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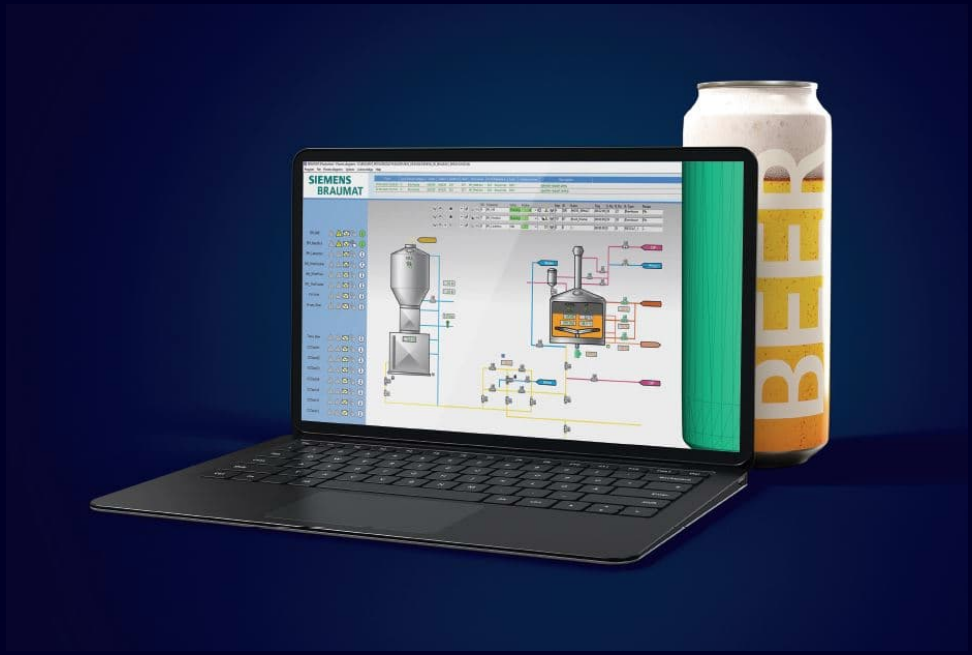

BRAUMAT®
Recipe based Control System for Brewing and Malting

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Slide 2

GB(FHOP10 Genereller Kommentar

Bitte korrigieren:
- eine Menge falsche/doppelte Leezeichen und unglückliche Zeilenumbrüche
- fehlende Ausrichtung der Elemente/Text
- ungleiche Schriftarten/-größe
- anscheinend viele 'Copy&Paste issues'
- fehlende/falsch platzierte Trennlinien
- unharmonische Zeilenabstände, und Formatierungen

In Summe wirken die Folien noch sehr 'roh' und noch nicht wirklich review-ready.

Gehle, Bjoern (DI FA HMI O&I PP, 2022-11-14T10:01:22.326

Current Challenges of breweries and malt houses

1. Increasing complexity of operation
2. Demand for process transparency
3. Faster and flexible adaption of recipes
4. Reduction of manual and routine work
5. Investment protection and future-proofness
6. Fast support and maintenance

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BRAUMAT® the SCADA based process control system

- Recipe controlled processes
- Batch based operations (ISA88)
- Complex Silo or Tank material transfers
- Multiple Reporting options
- Seamless Scalabilty
- IT/OT Integration
- Future investment protection

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BRAUMAT® the SCADA based process control system

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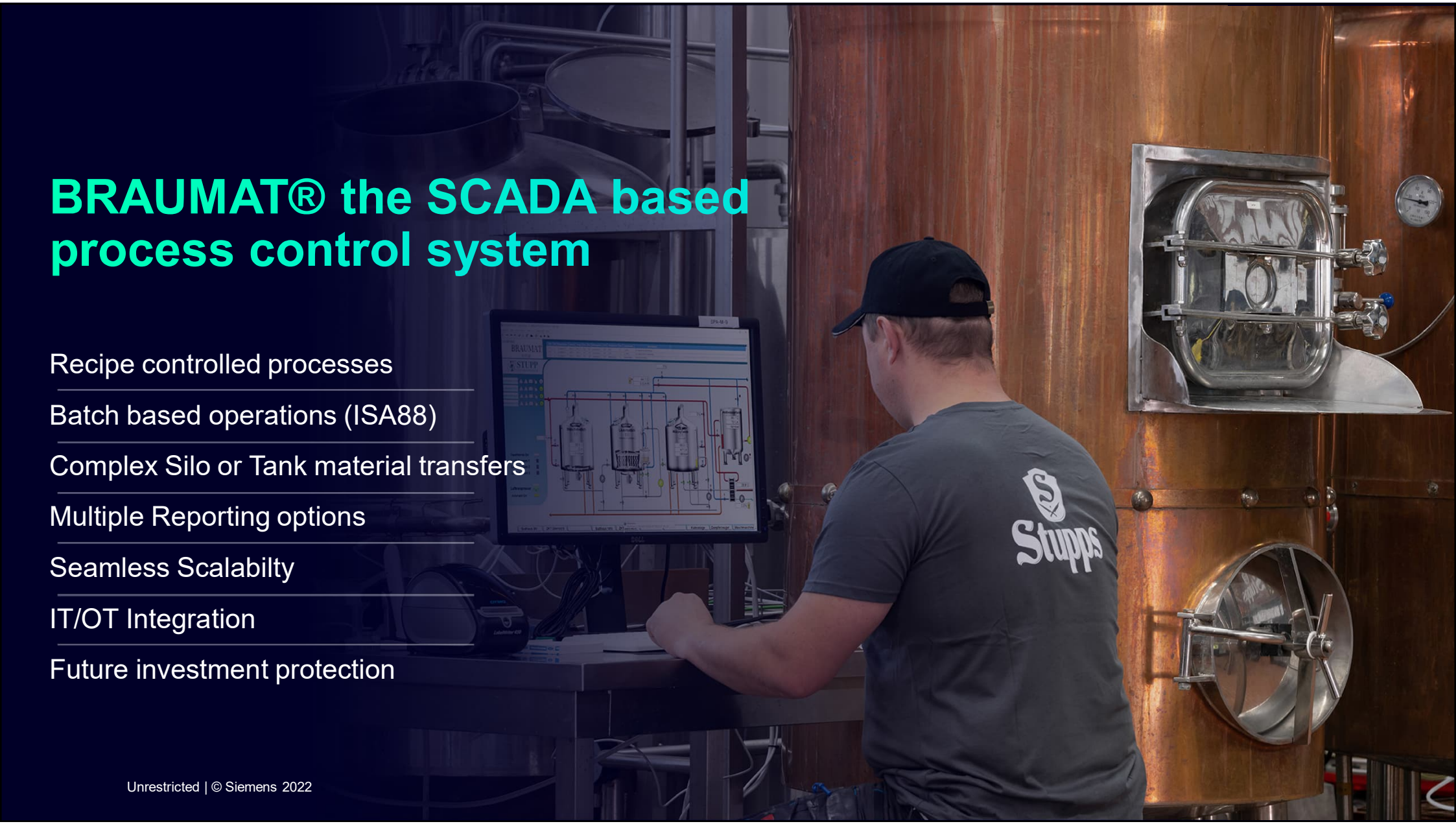

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BRAUMAT® – The layer between DCS and SCADA.
SCADA based technology providing control system functionality.

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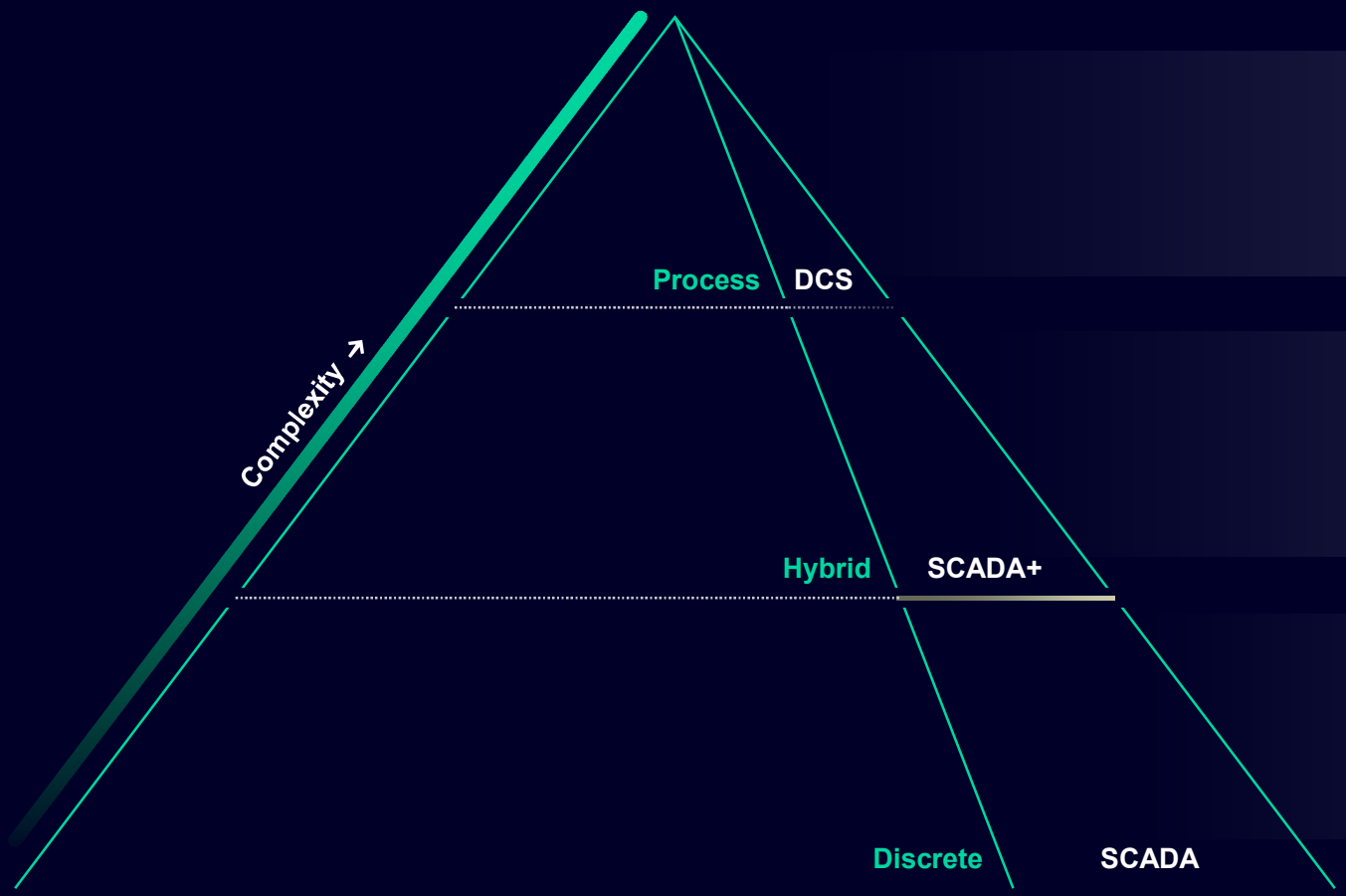

SIMATIC PCS 7/PCS neo

BRAUMAT

SIMATIC WinCC

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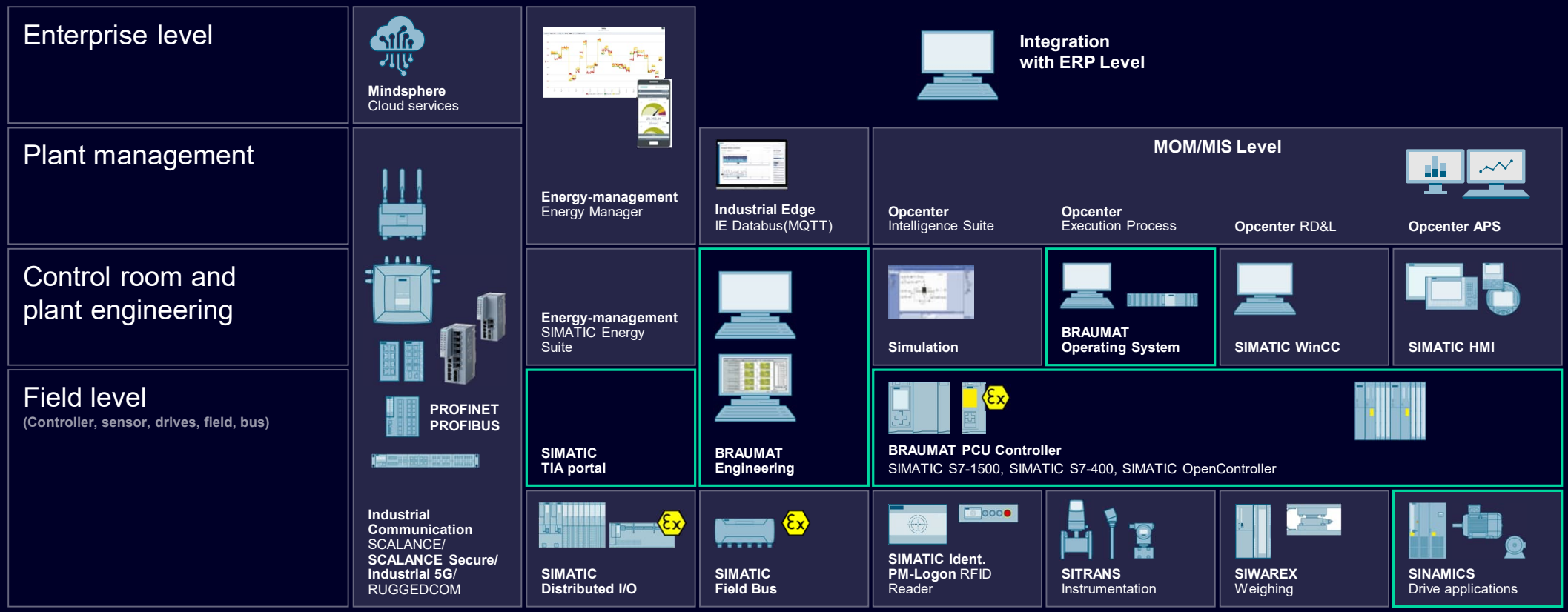
Slide 6

GB(FHOP10 Stimme Euch beiden zu... nun ja, SCADA + erzählt doch bereits die Story: WinCC Unified plus SIQENCE schlisst die Lücke zwischen WinCC (SCADA) native und DCS

Gehle, Bjoern (DI FA HMI O&I PP, 2022-11-11T10:33:13.196

BRAUMAT® - **Siemens** comprehensive portfolio around batch processing



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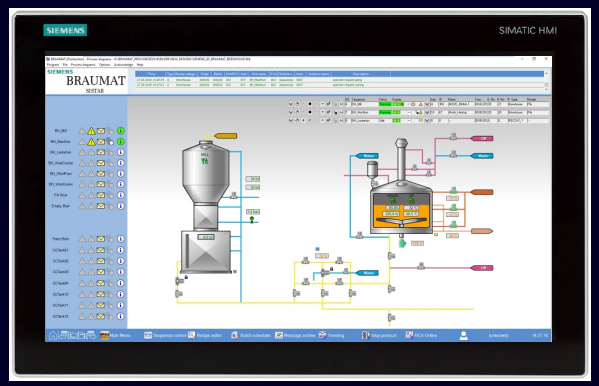
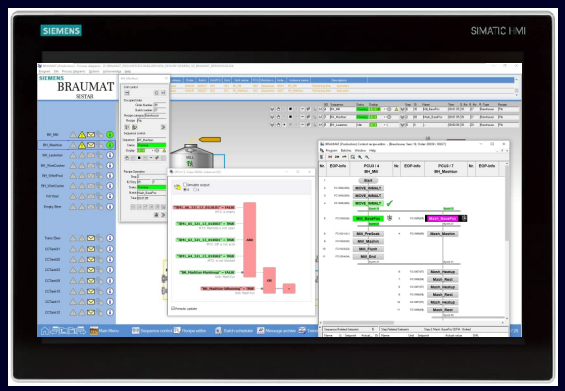
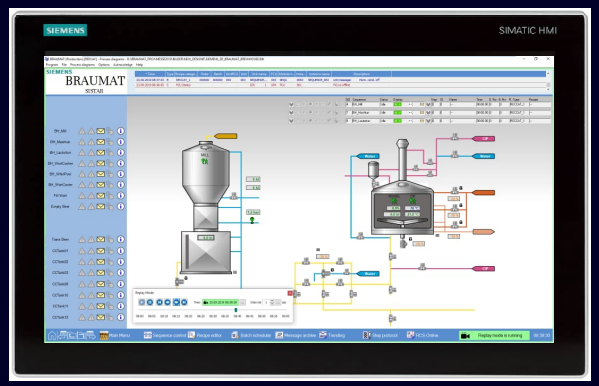
BRAUMAT® - Recipe controlled automation for batch-based production



Process control screen



Recipe/Batch control screen



Process data recording

BRAUMAT is the SCADA and PLC based recipe control system with focus on batch processes

- Easy to operate processes
- One person can be trained in 5 days to engineer and/or operate the entire system
- Modifications are possible in running process with very short turnaround times
- Huge installed base mainly with more than 45 years successful history, once started in the brewing industry
- Available in English, German, Spanish, Chinese, French, Portuguese and Polish, other languages as option

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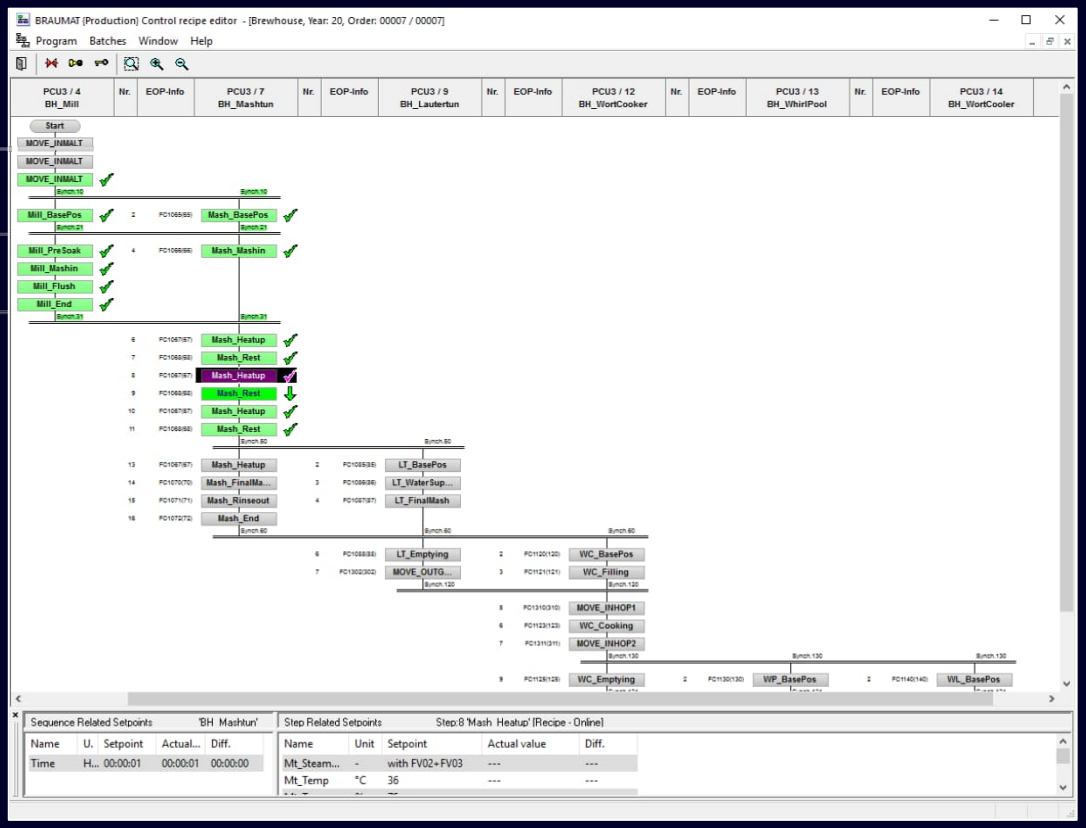
BRAUMAT - Graphical Recipe/Batch Control

Transparent process monitoring:

- Status of the process always under control
- Active step with number highlighted
- Synchronization between units out of the box
- Step related parameter visible



Immediate access is possible at any time from process image or unit overview

Easy comparison of current online parameter with set point

Relevant process information including interlock status online updated and visible

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BRAUMAT – Process data recording with Replay Mode

The Replay Mode

enables displaying historical process data with the look&feel of an interactive video

Replay Mode key facts:

- Visualization of historical production data
- Easy error root cause detection and analysis
- Operator training by using past production scenarios
- Ideal basis for remote support and services

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BRAUMAT – Integrated Maintenance Support

Maintenance functionalities

save valuable time and efforts to prevent damages or spoiled products

Integrated Maintenance support:

- Time-based customized Maintenance Report
- Maintenance Supervising via ICM and user aggregates
- Maintenance Groups provide secure closure of line sections
- User defined setpoints to launch maintenance messages

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BRAUMAT/SISTAR

Maintenance Report

Print date: 2022-11-08 09:26

Plant data

Plant name	Brewery	IOS Server	1	IOS Client	0
PCU S7-1500	1	PCU S7-400	0	Reduntant PCU	0
OPC UA activation counts	0			SQL Adapter activation counts	0

PCU1 - ICM

Class No.	Valve	Double seat valve	Motor	Frequency motor
ICM 1	251	0	4	1
ICM 2	256	0	0	0
ICM 3	256	0	0	0
ICM 4	255	1	0	0

PCU1 - ICM has error counts

Class No.	Valve	Double seat valve	Motor	Frequency motor
ICM 1	1	0	1	0
ICM 2	0	0	0	0
ICM 3	1	0	0	0
ICM 4	0	0	0	0

PCU1 - ICMs with high priority based on Switch Counts

No.	Name	Sequence	Sequence2	Operation hou	Switch Counts
1	LT_YS_002 Mash inlet	9	0	1.435555556	310
2	MT_YC_001 Steam control val	7	0	4.211111111	237
3	LT_NS_001 Lauter pump	9	0	3.901388889	231
4	LT_YS_003 Wort outlet	9	0	4.960833333	230
5	WK_YS_003 Hop dosing	0	0	0.821666667	168
6	MT_NS_002 Agitator	7	0	167.1486111	165
7	MT_YS_003 Malt inlet	7	0	578.8358333	164
8	MT_YS_001 Water inlet	0	0	1.556388889	163
9	MT_NS_001 Mash pump	7	0	1.338333333	161
10	MT_YS_002 MT outlet	0	0	1.435555556	156

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Route Control System – Transfer management with plausibility checks

- Automated transfers of different materials including CIP
- Planning based on preconfigured partial routes
- Key to achieve for state-of-the-art silo and tank farm automation
- Dynamic and constraint-based search for a path between source and destination
- Graphical Route Viewer for transparency

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BRAUMAT and Opcenter Execution Process – Value Proposition for breweries and malt houses

- Integrated execution of batch-based operation (ISA 88.1) into MOM (ISA 95) workflows
- Out of the box interplay between Opcenter and Braumat
- MOM based global manufacturing templates may include now the BRAUMAT system
- Deployable in MOM multiplant scenarios by combining security, usability and robustness

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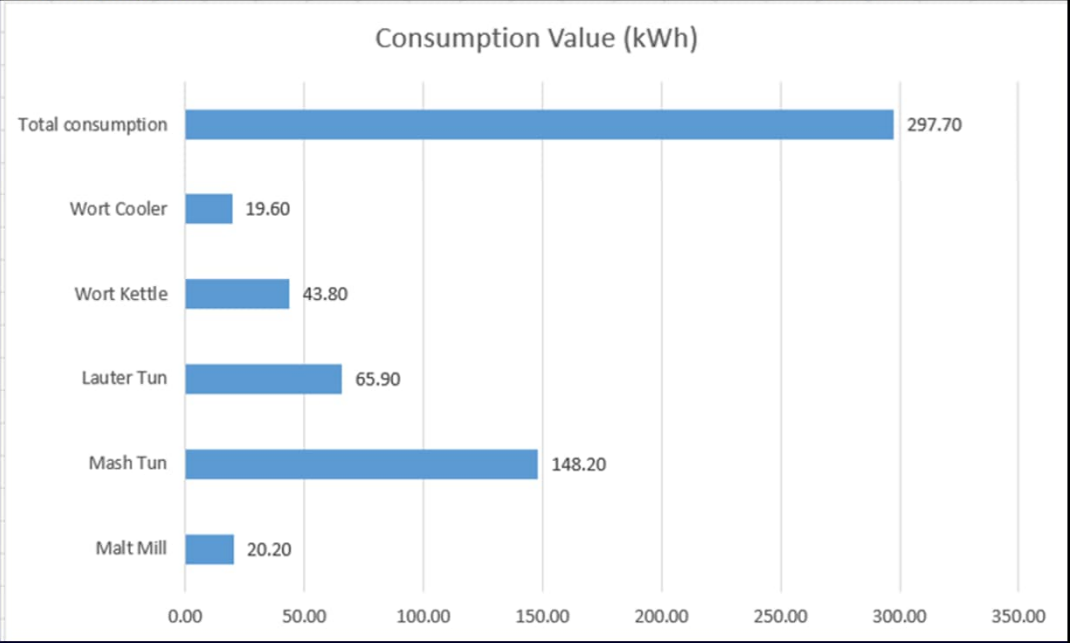
BRAUMAT and SIMATIC Energy Suite

- Energy transparency about each process step, unit and procedure in accordance with ISO 50001
- Batch based energy reporting to get to know energy costs
- Avoiding expensive energy peaks with load management
- Optimizing the energy consumption by using the SIMATIC Energy Manager

Energy Consumption			
Unit Name	**Start Value**	**End Value**	**Consumption Value (kWh)**
Malt Mill	926.5	946.7	20.20
Mash Tun	463.3	611.5	148.20
Lauter Tun	595.6	661.5	65.90
Wort Kettle	617.1	660.9	43.80
Wort Cooler	1320.2	1339.8	19.60
Total consumption			297.70



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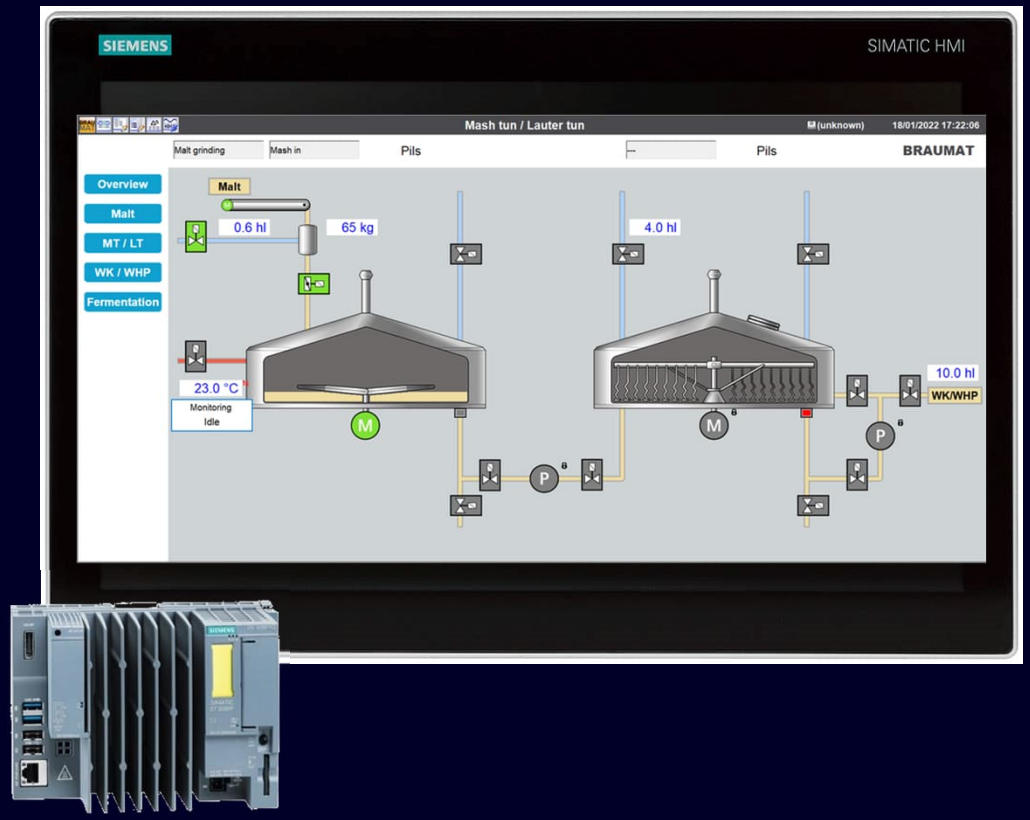
BRAUMAT LEAN edition

- For 1 PCU and 1 Server configurations
- Price level like a small SCADA system - but with full process control functionality and batch engine

Corner points

- Additional operator clients can be added at any time
- Replay mode integrated
- Can seamlessly be upgraded to BRAUMAT Full Edition



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BRAUMAT mobile solution

- Keep track of the process – even under mobile conditions
- Basic functions on board like events, alarms
- Optional: E-Mail, SMS, pager, printer including dashboard for analyzing
- Optional: Escalating alarm via predefined participants or operators
- Process screens based on HTML5 to be flexible

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BRAUMAT Safety first

- Preventing harm to staff (i.e. manhole, mill, motor and more)
- Helps to avoid spoiled food
- CPU S7-1518HF as safety edition, also for mixed configurations
- Can seamlessly be integrated into the BRAUMAT installation

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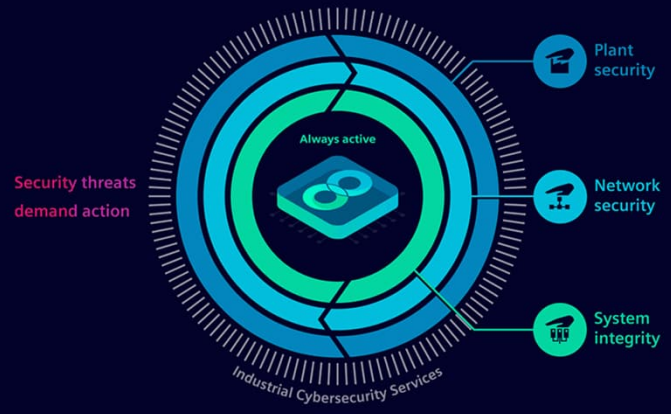
BRAUMAT Cybersecurity

- PCU protection via HW protected password security
- Terminal bus secured for preventing man in the middle attacks
- Optional: Operator stations secured via RFID card
- Hot-Standby PCU – located up to 10km away from each other in supporting your emergency plan

Industrial Cybersecurity Services

- Plant Security Services: IEC 62443 Asseessments & Consulting
- Network Security Services: NG Firewalls, DMZ, Anomaly Detection
- System Integrity Services: Endpoint Protection; Vulnerability & Patch Management; Backup&Restore



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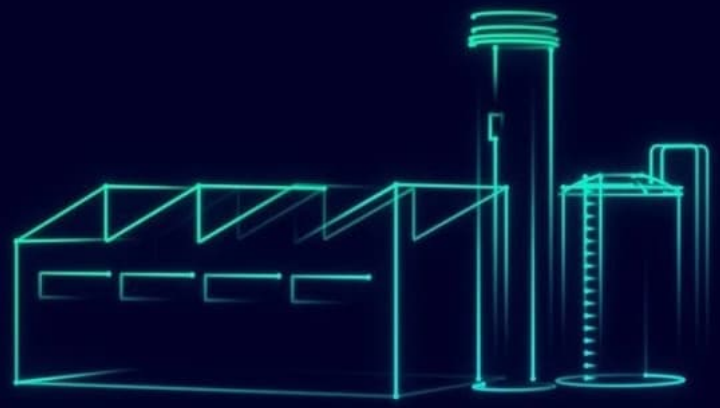
BRAUMAT – Our Solution offering, to ensure your success



- **360-degree process automation** consulting with focus on plant operation efficiency and sustainability.
- Tool based **standardization for each project phase** with defined project documentation. GB(FHOP10
- **Cyber secured** remote services available.
- Experience out of numerous Brownfield or Greenfield plant projects since 1977 – **worldwide.**

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Slide 19

GB(FHOP10 Schriftgröße
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SO0 0 Danke frü den Hinweis - wird geändert
Speck, Juergen (DI FA S MP OV), 2022-11-14T10:53:39.113

BRAUMAT – 3rd party support by certified partners

Top partners audited and certified as

BRAUMAT/SISTAR Expert

- Proven in several BRAUMAT/SISTAR projects
- Providing all needed services around BRAUMAT
- Consulting, Project management and Quality management in place

Expert benefits:

Continuously training and support by Siemens with exclusive and premium information

Find your BRAUMAT expert in our
Siemens Industry Partner Finder

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BRAUMAT & SISTAR
What's new in V8.0 SP2

July 2022

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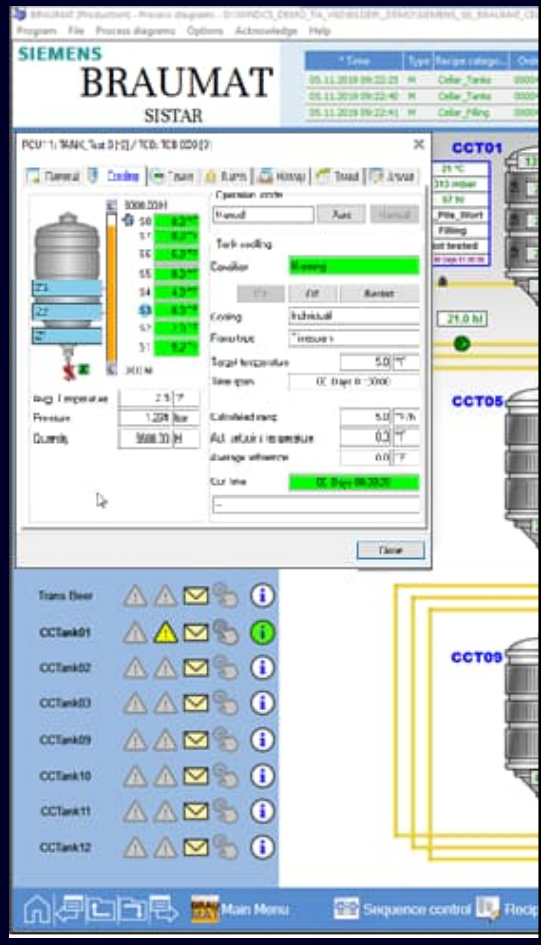
BRAUMAT / SISTAR V8.0 ServicePack 2
Overview

BRAUMAT / SISTAR V8.0 is the **consequent next step** in the development of Process control for Food & Beverage and industries with similar requirements.

While **maintaining market proven** and **mature features** again several **new innovations** are being introduced to the system with newly released service pack 2.

With clear focus on further increased **reliability**, **flexibility** and **usability** service pack 2 follows the path to a more intuitive and efficient operation and is another step towards the **future of process control** in batch based operation.

Among others **new technical features** are now available like enhancement of possible hardware base as well as new possibilities in **usability of route control** and **improved connectivity to MES layer**.



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BRAUMAT/SISTAR V8 SP2
Supported Automation & Operating Systems

Supported Automation Systems (PLC)

- **S7-1500**
  - **CPU 1518-4 PN/DP** [1)]
  - **CPU 1516-3 PN/DP** [1) 4)]
  - **CPU 1518-4F PN/DP**[1)]
  - **CPU 1516-3F PN/DP** [1) 4)]
  - **CPU 1505S / 1505S F** [1) 4)]
  - **CPU 1507S / 1507S F** [1)]
  - **CPU 1508S / 1508S F** [1)]

  NEW:
  - **CPU 1517-3 PN/DP** [1) 5)]
  - **CPU 1517-3F PN/DP** [1) 5)]
  - **CPU 1518HF-4 PN** [3) 6) 7)]

- **S7-400 (preferential range)**
  - **CPU 417-4** [2)]
  - **CPU 416-3 PN/DP** [2)]
  - **CPU 416-3** [2)]

Notes:
- The full quantity structure cannot be used with all S7-400 CPU types
- More support for S7-400 PLCs and further details can be found in the product documentation

1) S7-1500 - FW V2.6 or higher
2) S7-400 - FW V5 or higher
3) S7-1518H - FW V2.9 or higher
4) reduced quantity structure: 40 Units
5) reduced quantity structure: 48 Units
6) reduced quantity structure: 64 Units
7) Route control and parametrizable cross-coupling not possible yet

Supported Operating Systems

- **Windows 7**
  - Ultimate/Enterprise SP1 (64Bit)
- **Windows 10**
  - Enterprise 2015 LTSB (64Bit)
  - Enterprise 2016 LTSB (64Bit)
  - Enterprise LTSC 2019
- **Windows Server**
  - **2008** R2 SP1 Standard Edition (64 Bit)
  - **2012** R2 Standard Edition (64 Bit)
  - **2016** Standard / Datacenter Edition (64 Bit)
  - **2019** Standard/ Datacenter Edition (64 Bit)
- **Windows Embedded Standard 7 SP1** (32Bit)

Note: Not all operating systems are released for every type of station (e.g. Server, Client, etc.), further details can be found in the product documentation

Platforms for virtualization

- **VmWare ESX**
- **Microsoft Hyper-V**

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High available PLC

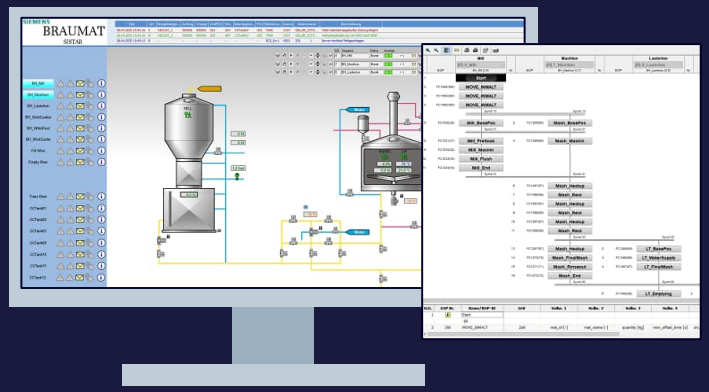
Higher availability of the production by support of S7-1518HF CPU [1)]

Graphical route viewer

Graph view offers support for engineering & verification of complex RCS configurations

Integrated connectivity to Opcenter Execution Process

Use Case: MES based creation of batches [2)]



SISTAR & BRAUMAT V8.0
Service Pack 2

1) not included in SP2: RCS & parametrizable cross-PLC communication (planned to follow by next release)
2) 1st step of connectivity (further features planned to follow soon)
3) Feature in final test, planned final availability Q4 0222

Conveyor control

Controlling and monitoring of conveyor lines for solid material transfers [3)]

Higher flexibility for Lean

Introduction of smaller extension license (by +4 Units) for more smooth expansion

Extended language support

Support of additional system languages: French, Polish, Portuguese

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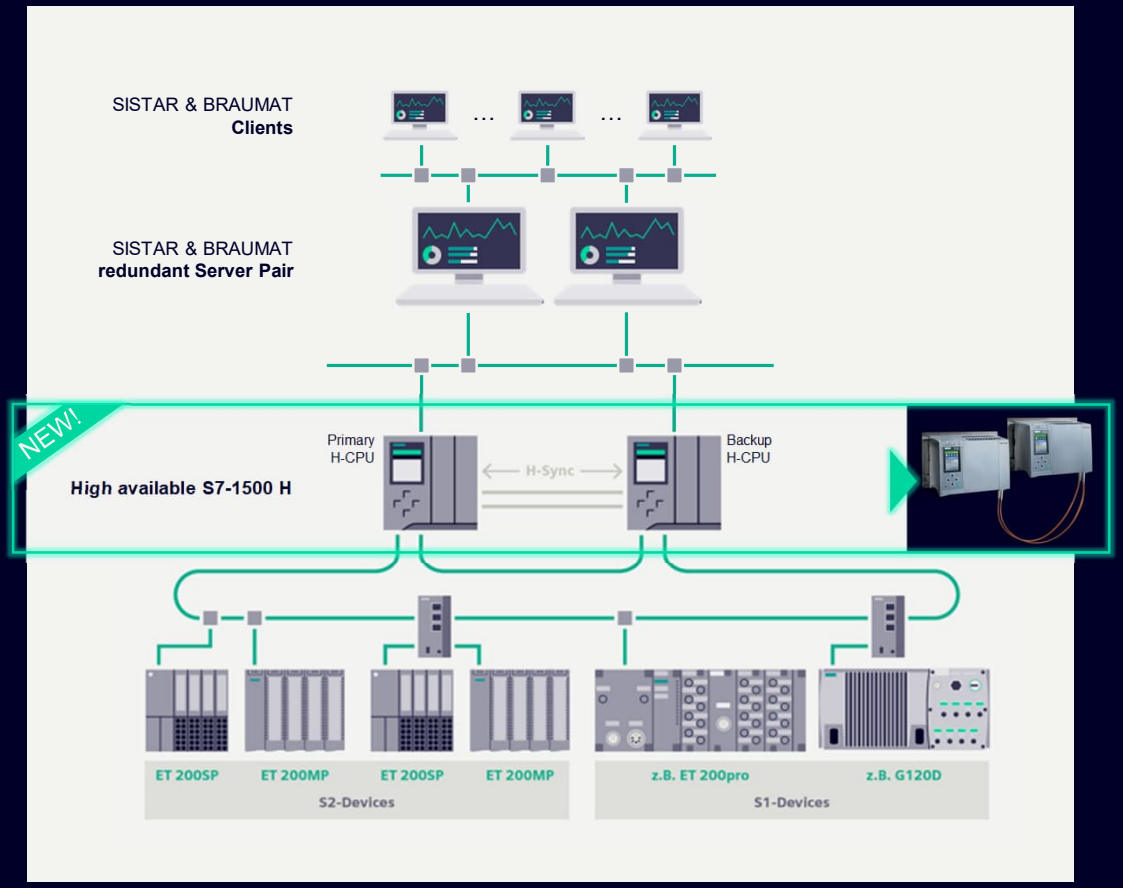
BRAUMAT & SISTAR V8.0 SP2
Features to come in more detail



Support of High available PLCs

Benefits

Avoidance of plant downtimes leads to:

+ reduction of production losses
+ prevention of data & material losses
+ avoidance of damages
+ increased reputation

Characteristics

- Support of S7-1518 HF CPU (with max. 64 Units)
- Synchronization via fiber-optic cable (max. ~10km)
- Hot-standby with fail-over time of approx. 50 msec
- Supported IO systems:
  SIMATIC 200SP and ET 200MP

Note:
Not supported in SP2: H-CPU for RCS & parametrizable cross-PLC communication (planned for future release)

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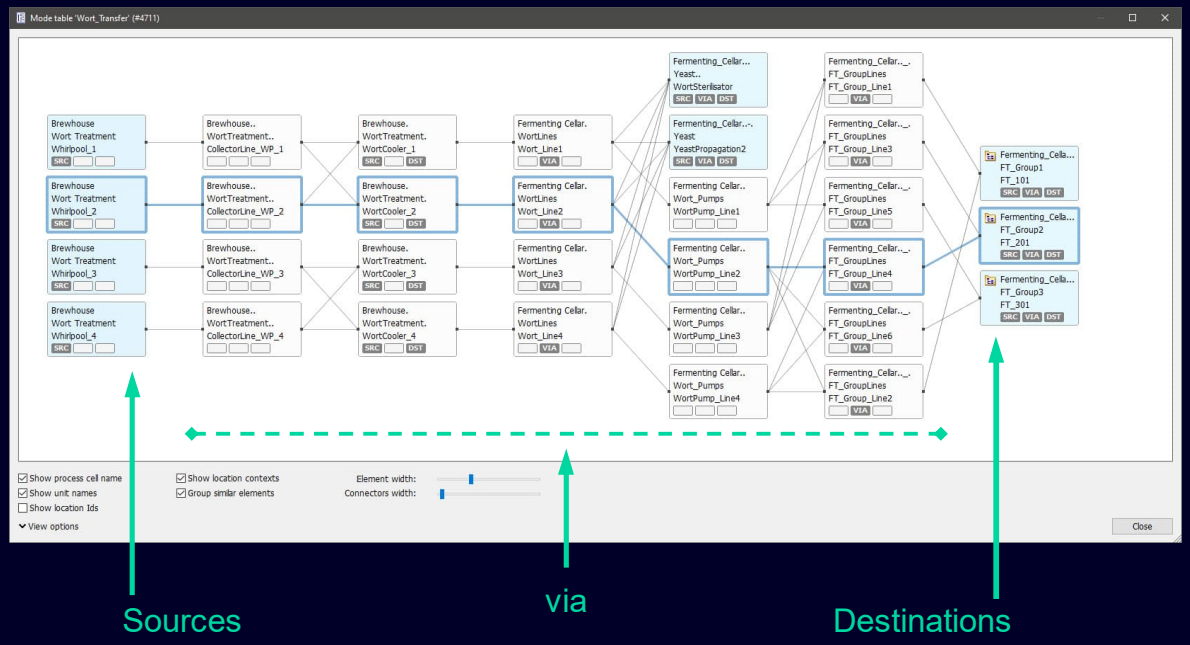
BRAUMAT & SISTAR V8.0 SP2
Features to come in more detail



Route Control System - Graphical Route viewer

Benefits

Graphical route viewer offers support for engineering & verification of complex Route Control configurations

Characteristics

- Representation of transfer routes as route graph showing: Source, Destination and Via nodes
- Allows manual tracing of reachable nodes and identification of possible routes to check the linking of source and destination nodes

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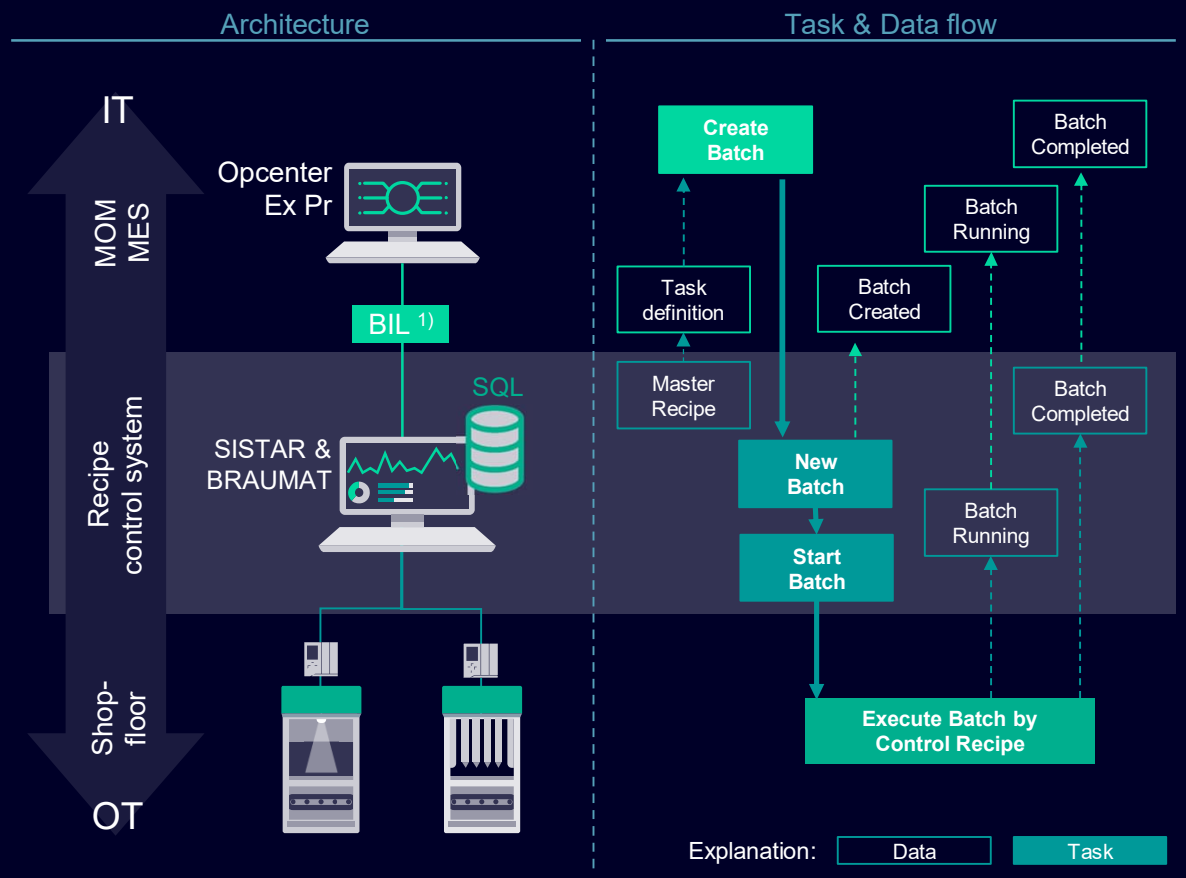
BRAUMAT & SISTAR V8.0 SP2
Features to come in more detail



1) BIL – Batch Integration Layer

Integrated connectivity to Opcenter Execution Process

Benefits

Integrated connectivity to Opcenter Execution Process offers:

- Out-of-the-box interplay between IT and OT level
- Reduces integration effort and costs
- More robust and reliable connectivity

Characteristics

- 1st step of connectivity to Opcenter Ex Pr offering basic use cases for creation of batches and exchanging of batch status information
- Features for covering additional uses cases will be delivered continuously in future releases

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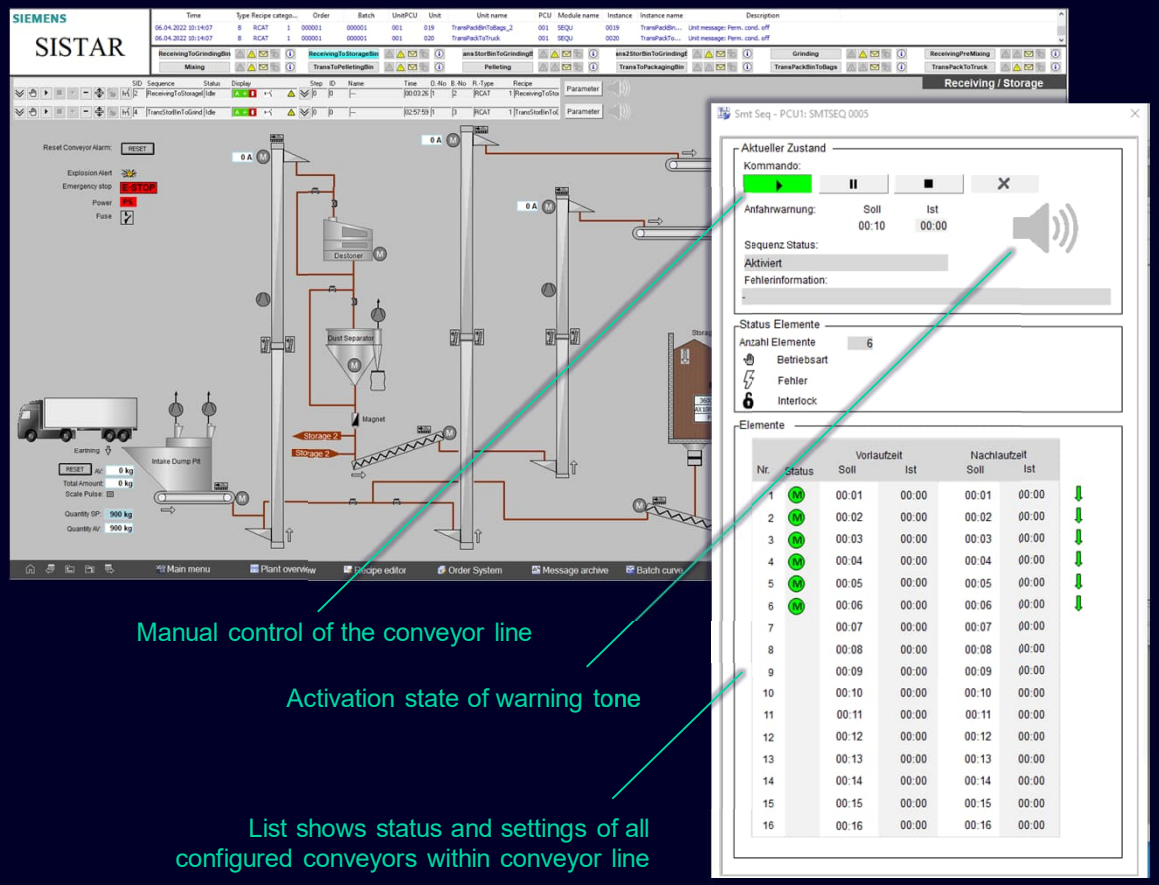
BRAUMAT / SISTAR
Features to come in more detail



Manual control of the conveyor line

Activation state of warning tone

List shows status and settings of all configured conveyors within conveyor line

Conveyor control [1)]

Benefits

- Pop-Up dialog for control and monitoring of conveyor lines for solid materials
- Allows sequential start-up and stop of conveyor lines
- Quick and easy overview of the operation state of all conveyors within a conveyor line

Characteristics

- Supports conveyor lines for solid materials (e.g. conveyor belt, screw conveyor, vertical conveyor, etc.)
- Allows setup of up to 16 interlinked conveyors a conveyor line
- For a sequential start-up and stop of the conveyor line each conveyor an individual pre-run and stop delay can be configured

1) Feature in final test environment, planned final availability in Q4 2022

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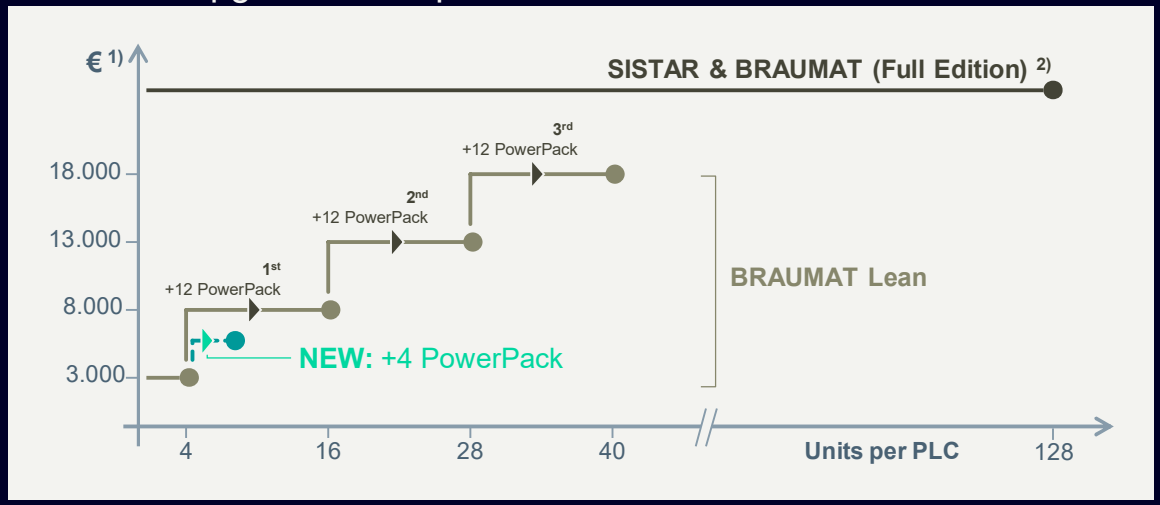
BRAUMAT & SISTAR V8.0 SP2
Features to come in more detail

License & Upgrade concept:



Higher flexibility for Lean concepts

Benefits

Introduction of smaller extension license (by +4 Units) for more smooth expansion – especially for smaller configurations

Characteristics

- **Entry package:**
  - 4 units included with attractive entry price: 3.244€ 1)
- **PowerPacks:**
  - PowerPack +12 Units:
    → extension by 12 units (price: 5.406€ 1))
  - NEW! PowerPack +4 Units:
    → extension by 4 units (price: 2.650€ 1))

1) List price (L1)
2) BRAUMAT/SISTAR (full edition): Price depends on individual configuration

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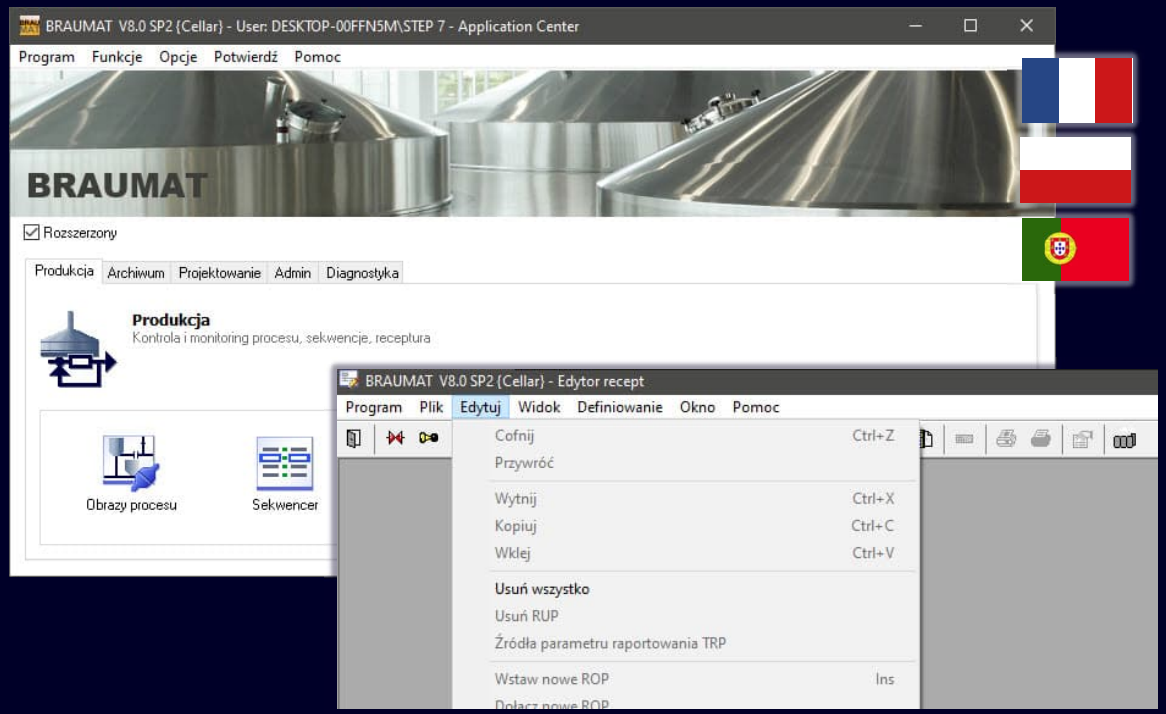
BRAUMAT / SISTAR
Features to come in more detail



New operator languages French, Polish, Portuguese

Benefits

- Support of additional operator system languages:
  - French
  - Polish
  - Portuguese

Characteristics

- Additional operator system languages by easy integration of language packs
- Additional operator language packs will be made available via free Siemens Industry Online Support (SIOS) Download

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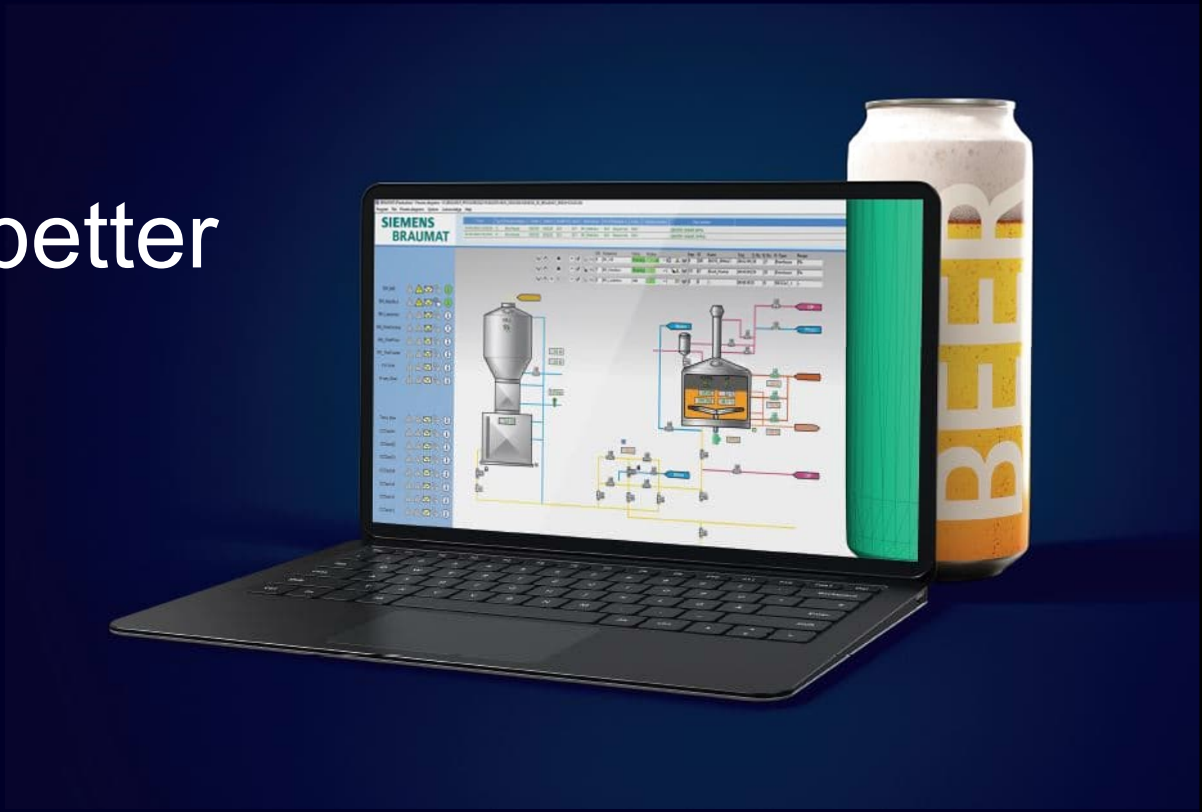
Beer simply brewed better



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