SYSTEMS AUTOMATION & MANAGEMENT PTY LTD.

VHISTORIAN

Storage, Processing and Visualisation

Over 36 Years of Service Excellence in the Technology Industry.

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VAHISTORIAN

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VA Historian is a process data historian capable of storing vast data volumes generated from today's industrial facilities. It easily retrieves and securely delivers information to desktop or mobile devices, enabling organizations to analyse processes at any time.

Summary

VA Historian combines the ability to store ultra high-speed logic analyser data sources with traditional high-speed data acquisition from industrial systems. It features a time-series database incorporating a traditional relational database engine, facilitating access to plant data using open database standards. With advanced data storage and compression techniques, data history is accurately represented for any time period with extremely fast data access, including multi-year aggregated data.

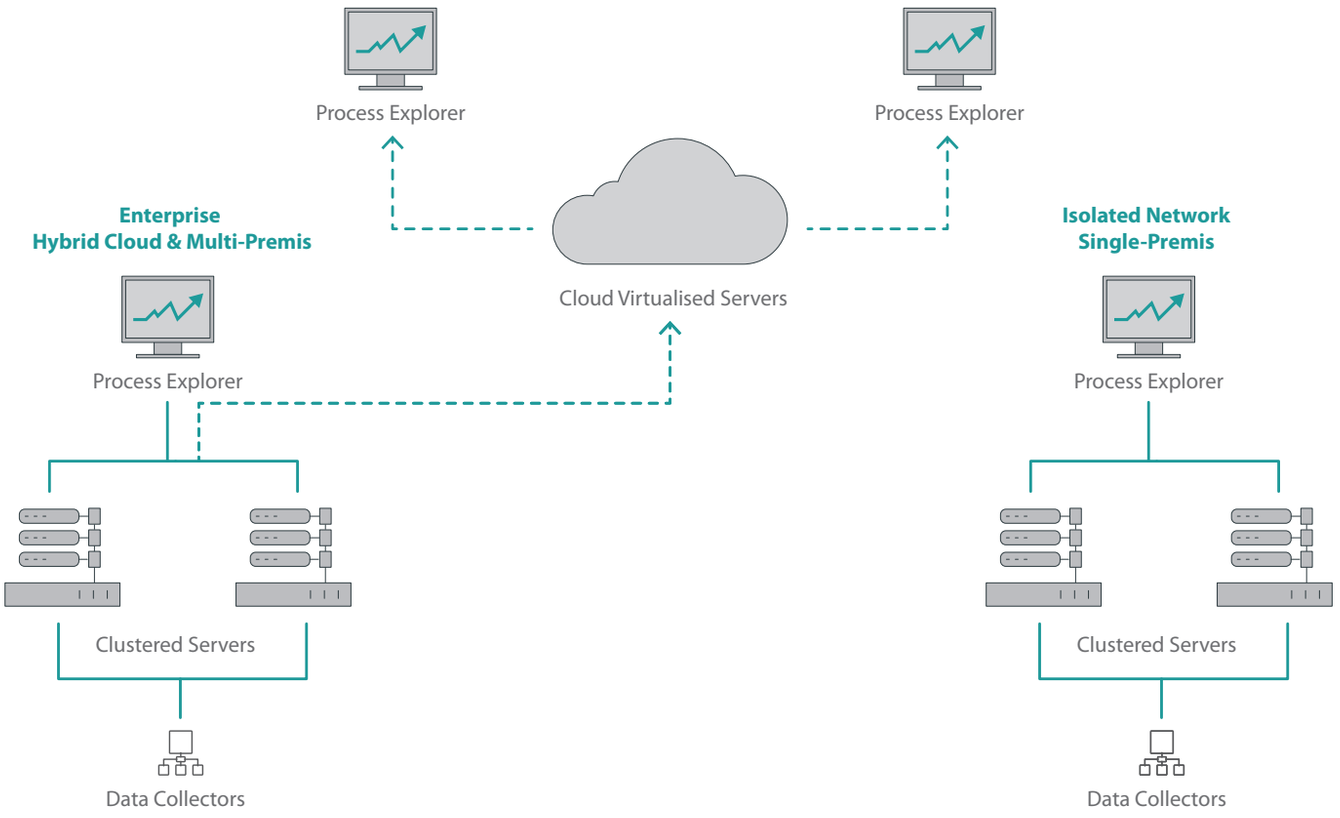
Business Value

A continuous and accurate operational history provides a foundation for faster troubleshooting and easier discovery of high-value process improvement opportunities. High availability clusters ensure the continuous retention of valuable data for the plant's lifespan. Comprehensive reporting and data analysis options enable insights into your process, alarm, and event data for more informed decisions.

Data Integrity

The data collection process combines multiple data sources from disparate systems, including standard protocols such as OPC UA, OPC DA, MQTT, and proprietary protocols to classic SIEMENS or ABB DCS. Low bandwidth remote facilities have an optimized network protocol with store and forward capability to cover communication unreliability. By default, all incoming data is timestamped at the source with a common time synchronization method.

Data can be out of temporal sequence between distributed data sources and is continuously stored in a coherent time domain. Each data point has a value and quality association, which is evaluated during the processing and querying of the data set.



Continuity

The **VA Historian** is capable of monitoring and archiving critical infrastructure data without any downtime. Typically, systems run 24/7 for years and have a modular software architecture that prioritizes the storage of data in case of any failure.

A clustered network data storage capability increases resilience to storage media failure by replicating the storage. Decentralized store-and-forward data collectors bridge unreliable networks with buffering of data even for extended periods.

Performance

To achieve the capability of incorporating ultra high-speed logic analyser waveforms with a 1-nanosecond time resolution and traditional high-speed data at a 1-millisecond resolution, a decentralized data collector concept is used. This facilitates the off-loading of specific data source protocols and optimizes the network traffic to the VA Historian. Data collectors may be physical or virtualised components with Linux or Windows operating systems.

To achieve a responsive experience for VA clients, a hybrid memory and persistent storage architecture is used. VA clients achieve real-time data monitoring capability with minimal latency. The data storage footprint is a fraction of what traditional relational databases require and is optimized for data fidelity and data access speed, facilitating upstream data analytics applications.

With ultra high-speed data storage capabilities, transient data from specialized hardware can be analysed together with high-volume process data.

A typical scenario involves the continuous monitoring of a group of inputs at an oversampling rate, which have triggers for predefined criteria. At the trigger point, data from a predefined period before and after the trigger is stored with the highest sampling rate possible as transient data. Outside the trigger point, data is stored at a nominal aggregated rate for long-term storage.

Scalability

Each individual **VA Historian** system supports up to 1 million tags which is sufficient for many complex on-premise sites. For enterprise fleet solutions it is possible to consolidate cross site access to full resolution data or a hybrid cloud solution with reduced or aggregated data.

The core historian database is truly multi-platform with support for Windows and Linux on Intel x64 or ARM64 processors. Using multi-core ARM processors, it is possible to utilise cost effective platforms for compact historian systems while clustering increases data storage resilience and improves throughput.

Data Visualisation and Reporting

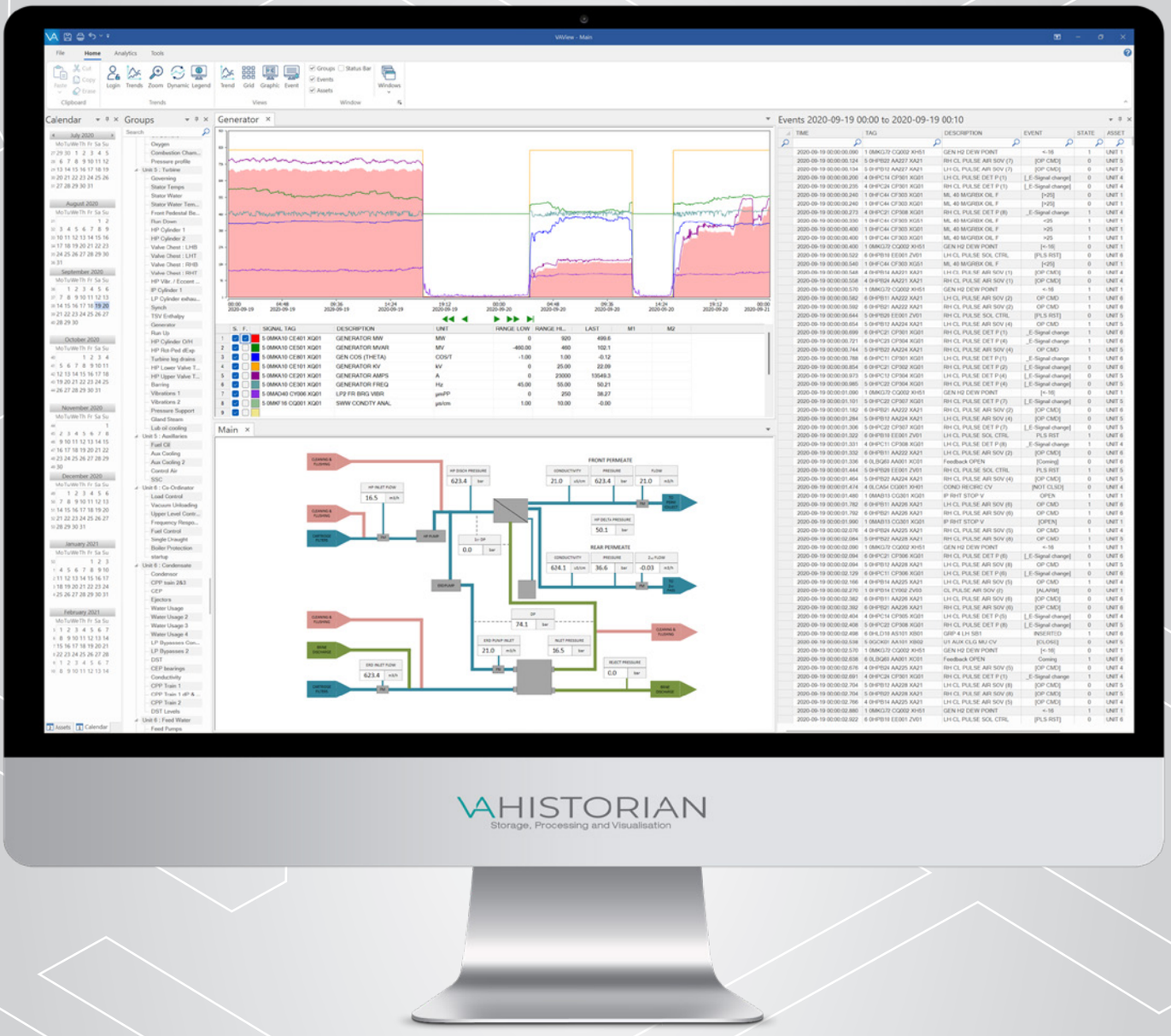
Using the data is just as important as storing it. For this purpose, the VA View desktop client and VA Web client provide data trends and reports. Graphical representation of process screens and dashboards allows critical information or KPIs to be available in a simple web interface.

Advanced data retrieval capabilities provide fast and concise result sets for reporting or viewing. These include:

- **Integral over any time period with 1ms precision:** A useful feature to convert a rate to a quantity, for example, finding the total power consumed in the last 8 hours or how long a pump has been on today.
- **Minimum, Maximum, Time-weighted average, Standard deviation** over a user-defined period.
- **Snapshot of values** at a specific time-point.
- **Summary functions on groups of tags:** This would be the maximum or difference in temperature from multiple probes.
- **Counter:** Provides the number of operations of a device.
- **Alarm and event overlay:** Provides a comfortable way to integrate trends with alarm logs in a synchronised display.

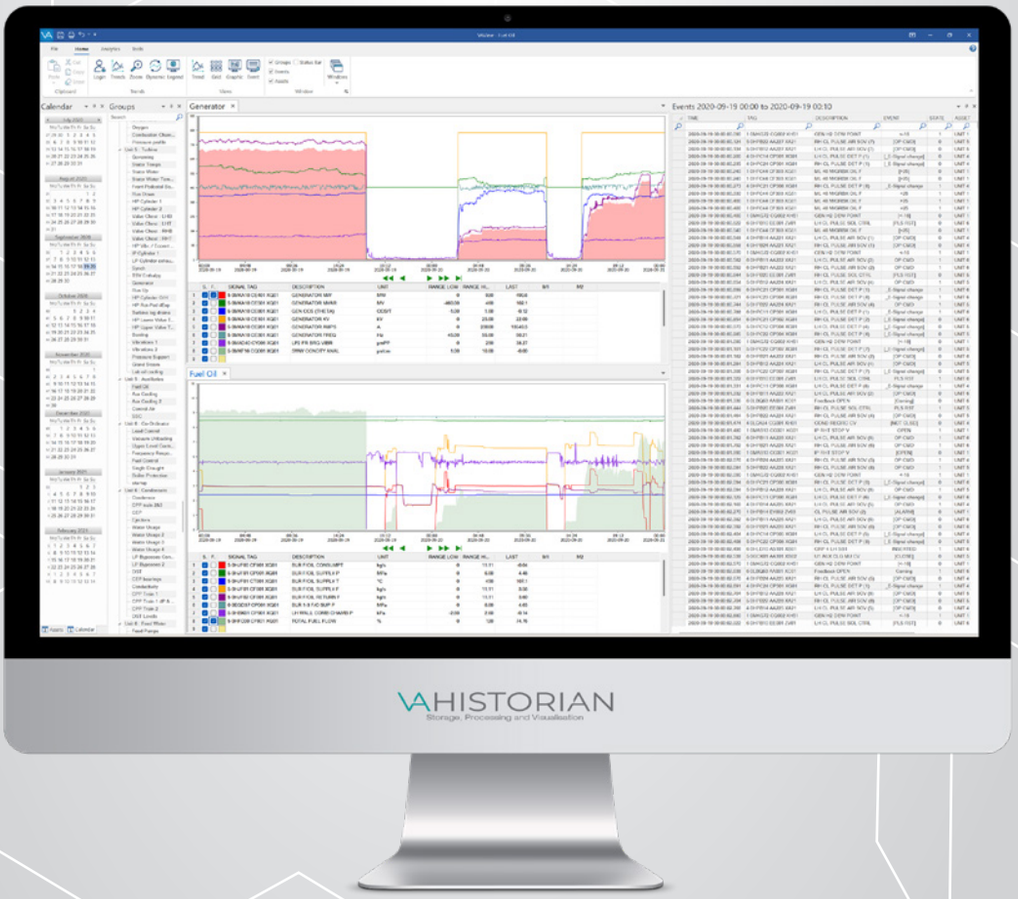
For deeper insight the VA Data Analytics package presents an opportunity to apply specialised algorithms or use machine learning for advanced data processing.

VA HISTORIAN CLIENT APPLICATION INTERFACE



Trends, Events and Plant Diagrams

Integrated access to historical data over any time period represented by trends, plant diagrams and events. These can be replayed at any point in time.



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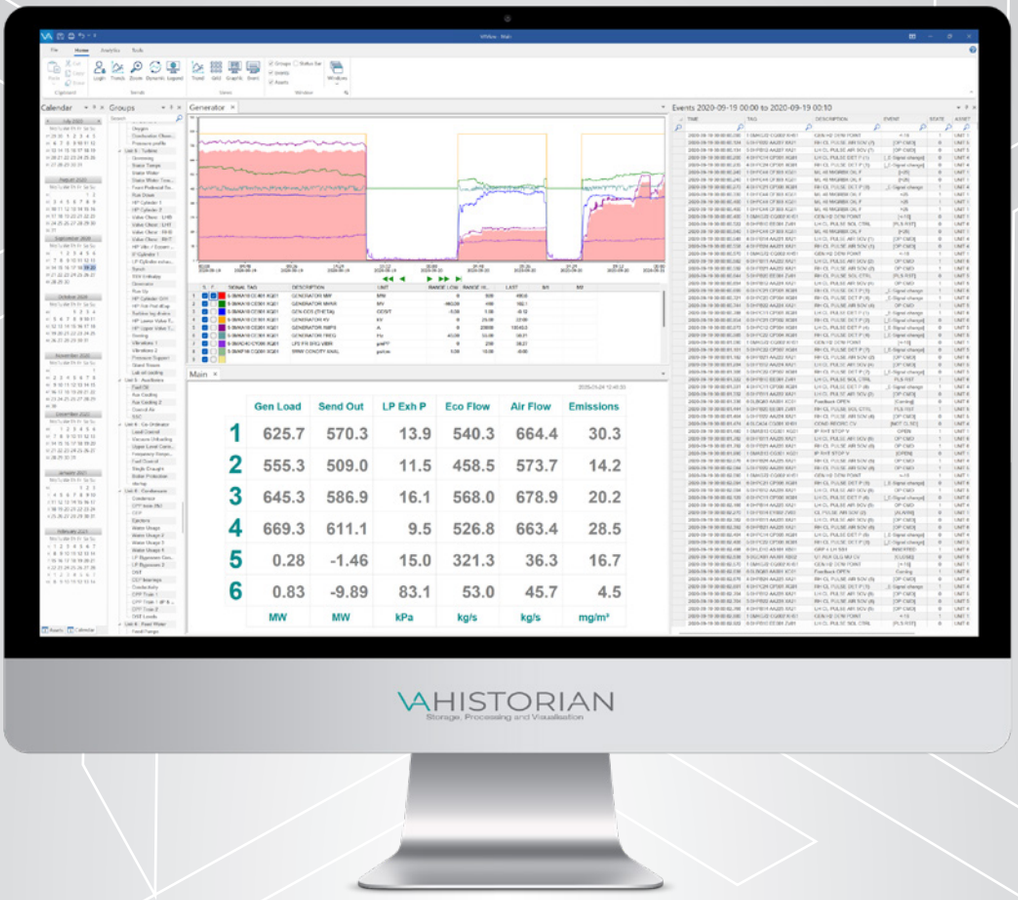

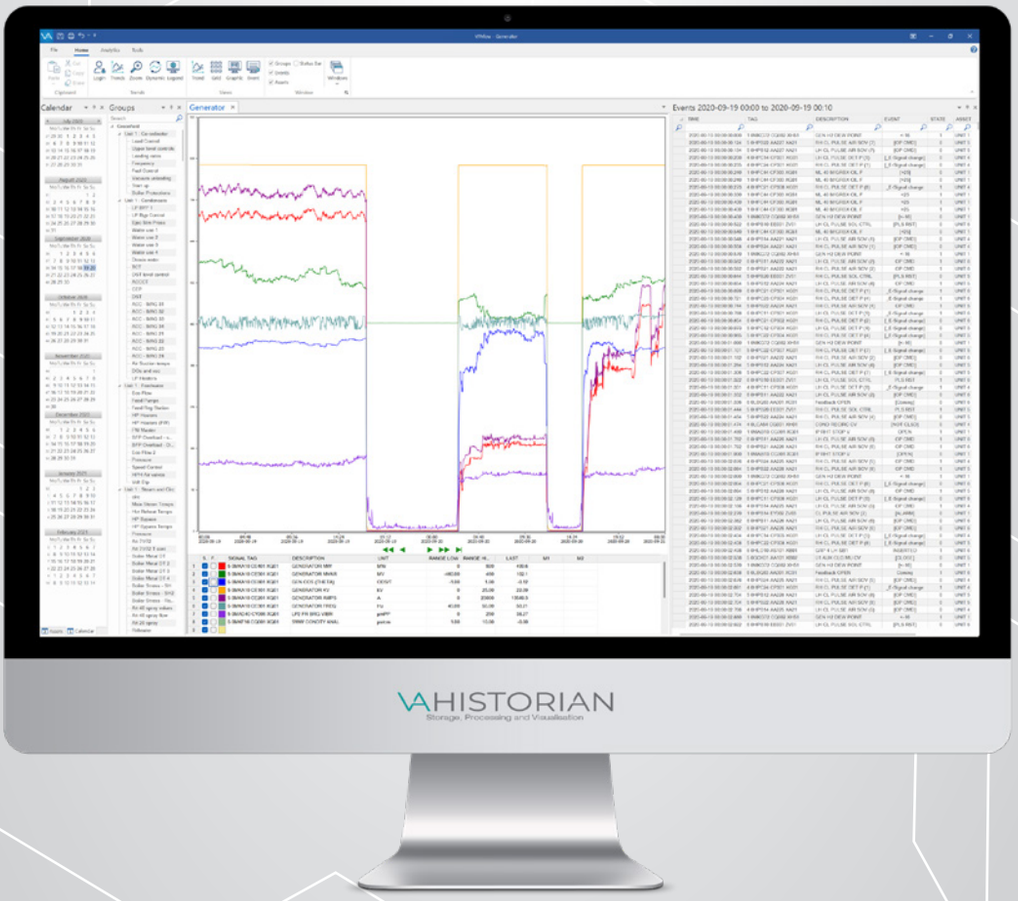

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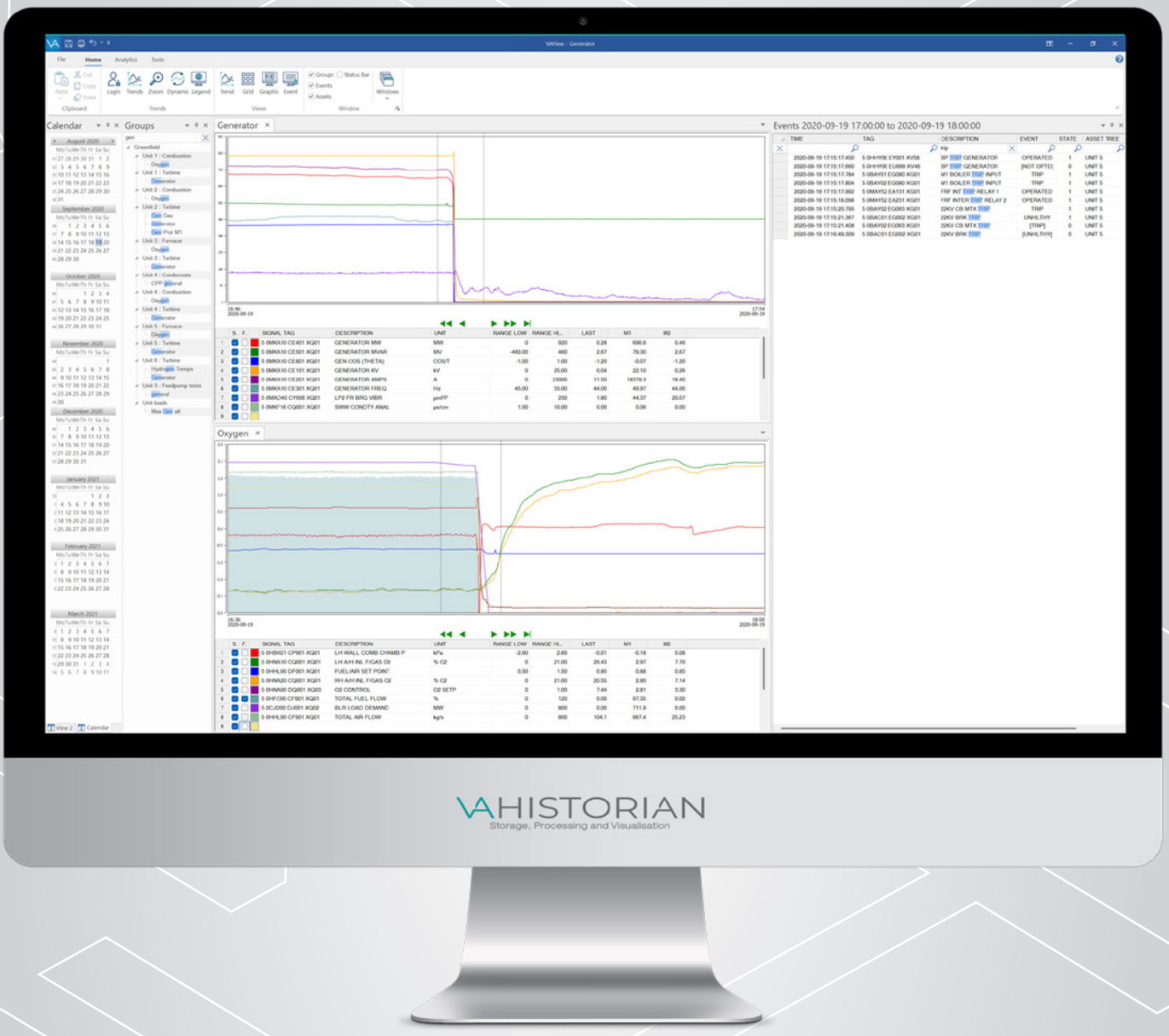

Trends, Events and Plant Diagrams

Through the trend zoom function and event logs with filtering on specific event types it is possible to navigate to the root cause of incidents with no delay.

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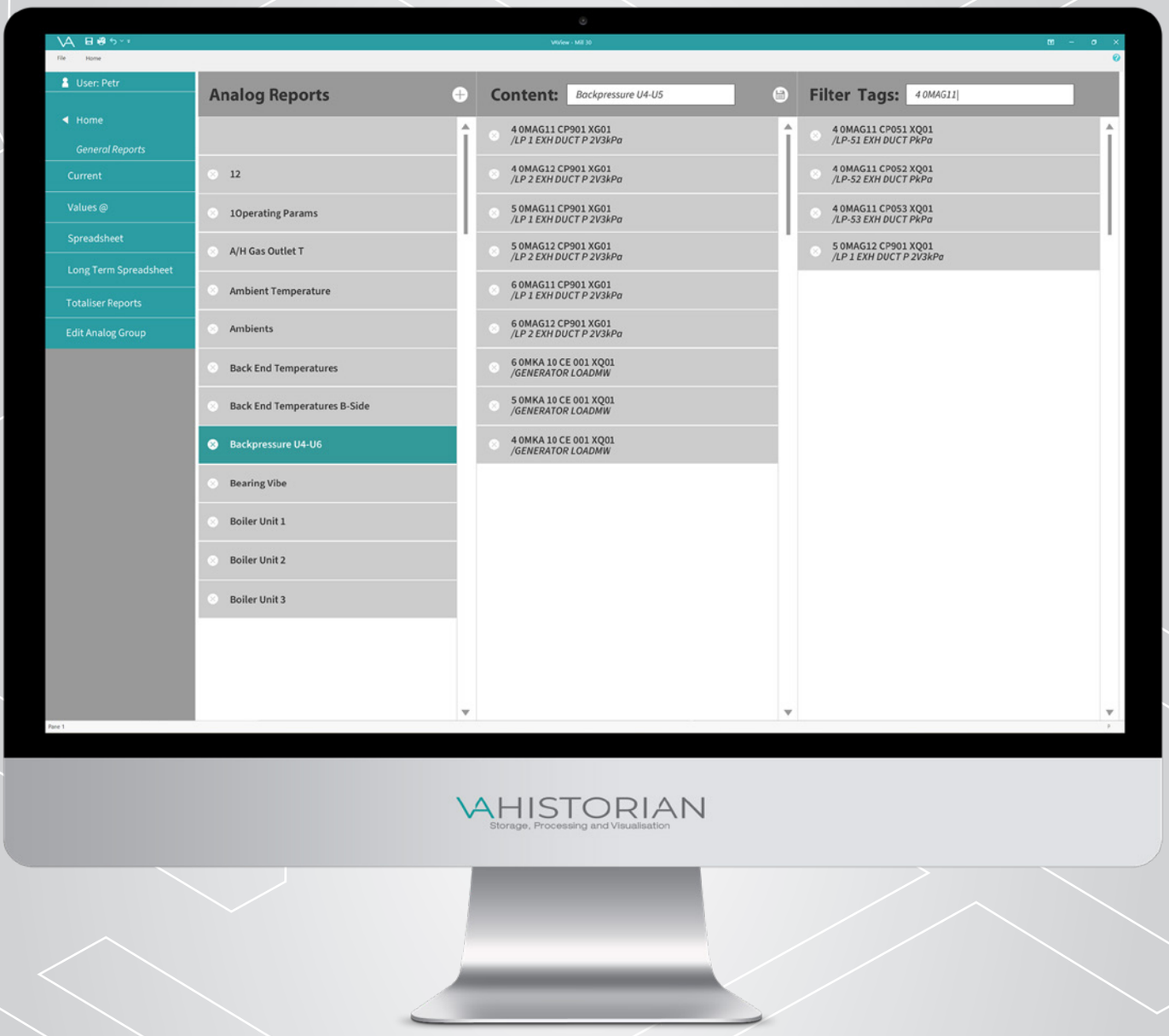
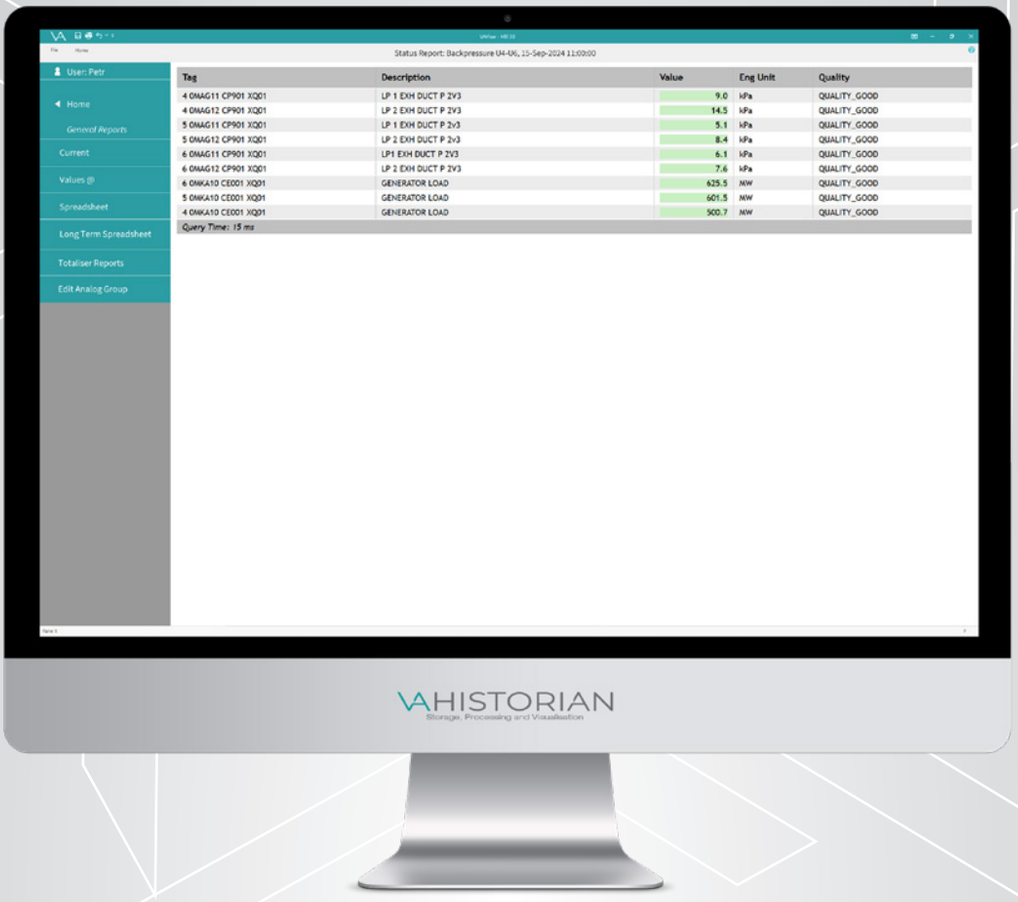
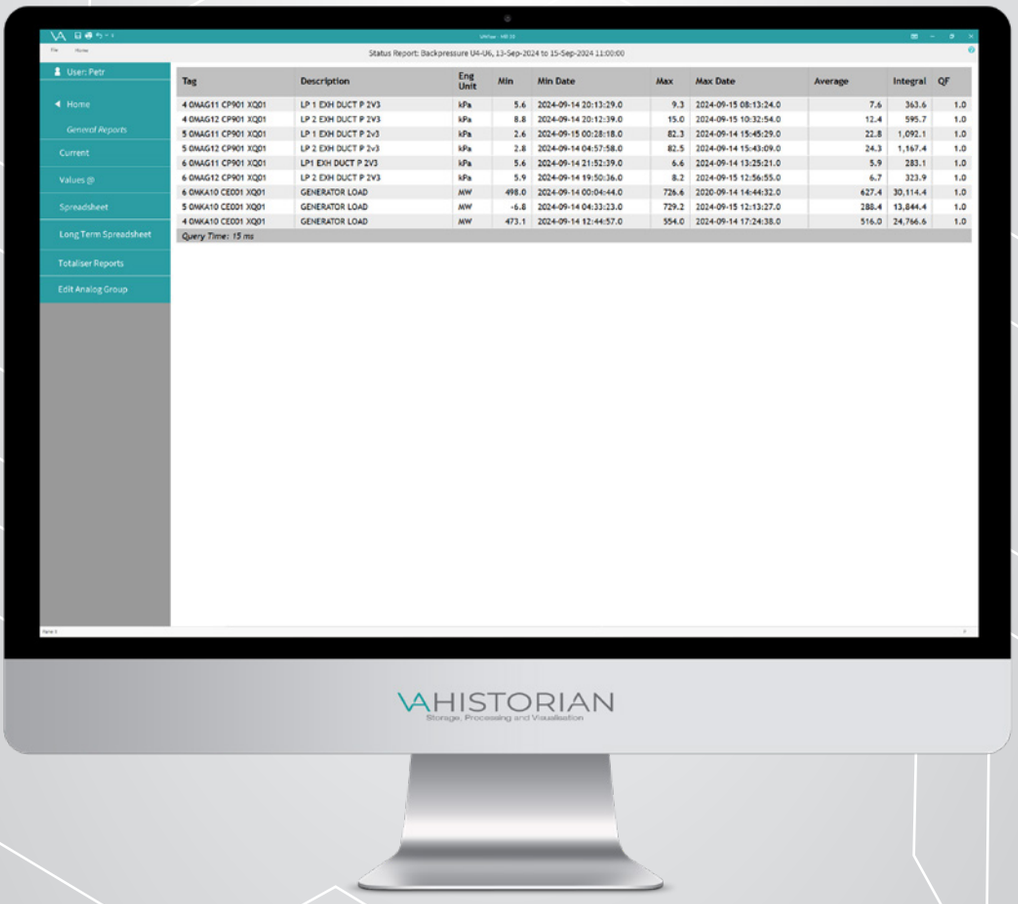
VA HISTORIAN WEB INTERFACE



Web Reports Interface

Directly access through a web browser, various reports utilise functionally grouped tags for meaningful analysis.





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Specifications

VA Historian Server	
Supported operating systems	Windows Server 2019 or newer Linux Ubuntu 20.x or newer
Hardware platforms	Intel x86 64-bit only ARM64 architecture
Maximum tags per VA Historian	1 million
Minimum data resolution	1 nanosecond
Maximum storage period	Limited only by the disk space available A typical 100,000 tag system requires 1 GB of disk storage per day. An 8 TB disk will hold over 20 years of history online with instant data response.
VA View Client	
Supported operating systems	Windows 10 or newer 64 bit
VA Web Client	
Supported browsers	Microsoft Edge Chrome Firefox Safari

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