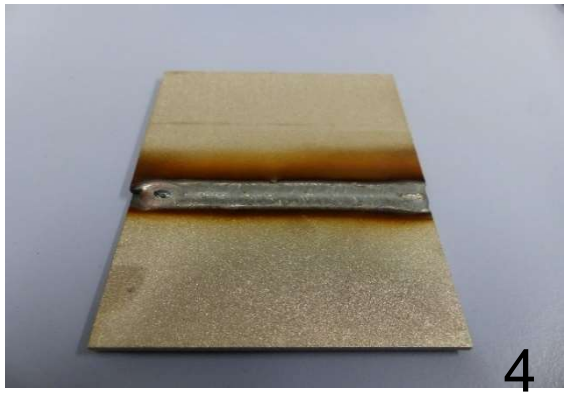


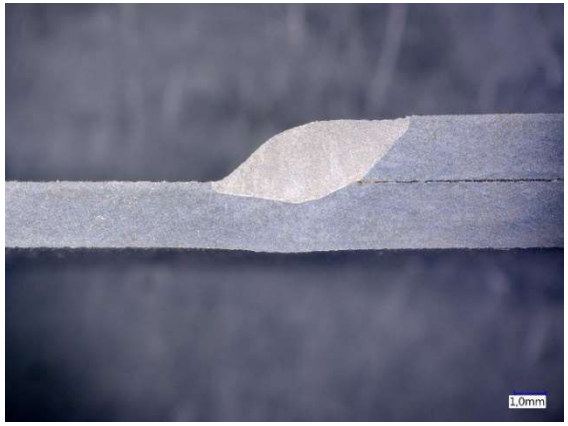
Motion Vari Weld: LAM generated sheets



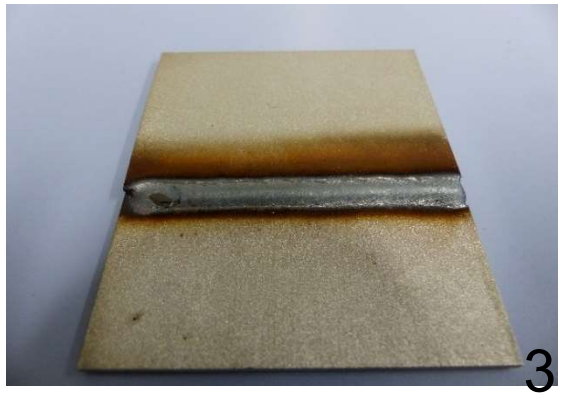


- Filler metal: 1.4430
- V_D= 4,0m/min
- V_S= 60cm/min





- Filler metal : G4Si1
- V_D= 4,0m/min
- V_S= 50cm/min



- Filler metal: X90
- V_D= 4,0m/min
- V_S= 50cm/min

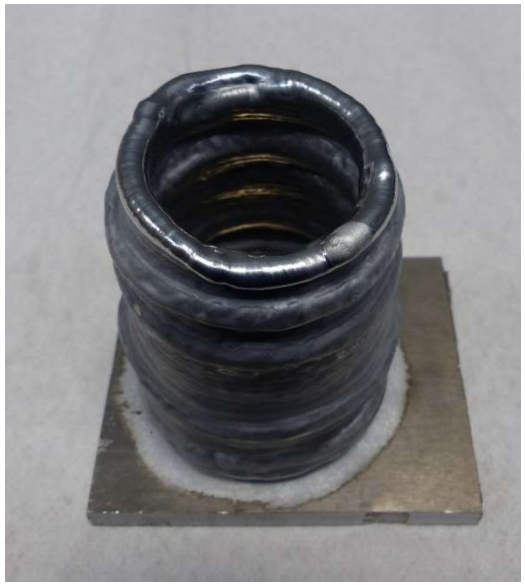
CLOOS

StaVari

Motion Weld

MoTion Control Weld

Aluminium, wire-Ø 1,2 mm



MoTion Vari Weld

Aluminium, wire-Ø 1,2 mm

MoTion Control Weld

Stahl, wire-Ø 1,0 mm

Agenda

- Cloos Qineo NexT: **n**ew **ex**cellent **T**echnology
- **Cloos Automatization: Examples of automated welding systems**
- Cloos Gateway: The gate into our data world

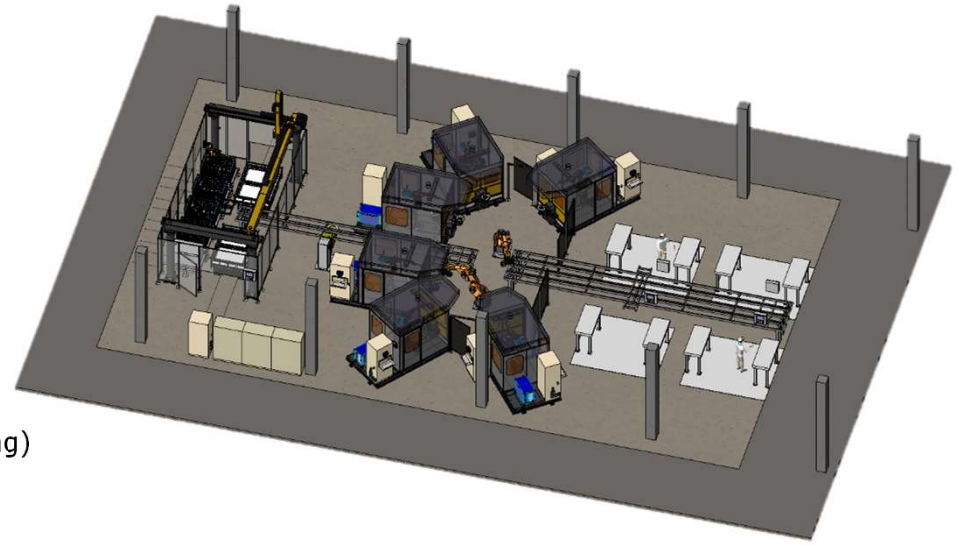
Bicycle stand

Truck components

Production line with 6 compact cells CC-6, re-designed base frame and transportation system with workpiece positioner and loading/unloading system for trailing-axle-support

Scope of supply:

- QRH 280
- QINEO Pulse 600
- QR-RP-S-3kN
- QR-WP-DH-TS-2,5kN
- RFID evaluation unit
- RFID read/write module
- Marking unit PM micro AS LL
- PLC control (übergeordnete Steuerung)
- Brennerreinigung CMR 8-C
- Arc sensor
- QDM Software
- Carola EDI Software
- PDM Software



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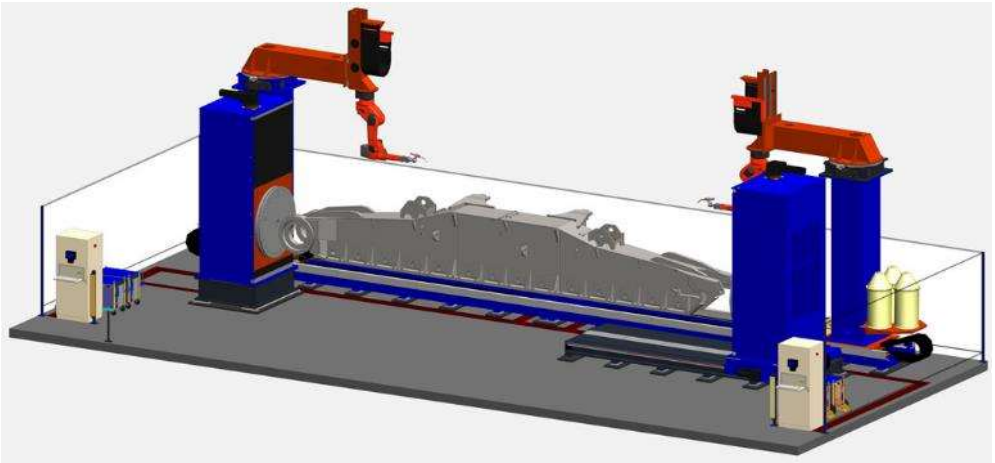
Mobile cranes

Robot system for welding parts of cranes

Short description of the system :

- QRC 350
- GLC 403/603 Quinto II SD
- QR-MD-WS torch changing system
- Tandem/single wire
- CTV-5kN
- FL-50kN, 15m
- QR-WP-TVV-150kN
- PDM Software
- Gas nozzle sensor HS700K
- Arc sensor



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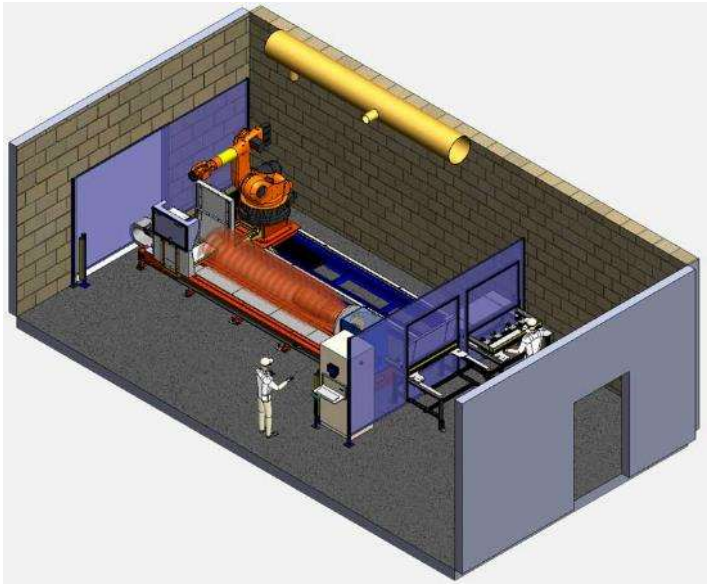
automatic heavy load high bay warehouse

grinding

Special purpose system for grinding Conveying screws for the food industry

Short description:

- Romat 520/120
- Grinding- Equipment
- FL 20kN
- TC-20kN-E
- WPG-PSE-20kN



CLOOS

Agenda

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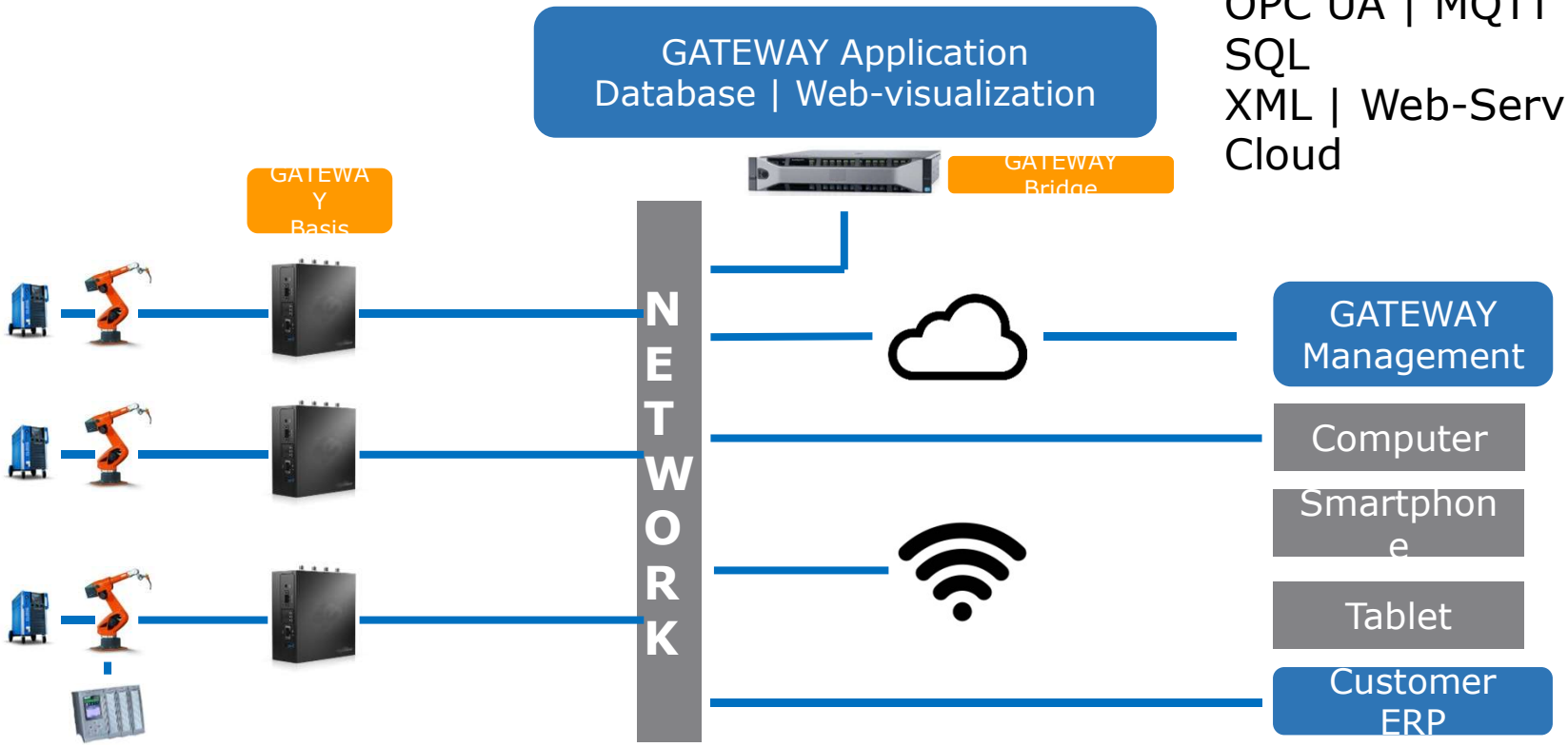
- **Cloos Gateway: The gate into our data world**


CLOOS
Weld your way
DEUTSCH
MENÜ
Fertigungs-Planung
Maßgeschneiderte Lösungen
Mehr erfahren
Material-Wirtschaft
Perfektes Logistik Know-How
Mehr erfahren
Qualitäts-Management
Wirtschaftlich handeln
Mehr erfahren
Wartung und Service
Sicherheit durch Kompetenz
Mehr erfahren
CLOOS-Management
Erfolgreich handeln
Mehr erfahren

CLOOS

Vision

Interfaces
OPC UA | MQTT | SQL
XML | Web-Service | Cloud



webbased Solutions| various open interfaces

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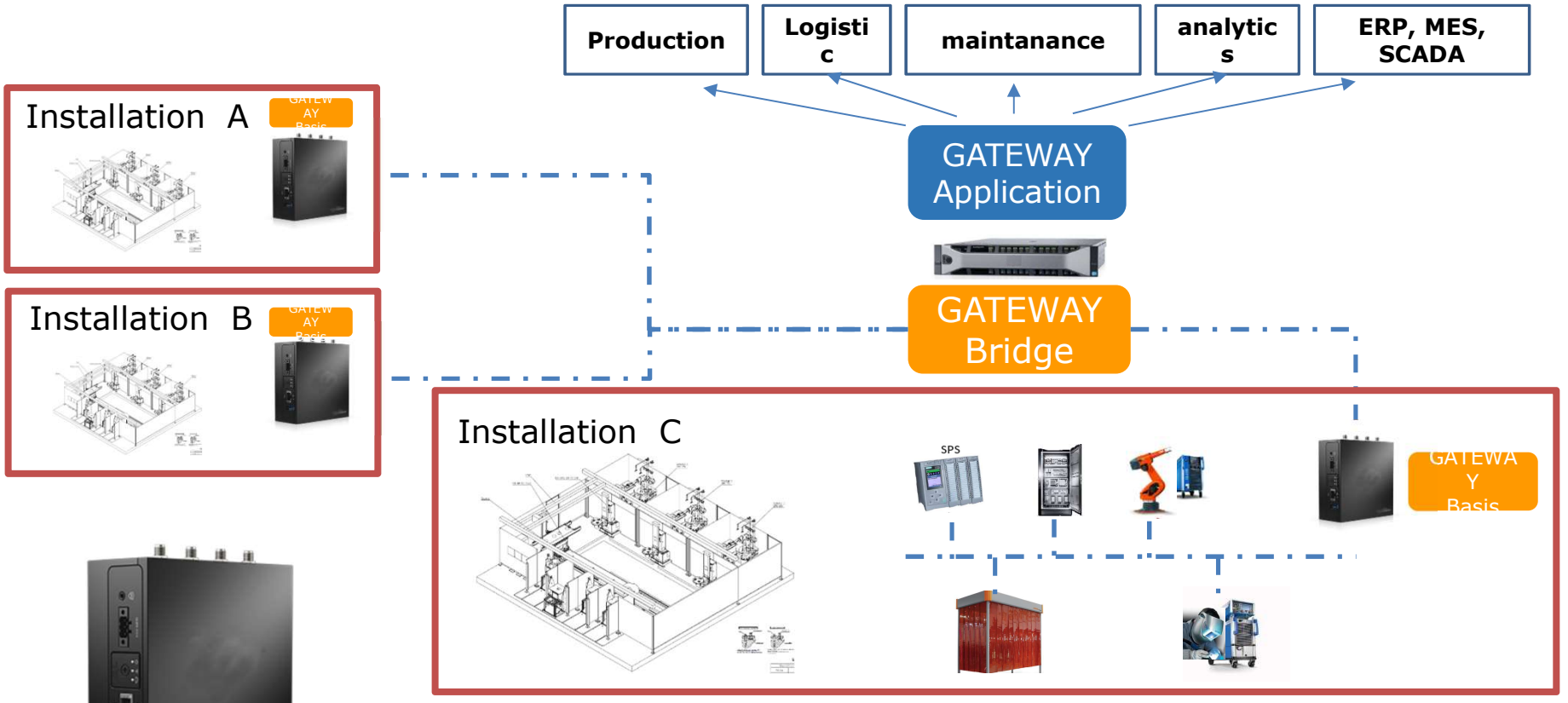
Solution path: Gateway basis



Example Hardware

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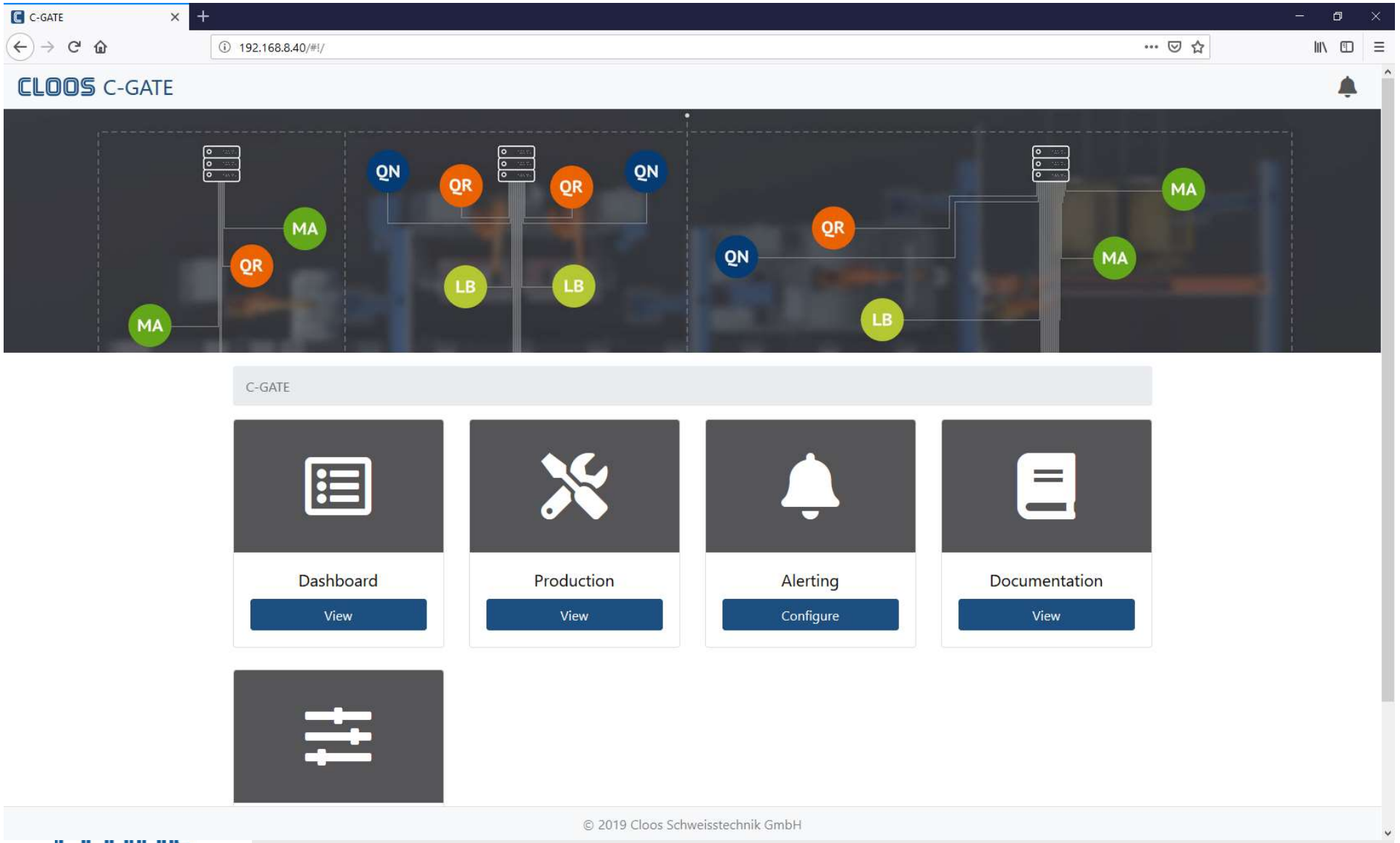
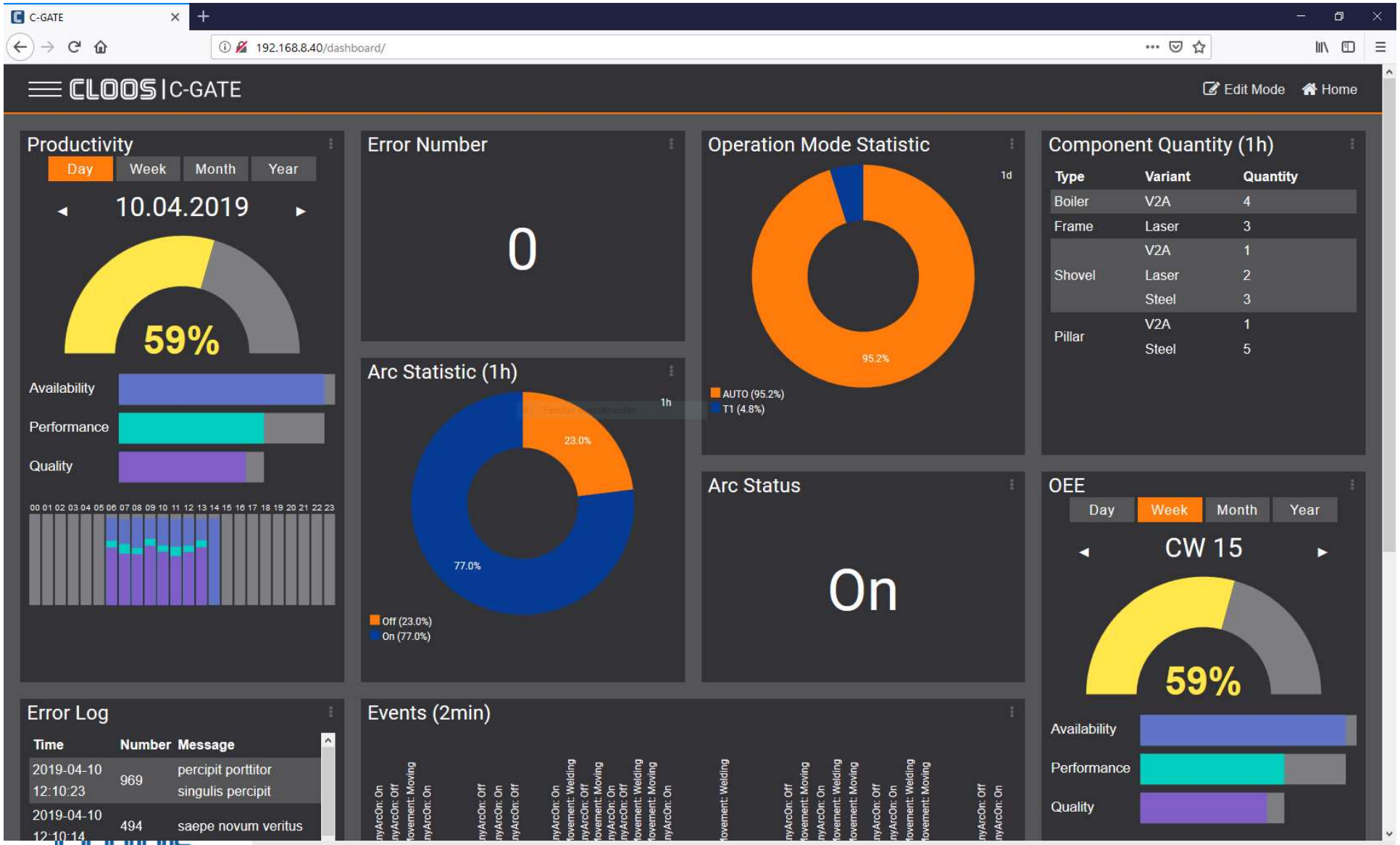
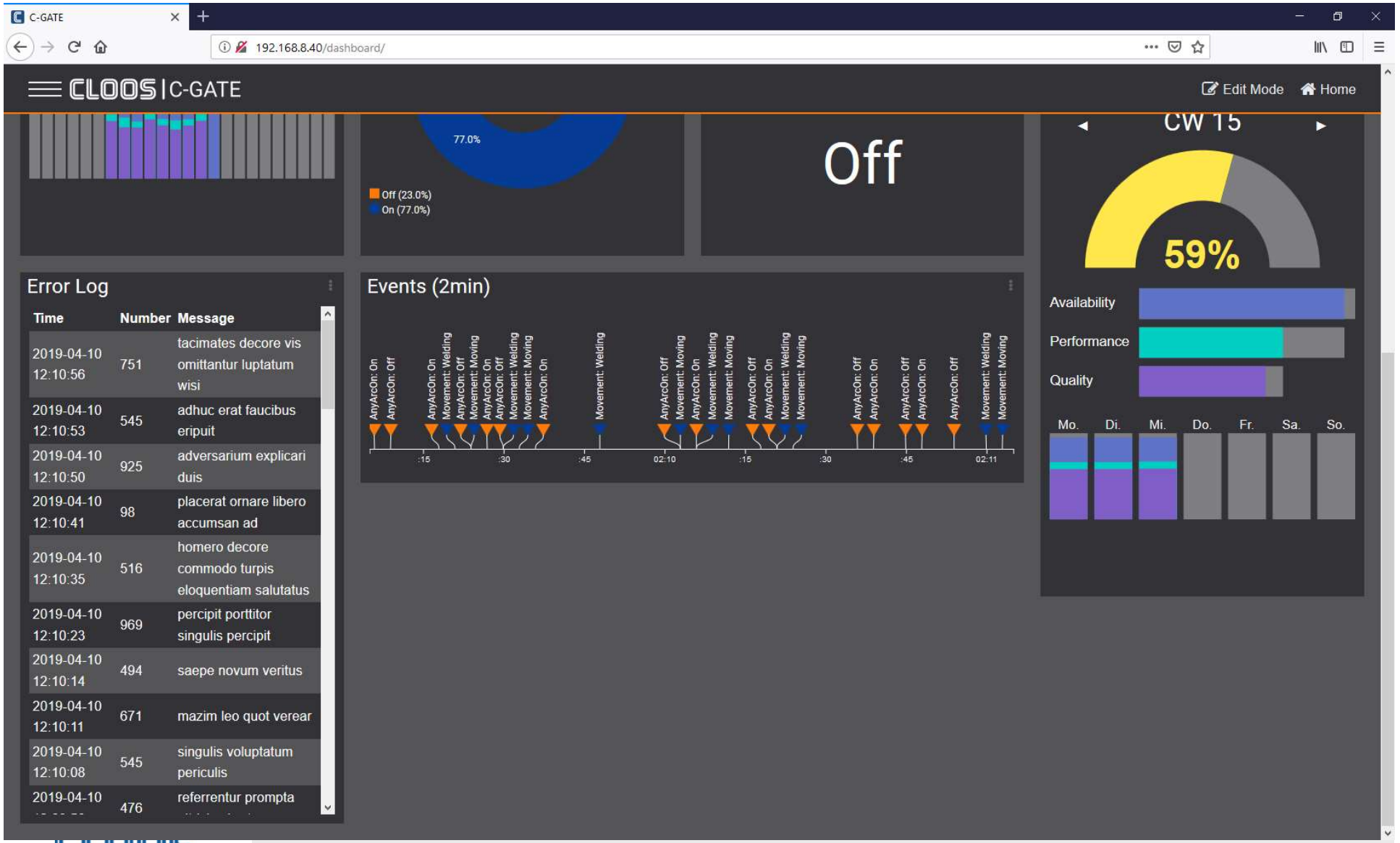
CLOOS Gateway



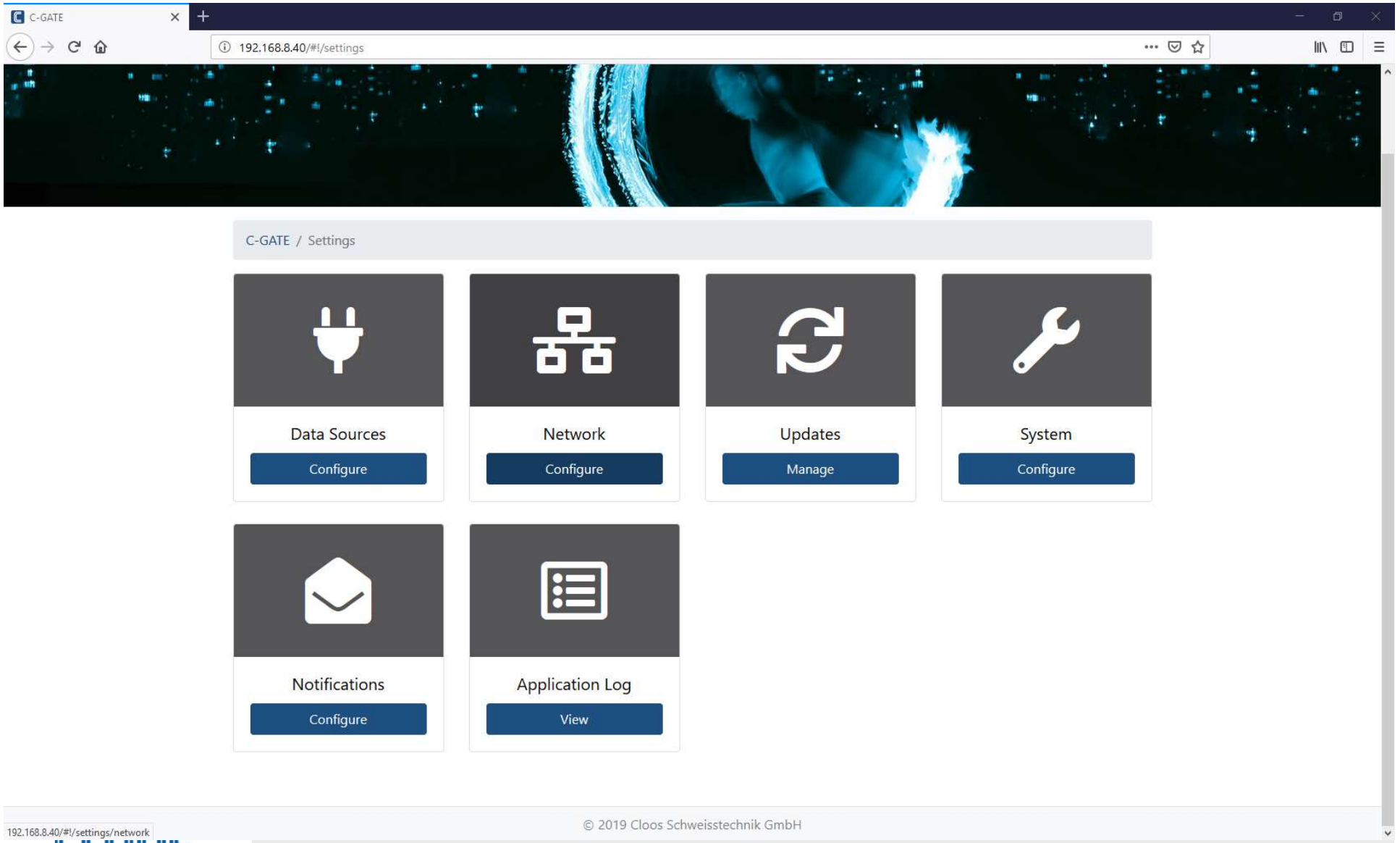
CLOOS Gateway



CLOOS Gateway



CLOOS Gateway



Thank you for your attention

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Weld your way.