



**Out of the Box Solution:
Intelligente Anlagenwartung mit COMOS**





**Demografische
Alterung**



**Effizienz-
Steigerung**



**Anlagen-
lebenszyklus**



Umweltschutz

Out of the Box



**Single source
of Information**



**Integriertes
System**



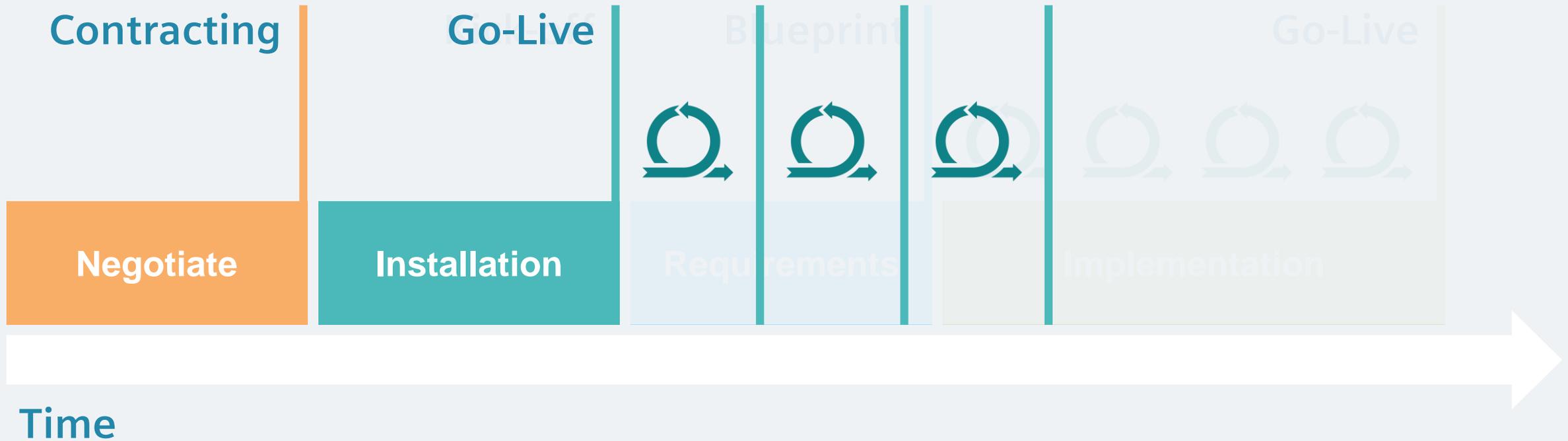
**Mobiles Daten-
Management**



**Einhaltung von
Regularien**

Agile Iterationen

Holen Sie alles raus!



Instandhaltungsprojekt mit COMOS

... in 5 Schritten



Training & Consulting

Infrastruktur Setup

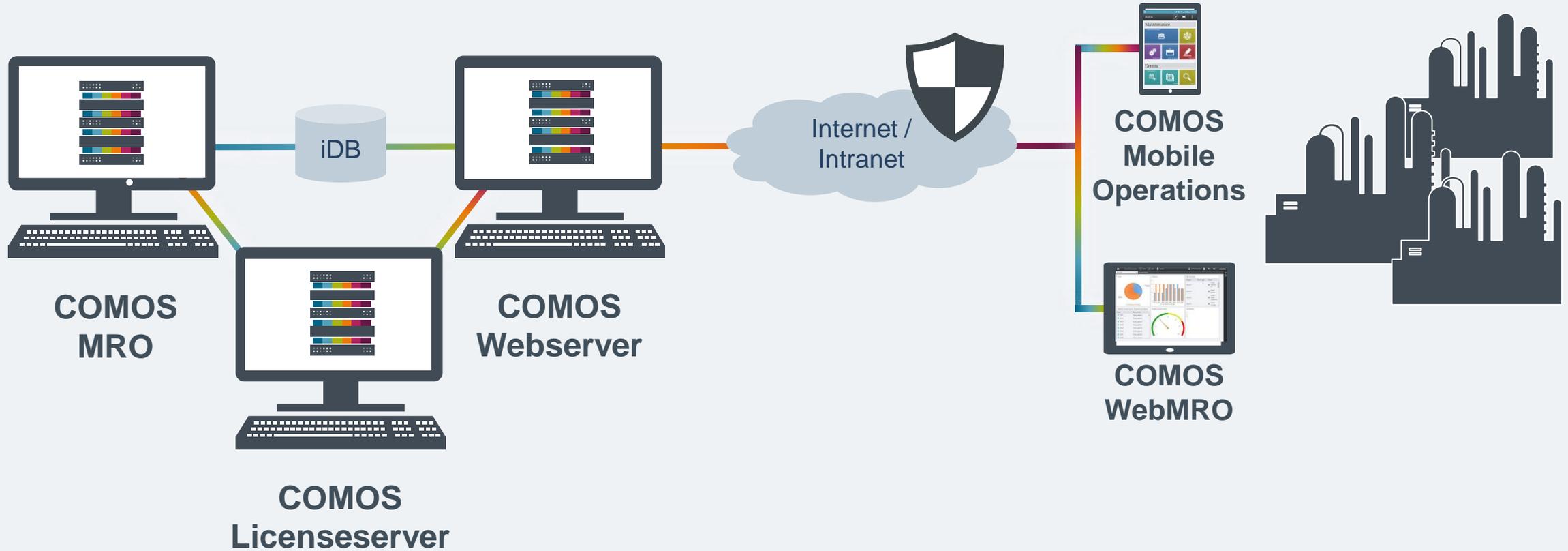
Struktur Import

Verbindung zum Leitsystem

Ressourcen Definition

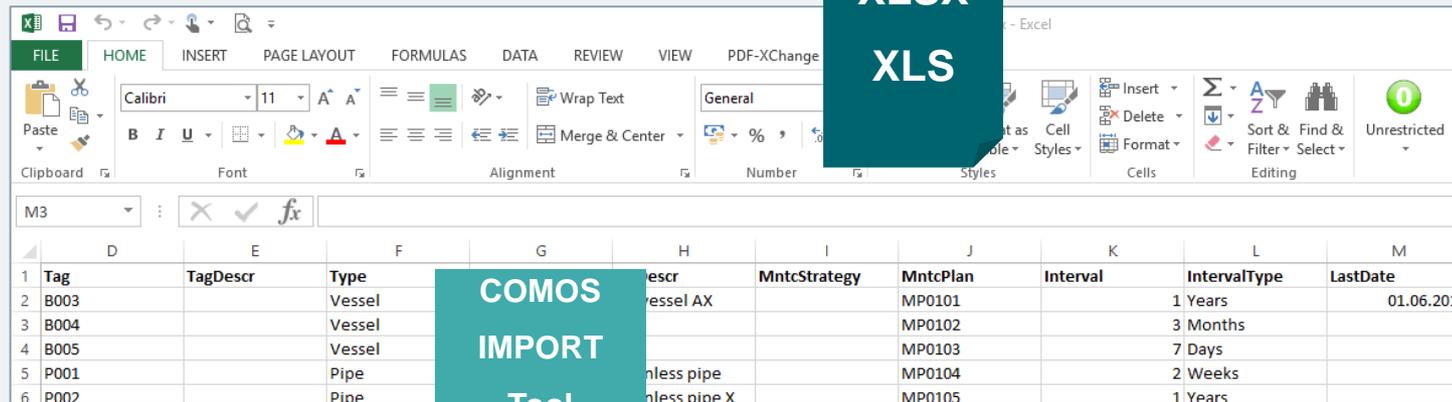
Mobile Instandhaltung & Analyse

Infrastruktur Setup



Struktur Import ... mit '1 Klick'

SIEMENS
Ingenuity for life

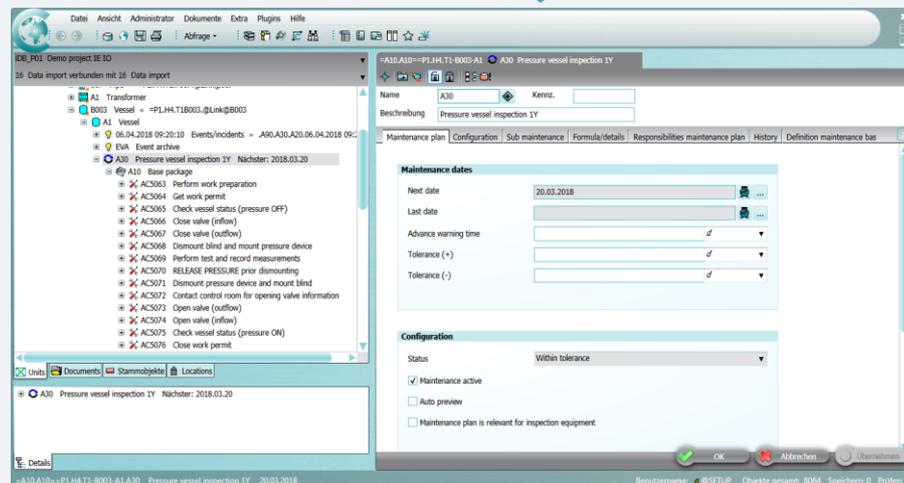


| Tag | TagDescr | Type | descr | MntcStrategy | MntcPlan | Interval | IntervalType | LastDate |
|------|----------|--------|-------------|--------------|----------|----------|--------------|------------|
| B003 | | Vessel | Vessel AX | | MP0101 | | 1 Years | 01.06.2017 |
| B004 | | Vessel | | | MP0102 | | 3 Months | |
| B005 | | Vessel | | | MP0103 | | 7 Days | |
| P001 | | Pipe | less pipe | | MP0104 | | 2 Weeks | |
| P002 | | Pipe | less pipe X | | MP0105 | | 1 Years | |

XLSX
XLS

COMOS
IMPORT
Tool

- Vordefinierte Tabelle (Excel)
- Ready-to-use Standard COMOS Import
- Basierend auf Brownfield-Importer
- Erweiterbar via Skript



Verbindung zum Leitsystem

Schnittstelle durch Konfiguration basierend auf XML Konnektor

The screenshot displays the Siemens software interface for configuring XML connectors. The main window is titled ".@MXC.01 Datenpunkte". The left sidebar shows a project tree with various components like "MRO Anpassungen MRO" and "PCS Leitsystem". The main area is divided into several panes:

- Abfrage (Query):** Shows "Start Import" and "Datenpunkte". The "Abfrage-Startobjekt" is set to "=PCS Leitsystem".
- XML-Startknoten (XML Start Node):** Set to "/xml".
- Klasse(n) (Class(es)):** Set to "Alle".
- Stammobjekt(e) (Parent Object(s)):** Set to "@20|Z10|Z01 @20|Z10|Z01 Datenpunkt".
- Datenpunkte/Datenpunkt Table:** A table listing data points with their characteristics, descriptions, values, units, and dates.
- XML-Dateiname (XML File Name):** Set to "D:\Secure\home\mandorfe\profile\Desktop\ImportExample2.xml".
- Direkthilfe (Direct Help):** A section for defining objects per value calculation.

| Kennzeichen @Name | Beschreibung @Description | Wert @Value | Einheit @Unit | Datum @Date |
|-------------------|---------------------------|-------------|---------------|-------------|
| DP001 | Datenpunkt | 322 | hrs | 11.06.2016 |
| DP002 | Datenpunkt | 22 | hrs | 11.06.2016 |
| DP003 | Datenpunkt | 122 | hrs | 11.06.2016 |

Below the table, there is a detailed view for the selected data point "DP001". It shows fields for "Name" (DP001), "Beschreibung" (Datenpunkt), and "Einheit" (hrs). The "Importwerte" section shows the current values for "Wert" (322), "Einheit" (hrs), and "Datum" (11.06.2016).

- Betriebszeit
- Temperatur
- Störmeldungen
- Durchfluss
- Vibration
- ...



Verbindung zum Leitsystem

Zustandsorientierte Wartung durch Konfiguration von Datenpunkten

The screenshot shows the Siemens software interface for configuring maintenance plans. The main window displays the configuration for device MP001. The 'Maintenance dates' section shows the next date as 24.02.2019 and the last date as 31.05.2016. The 'Configuration' section has checkboxes for 'Maintenance', 'Auto preview', and 'Maintenance'. The 'Date calculation' section shows the calculation status as 'active; from formula: (12000 - 14) / 12 + 13' and a maintenance interval of 5 years (365 days). Two dialog boxes are open: 'Calculate workpackage dates' showing a table with columns 'Status', 'Date', and 'Formula', and 'Input formula' showing the formula $(A - B) / X + \text{DaysSinceLastDate}$ and a variable list with values for A (12000), B (14), and X (12).

Daten aus Leitsystem

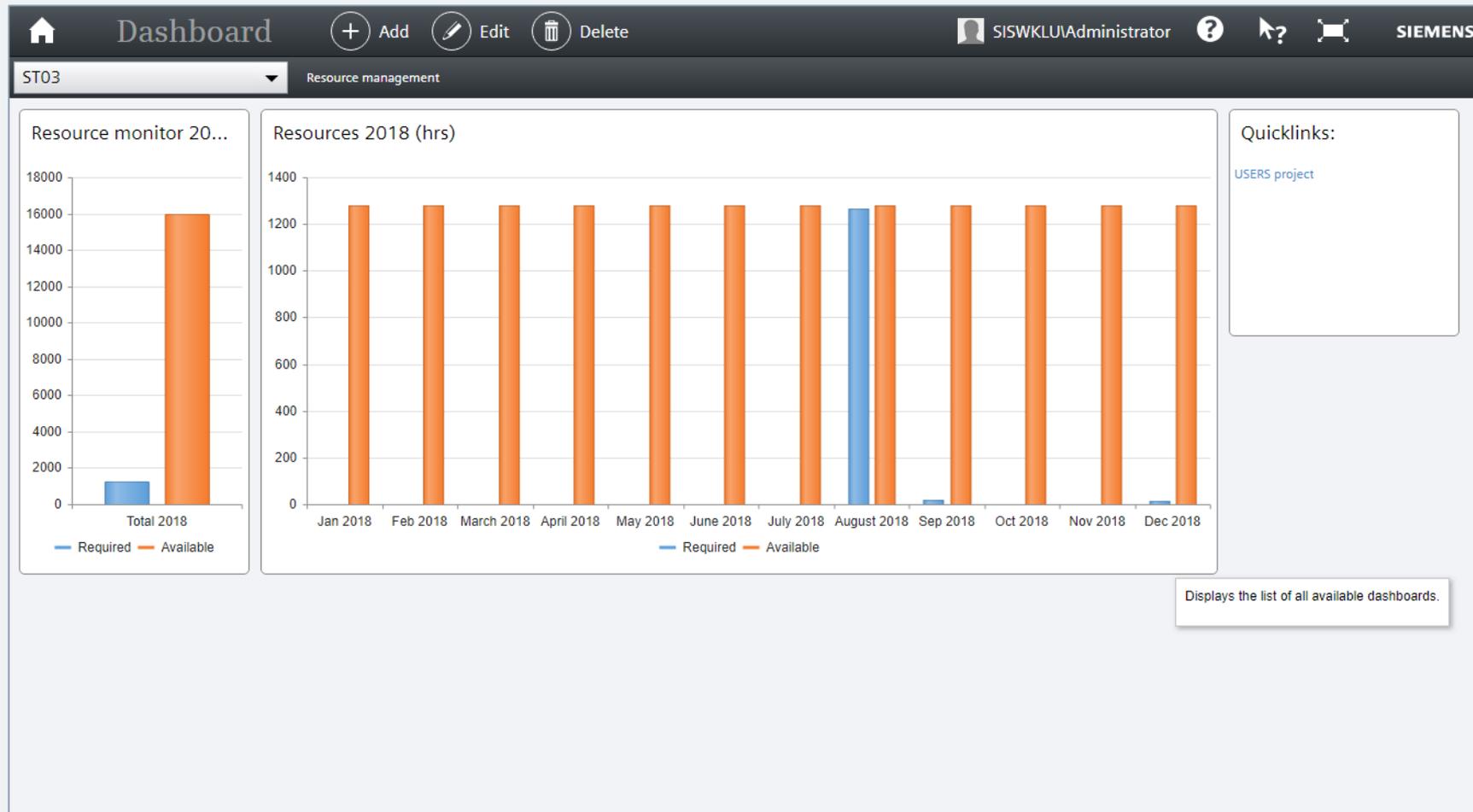
Nächster Wartungstermin
über Formel
 $((a + x) - y) / z + c$

a = Wert letzte Wartung
x = Intervallwert
y = Aktueller Wert
z = Faktor (Umrechnung in
Tage)
c = Tage seit letzter Wartung



Ressourcen Definition

... verfügbare und benötigte Ressourcen



Mobile Instandhaltung

Rückmeldung aus dem Feld



1. Installation von der COMOS Mobile Operations App am mobilen Gerät

2. Login

3. Arbeiten

The screenshot displays the mobile application interface for event management. The top navigation bar includes a home icon, the title 'Events', and buttons for '+ Add' and 'Edit'. The user profile 'Demo' and the 'SIEMENS' logo are also visible. Below the navigation bar, a 'Filter' menu is open, showing options: 'All events', 'Critical events', 'Warnings', 'Info', and 'Saved Searches'. The main content area shows a list of events for 'All events' filtered to 'Fluid on the ground'. The events listed are:

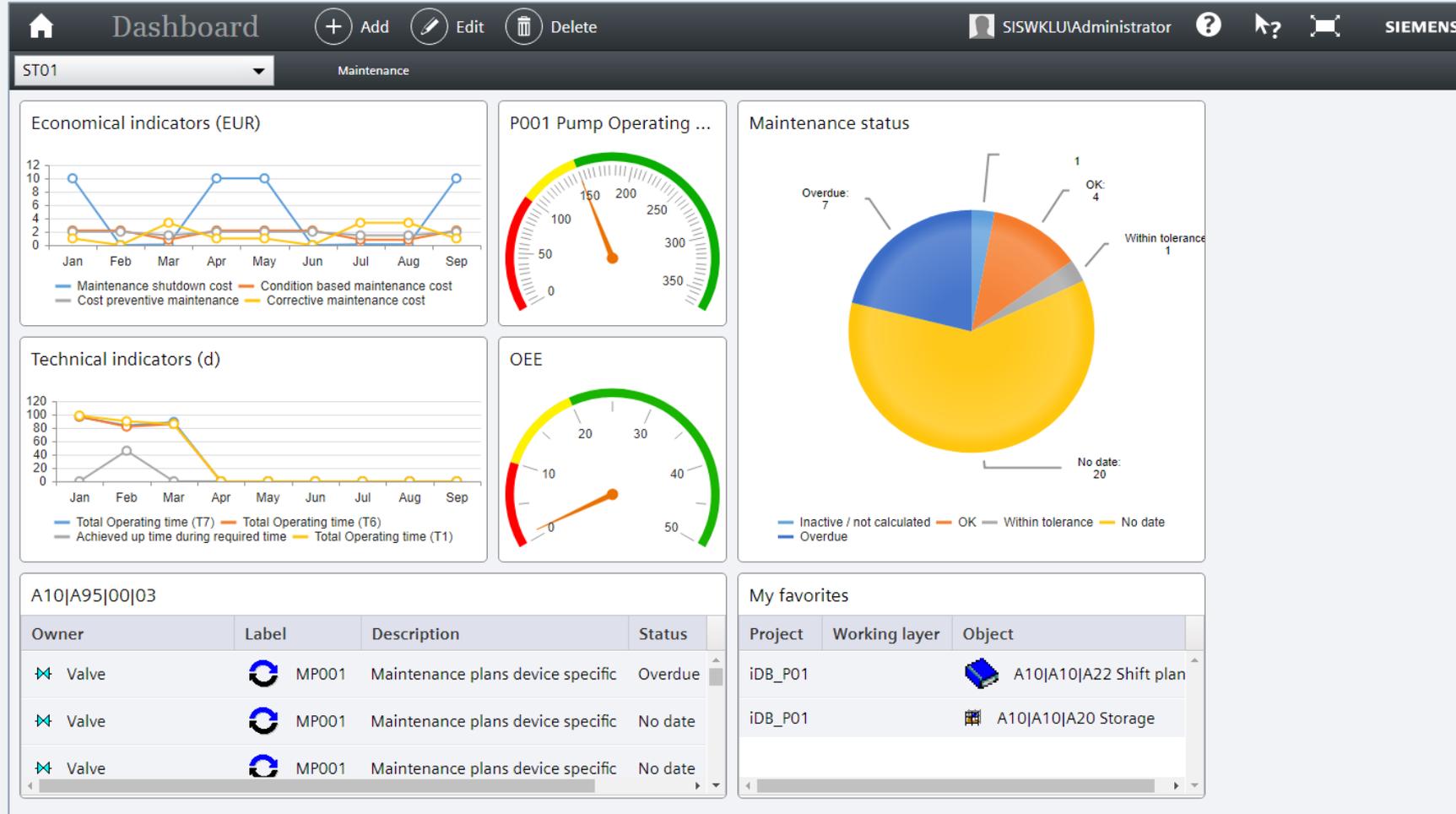
- Fluid on the ground (B001 Vessel) - 13.09.2017
- Unusual sound detected (P001 Pump) - 13.09.2017
- Unusual smell detected (P001 Pump) - 13.09.2017
- Leakage detected (P001 Pump) - 13.09.2017
- Failure / Fault (P001 Pump) - 13.09.2017
- Transport damage (P001 Pump) - 13.09.2017
- Wrong assembly (P001 Pump) - 13.09.2017

The right-hand side of the screen shows a detailed view of the 'Fluid on the ground' event. It includes a 'Details' tab, 'Related objects', and 'Attachments'. The 'General' section contains the following information:

- Title: Fluid on the ground
- Description: (Empty text area)
- Responsible: Worker 1, Maintenance
- Creation date: 09/13/2017

... und Analyse

KPIs (Key Performance Indicators)



Kennzahlen basierend auf

- DIN EN 15341:2007-06
- DIN EN 13306:2018-02

Funktionalitäten für die Instandhaltung

Best Practise Beispiele



Inbetriebnahme



**Ereignis- &
Schichtmanagement**

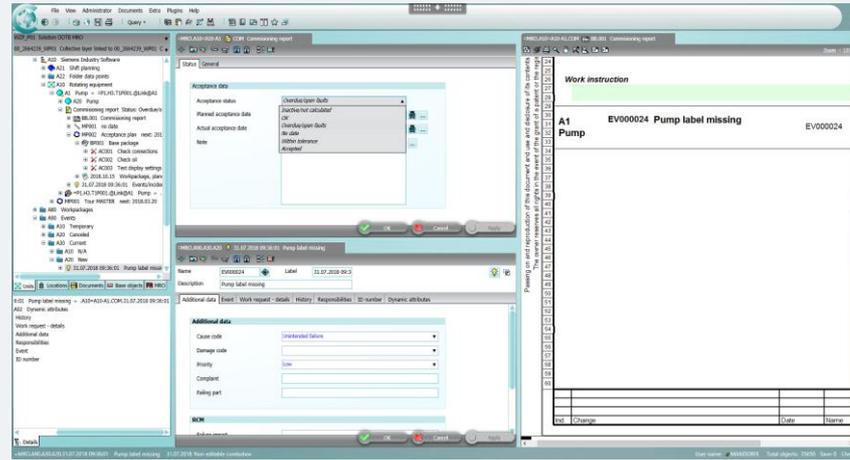
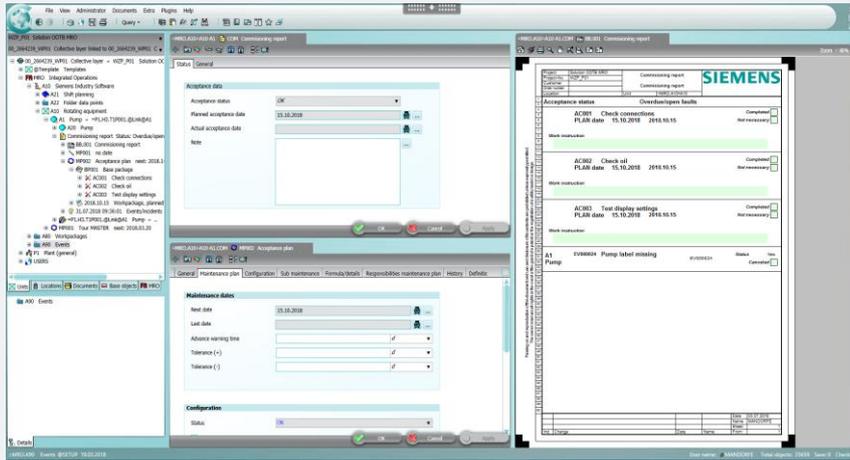


Arbeitsfreigabe

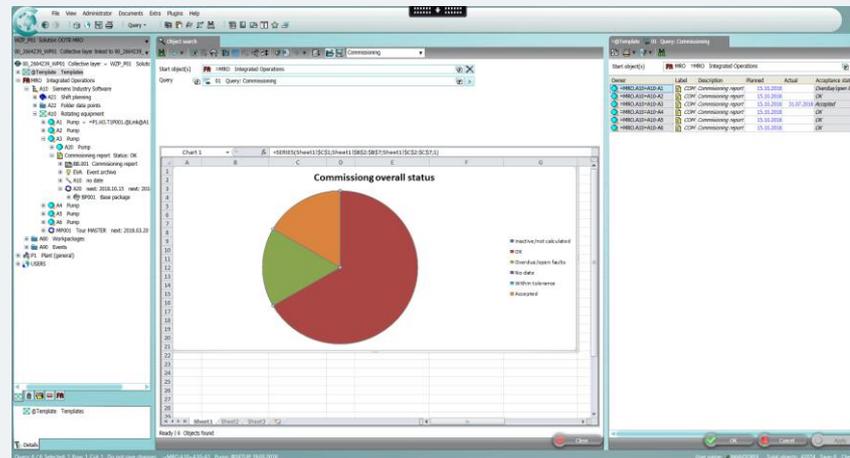
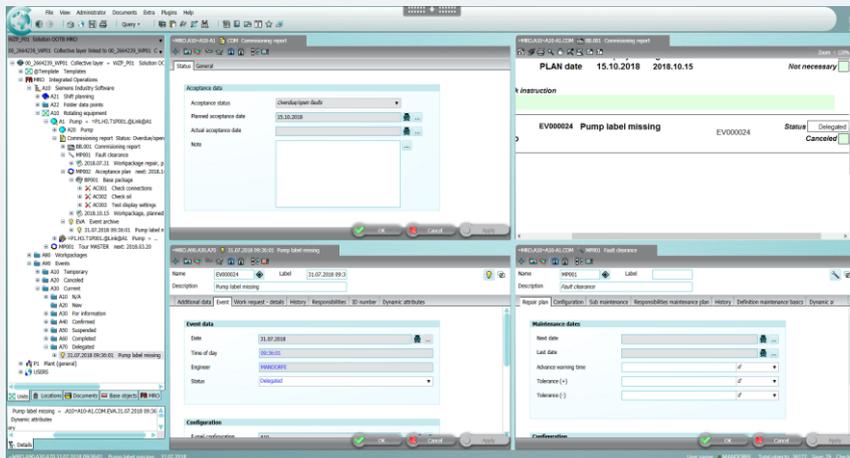


Reporting

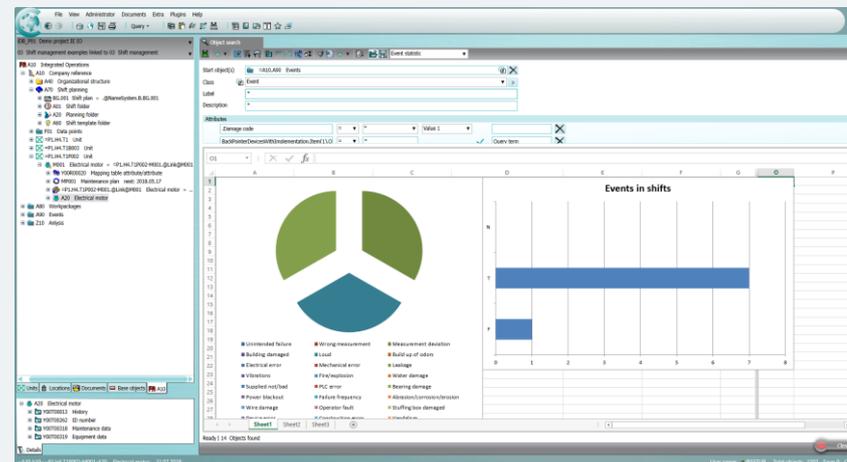
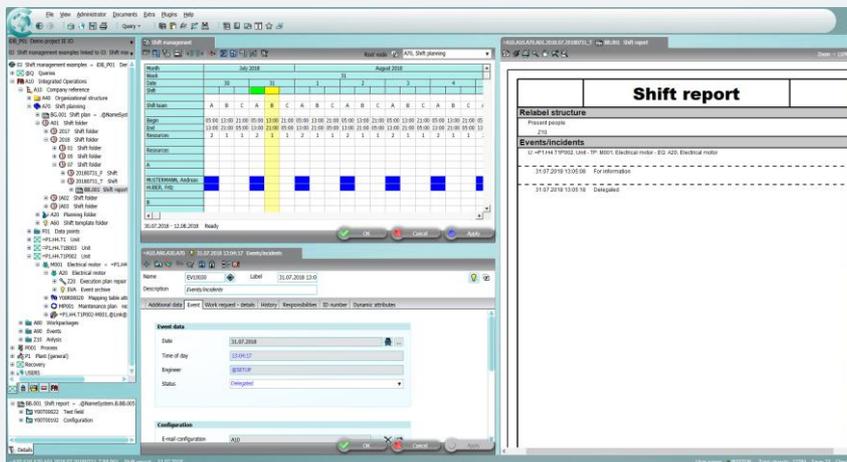
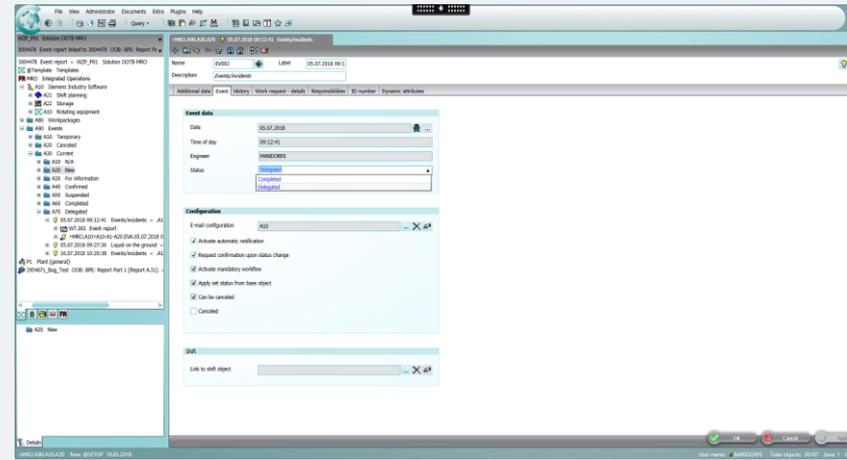
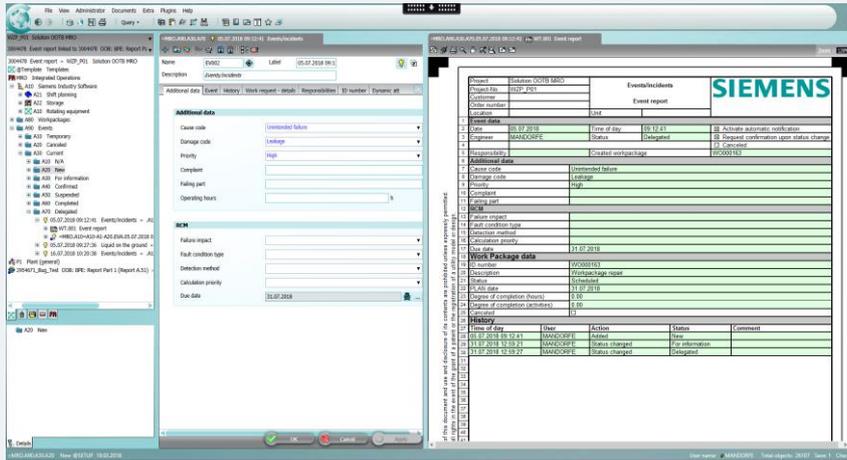
Inbetriebnahme



- Geplante Inbetriebnahmeaktivitäten
- Fehleridentifizierung
- Statusverfolgung
- Bericht und Pluginvorlage für Überblick



Ereignis- & Schichtmanagement

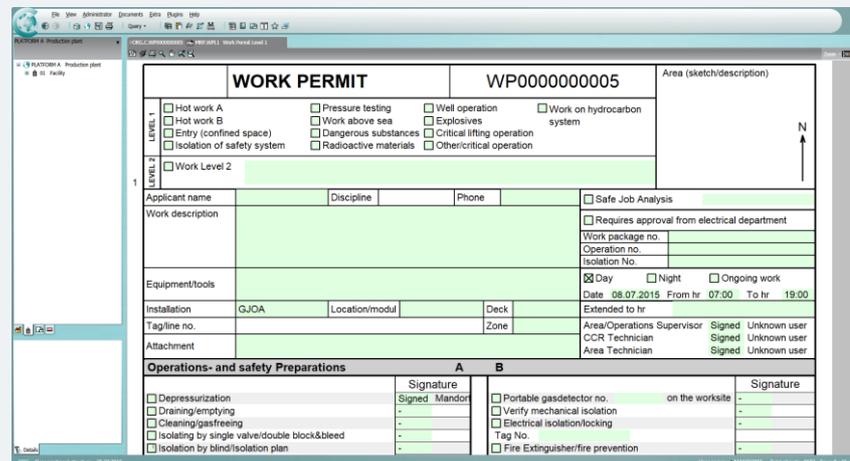
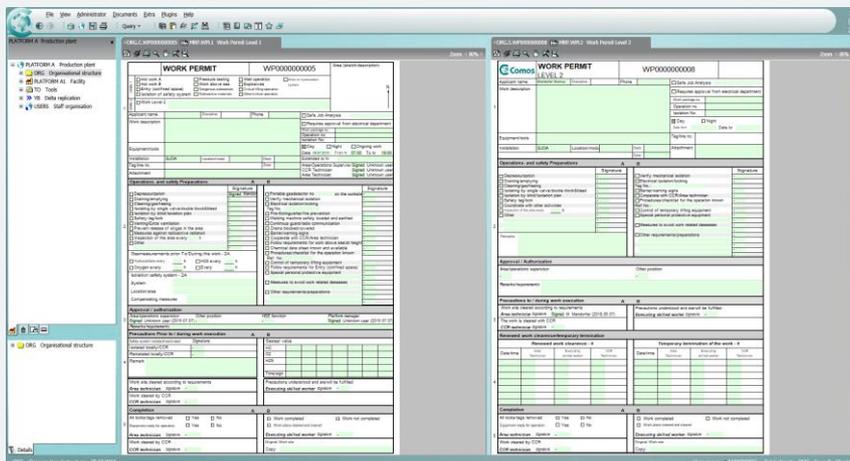
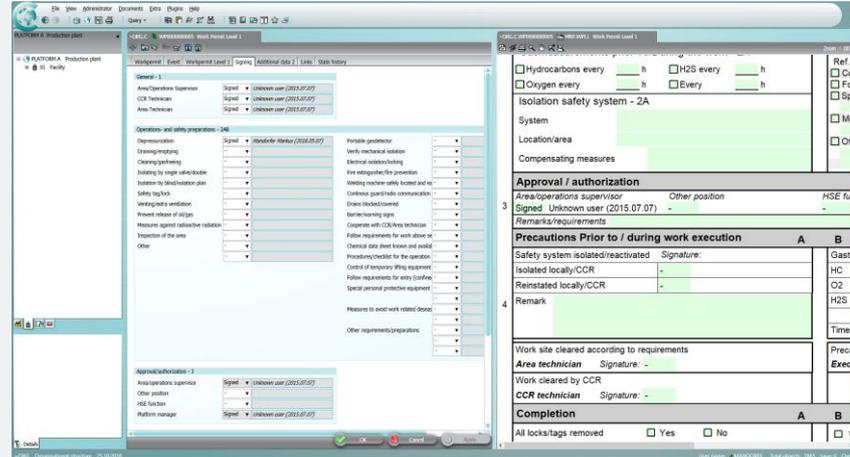


- Vordefinierter Workflow
- Automatisches verknüpfen mit Reparaturplan
- Elemente Einstellungen
- Verlinkung zur aktuellen Schicht
- Integration in Schichtbericht
- Ereignisbericht
- Vorbereitung für RCM (Reliability Centered Maintenance)
- Beispiel für Ereignisstatistik

Arbeitsfreigabe 2 Typen (Level 1 & 2)



- Integration in Arbeitspakete
- Ereignisfunktionalität als Basis
- Bericht je Typ
- Einfaches abzeichnen



Berichte basierend auf DIN EN 13460:2009-08



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Scheduling sheet

Workpackages

Project: [] Project No: [] Building: [] Unit: []

Planning period

From: 01.01.2018 Until: 31.12.2018

List of work orders

| ID number (workpackage) | Description (workpackage) | Planned date (workpackage) | Due date (workpackage) | Required resources (workpackage) | Planned time (qualification) |
|-------------------------|-----------------------------|----------------------------|------------------------|----------------------------------|------------------------------|
| WO000014 | Workpackage device specific | 12.08.2018 | 30.08.2018 | Electric (example) E | 1 h |
| WO000029 | Workpackage device specific | 01.08.2018 | | Electric (example) E | 0.5 h |
| WO000031 | Workpackage device specific | 02.08.2018 | | Electric (example) E | 0.5 h |
| WO000032 | Workpackage device specific | 03.08.2018 | | Electric (example) E | 0.5 h |
| WO000033 | Workpackage device specific | 04.08.2018 | | Electric (example) E | 0.5 h |
| WO000034 | Workpackage device specific | 05.08.2018 | | Electric (example) E | 0.5 h |
| WO000035 | Workpackage device specific | 06.08.2018 | | Electric (example) E | 0.5 h |
| WO000036 | Workpackage device specific | 07.08.2018 | | Electric (example) E | 0.5 h |
| WO000037 | Workpackage device specific | 08.08.2018 | | Electric (example) E | 0.5 h |
| WO000038 | Workpackage device specific | 09.08.2018 | | Electric (example) E | 0.5 h |
| WO000039 | Workpackage device specific | 10.08.2018 | | Electric (example) E | 0.5 h |
| WO000040 | Workpackage device specific | 11.08.2018 | | Electric (example) E | 0.5 h |
| WO000041 | Workpackage device specific | 12.08.2018 | | Electric (example) E | 0.5 h |
| WO000042 | Workpackage device specific | 13.08.2018 | | Electric (example) E | 0.5 h |
| WO000043 | Workpackage device specific | 14.08.2018 | | Electric (example) E | 0.5 h |
| WO000044 | Workpackage device specific | 15.08.2018 | | Electric (example) E | 0.5 h |
| WO000045 | Workpackage device specific | 16.08.2018 | | Electric (example) E | 0.5 h |
| WO000046 | Workpackage device specific | 17.08.2018 | | Electric (example) E | 0.5 h |
| WO000047 | Workpackage device specific | 18.08.2018 | | Electric (example) E | 0.5 h |

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Check of the maintenance logs

Workpackages

Project: [] Project No: [] Building: [] Unit: []

Planning period

From: 01.01.2018 Until: 31.12.2018

List of work orders

| ID number (workpackage) | Description (workpackage) | Comments (workpackage) | Actual date (workpackage) | ID number (event) | Event description (event) | Date event record |
|-------------------------|-----------------------------|------------------------|---------------------------|-------------------|---------------------------|-------------------|
| WO000002 | Workpackage device specific | | 02.05.2018 | | | |
| WO000003 | Workpackage device specific | | 03.05.2018 | | | |
| WO000004 | Workpackage device specific | | 04.05.2018 | | | |
| WO000005 | Workpackage device specific | | 05.05.2018 | | | |
| WO000006 | Workpackage device specific | | 06.05.2018 | | | |
| WO000007 | Workpackage device specific | | 07.05.2018 | | | |
| WO000008 | Workpackage device specific | | 08.05.2018 | | | |
| WO000009 | Workpackage device specific | | 09.05.2018 | | | |
| WO000010 | Workpackage device specific | | 10.05.2018 | | | |

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Item history record of maintenance operations

Electrical motor

Project: [] Project No: [] Building: [] Unit: []

History item period

From: 01.01.2018 Until: 31.12.2018

List of work orders

| ID number | Description | PLAN date | Complaint | Failing part |
|-----------|-----------------------------|------------|-----------|--------------|
| WO000029 | Workpackage device specific | 01.08.2018 | | |
| WO000031 | Workpackage device specific | 02.08.2018 | | |
| WO000032 | Workpackage device specific | 03.08.2018 | | |
| WO000033 | Workpackage device specific | 04.08.2018 | | |
| WO000034 | Workpackage device specific | 05.08.2018 | | |
| WO000035 | Workpackage device specific | 06.08.2018 | | |
| WO000036 | Workpackage device specific | 07.08.2018 | | |
| WO000037 | Workpackage device specific | 08.08.2018 | | |
| WO000038 | Workpackage device specific | 09.08.2018 | | |
| WO000039 | Workpackage device specific | 10.08.2018 | | |
| WO000040 | Workpackage device specific | 11.08.2018 | | |

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Personnel skill and training file

Project: [] Project No: [] Building: [] Unit: []

Personal data

| | |
|-------------------|-------------------|
| Personnel number | 00000000 |
| Title | Mf |
| File (academic) | Graduate engineer |
| Event name | Mandorfer |
| Name | Mandorfer |
| Phone number | 0043000000 |
| Cell phone number | 0043000000 |
| Fax number | 0043000000 |

Qualification

| | | | |
|-----------------------|------------|----------|-----------------------------|
| Description | Valid from | Valid to | Availability (Display text) |
| Mechanics (example) E | 31.07.2011 | | |
| Electric (example) E | 31.07.1999 | | |

Career history

| | | | |
|-------------|------------|----------|-----------------------------|
| Description | Valid from | Valid to | Availability (Display text) |
| Career item | 31.07.1999 | | Electrician |

Training program

| | | | |
|-----------------|------------|----------|-----------------------------|
| Description | Valid from | Valid to | Availability (Display text) |
| Training course | 31.07.2018 | | Advanced Cp |

- Kontrolle der Instandhaltungsprotokolle (A.46)
- Terminverfolgungsblatt (A.10)
- Personalakte über Fähigkeiten und Ausbildung (A.51)
- Instandhaltungsbericht der Einheit (A.3)
- Querverweisliste von Ersatzteilen (A.5)
- Verfahren zur Kennzeichnung von Schulungsanforderungen (A.50)

START

NOW

