Advantech WebAccess

Industrial IoT Application Software Platform

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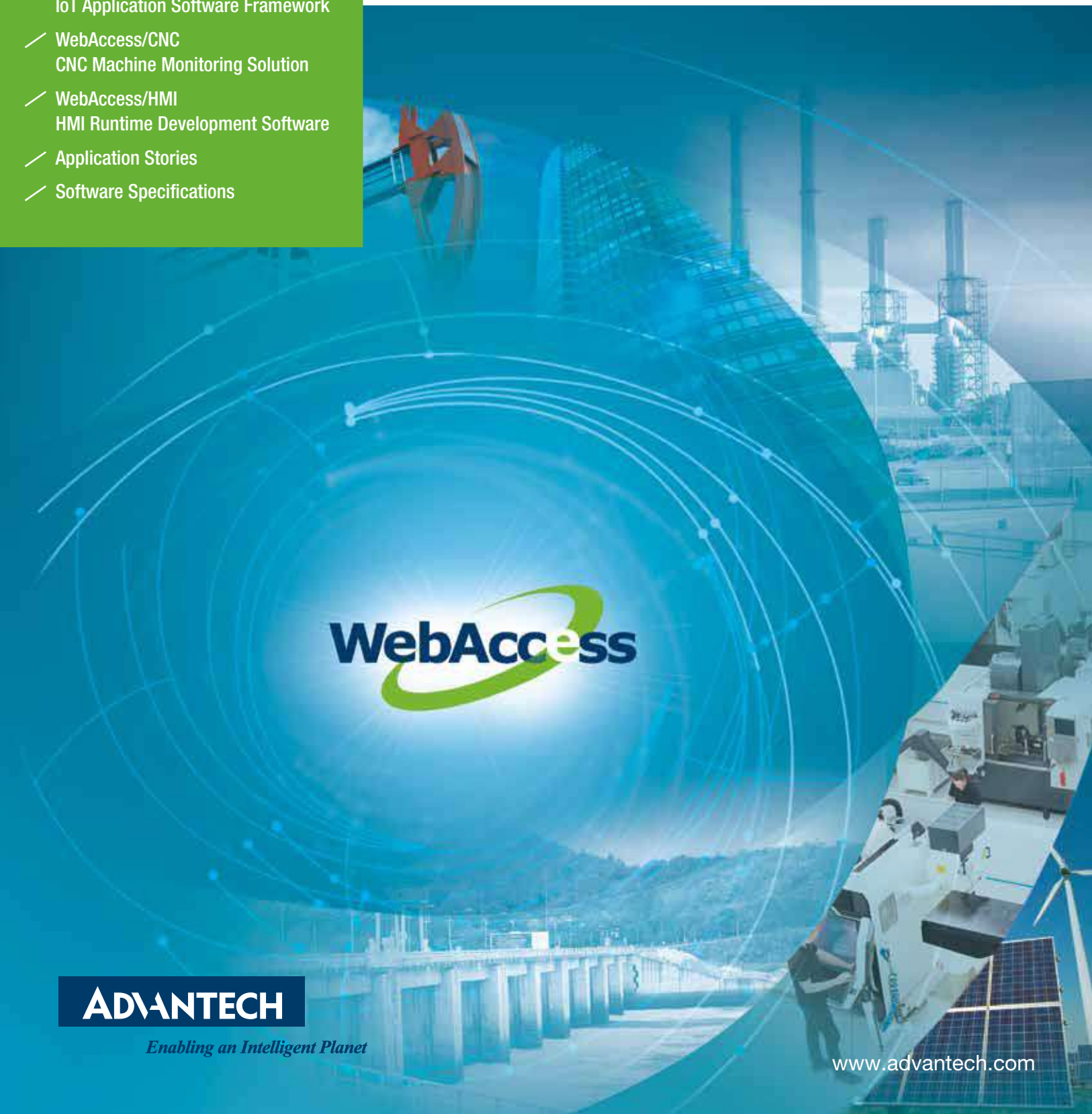

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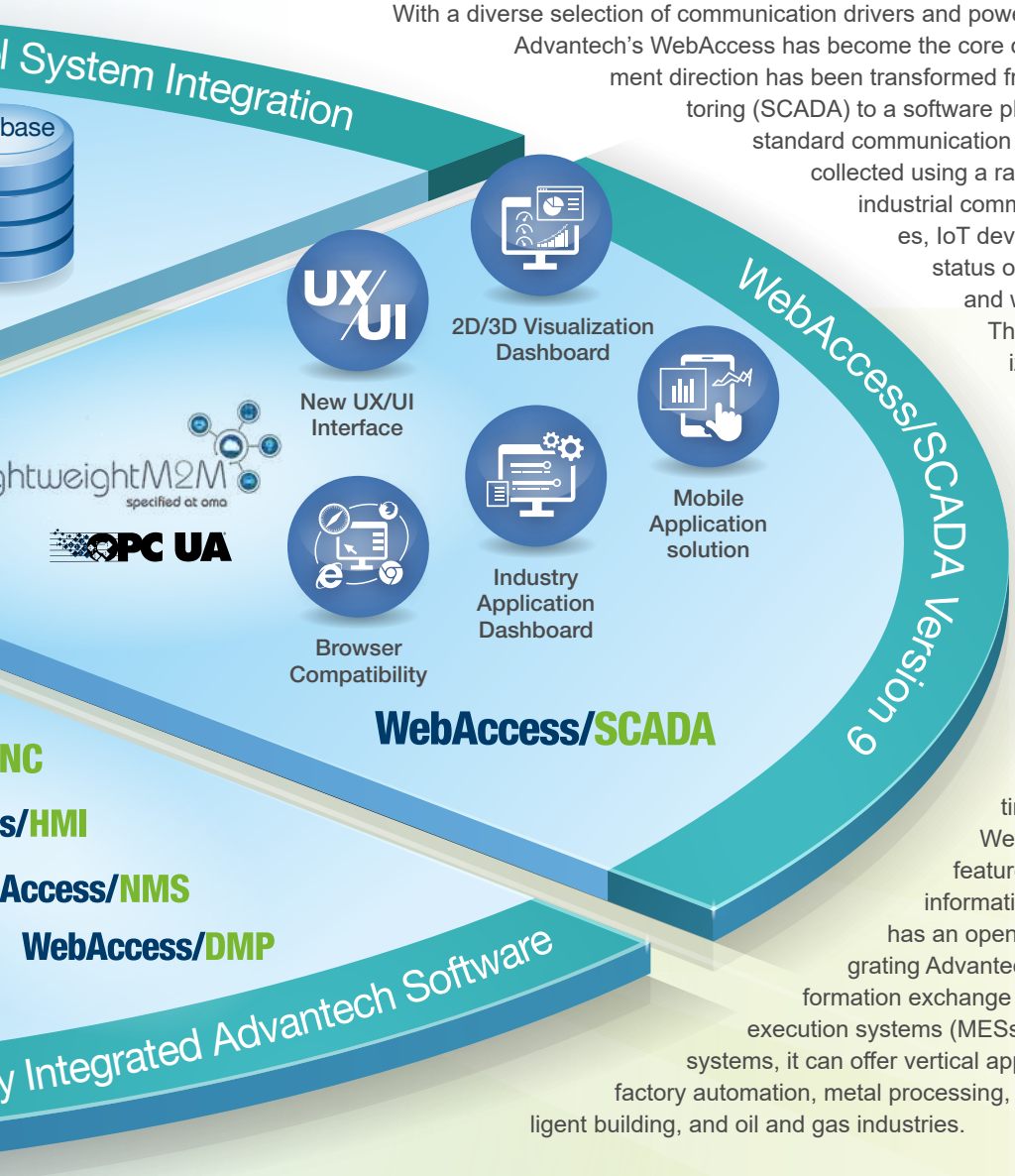
Advantech WebAccess, Industrial IoT Application Software Platform

As technological innovation continues to drive the evolution of IoT, the smart city concept is developing rapidly, and the intelligent manufacturing trend of Industry 4.0 is becoming increasingly prevalent. The use of equipment networking in the acquisition and uploading of large volumes of data to the cloud for big data analysis has become critical in the evolution of industrial applications. With the need for universal, cross-system accessibility to enable seamless integration without hardware constraints, selecting the right software is critical to successfully creating various industrial IoT applications.



With a diverse selection of communication drivers and powerful remote management features, Advantech's WebAccess has become the core of IoT solutions. Moreover, its development direction has been transformed from traditional data acquisition and monitoring (SCADA) to a software platform for IoT applications. With industry-standard communication protocols, various equipment data can be collected using a range of technologies including traditional industrial communication equipment, standard databases, IoT devices, devices for managing the equipment status of computer platforms, network switches, and webcams used for image management. Thus, with various analysis methods, localized data processing can be implemented through alert management, reporting, and data visualization.

In combination with a cross-platform dashboard GUI, WebAccess has built-in graphical tools light signals, Google Maps, and alert/incident history, all of which can be used to visualize the output of data processing. With the browser on their smartphones, tablets, or other mobile devices, users can obtain information on current conditions and track historical records at any time and from any location. In addition, the WebAccess app has an alert push notification feature that can be utilized to broadcast critical information on events as they occur. WebAccess has an open interface and standard database for integrating Advantech software packages. Combined with information exchange for integration with software management execution systems (MESs) and enterprise resource planning (ERP) systems, it can offer vertical applications suitable for the development of factory automation, metal processing, power and energy, water treatment, intelligent building, and oil and gas industries.

To satisfy current IoT and Industry 4.0 requirements, WebAccess can also be combined with private cloud solutions provided by partners from the cloud services industry. Data can be uploaded to the WebAccess cloud platform using the MQTT standard and saved in a database that can be further developed for industrial IoT applications by working with our partners. Through industry–academia collaboration, we anticipate that big data analysis, equipment prevention and maintenance, and other applications will be developed on the cloud platform. Together with our partners, we will create Productivity 4.0 business opportunities.

WebAccess/SCADA IoT Application Software Framework

Advantech WebAccess/SCADA is the first 100% web architecture-based SCADA software. Through an Internet connection or a LAN, standard browsers can be used to create engineering projects, construct screen displays, and perform subsequent project modifications and maintenance. The software supports decentralized architectures and backup systems (SCADA redundancy), centralized database servers, and multilayer network security architectures, making it the ideal choice for companies seeking to integrate automated control as well as remote monitoring and management.

Since its development in 2001, WebAccess/SCADA has evolved from traditional SCADA software to a powerful, easily expandable IoT application software framework. By using a web platform, WebAccess/SCADA incorporates additional interfacing methods and application methods that assist system integrators in vertical markets. From data retrieval to visualization through a cross-platform GUI, backup to a web-based server, and comprehensive intelligent system integration, WebAccess/SCADA is capable of providing you with the most complete system-level solution.

100% Web-Based Architecture

- Complete browser-based development environment
- WebAccess web services allow for remote system evaluation, maintenance, and updates
- Supports up to 32 clients free of charge and simultaneous online monitoring by multiple users
- Real-time remote data synchronization
- Real-time display of warning messages and online confirmation
- Display of real-time and historical data; query/print results from saved data

Industrial big data collection

- More than 32 drivers supporting 450+ devices including Advantech controllers and I/O modules as well as PLCs from major suppliers such as SIEMENS, Schneider, OMRON, Mitsubishi, Panasonic, ABB and Yokogawa
- Supports open and real-time data connections: OPC DA/UA, Modbus, BACnet, DNP3, Ethernet/IP, DDE Server, etc.
- Supports numerous CNC controllers including major CNC networked controllers manufactured by Fanuc, Siemens, Mitsubishi, Heidenhain, and Advantech LNC

Multiple interfaces for information access

- Supports OPC DA/UA servers; acquired I/O data are passed to other system applications using the OPC protocol
- Can be used as a virtual Modbus slave; acquired data can be mapped to register locations on Modbus equipment. Data can be sent to software systems used by other manufacturers by utilizing the Modbus TCP/RTU protocol
- Supports open interface API and web services (RESTful API/SignalR); highly flexible and easily integrated with MES/ERP systems for in-depth industrial applications

Wide selection of data analysis/processing tools

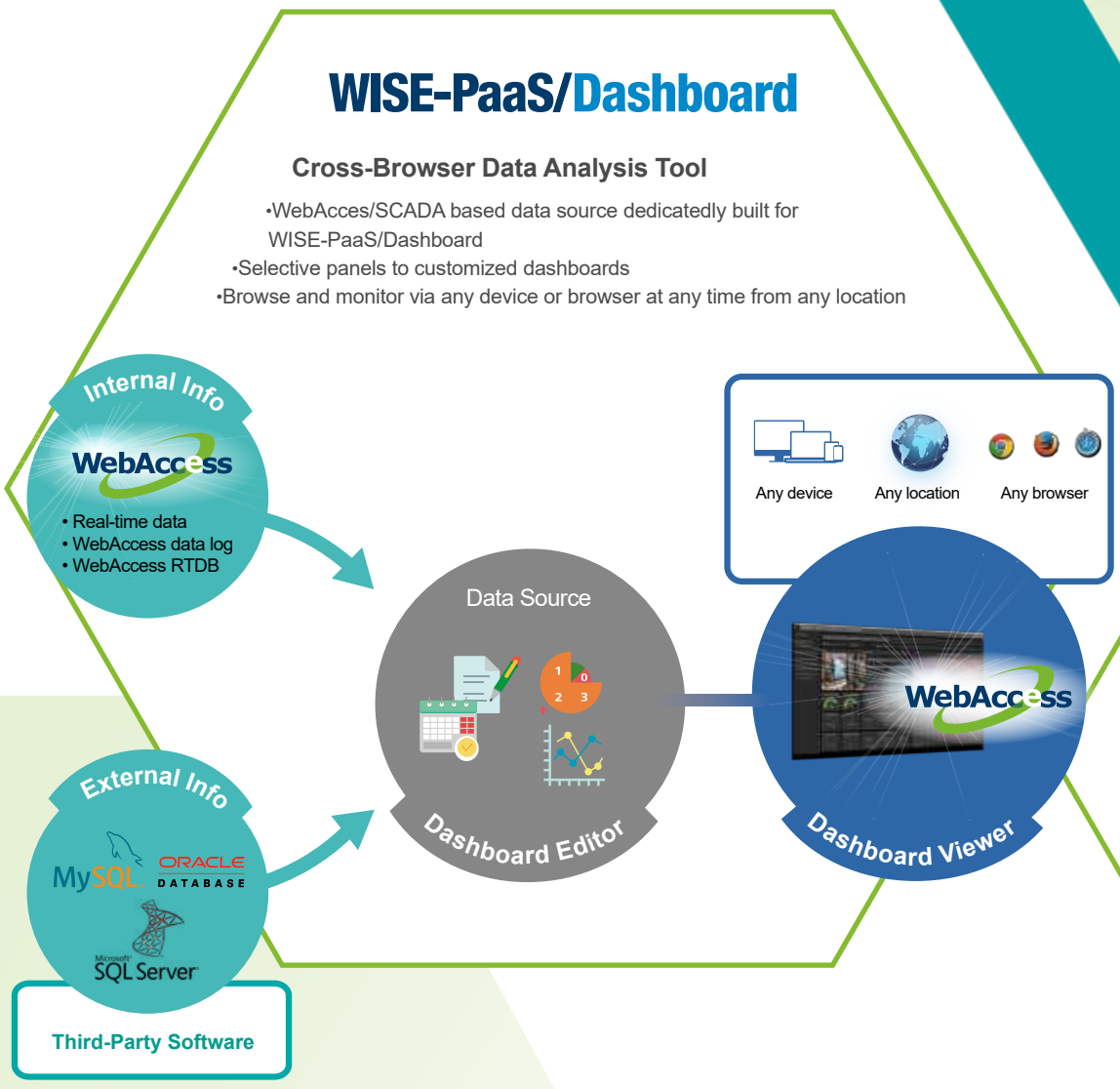
- System-level alert information management through SMS, email, or app notifications
- Can be combined with Excel to easily populate template reports with both images and text. With just a few simple configurations, regular reports can be generated and printed/exported remotely, and email notifications can be broadcasted automatically
- Integrated with Google Maps and Baidu Maps to display real-time data and utilize GPS positioning features pertaining to real-time tracking
- Utilizes ODBC for data storage using standard database systems including SQL Server, Oracle, MySQL, and Microsoft Access; a web-based reporting tool is also provided for database queries

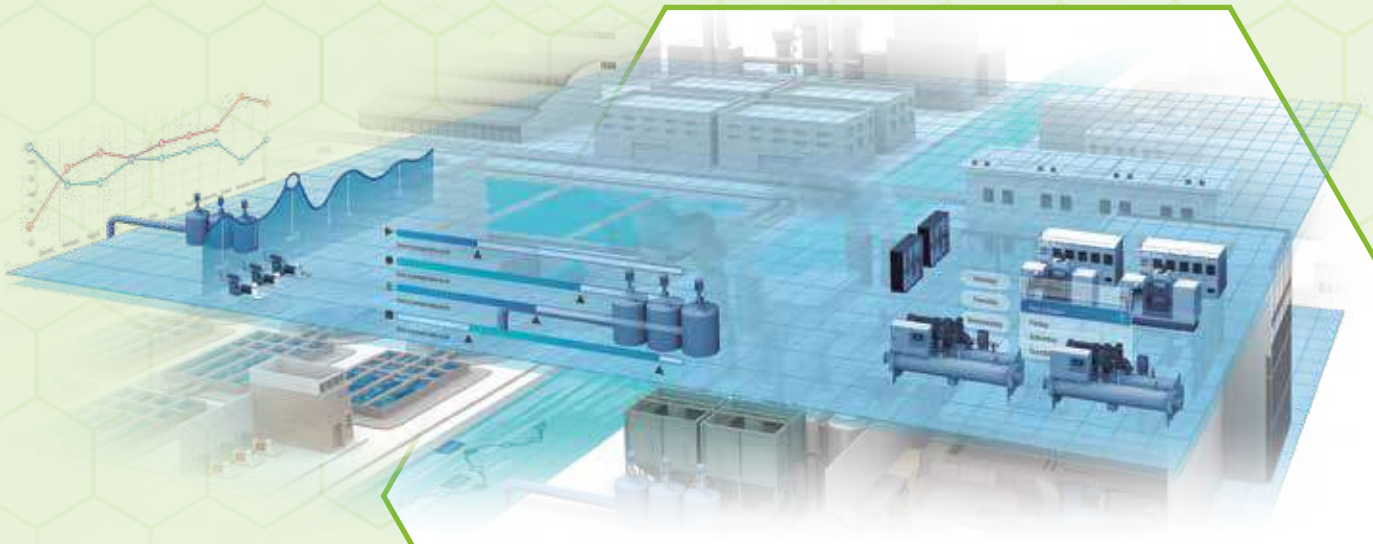
Cross-platform web drawing tools

- Cross-platform dashboard with 40+ built-in widgets means that a comprehensive display can be established after making only a few simple configurations
- Smartphones and tablets can be used for remote browsing
- WebAccess also comes with WISE-PaaS/Dashboard and WISE-PaaS/SaaS Composer, tools for creating customized visualization, meaning that unique dashboard interfaces can be developed according to industry requirements
- Perfectly integrated with Flash Video, for making multimedia creations with unlimited possibilities

WebAccess/SCADA with Data Visualization and Mobile Application

WebAccess/SCADA provides a wealth of data analysis and processing tools for transforming information into business insights in real time. These tools include the web-based cross-platform Dashboard, “App mode” support of multiple operating systems, and video management integration.





WISE-PaaS/SaaS Composer

True 3D Visualization Tool with Real Time Monitoring

- Reconstructs the on-site environment with 100% customization ability & simple/intuitive 3D modeling application
- Integrates WISE-PaaS platform services and data connections, also WISE-PaaS visualization tools
- Allows cross platform usage with browser-based infrastructure and supports diversified types of file import
- Updates critical data in a visually intuitive display
- On-premise version bundled with WebAccess/SCADA based on WebAccess/SCADA data sources.

WebAccess App

Mobile Application Solution

- Remote monitoring and control
- Alarm push notification
- Multi-language support
- Supports iOS 10 and Android OS 5 and above

WebAccess/CNC CNC Machine Monitoring Solution

Advantech WebAccess/CNC is a core software solution for networking CNC machines. Leveraging the 100% web-based architecture of the WebAccess/SCADA platform, WebAccess/CNC provides not only crucial CNC networking functions but also the benefits of SCADA software for CNC machining. With the inclusion of I/O device monitoring capabilities, WebAccess/CNC enables CNC information management and status visualization. Internet Explorer (IE) can be used to browse SCADA web pages and monitor/capture real-time CNC and production status data to improve efficiency and analyze device availability.

Designed specifically for the machine tool market, WebAccess/CNC comes with numerous SCADA drivers and can support a wide range of CNC, I/O, and PLC devices to facilitate equipment data collection and industrial networking application development.

CNC Overview

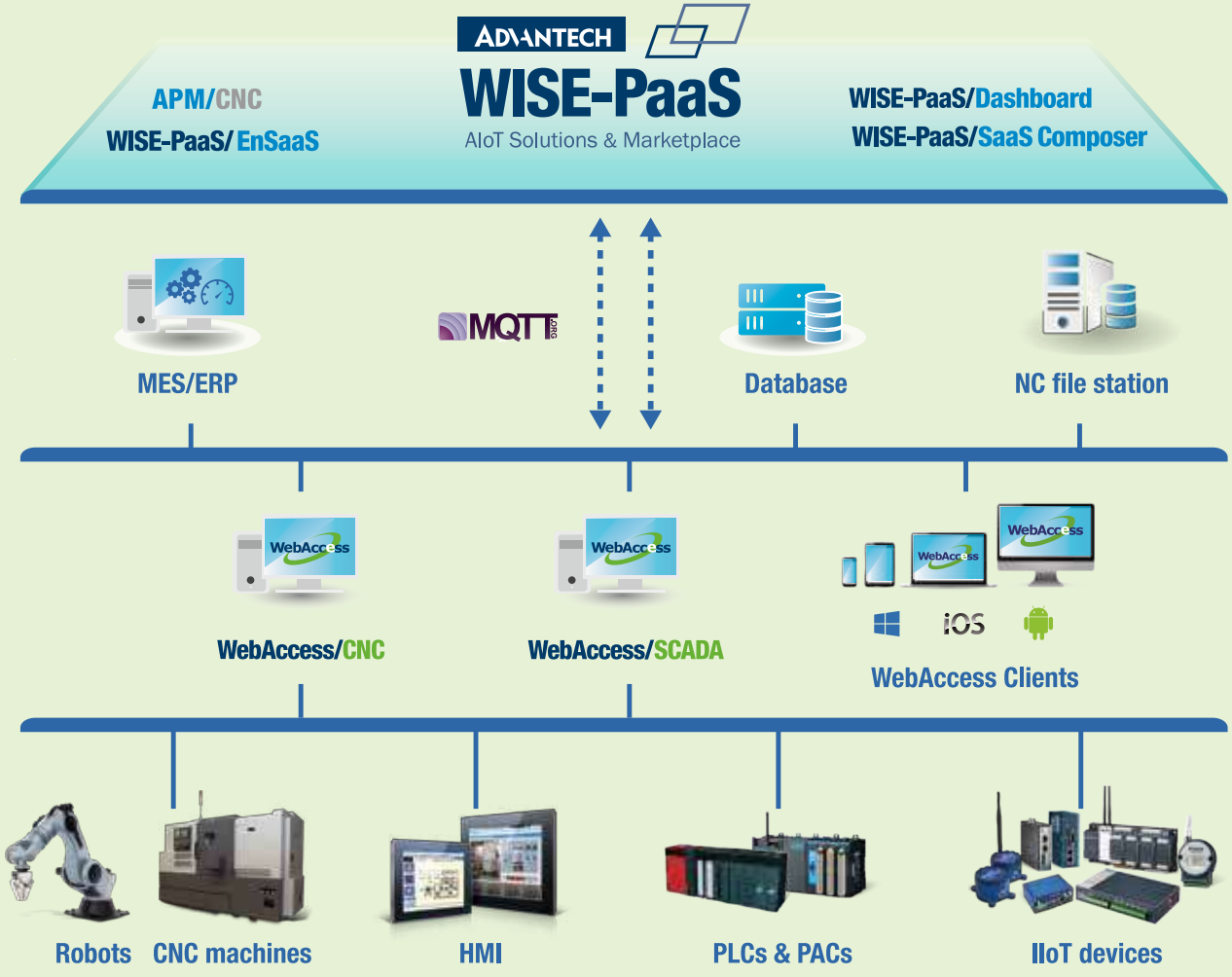
Gives an overview of real-time connectivity, operating mode, CNC status, alarms, and machine availability data

CNC Information

Provides machine coordination, operation, G-code, and spindle information

CNC Availability

Provides CNC availability details to aid with improving production efficiency



Support CNC & Robot Controllers

Haas F1 Team, SYNTEC, FANUC, SIEMENS, MITSUBISHI ELECTRIC, HEIDENHAIN, brother at your side

Standard Communication Protocols

OPC UA, Modbus, MQTT, MTConnect

Alarm & Operations Data

Provides historical data on alarms and CNC operations to facilitate machine maintenance

CNC Program Management

Features a transfer function for NC files and an editing tool for file programming

Parameter Configuration

User interface for modifying coordinate and tool compensation parameters

Servo Spin

Enables real-time monitoring of spindle load to help with analyzing machine wear and damage

Maintenance

Features a configuration interface for preventive machine maintenance

WebAccess/HMI
HMI Runtime
Development Software

Advantech WebAccess/HMI is powerful, intuitive software for developing comprehensive HMI solutions. The ease of integration makes WebAccess/HMI suitable for various application fields. WebAccess/HMI features utility programs, such as a recipe editor, text editor, and data transfer helper, and it supports solution-oriented screen objects, high-end vector graphics, data and operation logging, online/offline simulations, and Microsoft Windows fonts for multilanguage applications. Included in the WebAccess/HMI package is an HMI runtime engine that guarantees reliable open platform performance with minimal system overheads, high data communication rates, sub-second screen switching, and 24/7 operability.

Smart Screen Management

- Shows application screen numbers and names as traditional text or thumbnails
- Screens can be selected from the list for editing, cutting, copying, deleting, or exporting

Project-Based Management for Multiple Applications

- The project tree provides comprehensive functionality for project management
- Global settings and resources are sharable to all applications in a project

Software Support for a Range of Machines

- Four communication links with the option to add more RS-485 and TCP/IP interfaces
- One startup macro, one main macro, four event macros, four time macros, and no limitation on other macro types

Efficient Tools for Easier Design Customization

- Real-time WYSIWYG design makes changes to objects instantly viewable
- Semitransparent dialog boxes ensure that on-screen objects are visible

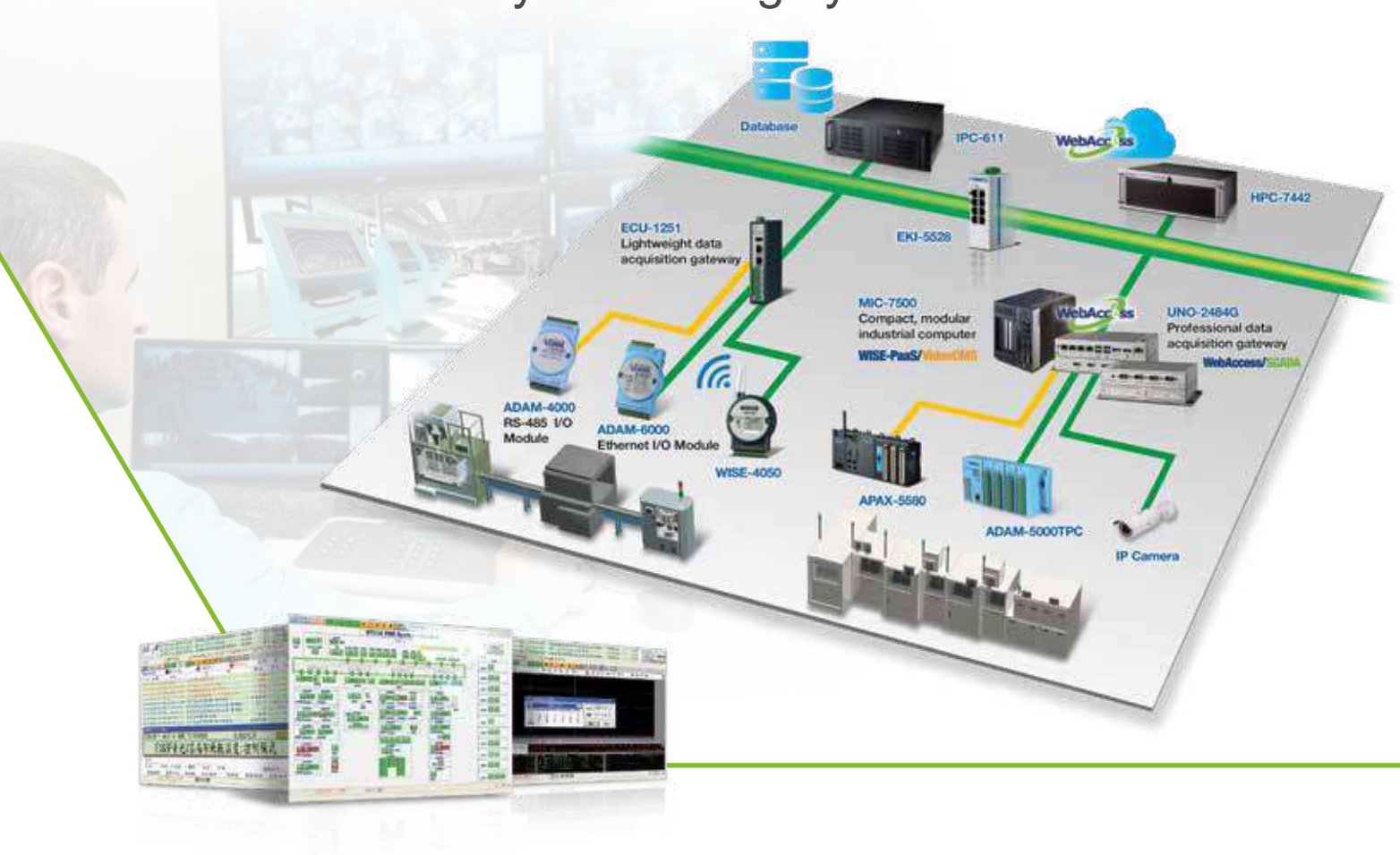
Boost Performance With Simulations

- Offline simulation function allows users to experience their design before deciding to purchase a model
- Communication performance can be evaluated using an online simulation prior to installation

Enhanced Data Security

- Project files, global macros, and password tables can be protected with different passwords
- Copying and uploading of an application can be prohibited in advance

Advantech factory monitoring system solutions



Introduction

For a hi-tech plant that operates 24 hours per day, as soon as the power supply becomes unstable, a fire breaks out, or gas/liquid leaks which cause a reduction in yield, machines will need to be stopped for inspection/maintenance, which can result in a significant amount of money and hard work being lost. If there are problems at any stage of the process and such problems are not discovered in time or resolved immediately, potential losses may be difficult to estimate. Therefore, knowing how to construct a public-facility monitoring system that responds quickly, operates easily, is highly reliable, and can broadcast alert notifications immediately is a crucial risk management step.

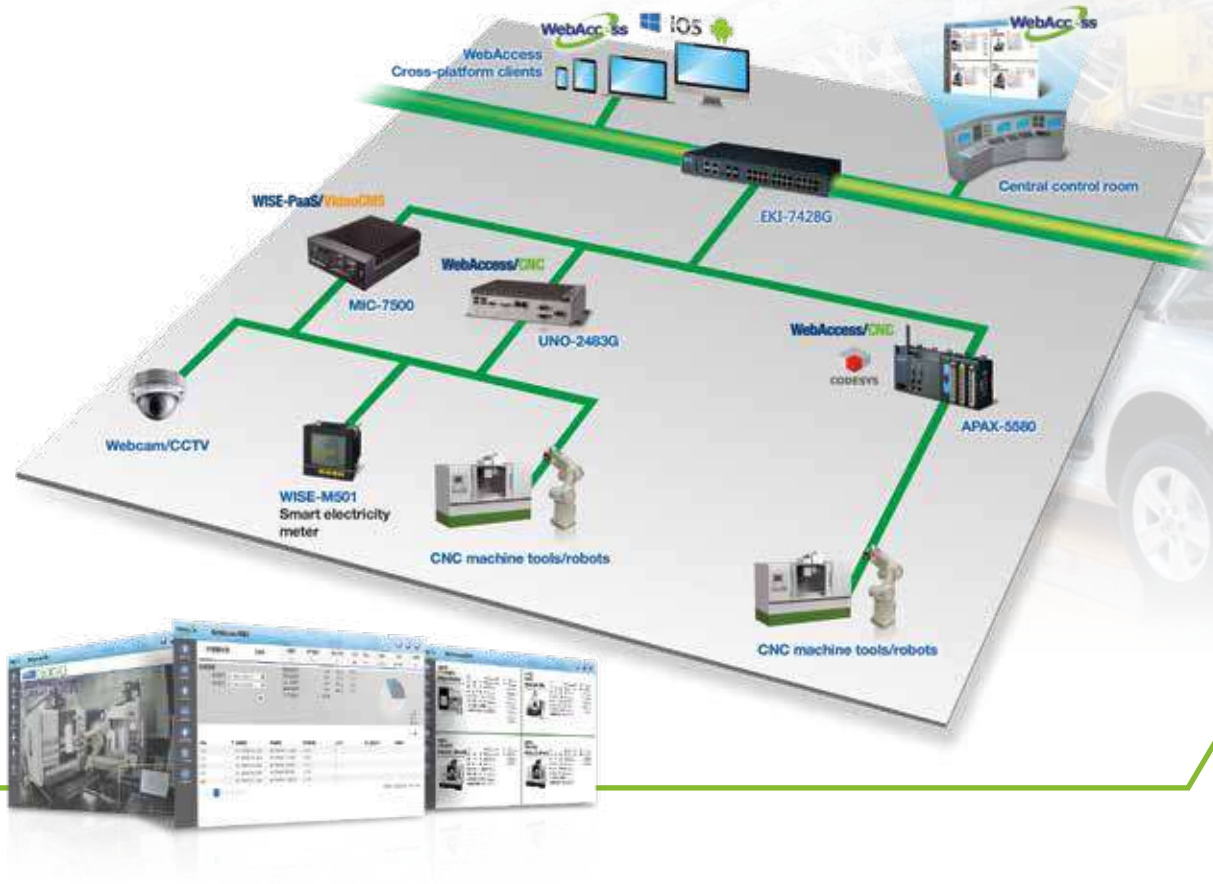
System Overview

Advantech factory monitoring systems adopt a client/server architecture to create a dedicated internal network within a plant. With a monitoring host, data acquisition controller, and packaged software provided by Advantech, easy system operation, data security, and high scalability are achieved. System integration companies can plan and configure plant-monitoring screens. To ensure that your control requirements are met, logic operations and high-order mathematical calculations can be performed using the controller programming software. To meet the demands of hi-tech factories where machines must operate around-the-clock, a redundant framework can be established on the basis of safety and other requirements. A stand-alone server can also be upgraded to a redundant system for centralized monitoring. In the event that the power source or communication network goes offline, operation can be immediately switched to the backup system, allowing system operation to remain stable.

WebAccess Software Features

- Numerous equipment communication drivers are provided to connect with various PLC controller brands. On-site equipment data are collected in real time, and with the user-friendly GUI, the entire factory's current status can be easily managed by the user.
- Cross-platform remote browsing is provided so that on-site operators can monitor equipment status and exception status reports via a browser or by using the app on a smartphone, tablet computer, or other mobile device.
- When connected to an imaging system, a factory's level of safety monitoring can be enhanced through features including facial recognition of factory personnel, personnel flow detection, and on-site smoke detection. Concurrently, when combined with WebAccess/SCADA, alerts can be pushed to the mobile devices of relevant personnel immediately after an abnormal condition is detected.

Advantech metal processing industry solutions



Introduction

In recent years, the trend of intelligentization has become more prevalent in the manufacturing industry. Using sensors and other networking technologies, manufacturers are seeking better ways to collect and compile equipment data at production sites. Big data analytics and machine learning are being utilized to visualize data in the realization of smart production management, the objective of which is to increase production efficiency.

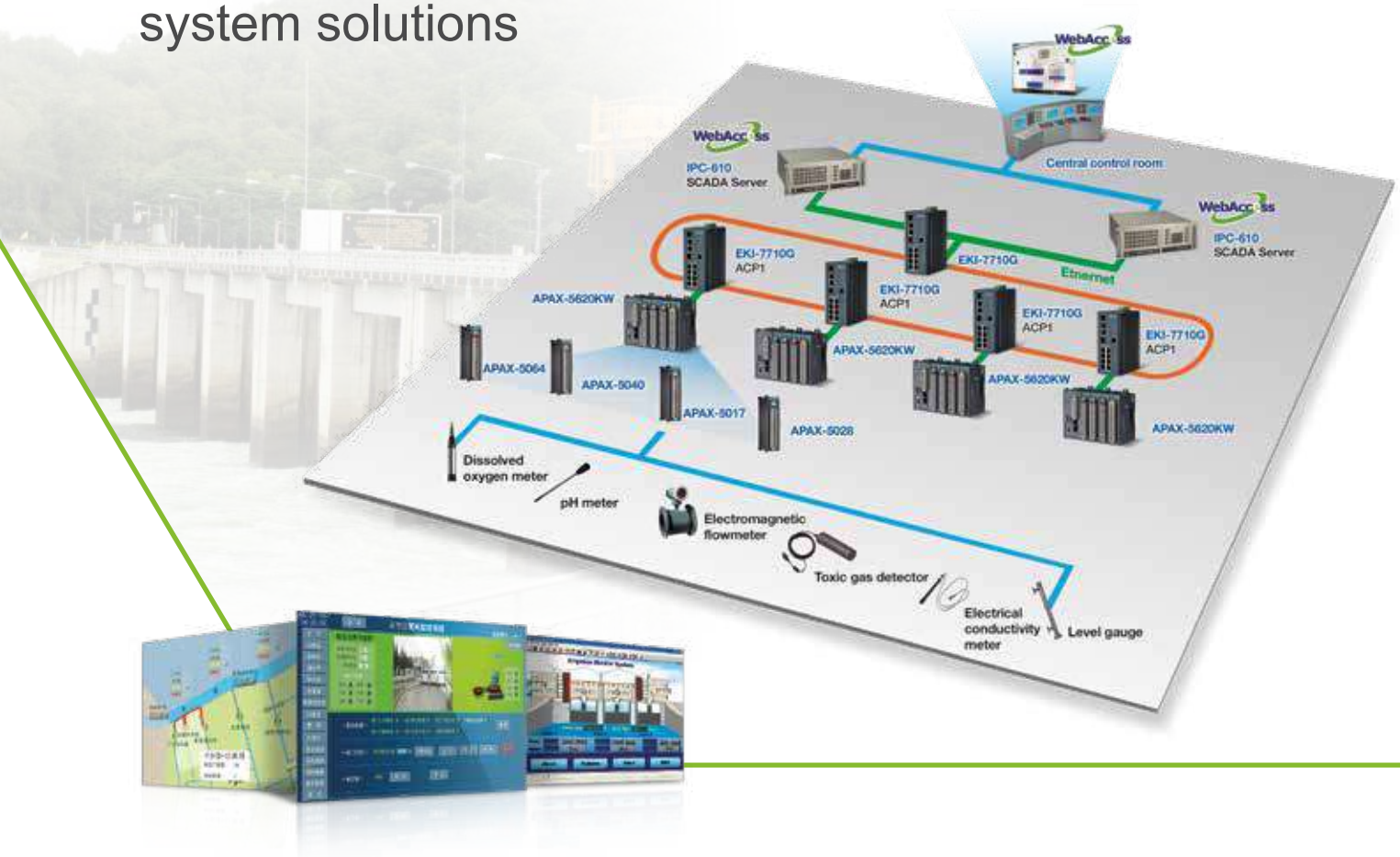
System Overview

Advantech's metal processing industry solutions use WebAccess/CNC networking software as the core. The WebAccess/SCADA architecture provides a networking interface targeting major network controllers currently on the market. Users no longer need develop their own interfaces, and additional sensors are no longer necessary to collect and monitor CNC data. WebAccess supports multiple communication protocols and can thus be integrated with various types of factory equipment such as PLC, HMI, and I/O devices. Numerous smart image analysis functions are provided through the WISE-PaaS/VideoCMS intelligent video core module. Through the collection and integration of factory data, real-time production data can be obtained via the control room or by using a mobile device, thus realizing smart production management and improving production efficiency.

WebAccess Software Features

- Supports major CNC network controllers on the market, including those produced by Fanuc, Siemens, Mitsubishi, Heidenhain, and Advantech LNC
- Projects are automatically constructed after going online; CNC monitoring functions are provided to shorten development times. The system is open and can thus be re-engineered
- Supports NC file transmission; scheduling features in WebAccess ensure that uploading/downloading times are automatically set
- Fully supports all features from WebAccess/SCADA Professional; Super SCADA multilevel architecture is used for building distributed projects

Advantech water treatment monitoring system solutions



Introduction

In today's society, sewage treatment plants are an important part of a city's infrastructure. To ensure the quality of purified water, sewage or wastewater generated by homes and businesses must go through multiple treatment processes to remove solid waste, organic compounds, and numerous contaminants. With such complex operations, which must be performed around the clock, careful and strict management is essential to avoid errors that would likely occur if monitoring were conducted by way of manual inspection. In addition, fluctuations in water quality as well as mistakes due to human error may cause environmental pollution from sewage not being treated properly. Therefore, automatic monitoring and control systems play a critical role in ensuring that treated sewage meets environmental regulations established by the government prior to being discharged into waterways or rivers.

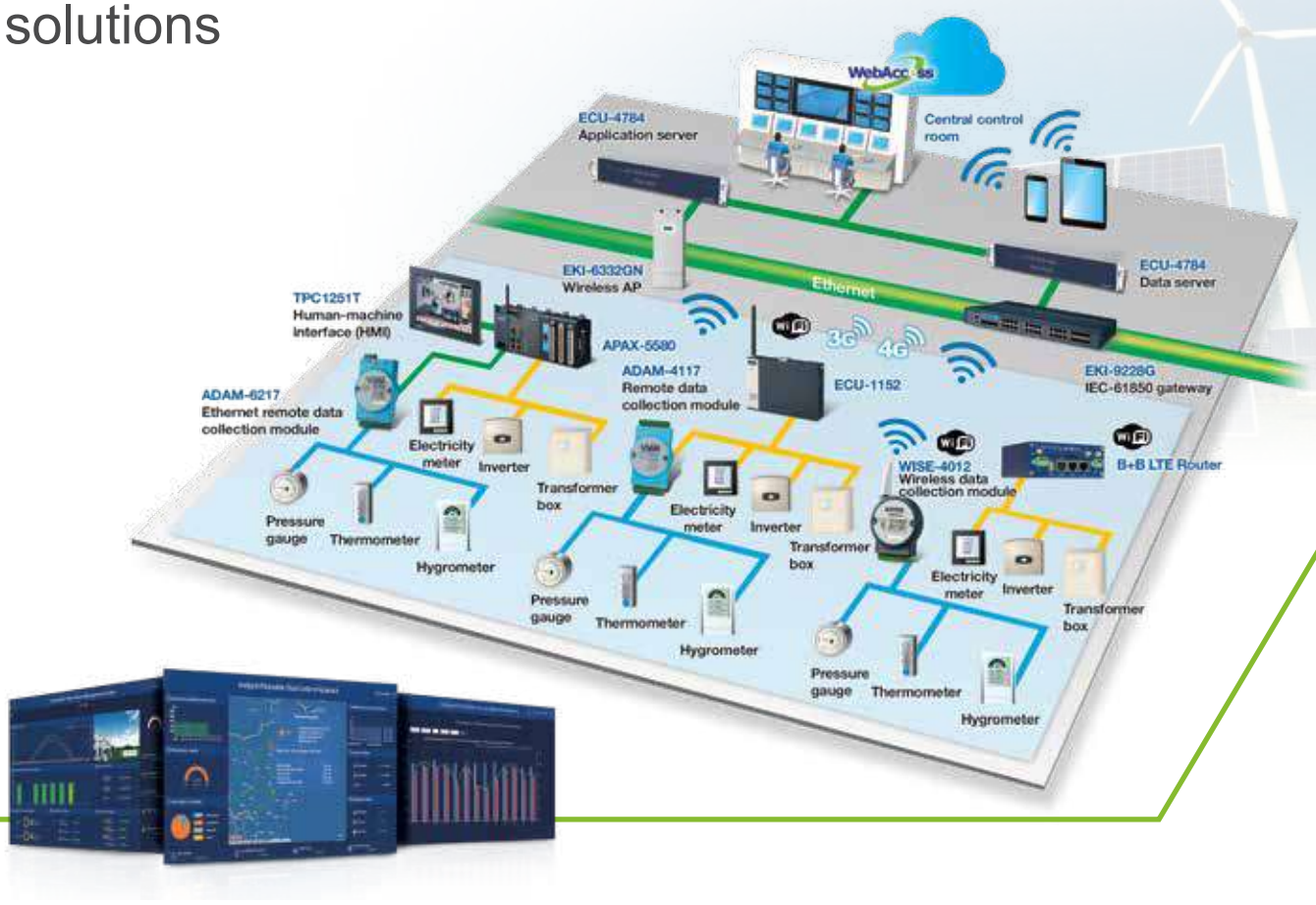
System Overview

Advantech's water treatment monitoring system solutions offer a means for programmable automation controllers (PACs) to realize sewage treatment process automation. These include data acquisition and transmission equipment for transmitting sensor and controller data to the control center. The HMI installed on the server in the control center and the remote monitoring software WebAccess/SCADA are based on browser/server (B/S) network architecture. In addition to centralized data processing, clients are also able to browse and control the system remotely, such as by starting or stopping the operation of pumps. The solution also has a comprehensive redundancy system to ensure reliable and continuous system operation, which obviously has a significant impact on sewage treatment efficiency.

WebAccess Software Features

- With 100% web-based architecture, users can develop projects and perform remote monitoring/maintenance using a standard web browser, which will shorten project development times for engineers
- Each station's monitoring system can be easily moved up with the Super SCADA web-based architecture. Data can be kept in different layers at each area's control center or the main control center. The break point resume transfer method ensures data continuity
- Integrated with Flash, Google Maps, and other tools for presenting data in a format that is easy to understand
- Excel reports can be developed to present data in both text and graphical formats. Reports can be generated automatically daily/monthly/annually, which can be sent via emails in PDF or CSV formats to specified operators automatically

Advantech solar power management system (SPMS) solutions



Introduction

As large-scale solar power stations are being built and operated all around the world, issues concerning all power station owners and power grid companies include determining real-time data accuracy/integrity, long-term data storage, monitoring operating status, and meeting monitoring requirements of upper-level systems or grid dispatch systems. By integrating software, hardware, and new IoT technologies, Advantech has constructed a unified monitoring and management system that can monitor and manage different types/models of inverters and other equipment produced by different suppliers, thus aiding solar power stations in optimizing their operations and maintaining system efficiency.

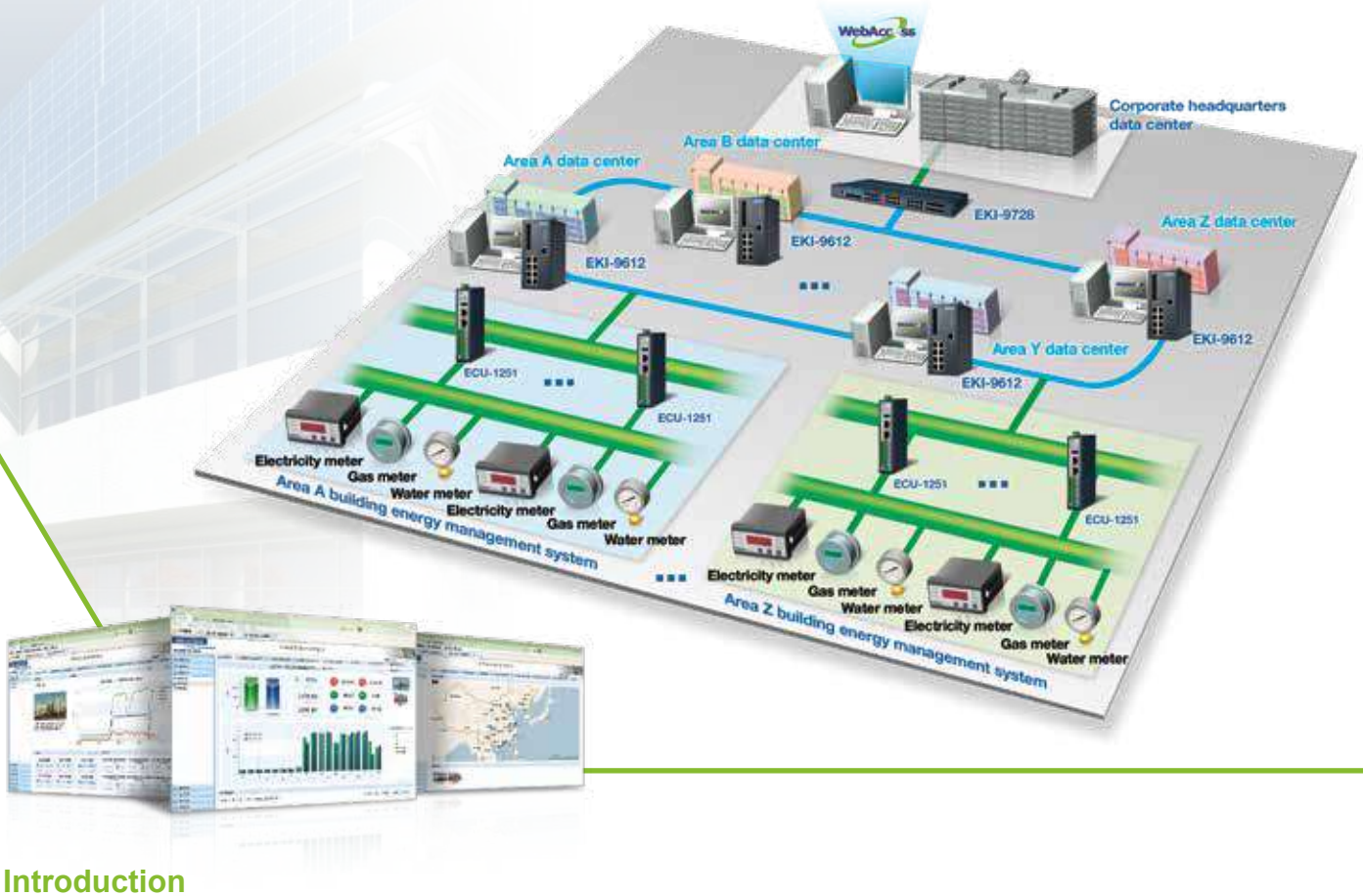
System Overview

Advantech's solar energy monitoring and management system solutions mainly include WebAccess/SPMS software, data acquisition modules, communication modules, and industrial servers. The overall operations/maintenance solution, which features integrated software and hardware, includes data acquisition, transmission, evaluation, and cloud management technologies that satisfy the various operational requirements of solar power stations, system integrators, investors, owners, and other levels of users.

WebAccess Software Features

- Comprehensive software/hardware solution that can transmit and retrieve data to and from solar power stations and perform centralized remote monitoring and analysis. All hardware and software go through rigorous testing and receive proper certifications to ensure that the strict requirements of the power industry are met and that the system will operate reliably in the long term
- Overall monitoring processes can be organized into a multilayered structure including groups, power stations, collection stations, equipment overview, and detailed power equipment, thus facilitating top-down visual management
- With a geographic information system, data from the power station can be compiled and displayed for the real-time monitoring of operating parameters for equipment such as string inverters and electricity meters
- Remote monitoring with a smartphone app, with configurable monitoring screens and data reporting settings; the system can be integrated easily with software applications used by other manufacturers and can thus be re-engineered

Advantech building energy management system solutions



Introduction

Companies from all over the world are involving themselves in energy saving and carbon reduction initiatives; such efforts not only lower operating costs but also fulfill corporate social responsibilities and enhance a company's image and future competitiveness in green trading. Among such initiatives, the energy efficiency of buildings plays a very key role. By using summarized energy consumption data to create graphical reports, management can easily estimate whether a building's energy consumption is reasonable and suggest appropriate improvement measures.

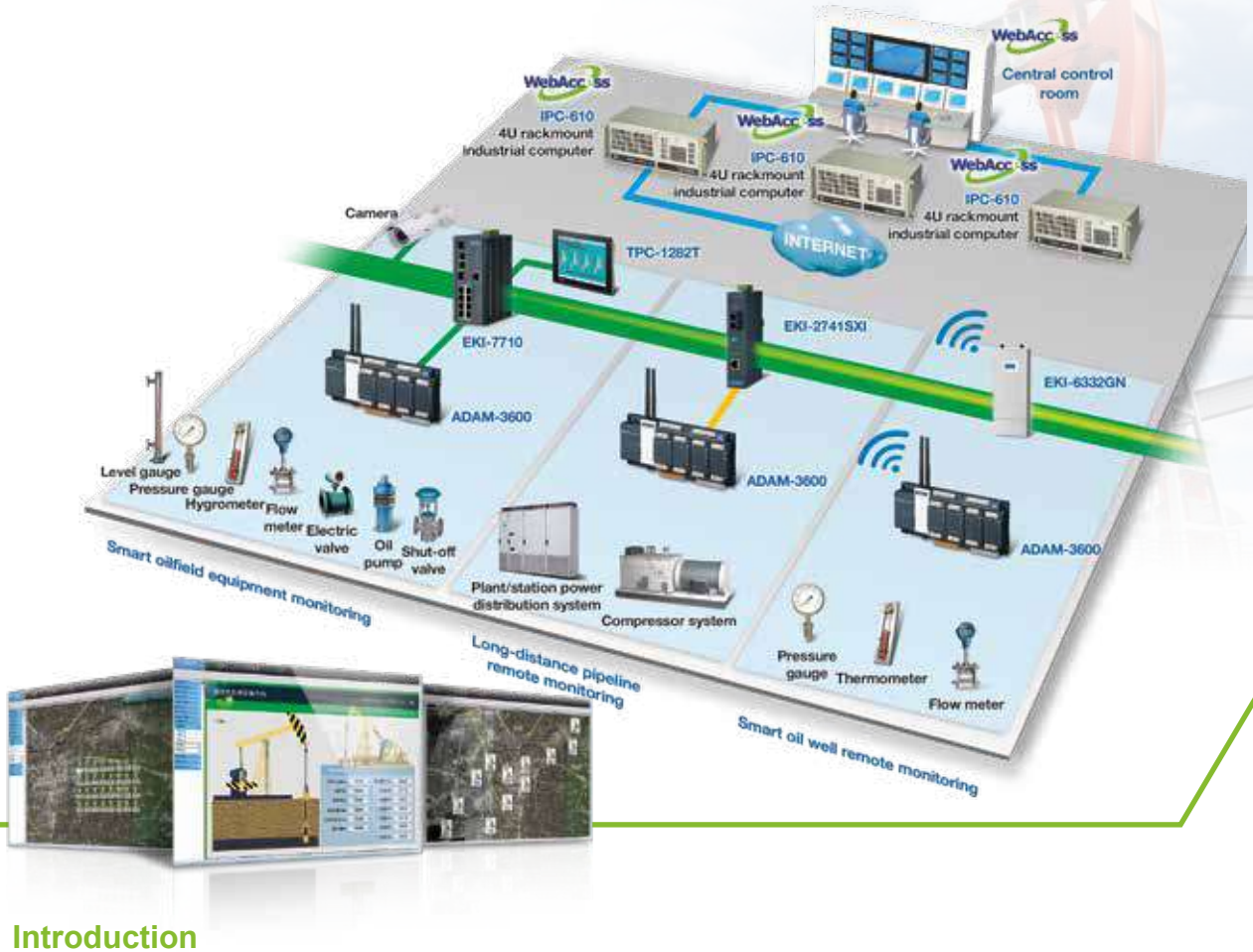
System Overview

Advantech EMS energy management solutions provide necessary software/hardware for establishing a complete energy management system, including terminal digital electricity meters, industrial computers, energy management software (WebAccess/EMS), and database servers. By creating a highly integrated energy management system solution, management personnel can access consumption data in a format that is easy to read and understand with just the press of a button; this applies to individual buildings, area complexes, or even the branch offices/factories of multinational corporations.

WebAccess Software Features

- Completely based on the web browser and integrated with WebGIS, business owners can gain a better understanding of a building's geographic information. In addition, centralized management can be conducted remotely for small and standalone buildings or even city complexes
- Rich set of customizable reporting features. In addition to establishing scheduled reports, users can also configure report formats to include text, images, and charts from the dashboard, meaning that users can dynamically an intuitively view valuable data of interest, such as data on energy consumption, energy costs, and evaluation results
- Through the cross-platform dashboard system, users can view a building's energy consumption data (electricity, water, gas, cooling capacity, and heating capacity) from their smartphone, tablet computer, and other portable devices; this includes access to information such as real-time energy consumption status, energy consumption index, and energy consumption trends

Advantech oil and natural gas system solutions



Introduction

Oil and natural gas industries remain the core of the world's main energy supply. From exploration and development as well as drilling and production to fuel transportation and processing, building a reliable, efficient, and precise monitoring and control system is critical to every stage of the oil and natural gas industries.

System Overview

With data acquisition at the sensing layer, data communication at the transmission layer, and WebAccess/SCADA as the network intermediary software linking the application layers, Advantech's oil and natural gas IoT solutions can provide on-site data collection and real-time remote monitoring throughout the entire process from oil and gas refining to long-distance pipeline maintenance. Authorized personnel can access shared databases from any end device with an Internet connection, at any time and from any location. Problems can be resolved by using just one click, aiding oil and gas producers in building a comprehensive IoT system that covers oil and gas production, transportation, storage, and sales.

WebAccess Software Features

- Open platform based no B/S Internet technology, which can be easily connected to application-level management software; this low-cost solution can be quickly attached to large, complex systems while maintaining future expandability
- By combining with the ADAM-3600, WebAccess/SCADA can manage collecting and uploading data from all equipment at an oil well. Through the Super SCADA architecture, data can be automatically uploaded to WebAccess/SCADA; the break point resume transfer feature ensures data integrity and continuity
- Through remote monitoring, plant equipment can be monitored and controlled remotely. Alert notifications can also be sent to users via the smartphone app so that appropriate response measures can be implemented at a moment's notice

WebAccess/SCADA Software Specifications

Functions	
OS	Windows 8.1 Pro, Windows Server 2008 R2 or later, Windows 10 IIS7.5 & Net Framework 4.5
Number of I/O Tags	150+100*n/Unlimited
Number of Internal Tags	150+100*n/Unlimited
Number of Extensible Tags	100*n
Number of Web Clients	32 (free)

Communication	
Number of Communication Ports per SCADA Node	60
Number of Devices per Communication Port	256
Number of Drivers	Supports over 450 types of PLCs and RTUs
OPC DA Client	Yes
OPC UA(DA) Client	Yes
MQTT Communication	Yes

Graphics	
Number of Graphic Pages	Unlimited (subject to HDD size)
Variables per Graphic Page	4,000
Built-in Gallery	Yes
Tag Source	Global
Multitouch Gesture	Yes

Web-Enabled Integration	
Video	Yes
Google Maps and GPS Location Tracking	Yes

Visualization	
Cross Browser and Platform	Yes
WISE-PaaS/Dashboard	Yes
WISE-PaaS/SaaS Composer	Yes

Alarm and Trend Log	
Number of Alarm Logs	30,000
Number of Action Logs	30,000
Number of Data Logging	Number of I/O tags license x 2
Alarm Groups per SCADA	9,999
Alarm Management System	Yes
Max. quantity/group of Real-Time Trend	12 records/group
Real Time Trend Tag Source	Global node
Max. quantity/group of Historial Trend	12 records/group
Historial Trend Tag Source	Global node

Open Interface	
Modbus Server	Yes
BACnet Server	Yes
ODBC and SQL Query	Yes
OPC DA Server	Yes
OPC UA (DA) Server	Yes
DDE Server	Yes
Windows API	Yes
RESTful API	Yes
SignalR	Yes

Network Architecture	
SCADA Node Redundancy	Yes
Device Redundancy	Yes
Super SCADA with Breakpoint Resume	Yes

Report	
Web-based Report	Yes
Excel Report	Yes
Export to Excel	Yes
Send Email by PDF or Excel	Yes

Database	
Real-time Database	Yes
Database Server	SQL Server/Oracle/MySQL/MS Access/PosgreSQL
ODBC and SQL Query	Yes

Receipt	
Recipes per Project	Unlimited (subject to HDD size)
Unit per Recipe	999
Item per Unit	999

Scheduler	
Holiday Configuration Group	9,999
Time Zone Group	9,999
Device Loop Group	9,999
Equipment Group	9,999
Scheduler Reservation Group	9,999
Class Scheduler	Yes

Others	
Script language	TclScript/VBScript/JavaScript
Data Transfer	Yes, Global Tag
Supports IPv6	Yes
Supports https	Yes
User Management	Yes
Demand Control	Yes
WebAccess Express	Yes
WebAccess App	Yes (version 8.3 and later)

WebAccess/CNC Software Specifications

Advantech WebAccess/CNC		
Number of CNC connections		1/5/10/20 CNC connections (maximum of 20) per CNC runtime
Supported CNC Controllers	Fanuc	0i-A/B/C/D/F, 16i, 18i, 21i, 31i, 32i
	Mitsubishi	M700/M70, M800/M80 series
	Heidenhain	iTNC 530
	Siemens	840D, 828D (OPC/UA license required)
	Advantech LNC	M/T 2800/2900/5800/6800/6900/7900 (*)
Number of Built-In I/O Tags		75
Number of Extensible Tags		75/150/300/600/1,500/5,000
Number of Extensible CNC Connections		5/10

***Advantech LNC controller connections are charged according to the number of I/O tags.**

WebAccess/HMI Software Specifications

One Design for all Models	
Item	Maximum
Number of Panel Applications	128
Number of Languages	10
Number of Font Templates per Language	20

Limitations for One-Panel Applications	
Item	Maximum
Number of Tags	9,990
Number of Communication Links	4/16
Number of Screens	7,999
Number of Discrete Alarm Blocks	64
Number of Recipe Blocks	64
Number of Data Loggers	65,535
Number of Schedules	80

Download WebAccess App

iOS

Android

Online Resources

For a free trial version, instruction manual, or other resources, please visit:
www.advantech.com/industrial-automation/webaccess

WebAccess Website

Regional Service & Customization Centers

China	Kunshan 86-512-5777-5666	**Taiwan**	Taipei 886-2-2792-7818	**Netherlands**	Eindhoven 31-40-267-7000	**Poland**	Warsaw 00800-2426-8080	**USA**	Milpitas, CA 1-408-519-3898

Worldwide Offices

Asia

Taiwan

Toll Free	0800-777-111
Taipei & IoT Campus	886-2-2792-7818
Taichung	886-4-2372-5058
Kaohsiung	886-7-392-3600

China

Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Chengdu	86-28-8545-0198
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Japan

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Osaka	81-6-6267-1887
Nagoya	81-0800-500-1055
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