In modern processing plants, an increasing number of daily operations are supported by advanced process control solutions such as Outotec’s ACT. ACT provides a platform to build customized control applications that enable stabilizing and optimizing everything from single-unit processes to plant-wide production. ACT control applications are built on top of your existing base-level process control system and can be implemented to practically any modern process with an existing automation system and adequate instrumentation.

Outotec’s proprietary ACT platform builds on our extensive experience with advanced control solutions. The Outotec ACT platform features next-generation tools for advanced process control in a usable and easily implementable form. Outotec ACT platform is an open and easy-to-learn system making it a great tool for plant experts with no prior programming skills as well.

Outotec ACT can be connected to all existing plant control systems via an OPC interface or through custom-made interfaces. The ACT platform includes interfaces for both engineering and operating, enabling faster control application development and implementation with reduced capital costs.

ACT provides standard logical components that can be used like macros or functions, making control applications easy to design, implement, and follow. It also enables more complex control logics while allowing users to maintain an overall grasp of the project.

**OUTOTEC® ACT PLATFORM**

**BENEFITS**
- All-in-one solution
- Increased efficiency
- Processes visualized
- Open and transparent
- Plant interconnectivity
- Ideal for modernization
THE OUTOTEC ACT PLATFORM CONSISTS OF THREE MAIN COMPONENTS:

1. ACT Designer
   Design and tune your control strategy

ACT Designer is a graphical design environment used to configure and implement all aspects of the advanced process control solution, including control strategy, communications, testing, and operating interfaces.

The control strategy is implemented using hierarchical re-usable flowcharts, which have been designed to show the control logic, actions, and models used in the strategy – all at a glance.

For example, the control strategy for two or more independent processing lines can be implemented in a single reusable sub-strategy, which is then linked to each processing line. This reduces both the amount of work and the number of errors caused during implementation. The visual hierarchical implementation also ensures that the control logic is easily modularized.

ACT Designer also features tools to test control applications before use:

- **Standard software environment - Debugging tools**: Enjoy efficient execution control using tools such as pause, step-by-step execution, breakpoints, watches, and more.

- **Test with live data**: Verify exactly how the control strategy will behave, by processing process values without connecting the logic outputs to the plant control system or by processing historical data from the built-in database.

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**Advanced calculation modules**
- Fuzzy logic
- Models
- Machine vision
- Process tomography
- Other

**ACT data interfaces to external systems**
- OPC client
- Other

**ACT Engine**
- ACT Historian
- ACT control applications
- Process database
- ACT control
- Grinding
- Flotation
- Dewatering
- Hydro
- Smelting
- Other

**ACT Designer for engineering and data analysis**

**Web interface for operators**
2. **ACT Engine**
   Execute control applications and interface with your plant control system

The ACT Engine executes multiple ACT applications and is run as a Windows service independent of the design environment and operator interface. ACT applications can also be run on multiple servers for redundancy or to split the workload, while still allowing central management and control design.

ACT includes the following tools, all of which can be implemented as easily configurable flowchart blocks:

- Logic execution with complex expressions
- Data validation and filtering
- Historical calculations
- Advanced timing and delay handling
- Linear regression models
- Extended Kalman filter for complex soft sensors
- Fuzzy logic

The ACT's functionality can easily be extended or customized by adding custom modules as ACT add-ins. The default communication interface between ACT and external systems is OPC.

3. **ACT User Interface**
   Monitor and set targets, limits, and other parameters

The ACT integrated Operator user interface runs on the ACT server. It can be used to monitor and control the status of the ACT control solution and for basic administrative tasks. ACT’s user interface is based on web technology and can be used on both mobile and stationary devices as required.

Because different control parameters, such as target values or limits, are usually managed by different users, you can create separate pages for different process areas and modules. The user interface design can be based on Outotec’s common UI components or customized to suit your needs.
ENSURING PROCESS OPTIMIZATION

Outotec offers a wide range of services for optimization and maintenance for any advanced process control system, to ensure the long-term performance of your solutions. The best optimization result is achieved when process conditions, system performance levels, and operation of the instrumentation are continuously assessed and maintained.

Based on process results and analysis of operation, Outotec performs preventive maintenance on the system, related instrumentation, and software. We provide support and continuous improvements for your advanced process control solutions, ensuring optimized performance.

Outotec’s global network of specialists ensure that there is always a dedicated service engineer with systems expertise near you. Our service engineers have the latest updates available and can continuously improve your system through assessments, Outotec’s in-house metallurgical know-how, and knowledge of product development.

OUTOTEC ADVANCED PROCESS CONTROL SERVICE CONTENTS

Outotec’s Advanced Process Control solutions / systems include:
- ACT Platform
- ACT Control Applications
- FrothSense System
- CellSense System
- Chena
- LevelSense System

As the need for support varies, Outotec offers two different service levels for APC systems: system support and optimization support. System support aims to ensure reliability, whereas optimization support aims to maximize performance.

System support services
- Helpdesk
- Remote troubleshooting
- On-site APC service
- Minor software updates

Optimization support services
- System support services
- Application assessment and performance reporting
- Control strategy support and updates
- Process changes updated in optimization application
- Regular expert assistance on-site
- Major software updates