



IN MOTION WITH FLOWCHIEF

SCADA



SCADA



In motion with FlowChief

The system with unlimited possibilities!

FlowChief is highly scalable and can be used as on-site HMI for easy operation, as central SCADA-system or as private cloud service. Current technologies and standards are the fundamentals for this universal platform.

- 100% web technology
- Complete integration of OPC UA standards
- One-For-All: Visualization, operational historian, reporting, alerting, maintenance and energy management
- Highly scalable: HMI – SCADA – Cloud Service
- Industry-neutral and independent
- Efficient and simple engineering
- Total multi-client capability

For operators

- ✓ Reliable and fail-proof
- ✓ Direct manufacturer support (24/7)
- ✓ Long-lasting technologies
- ✓ Hardware independency
- ✓ Assurance for your investment
- ✓ Intuitive and easy-to-use
- ✓ User training direct from the producer
- ✓ Upward compatible for 20 years

For integrators

- ✓ Innovative technologies
- ✓ Open system based on standards
- ✓ Highly qualified contemporary support
- ✓ Engineering without programming skills
- ✓ Large range of training and consultation
- ✓ High customer satisfaction
- ✓ High level of product distribution
- ✓ FlowChief partner program

For OEM

- ✓ Customizing and commissioned programming
- ✓ White labeling
- ✓ Easy networking of on-site systems and cloud systems
- ✓ Condition-monitoring
- ✓ Predictive maintenance
- ✓ Standard software as protection of your investment
- ✓ First- and second-level-support (24/7)
- ✓ Purchase and leasing options

TECHNOLOGIES

Where FlowChief goes ahead!

Standards

FlowChief is based on standards – these are the key to a homogeneous, clear and future-proof system infrastructure. Standards secure your investment, reduce further costs and provide many possibilities for the future.

- *OPC UA Client/Server (incl. Historical Data Access)*
- *OPC Classic Client & Server*
- *Microsoft SQL Server™*
- *Applied web technologies: SVG, CSS, JavaScript, ASP, NET, HTML*
- *Alerts via VoIP, ISDN, SMTP, Push-Notification (App)*
- *Import of text based structures (CSV, XML, TXT)*
- *Multiple export functionalities (CSV, HTML, XLS, PDF, PNG)*
- *Highcharts as Charting-Engine (additional to interactive curves)*
- *POP3(s) e-mail-client, FTP(s)-Client, HTTP(s)-Client*
- *Regional Settings – Translation of all front-ends and expandable through user*
- *Safe web access through TLS-encryption*
- *Integrated 2-factor-authentication (optional)*
- *REST API client*
- *AJAX/SOAP-based web service*
- *White labeling*
- *Audit-Function*
- *Time zone overlapping archiving (UTC-timestamp)*
- *Hot-Standby-Redundancy*
- *Google-Maps-Integration*
- *Active-Directory-Integration (Single-Sign-On)*

100 % web technologies

HTML5 web technologies change the world of SCADA and process control systems. No more time wasting desktop installations with limited usability and incompatibilities between products and operating systems.

FlowChief software products have been conceived to be used with web browsers from the very beginning, totally designed in pure web technology. No further installations are needed, regardless whether using control station, desktop, notebook, tablet computer or smartphone – they all connect to an application via intranet, a (private) cloud or a secure internet connection. Your FlowChief system is accessible worldwide and is not only limited to visualization. 100 % web technology means to us: full functionality within visualization, configuration, archiving, reporting, alerting and maintenance management.



- **Platform and device independency**
Web browsers are available everywhere!

- **Location-independent**
on-site or via world wide web

- **Secure and simple integration**
into the system infrastructure (firewalls, DMZ, proxies etc.)

- **Choose any web browser**
Firefox, Chrome, Edge, Safari or even Opera?

- **High definition**
Lossless zoom with perfect performance through W3C standardized SVG

- **Future-proof and safe investment**
Profit from the fast development of web technologies!

- **Innovative operating concept**
Supports multi-touch and touch gestures

- **Responsive design**
Optimised presentation for various screen sizes

- **No client installation**
No more plugins or browser extensions necessary!

FLEXIBLE. SIMPLE. EFFICIENT.

Engineering as it should be!

WEB-BASED-CONFIGURATION

With 100 % web technology we do not limit ourselves to visualization. At FlowChief pure web means consistent operation of the web browser in all configuration and user front-ends:

- *Creating a data model*
- *Dashboard- and reports-designer*
- *Stand-by and alert configuration*
- *Machine- and maintenance configuration*
- *Energy management*
- *System settings*
- *Recipe management*
- *User management*



IMAGER

Your powerful engineering tool for creating process images and animations. The FlowChief imager can be used as local application or detached as TCP/IP-client. Multiple formatting possibilities, such as alignment tools and included libraries for vector images and objects for various industry sectors, enable a simple creation of great process images.

- *Extensive library for graphics and objects*
- *Online-engineering (multiuser, no compiler)*
- *Local or via network (TCP/IP)*
- *No external development environment needed*
- *W3C-standard vector graphics (SVG)*
- *Embedding of external sources (webcam, map etc.)*

MASS DATA CONFIGURATION

FlowChief can handle huge amounts of process variables much easier and more convenient by configuring them in Microsoft Excel™. Programming skills are not necessary. Configuration can be done both offline or online while the system is running. Changes are immediately available, without any downtime:

- *Configuring instead of programming*
- *Online-changes without system downtime*
- *Integrated plausibility check of the configuration*
- *Import and export functionality*

WIZARD

The web-based assistant automatically transfers the data-model from its source and therefore prevents complicated handling of large data-point lists. Process variables are generated fully automatic on the base of the PLC configuration. Data resources like OPC UA servers cannot only transfer symbols but also metadata (e.g. units, measurement range, comments, etc.). Thereby it is possible to plan all data, decentralised, in the controller.

- *Automatic transfer of the configuration from the PLC or SCADA*
- *Efficient, high performing engineering*
- *Prevention of configuration errors*

One-For-All

FlowChief integrates all necessary functions of modern SCADA and even more into one product: From visualization to alerting, from historian to maintenance management. The user is spared complex and opaque system infrastructures – and thus considerable costs.

- **One product for all tasks**
- **Consistent usage – one user management**
- **Only one setup of the data model and process connection**
- **One central server – also available as high performance redundancy (optional)**
- **Massive cost saving at integration and runtime**
- **Easy backup and restore procedures**
- **No interfaces between products and therefore maximum life-time-cycle**
- **Simple IT-security concepts through minimisation of communication connections and interfaces**
- **Easy product updates, no compatibility problems**
- **Modularity and scalability on the base of one-for-all-solutions**
- **One point of contact for the project and support**

VISUALIZATION

Pure web technology! Powerful and platform independent



DASHBOARD

Flexible, tile based cockpit application. Use of charts, elements for visualization, message lists etc.



ARCHIVING & AGGREGATION

Efficient and secure archiving incl. compression



TRENDING

Interactive on-/offline curve-functionality; various modes: archive, archive time comparison, frequency, XY-scatter diagram



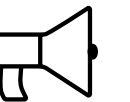
REPORTING

User-friendly report engine including designer



RECIPE MANAGEMENT & SCHEDULER

Integrated recipe management for the simple administration of production and processes



MAINTENANCE MANAGEMENT

Plant and maintenance management with direct process connection and ticket system



ALERTING & ESCALATION

Intelligent alerting platform – targeted alerts via voice, text message, e-mail or app

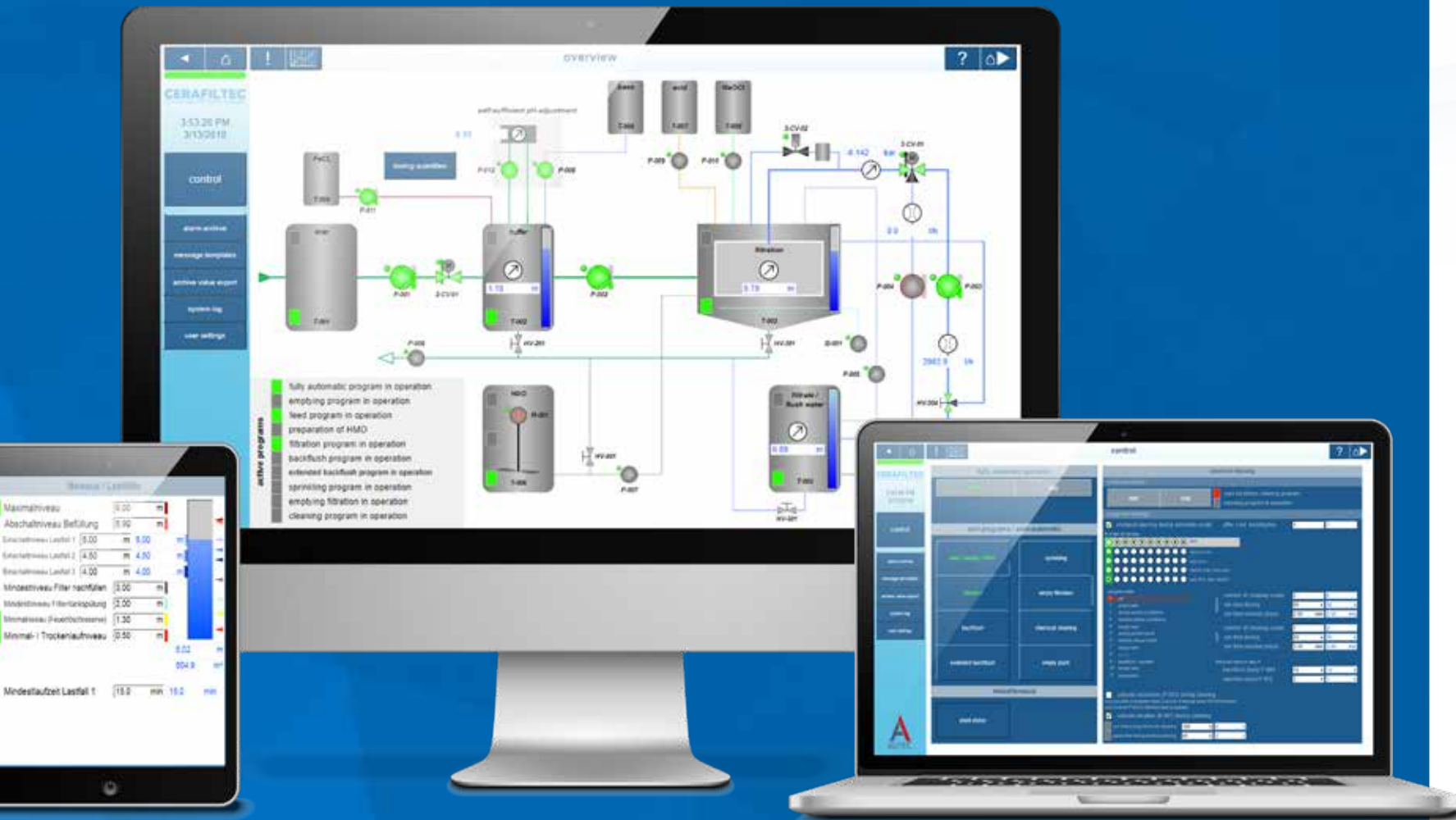


ENERGY MANAGEMENT

Integrated solution for energy management, ISO 50001 certified



ONE-FOR-ALL Close-up



VISUALIZATION

Efficient and reliable visualization is the central component of FlowChief. Powerful update of all data and fast loading of images, no matter if individual workplace or access via network. The user profits from fantastic interfaces with individual design and intuitive handling.

- *Lossless zooming – no pixelated view*
- *Easy integration of trends, message lists, charts, webcams and maps*
- *Fade in and out depending on zoom-level*
- *Easy navigation between front-ends through context menu*
- *Security features: encryption, password standards, 2-factor-authentication*
- *Integrated navigation menu*

DASHBOARD

Always up to date with the Dashboard – compact and simply organised. Widget elements such as speedometer, bar graph or diagrams can be easily compiled. Additionally visualization elements like text messages, Google-Maps and webcams can be simply integrated. Responsive web design makes the Dashboard available on various screen sizes – PC screen, tablets and smartphones.

- *Flexible, web-based tile editor*
- *Responsive design*
- *Personalised Dashboard with sharing-option*
- *Charts, interactive trends, visualization elements, message lists etc.*
- *External resources (webcam, maps, portals etc.)*



ARCHIVING & AGGREGATION

Powerful historian functionality, which archives digital, analogue and counter data within milliseconds. Each variable can be individually parameterised: value archiving (delta-event, cyclic and historical) and aggregation (15 min., h, day, month, year). The consistent data model offers full transparency within visualization, trending, reporting and exporting. The safety of your data is provided by redundancy, backup, recovery and offsite data storage.

- *High performance SQL database*
- *UTC timestamp and quality flags*
- *Correction of process values*
- *Accurate processing of historical data*
- *Data outsourcing function with permanent online access*
- *Backup and recovery*
- *Interface for third party: OPC UA server (HDA)*
- *Audit trail*

TRENDING

An interactive and extremely efficient online- and archive-trending is available for the process analysis. Flexible control elements enable a simple evaluation of Big Data. Each user compiles his charts individually and chooses from analogue data, counters or digital values. Ready formatted combinations can be saved for private use or shared flexibly between various users.

Parallel display of up to 100 data points

Modes: online, archive, time comparison, frequency and XY scatter diagram

Large range of formats: colour, diagram types (line, pillars, area etc.)

Virtual calculation of process values within a graph



Analysis tools: display of limits, min/max values, cross-hair pointer

Auto scale, X-Y Zoom, export, multi-touch

REPORTING

FlowChief WebReports are user friendly and flexible, so that you will benefit from your data. Easily create automatic reports without any programming skills. The basis for the reports is the compression of data. Various process key figures can be displayed through calculation and other extended functions.



Intuitive, easy to use report designer

Tables, charts and diagrams

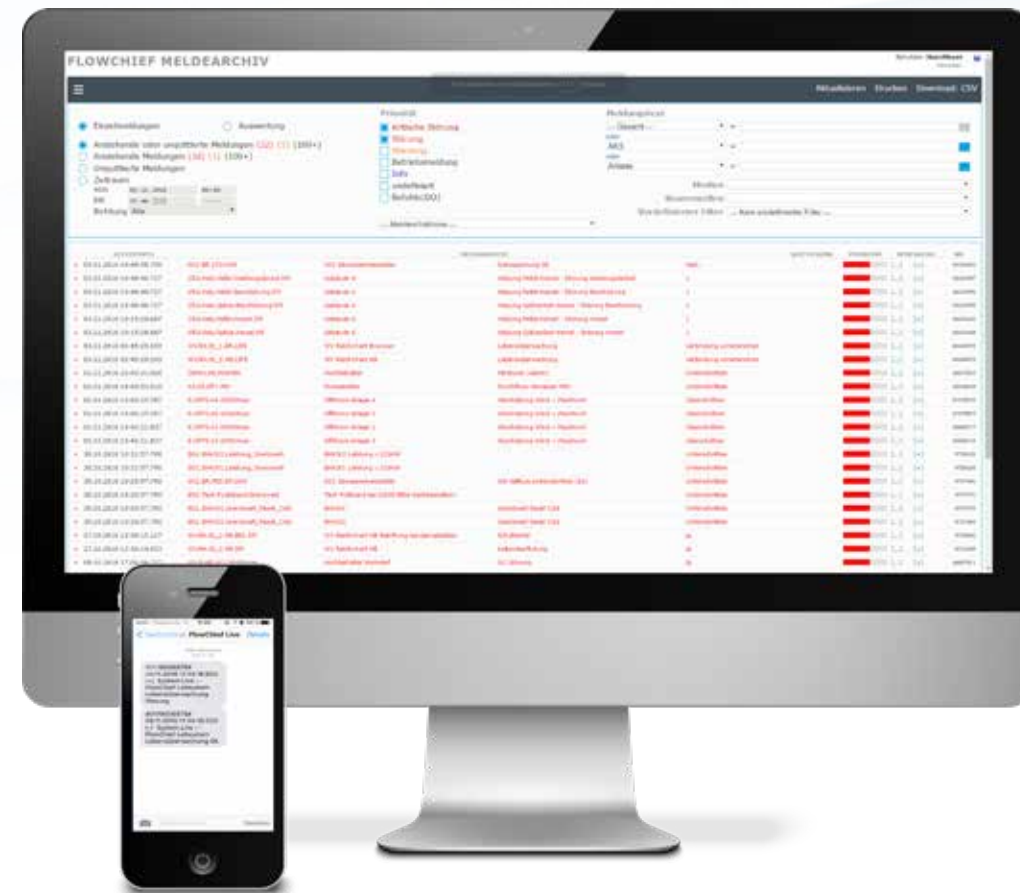
Automatic dispatch via e-mail or FTP

Excel reporting for corporate use

Industry sector specific alternatives

ALERTING & ESCALATION

Maximum plant availability through an intelligent alerting platform, using targeted alerts in case of errors. Historic events can be traced due to long term archiving of procedural and fault messages. Using priorities and parameters for announcements, the system decides of the urgency and alerts certain users via voice (VoIP available), text message, push notification or e-mail. The software also provides a complete stand-by-service and shift schedules, including calendar functions, handover, parallel alerting and escalations.



• **Message archive including frequency analysis**

• **Integration of message lists in visualization and dashboard**

• **Alert types: Phone, text message, e-mail, App**

• **Escalation depending on type of message and user**

• **Text-to-speech (TTS)**

RECIPE MANAGEMENT & SCHEDULING

FlowChief has an integrated recipe management and task scheduling for easy management of complex steering parameters in discrete manufacturing or the process industry. System parameters can be easily matched to fabrication and can be activated batch wise. Complex processes within the process operation can be coordinated by set points records.

• **Management of recipes and set values**

• **Tabular presentation and easy setup**

• **Includable in visualization and dashboard**

• **Manual or automated recipe selection**

• **Flexible time steering including self-monitoring**

MAINTENANCE MANAGEMENT

Providing regular maintenance for your plant and machines prevents faults. FlowChief maintenance management offers an online connection to your processes and triggers maintenance services through operating hours. Machine malfunctions release actions and generate tickets. Maintenance services are directly connected to machines and provide all necessary information like responsibility, security warnings or information from previous servicing. Maintenance employees may print routing slips or edit maintenance services offline in the FlowChief scadaApp.

• **Entire machine summary**

• **Trigger for maintenance based on operating hours or period**

• **Multi-client capable**

• **Ticketing system for displaying and coordinating processes between different parties**

• **Online access to manuals and specific documentation**

• **Offline access via mobile devices**



ENERGY MANAGEMENT

Integrate your energy data management into your operating SCADA. Divide your consumption values into media, organisation units or cost centers. Format complex hierarchic structures and balance sheets, to illustrate your company's energy flow clearly. Create transparent access to energy consumption data for energy managers, engineers, accountants or CEOs within your company.

- **Sankey diagram, Carpet-Plot, Multi-Carpet-Plot, duration hydrograph**
- **Energy-Dashboard**
- **Peak load monitoring**
- **Compensation of weather conditions**
- **Tariff administration**
- **Key figures according to ISO 50003**
- **Energy management according to ISO 50001**
- **Energy audit according to DIN EN 16247-1**



Redundancy

Using redundant server-hardware enables a lossless switch in case of an error. Network and server-hardware malfunctions can be easily intercepted. In case of failover all features like archiving, alerting etc. are still available. Communication is also redundant both while connected online (OPC UA und Classic) and via remote control with the FlowChief GPRSmanager.



- **Hot standby redundancy (automatic failover)**
- **Manual switching (cold-standby)**
- **Automatic matching of all online and historic data including configuration**
- **Easy implementation and operation**
- **Total functionality even in redundancy mode**
- **Redundant communication (online and remote control)**
- **Switching while ongoing operation, no data loss**

FLEXIBLE. OPEN. ACCURATE.

Connectivity

Manufacturer independent communication between controllers, measuring instruments and components for remote control is based on standardized interfaces.

FlowChief either interacts directly with controllers using OPC UA (Unified Architecture) or the common technology of classic OPC. That is how industry- or application-specific protocols like Modbus, IEC 60870-5-104 or Profinet are easily connected. Characteristic features are the real-time capture of data, high reliability and long-term compatibility.

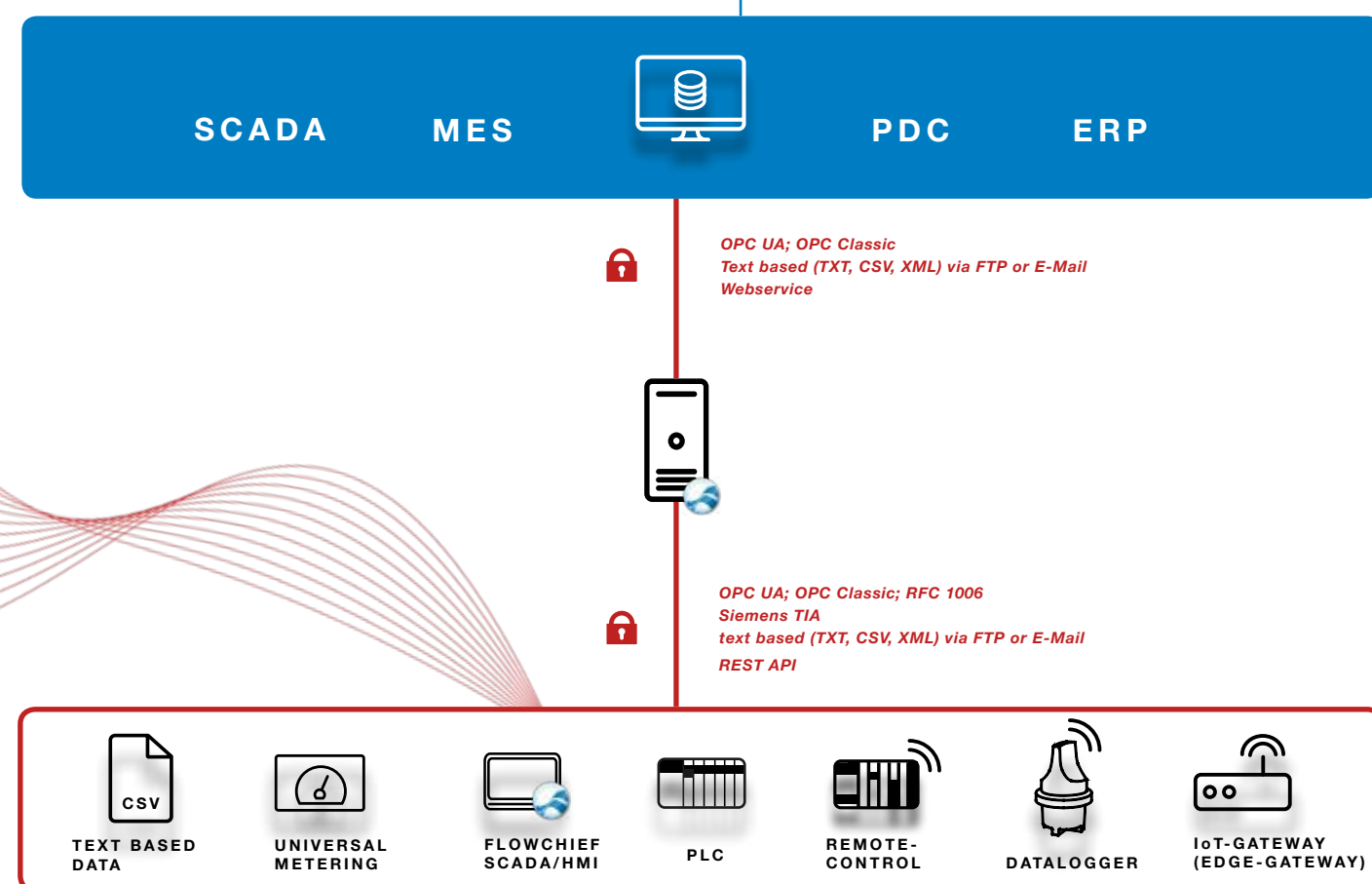
FlowChief remote control enables an economical, secure and efficient communication between decentralised controllers and central plant control, and therefore is perfectly suited for a M2M-application via GPRS, LTE, DSL etc.

Manufacturer independent communication (OPC)

Connectivity to MES, ERP or other plant control systems

Supports adding manual or laboratory test values

Text based data imports (CSV, XML, TXT etc.)



OPC Unified Architecture

The gapless integration of the Industry 4.0 standard OPC UA guarantees a simple, secure and universal communication between PLC, SCADA and business layer. With OPC UA nothing stands in your architectural way. Systems can be cascaded as required. This offers many benefits, such as automated configuration, comparison of archive data or integrated security mechanisms.



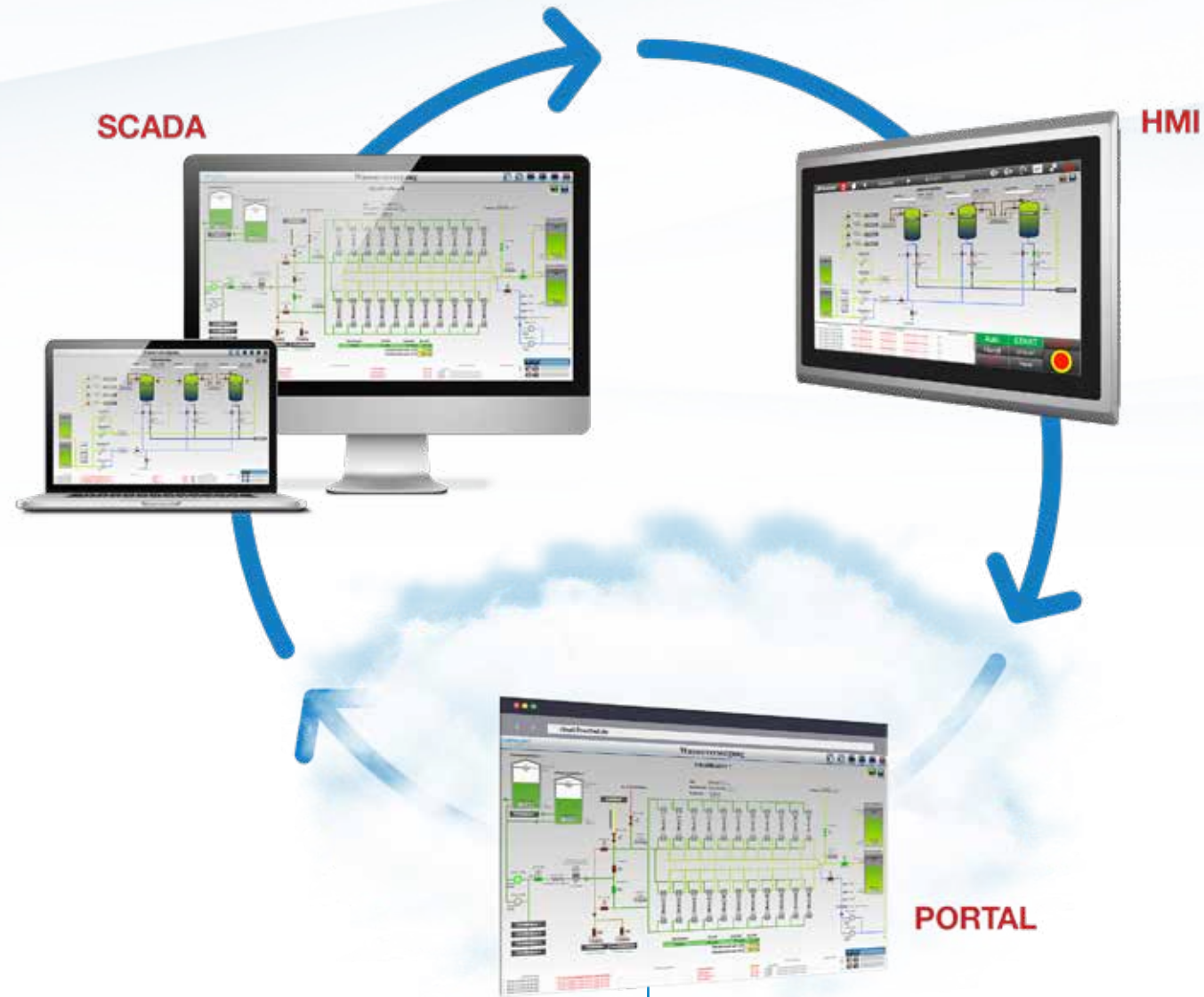
- **OPC UA client- and server-solutions**
- **OPC UA data access**
- **OPC UA historical data access (HDA)**
- **Security: sign & encrypt**
- **Block formation: sampling & queue**
- **Server integration in user management (multi-client capability)**
- **Server: Supply of various namespaces**
- **Client: Assistant for generating process variables based on server metadata**

Security



Security concepts of industrial process controls should always take place on different levels (Defence-in-Depth). FlowChief SCADA offers multiple features within the application to secure your plants. Every administrator favours the web-based architecture, because it can be integrated in a simple and secure way.

- **Access with TLS-encryption**
- **2-Factor-Authentication**
- **Active Directory Integration**
- **Great variety in rights management for plants and functionalities**
- **Configurable password policies**
- **Mandatory initial password change**
- **Login restriction to local network (LAN)**
- **No backdoors**
- **Protection against Brute Force Attacks**



scadaApp

Is it sensible to use an app to access web-SCADA? Yes. Because scadaApp adjusts user interfaces perfectly to mobile devices and offers extended functions, which are only available on mobile devices:



- *Intuitive and easy navigation between various user-interfaces*
- *Push-notifications on mobile devices for alerting*
- *Save access data for an easy access to your system*
- *Insert counter data, laboratory and manual values – even offline*
- *Favorites list to show important operating values*
- *Acknowledgement and feedback on maintenance services – even offline*

HMI. SCADA. CLOUD.

Scalability

FlowChief is highly scalable. It can be used for simple human-machine interfaces on site, as central SCADA system or as a (private) cloud service. Manufacturers or providers host their own FlowChief cloud and provide it for their customers.

- *Licensing via dongle or hardware-based key*
- *Easy transferring of projects between different system types*
- *Takeover of data models, process images, dashboards, reports etc.*
- *Simple connection of various FlowChief systems via OPC UA (automatic day-synchronisation, archive data synchronisation via OPC UA - HDA)*
- *Easy subsequent scalability of size and functionality*
- *Supports virtual structures*



References

ZEPPELIN POWER SYSTEMS CHP

Customer:

FlowChief visualization to operate and monitor CHPs; Linking Siemens S7-1500 (TIA - symbolic); Archiving all process values

Cloud Service (control station):

Central cloud services within the Zeppelin private cloud; Service provider for customers (remote control, remote diagnostic, remote control) via FlowChief; Networking of all systems via OPC UA including synchronisation of archive data (historical data access)

"At Zeppelin Power System we offer our customers tailor-made all-round carefree packages with our solutions for combined heat and power plants and marine installations. In FlowChief we found a partner with modern software and the necessary flexibility. That's how we offer FlowChief based software solutions to customers – from simple machine operation to marine fleet management."

Timo Jakubzik
Electrical Engineer
ZEPPELIN Power Systems



CENTRAL SCADA APPLICATION IN AN INTERNATIONAL CORPORATION

Project:

At final stage over 100.000 data points; Parallel access of up to 100 employees per web-browser; Hot-Stand-by-Redundancy; Multiple-client structuring per remit (Electricity, medium, environment etc.)

Visualization

Approx. 450 process images; display of information, depending on zoom level

Data source:

Up to 350 Siemens and Beckhoff controllers; Integrated energy management including more than 2.000 real meters; Import of supplier data via MSCONS

"In 2012, we decided to modernize the aging Repas AEG process control system. After an extensive market analysis, the choice fell on FlowChief. The decisive point was above all the uniquely consistent overall concept of the application – so there is no comparable product on the market, which offers a plugin-free web visualization with historian server and alarm platform combined. Meanwhile, we also trust FlowChief with our in-house energy data management."

Wolfgang Voith
Leader Electrical Engineering
SKF Schweinfurt



WATER SUPPLIER BAYERISCHER WALD

'waldwasser' – The Joint Water Supply Bayerischer Wald covers an area of more than 8000 km² in 7 districts

Characteristics:

A total of 8 Process Control Systems:

- Drinking water treatment plant Max-Binder
- Supply infrastructure of 'waldwasser'
- Waterworks Moos
- Veolia CARIX™ water softening
- Energy data management of Waterworks Moos (ISO 50001)
- Building automation system of Waterworks Moos

'waldwasser' cloud services:

- Intercommunal cloud service for water suppliers
- Multi-client structure with parallel access of more than 50 customers
- Provided services: Visualization, Stand-by-Service, reporting, reporting service, 24/7 alarm control center

"For almost 15 years, we have been using FlowChief process control and remote control technology. FlowChief has always relied on cutting-edge technologies such as pure web technology. These technologies enabled us to develop our 'waldwasser' web-visualization – an economical cloud solution for small water utilities. In the past, these were often simply overwhelmed by their own IT infrastructure. We are absolutely convinced of FlowChief, which is why we are fully relying on FlowChief in our new waterworks including the administration building: in the process control, in energy management and in the building automation system."

Dipl.-Ing. Hermann Gruber
Government architect and Plant Manager of
the Joint Water Supply Bayerischer Wald



SEWAGE PLANT CITY OF ERLANGEN

Characteristics: Sewage plant for 350.000 residents and approx. 20 Mio m³ sewage per year

Outdoor structure: 400 km sewer system, 20 pump stations, 25 rain overflow basins connected via FlowChief remote control

System characteristics: FlowChief process control system on hot-standby redundancy, stand-by-service (alerts via text message), maintenance, spill basin protocols, operation diary, scadaApp – app for mobile devices, integrated energy management according to ISO 50001

Features: Parallel access for up to 15 employees from electrical engineering, mechanics and management; Setup of own Wi-Fi and usage of mobile devices for access to processes direct in operation; On site interconnection: 45 PLCs (type Siemens S7)

"Since 2006, we have relied on FlowChief for the central process control system. The big advantage of the FlowChief system structure, is the integration of many important functions of our control technology into one software. From visualization and archiving to reporting and maintenance management – up to 15 employees from the control center, specialist workshops and operations management work with the system on a daily basis. Prerequisite for this is the consistent execution in HTML5 web technology. The system is designed as a hot standby redundancy solution – the reliability is also ensured in exceptional situations, such as hardware defects."

Stefan Engelhardt
CEO
civic sewage plant Erlangen



Service & Support

As a customer, you and your project are unique to us. That's what we and our system integrators experienced in over 2.000 projects. These are our service offers:

- *Support for users and partners via phone and e-mail*

- *24/7 support*

- *Coordinated training program*

- *Assistance for engineering and consulting offices*

- *Detailed multilingual documentation*

- *Project consultation – from concept to review*

- *Software update service*

- *Software purchase or leasing*



FlowChief System Integrators – Expertise close to you

FlowChief stands for high customer satisfaction and reliability in every project. Together with our partners, we support you from planning to approval and even in after sales. FlowChief partners qualify in regular trainings and through many successful projects. That's what our customers profit from. Well over 100 certified partners in Europe are a vote of confidence. Why not use this network or become a part of it!

- *Contact person on site*

- *Industry knowledge and proven project expertise*

- *Product expertise and system knowledge*

- *Fast support even in emergencies*

- *Project based individual training*

- *Support, consultation and project management*