

IGSS®
Interactive Graphical SCADA System

EcoStruxure™
Innovation At Every Level

INSIGHTS

IGSS DIGITAL BROCHURE

igss.schneider-electric.com

Life Is On

Schneider
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Quick overview

History

IGSS is full featured automation software – a SCADA system for process control and supervision. In 1984 IGSS was the first in the world to develop an **object oriented** and mouse operated SCADA system under the name of IGSS – Interactive Graphical SCADA System. IGSS is a proven system in industries such as:

- Water Supply
- Wastewater / Wastewater Treatment
- District Heating
- Electric Power
- Energy
- Gas Distribution
- Marine
- Traffic Control

All-in-one license

Our intuitive software is a fully-featured out-of-the-box SCADA or Supervisory HMI system and includes all features required for an “All-in-one” license to create turnkey automation projects. It can be customized to address the customer’s automation requirements and business needs. No extra modules or add-ons are required to create a turnkey SCADA project.

One solution - one partner

Safe delivery of future-proof solutions. Achieve high safety and security in delivery by choosing one solution that can encompass all your needs from one partner instead of multiple solutions from different partners.

Simplify the daily work

Integrated product features can assist and simplify the daily work. The integrated features help to optimize the System Integrator work processes and support the operators by helping to prevent many common errors.

Outstanding support

Our Nordic based support and development department are held in high regards by our customers and we offer best in class support. We are quick to respond and take a vested interest in our client’s obligations to their customer’s businesses. There is always a solution for every challenge.

IGSS Master

The IGSS Master module is a centralized entry point in its structure makes IGSS easy and intuitive to use

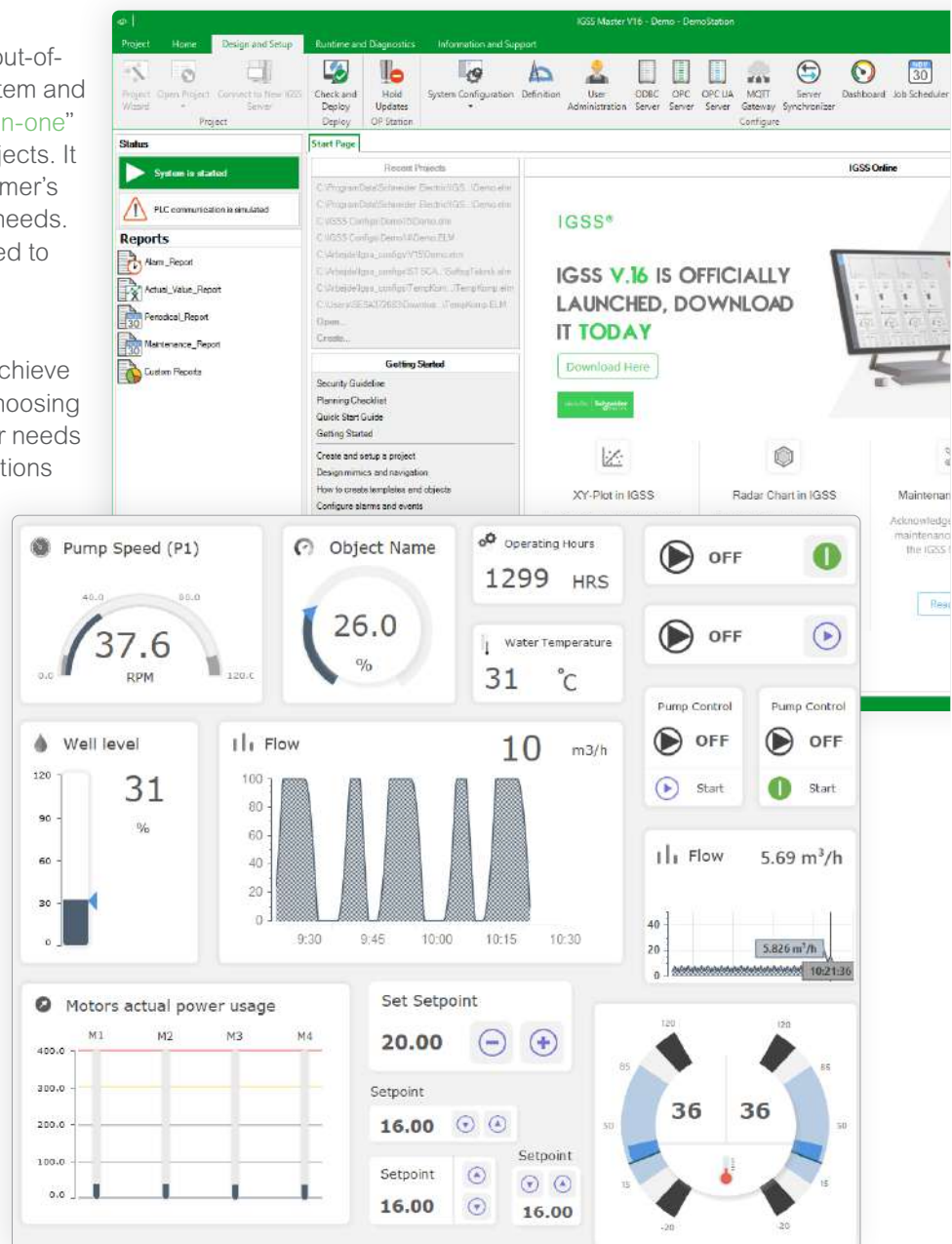
and provides accessibility to all necessary tools when needed, whether it comes to project development or monitoring.

Designing and monitoring

Explore and get creative with the design tools available in the Definition module. Develop and customize the process diagrams to fulfil any needs. Monitor and control process diagrams in the Supervise module.

Build-in alarm & preventive maintenance module

The Maintenance module is supplied free of-charge with an initial IGSS installation. A maintenance job can be created quickly by an operator or a system integrator and can be set up to be triggered based on selection of different production criteria. The maintenance job can be linked to an alarm in IGSS, thus alerting the operator via the Supervise interface and the Alarm module.



Partner strategy

The development of IGSS is based on a close collaboration with a broad range of very skilled and committed partners - all of whom are using IGSS in many industries around the world. With more than 30 years of experience in this business our focus remains the same: to continuously assist and support our partners when they use and promote IGSS, and to provide a great easy-to-learn and easy-to-use SCADA system for system developers and end-users.

Partnership benefits with IGSS

- Free development system – no license and service fees.
- Great access to technical support – fast and easy.
- Free project consultancy support for the first new project.
- Online training from our website and YouTube.
- Attractive partner discounts and competitive prices on smaller systems up to mega systems with 400,000 objects.
- Access to on-site advanced courses.
- Access to online coaching and webinars.

Benefits for the system developer

- "All-in-one" license.
- A fully featured IGSS SCADA or Supervisory HMI system. No extra modules or add-ons are required to create a turnkey SCADA project.
- An integrated preventive maintenance system is included for free.
- A fully featured Alarm module.
- Create informative and attractive reports using drag-and-drop.
- Driver support - supports more than 90 drivers.
- Intuitive, easy learning curve with IGSS.
- Logical object-oriented system structure.
- Link the same alarm text to multiple objects.
- No scripting skills are required.
- Strong playback feature to review past events.
- Specify commands, states, alarm-in and alarm-out in one template.
- Strong calculation features, to execute object calculations based on event or time. Calculations can be executed based on predefined conditions.
- Single tool operation – same platform for development and runtime functions.
- Use up to ten tags or I/O points in one IGSS object (no setup required).

Benefits for the system end-user

- All-in-one license – The IGSS standard version includes all software modules.
- Connectivity with numerous PLCs, RTUs and standard protocols with drivers.
- Easy report configuration and user defined curves and dashboards.
- Scalable from small systems up to systems with 400,000 objects.
- Preventive maintenance program included in the license.
- Favorable support and update agreement and free

online training.

- Modern and powerful data visualization tools.
- Full backwards compatibility to older systems.
- Alarm notification by SMS or e-mail.
- IGSS Mobile App with alarms, maintenance, trends etc.

IGSS version overview

Here is a list over the 3 supported versions of IGSS software and the operating system they can run on.

IGSS version	Ver. 16	Ver. 15	Ver. 14
Server 2019	✓	✓	✓
Server 2016	✓	✓	✓
Server 2012	✓	✓	✓
Win 10	✓	✓	✓

Supported languages



IGSS structure

Object oriented configuration

Object oriented configuration is the cornerstone of IGSS, and in a visualization system it is a major time-saving factor. This approach in IGSS ensures consistency and flexibility in design and provides a method to dynamically modify configurations. Furthermore, it offers reusability of individual process components as well as whole configurations.

As an example, an analog object can include the following Atoms: High scale, Low scale, High Alarm, High Limit, Actual Value, Set Point, Low Limit, Low Alarm, Alarm-In, Alarm-Out.

- Analog object: 10 atoms and 6 free value atoms.
- Digital object: 4 atoms and 6 free value atoms.

Free values are used to retrieve and store values from PLCs in addition to the actual value atoms. However free values have their limitations and cannot be used to trigger alarms and are not accessible to operators in the object command.

Object Type	Description	Example
Analog	An analog object is used for process components that can take on any value within a measuring range.	Level gauge, flow meter, temperature gauge.
Area	An area is a collection of diagrams, graphs and other IGSS objects. Areas are used to divide an IGSS configuration into logical parts. This may be the individual subprocesses in a production line.	One area allocated per sub-process: "Raw material", "Unpacking", "Assembly line", "Packaging", "Distribution".
Counter	A counter object may take on any value up to a given maximum. The counter can be reset by the operator or set to a preset value.	Hour count, minute count, second count, Start/stop registration. Number of revolutions per minute.
Diagram	A diagram is a graphical process picture showing a section of the monitored process. The operator monitors and controls the process components from the diagram.	"Assembly line 1", "Assembly line 2", "Assembly line 3"
Digital	A digital object is used for process components that can take on a finite number of states and commands.	Valve, pump, motor
Graph	A graph is a chart showing the values or states of up to ten IGSS objects. The data source can be either log data or reduced values.	Temperature gauges, level gauges, flow meters
Scaling	A scaling object maps one set of values to another set of values. It is typically used to convert one set of values received from the PLC to another set of values that the operator can relate to during supervision.	Fahrenheit to Celsius
String	A string object is a text field displaying a message related to the monitored process.	"The cleaning process is in progress"
Table	A table object is a collection of up to ten analog measurements that have the same measuring range and alarm limits.	Temperature gauges (T1, T2, T3, T4, T5, T6, T7, T8, T9, T10)

IGSS object

An IGSS object typically represents a physical component in the process, such as a pump, a valve, a motor, a level gauge, a flow meter, etc. Beside these physical components, IGSS also has a number of internal object types; see above illustration for further details. IGSS objects can be represented graphically in multiple ways in a process diagram: in shape of progress indicators, as bars, radar and pie diagrams, as filled rectangles or icons etc. These representations are called Descriptors in IGSS and can be connected to the different object types.

Atoms and free values

In contrast to other SCADA systems, IGSS collects all data relating to one physical component into one IGSS object. This means that one object may contain up to ten I/O points or data tags. In IGSS, we call these "Atoms".

I/O objects and non-I/O objects

In IGSS objects are split into Input/Output objects and non-Input/Output objects.

- Input/Output objects are designed to integrate with external devices such as PLC machines.
- Non-Input/Output objects cannot integrate with external devices. Examples of non-Input/Output objects include Area objects, Diagram objects and Template objects.

The first 1,000 non-Input/Output objects are included in your IGSS license.

Server and client redundancy setup

IGSS is a genuine client/server technology for best performance and reliability. The system's architecture realizes a new kind of distributed information network which results in:

- Fast response times and incredible processing performance.
- Immediate changes in plant information are forwarded by the IGSS server to the operator stations, or clients.
- Less time-consuming special requests for data updates – the changes are automatically broadcast over the network.
- IGSS application can be accessed with a wireless connection or via the Internet.
- Instant real-time or historical process information – an invaluable tool for fine-tuning daily operations and for implementing strategic planning.

In order to increase stability and reliability, and to always be available, IGSS can be set up in the following ways:

Dualized servers

The dualized server solution protects your system against a server failure, which invariably results in loss of data. Both the primary server and the secondary server have direct connections to the PLCs in the system and collect the same data. The dualized server requires PLCs that support two simultaneous connections.

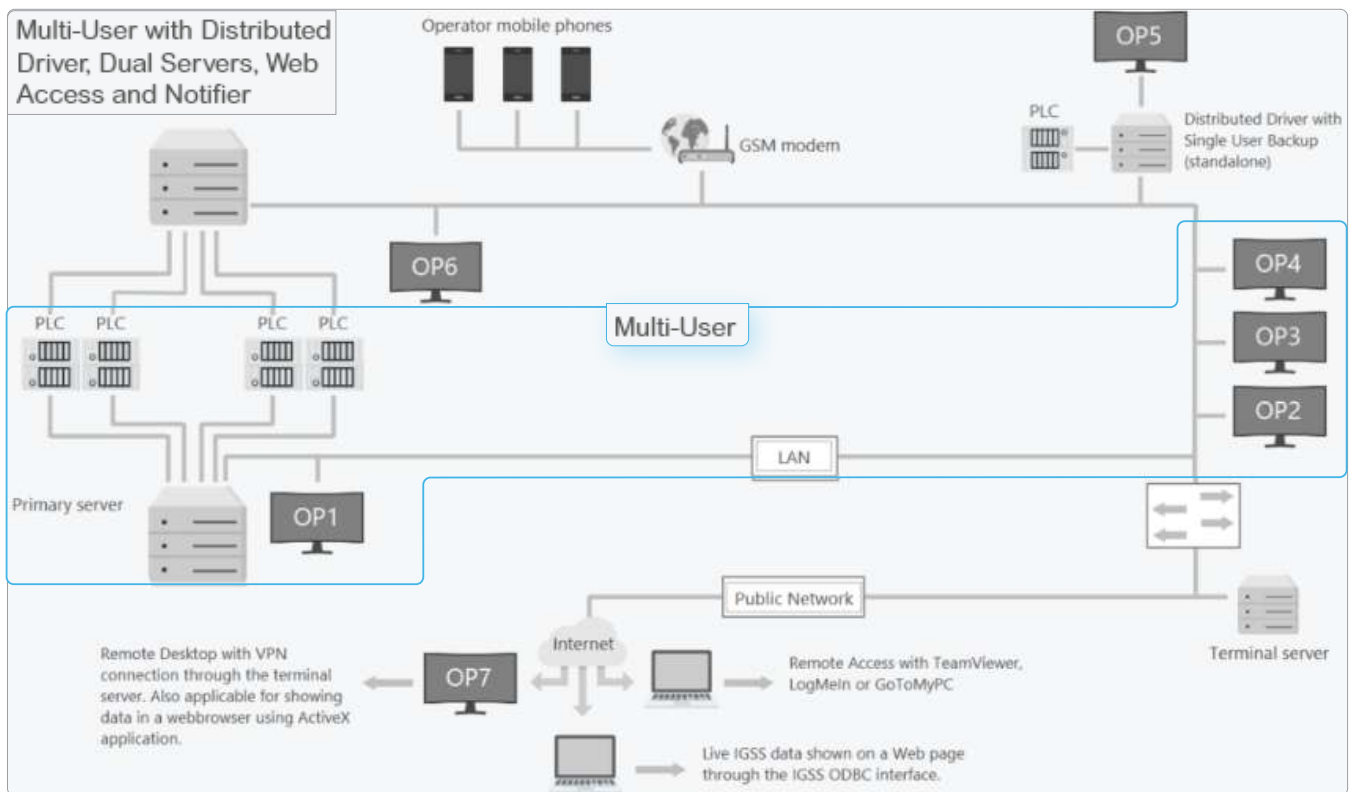
station is connected to the IGSS server and the drivers pass data on to the server.

Single user backup system

With a Single user backup option a station is able to:

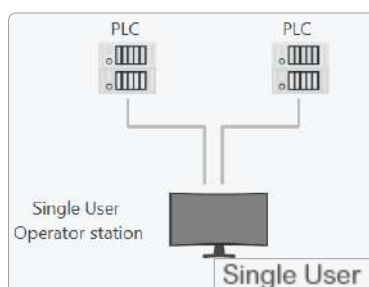
- Turn into backup mode if the station becomes isolated due to a network or server failure. The system functions as a Single User station running the drivers it ran before.
- Monitor and control the part of the process to which it's directly connected.
- Collect data from the station and save it to a spool file, then send it to the server when the connection is re-established.
- Automatically return to normal operations when the server is back online.

Data collection is a vital part of a SCADA software, and in IGSS the data logging functionality provides plenty of options on how to process and save data into LOG files. For each object logging can be set to save all process values, or only changes to process values, as well as selecting how much change is required to update the LOG data file. This can be expressed as a percentage



Operator station with distributed driver

This station type is a special instance of an IGSS operator station. The station is directly connected to one or more PLCs and the drivers runs locally on the station. During normal operation the



of either the relative change or a percentage of the maximum process value, as well as the ability to set options for:

- Scan interval (in millisecs.)
- Base interval (in mins.)
 - Data reduction
 - Transfer to history

All in one license

Master

The IGSS Master is the access point and control center for both system integrators and operators. From the IGSS Master a system integrator and an operator can access all other modules

Furthermore it contains a number of completely redesigned diagnostics features:

- Diagnostics tools for troubleshooting system and driver errors.
- Integrated browsing of data files and system log files.
- Integrated driver communication monitor.
- Integrated PLC simulator.
- Direct view of the license file.
- Direct access to support information on the web.
- Possibility of remote support using TeamViewer.
- IGSS Updater.

Definition

The Definition module is used by the system integrator to construct the IGSS configuration, creating the process diagrams of the plant as well as the objects and object logic for the plant configuration. The built-in tools and functionalities of the Definition module enables the system integrator to create an entire SCADA system without using external tools or programming functionality.

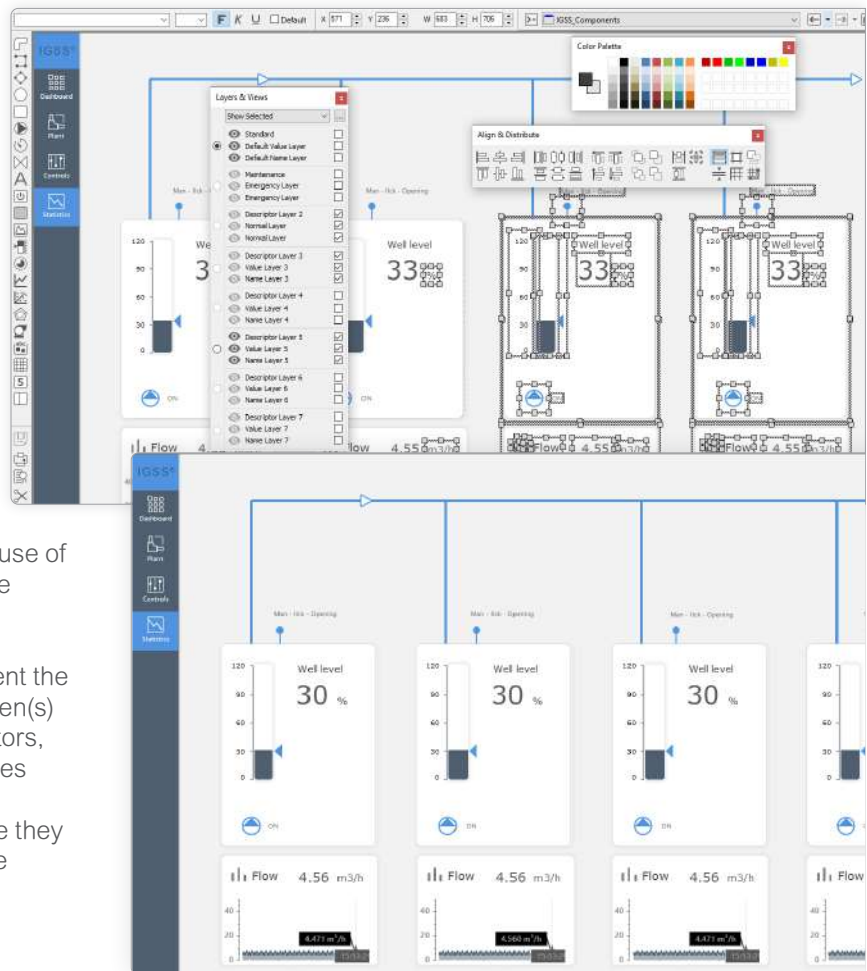
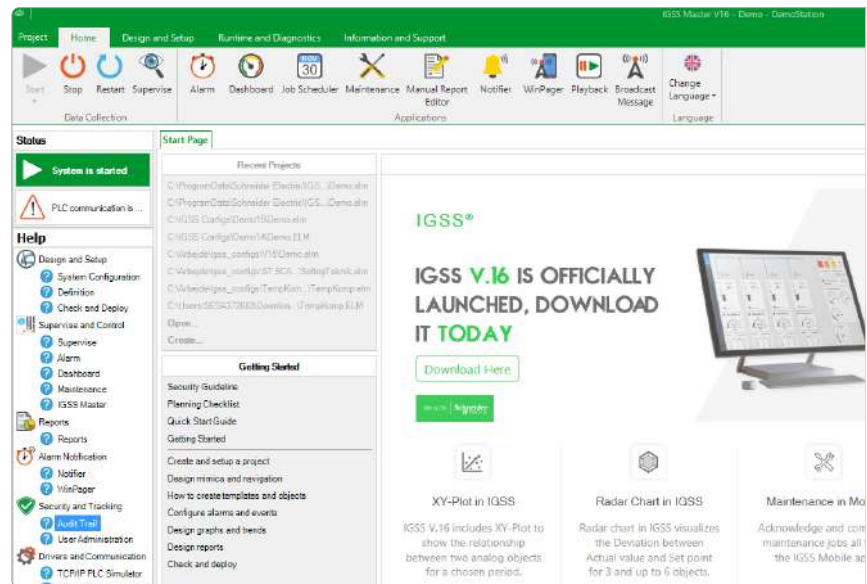
Supervise

The Supervise module is a tool for online process monitoring and control based on operator interaction with the system. Either by the use of mouse and keyboard, or touch if it is enabled in the windows operating system.

The Operator monitors the diagrams - which present the plant or process graphically on the computer screen(s) representing the plant's working components (motors, valves, flow meters, temperature scales, etc.). States and values of these process objects (process components), are updated automatically each time they change. Click-sensitive areas give the operator the ability to control components and access process diagrams.

Alarm module

Alarm handling is one of the most important functions when monitoring and controlling a SCADA plant. The Alarm module focuses therefore on simplicity, precision and flexibility. The Alarms module is always accessible and online and no matter which part of the plant is being monitored, it is visible as a square counter icon on the monitor. Within the module the operator has a total overview of all alarms, both active and those in the alarm log.



The operator has full control over the alarm list with a few mouse clicks and is able to:

- Quickly and precisely locate the alarms origin in the Supervise module.
- Read instructions regarding what actions should be taken when in alarm.
- Attach a note to the alarm and make it visible to all.
- Shelf and inhibit alarms.
- Create alarm filters.

- See maintenance job
- Inhibiting the Notifier module from sending the alarm.

All alarm events are continuously documented by the IGSS alarm log and alarm statistics. Alarm log files can be saved indefinitely and alarm statistics can be printed out on a regular basis. Furthermore IGSS can send alarms off-site with the alarm management system called Notifier.

Notifier

Notifier is an alarm management system and is used as a “hub” for collecting and displaying alarms from multiple plants. Notifier is a well integrated add-on to IGSS and has a line of features alongside this SCADA system. The incoming alarms can be either acknowledged in Notifier or forwarded to operator mobile phones as text messages, in which acknowledgement also can be made. The collected alarms can also be forwarded as e-mail alerts. Notifier also allows the operators to control the IGSS object's state/values by sending SMS messages from their mobile phones.

Maintenance

The purposes of the Maintenance module is to ensure that regular maintenance is performed on the process components to avoid unnecessary downtime and that the process components have an optimal lifetime cycle through regular and timely maintenance.

Benefits for the system integrator:

- Create maintenance jobs.
- Provide maintenance instructions to the operator.
- Attach alarm texts to the maintenance jobs.
- Customize the maintenance list.
- Control user access to protect maintenance functionality.

Benefits for the operator:

- Acknowledge maintenance alarms (either in the maintenance list or the alarm list).
- Read maintenance instructions and perform the correct maintenance on the process components.
- Complete the maintenance alarm.
- Write a maintenance note, if something unusual occurs while performing maintenance.

Audit Trail

In SCADA Supervisory Control & Data Acquisition systems, it is crucial to be able to monitor all actions performed in the process of the industrial plant. When set up correctly, the Audit Trail module records all actions performed by the IGSS system operators and store these in a database on a separate Microsoft SQL server. The Audit Trail module can easily be customized to record any of the following operator actions:

The image displays three screenshots of Schneider Electric software interfaces. The top screenshot shows the 'Active Alarms' window with a table of active alarms. The middle screenshot shows the 'Duty Planner' window with a calendar view for September 2022. The bottom screenshot shows the 'Maintenance' window with a table of maintenance jobs.

Severity	Object Name	Alarm Number	Start date/time
1	VTHBP=R1=C1-451_Tem_Alm	1069	29-06-2022 16:46:00:002
1	v11	205	29-06-2022 16:45:56:008
1	q1_2	213	29-06-2022 16:45:46:630
1	PST-007-kwh-total_2	2002	29-06-2022 16:45:50:678
1	PST-007-kwh-total_5	2002	29-06-2022 16:45:50:678
1	q1	213	06-09-2022 15:26:24:012
1	q2	213	06-09-2022 15:26:26:007
1	VSI 37	2051	06-09-2022 15:26:32:000
1	q3_1	213	06-09-2022 15:26:34:748
1	Permanent Alarm	5701	06-09-2022 15:26:44:005

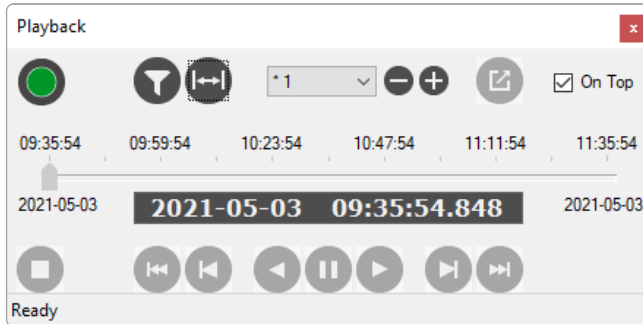
Job Type	Started	Activated	Value	Progress
Periodical	20-08-2021 10:00:48	20-08-2021 11:32:...	9191.1 hours	100%
Counter	20-08-2021 10:01:30	20-08-2021 10:01:...	24 reached	69%
Periodical	07-09-2022 9:37:40		0 hours	0%
Periodical	07-09-2022 9:39:09		0 days	0%

Date	Type	Subtype	Server	Station	User	Area	Object	Alarm	Value	String	Note
31-08-2018 09:03:24	Note	Alarm		Demo-Station	art	Global	Well_2				Alarm note added
31-08-2018 09:02:18	Alarm	Acknowledge		Demo-Station	art	Global	Well_2				Alarm acknowledged
31-08-2018 09:00:31	Access	Login		Demo-Station	art						User logged in
30-08-2018 16:26:06	Output	Command		Demo-Station	art	Training	p1	0	1	START	In state OFF command
30-08-2018 16:25:57	Output	Command		Demo-Station	art	Training	v12	0	0	CLOSE	In state OPEN command
30-08-2018 16:25:39	Access	Login		Demo-Station	art						User logged in
30-08-2018 16:25:31	Access	Logout		Demo-Station	Admin						User logged out
30-08-2018 16:25:02	Alarm	Acknowledge		Demo-Station	Admin	Training	q1				Alarm acknowledged
30-08-2018 16:24:16	Limits	High limit		Demo-Station	Admin	Training	q3	1	85	1.25 m³/h	High limit changed from
30-08-2018 16:23:27	Access	Login		Demo-Station	Admin						User logged in
30-08-2018 16:21:05	System	Stop		Demo-Station	Admin						Supervise exited

- Acknowledgement of process alarms.
- Commands send to the process PLCs.
- Operators login or logout.
- Changes in data collection settings.
- Operator notes written - for example alarm notes or maintenance notes.
- Changes in analog alarm limits.
- System start/stop.
- Broadcast messages to IGSS stations.

Playback

IGSS Playback is a great tool for analyzing prior system events. The IGSS Playback displays the entire Supervise interface as it looked and changed in the specified time period.



The playback can be either in real-time or can be speeded up or slowed down as appropriate to analyze the behavior of the system. Playback works very much like a video recorder. In IGSS it records the process values in the system. Enabling playback does not require any additional configuration or setup. Playback works by retrieving the historical values that are already logged in the system and features:

- Instant toggle between playback mode and normal supervision mode.
- Playback from 1/1000 to 1000 times the real speed.
- Pause and resume playback at any time.
- Skip forward or backward to the next value change.
- Clear indication of playback mode to site operator.

Data visualization

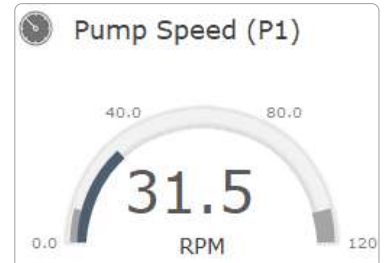
When a lot of data is being collected through IGSS, we need a way to 'paint a picture' of that data in order to interpret it. By using the build-in tools for visualization, all collected data can be presented graphically. This gives the operator a clear idea of what all the collected data means, makes it much easier and faster to understand, and to identify trends, patterns, and outliers within large data sets:

- Analyze and optimize.
- Absorb information quickly.
- Create an overview.
- Improve insights and make faster decisions.
- Easily distribute information and increase the opportunity to share insights with everyone involved.
- Compare and identify correlations between independent variables.
- View trends over time and compare periods.

IGSS has plenty of data visualization tools which each have their strength to visually present data and contribute to the understanding of data.

The visualization tools can either be used individually or in combination for an even better result.

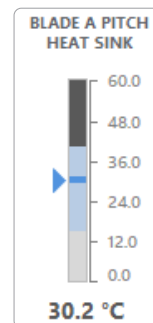
IGSS strength is also its facility to let System Integrators customise the look of the different data by visualizing descriptors by use of other descriptors. This contribute to great looking data presentations that look modern and add value to the operator when interpreting the data presented in a diagram. With the Graph and XY-plot the operator has full interactive functionality, such as zoom, navigation in the trend, date-/time picker and data comparison. This allows for deeper analysis of the dataset. The Pie, Radar and Bar are really helpful to use to get quick data overview on components.



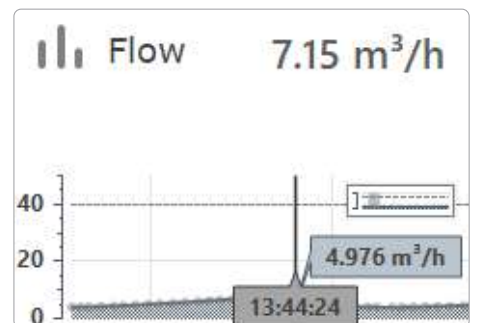
Pie chart



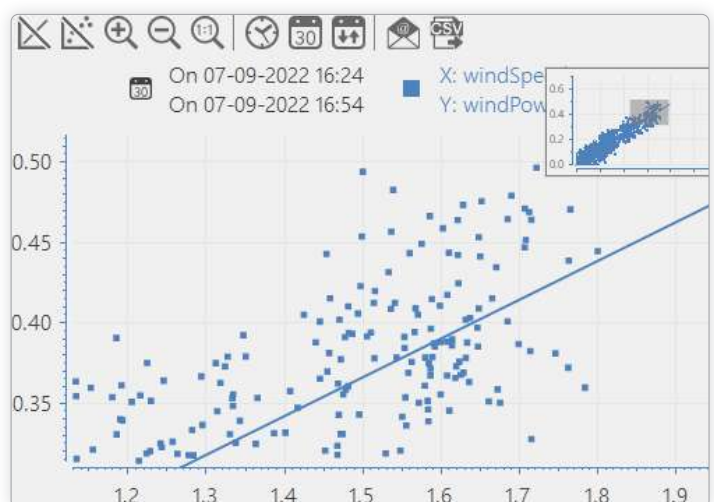
Radar chart



Bar graph



Graph (embedded)



XY-plot

Other features

System Configuration

The System Configuration module is used by the system integrator as an access point to configure the IGSS system and defining:

- Parameters for data collection.
- Setting up the IGSS server and operator stations.
- Specifying connections, IP addresses and back-up addresses.
- Set up access control parameters for operators and for alarm settings.
- Set up manual or auto start options for the IGSS Master.
- Define alarm parameters.
- Set up backup folders for Alarm, Log, Dashboard, Maintenance, Reduced Data and Historic data.

Faceplate

The Faceplate functionality allows the System Integrator to create multiple diagrams that are visually identical, except that the underlying process components can differentiate from one faceplate to another. Multiple faceplate diagrams can be open at the same time.

Benefits of using faceplates:

- Create process graphic templates that can be easily reused.
- Faceplates can be standalone popup diagrams or embedded in normal diagrams.
- Bind to any physical object independent of PLC memory mapping.
- Graphics on a faceplate may be optional.
- The system integrator can create a faceplate repository.

Workspace Manager

With the Workspace manager multiple system integrators can work in their own reserved part of a project. By using and creating workspaces via the 'Workspace Manager' the system integrators can:

- Help administer the workflow for the entire project.
- Ensure a safe and organised import of changes to diagrams without interfering with, or overwriting, other system designers project work.

HTML report for graphs

Using HTML reports on graphs, operators will be able to quickly analyse the data presented in the graph.

This feature can be used simply by selecting HTML Report on the graph toolbar or in the graph menu. The HTML report is generated directly in Supervise from an Embedded Graph or from a Graph Window. Reports may include both analog and digital objects, each signal type presented with different statistical results.

Define click interaction behavior

With the "Interaction" tab it is possible to specify the actions to perform when the Operator either left-clicks, right-clicks or double-clicks on a descriptor. This extra functionality means that the System Integrator can decide, within the interaction tab, multiple purposes for one descriptor and make it possible to either or:

- Open Details (select which diagram, faceplate, graph, or XY-plot should be opened).
- Show command menu.
- Show properties.

MQTT gateway

IGSS MQTT Gateway module makes it possible to exchange data between IGSS and a MQTT Server (Broker). The MQTT network protocol is often used by IoT devices and Cloud Service Providers for giving access to live data in distributed field devices. The IGSS MQTT Gateway can be configured to:

- Publish atom values from IGSS objects to a MQTT Server on a regular basis (1 second and up).
- Subscribe to values from a MQTT server and store those as atom values on IGSS objects.

The IGSS objects that are being used may either be selected individually or specified using wildcards.

Standard and Custom Reports

The IGSS Reports module is seamlessly integrated into the IGSS Master module and provides you with quick and intuitive access to all of your defined reports. With the report module in IGSS come some useful functionalities, such as:

- Inclusion of online values, alarm data for individual objects and alarm data for each alarm number in user-defined reports.
- Configuring IGSS Reports to launch a VBA function when a report has been generated. This allows changing parameters and sending commands in a running IGSS project.
- Improved copy/paste functionality in Excel enables the operator to copy multiple report data tags and quickly change data parameters.
- Linking a Report sheet in an Excel file to a defined event. When generating the report, it will include an individual sheet for each time the event has occurred.

IGSS mobile application

IGSS in the palm of your hands

Access and use all the essential IGSS SCADA software control and supervision functionality through our mobile application. The IGSS Mobile App enables operators to supervise and control certain elements by the use of smartphones. The IGSS mobile app can connect to one or more IGSS plants, depending on the setup of the individual IGSS plant.

Download our mobile app from a preferred app vendor and get the benefit from features:

- Connect to one or more plants.
- Monitor active alarms.
- Acknowledge and shelf alarms easy.
- Update object values.
- Send commands to selected objects.
- Observe object trend data up to one week back.
- Alarm acknowledge.
- Alarm instructions.
- Alarm severity.
- Alarm shelving.
- Alarm notification.
- Alarm details.
- Add objects coordinates.
- Change object limits.
- Change object set point.
- Dark mode (only for iOS).
- Favorite list.
- Trends/Graphs for objects with logging.
- Object details.
- Object value control (if allowed by the SI).
- Objects on map.
- Add GPS location to object.
- Real time trend monitoring.
- Read data and view high and low alarm limits (if set in IGSS) for analog signals.
- Maintenance job acknowledgment.
- Add maintenance job note.

