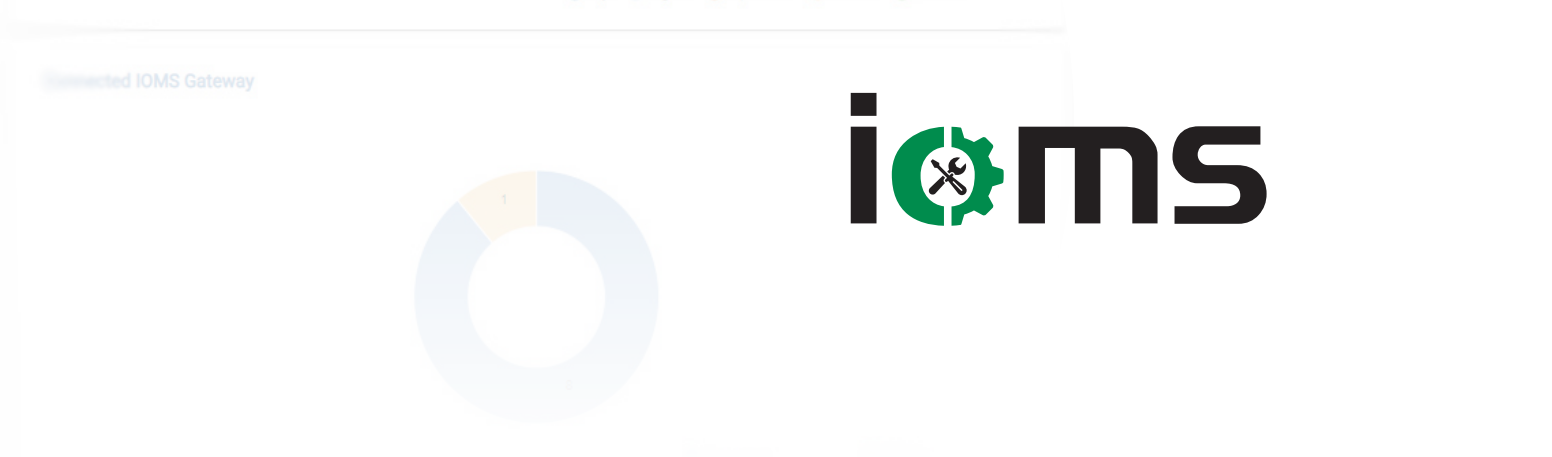
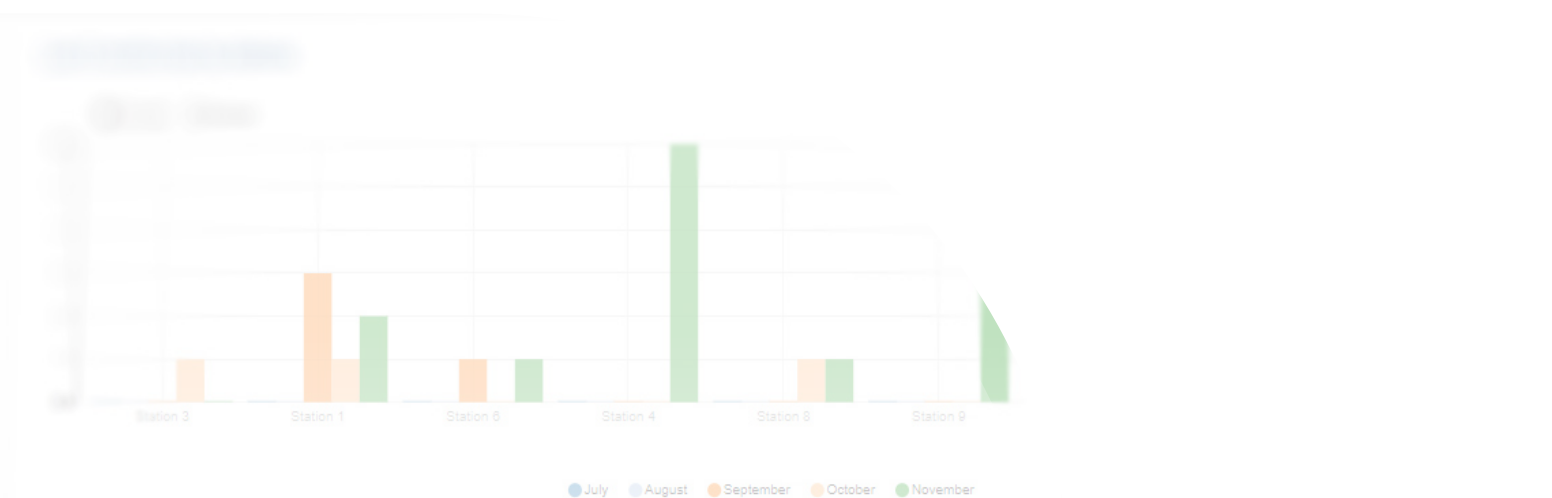


# INTELLIGENT OPERATION & MAINTENANCE SYSTEM

STELLA-**IOMS**



**ioms**

# STELLA

## PROTECTION & SUPERVISION



Sécheron has been developing and manufacturing safety devices for DC traction systems for the railway industry for decades. We have drawn upon our extensive experience with DC traction systems and the related industry standards to develop our STELLA product range.

All STELLA products, including control and protection devices (SEPCOS), control and supervision (KEOPS), stray current monitoring system (SCMS) and operation and predictive maintenance (IOMS), are based on our strong experience in the field and on customer feedback to meet our customers' railway network requirements and simplify the operation and maintenance of their traction power substations.

STELLA products are designed with the latest technology. Their modular design allows the customer needs to be met even on the most complex of projects.

## GENERAL INFORMATION

The Intelligent Operation & Maintenance System (IOMS) developed by Sécheron is a software as a service (SaaS) for collecting data from the traction power substation to optimize customer operations, maintenance activities and resources. IOMS is part of the asset management strategy of owners and end-users.

Data analysis is achieved by algorithms implemented in the product, developed specifically for railway applications.

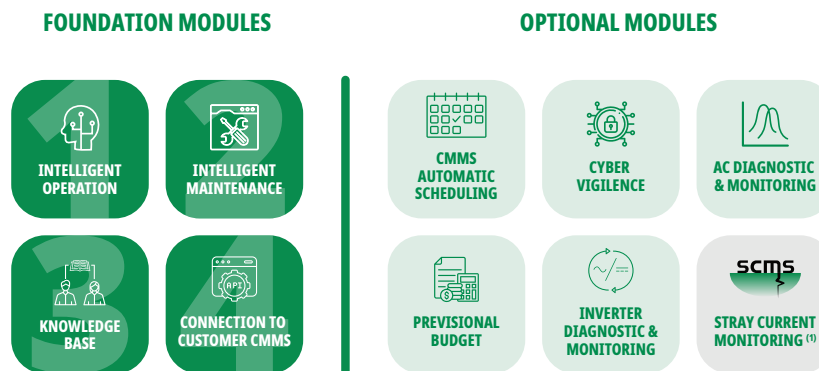
IOMS is composed of two main modules: Intelligent Operation and Intelligent Maintenance.

## MAIN BENEFITS

- ✓ Reduce operational risks by detecting critical events and troubleshooting analysis in the railway network
- ✓ Increase lifetime of assets (decreases Life Cycle Costs)
- ✓ Optimize maintenance operations (visit TPS upon trigger & alarms)
- ✓ Improve system availability with efficient preventive and predictive maintenance
- ✓ Lower exploitation and maintenance costs
- ✓ Improve operation management and decision making
- ✓ Allow traceability of history and foreseen actions (maintenance report automatically generated and archived)
- ✓ Decrease spare parts management costs
- ✓ Stock management system for spare parts (including order lead time) / dealing directly with the original manufacturer
- ✓ Safe and reliable

# DESCRIPTION

IOMS is a modular product and can be arranged in a variety of configurations according to the following modules::



<sup>(1)</sup> Soon to be available.

## 1. Intelligent Operation

The Intelligent Operation module monitors critical processes/equipment from a central dashboard for increased efficiency. It allows the diagnosis of problems remotely, reducing the occurrence of "no fault found" outcomes.

## 2. Intelligent Maintenance

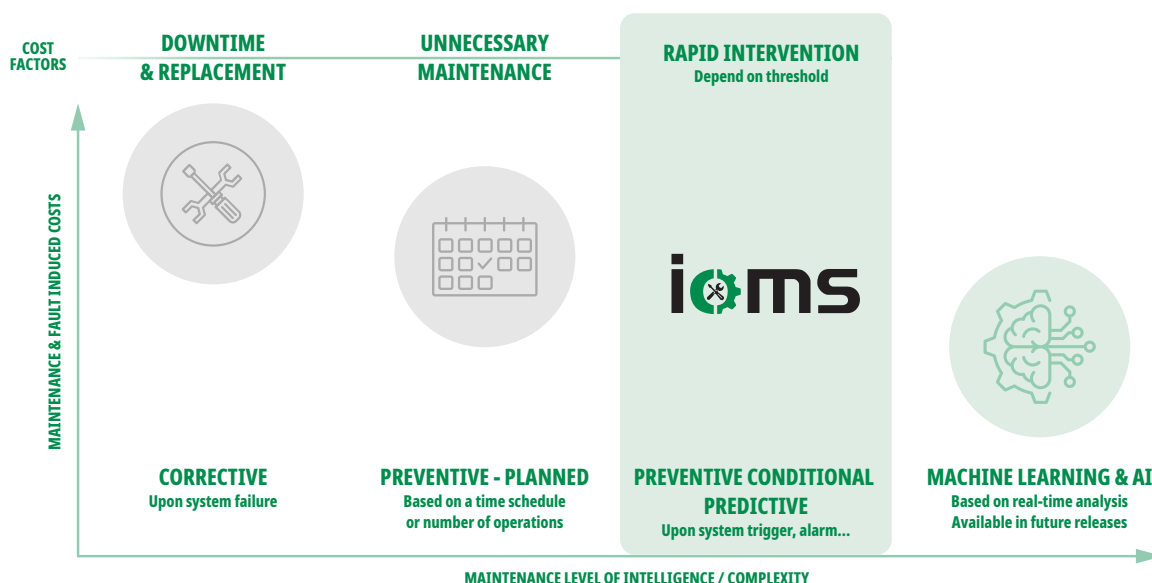
The Intelligent Maintenance module computes the data collected on each device. Using various algorithms, the system calculates wear and generates events, alarms, notifications, and reports to notify the line owner about operation analysis and optimization or to plan maintenance actions.

## 3. Knowledge Base

The IOMS system incorporates an extensive knowledge base, which includes comprehensive maintenance sheets for Sécheron's devices.

## 4. Connection to customer CMMS

The IOMS embeds an API (Application Programming Interface) to facilitate the integration of our system in the global customer asset management. It serves as a software interface, allowing the IOMS to offer services to other software components, like the customer CMMS.



Maintenance actions and IOMS scope.

# FOUNDATION MODULES



## INTELLIGENT OPERATION

The information produced by the Intelligent Operation module is used to optimize network usage and reduce maintenance activities.

### Main features

- The Intelligent Operation module monitors:
  - Alarms and notifies if there is an abnormal rate in a particular level (substation, cubicle, equipment, component)
  - Power consumptions and generates periodic reports
  - Temperatures
  - Software versions, disk space, etc.
  - Equipment downtime and fault rate
- The Intelligent Operation module provides:
  - A user-friendly dashboard that offers a good overview and highlights all necessary information about the substation
  - Maintenance and operation videos (similar to e-learning management system)

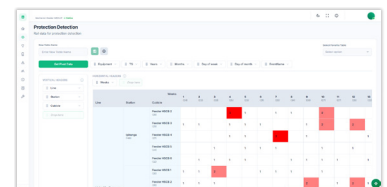


### Functions

The Intelligent Operation module contains several functions, here are some of them.

#### Protection trip

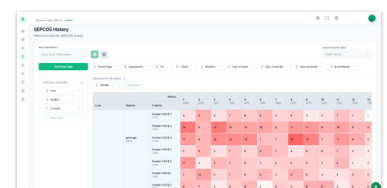
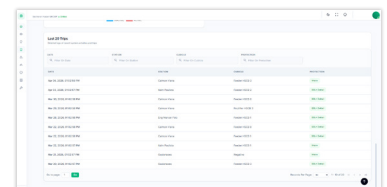
The protection trip menu summarizes tripping operations and sorts them by type/equipment/date. This information helps the operator to generate statistics for analysis to determine the root cause of a potential issue in the traction network. It also helps to predict failures.



#### Visualization and reporting

The device menu allows the operator to visualize various information about the software installed on the SEPCOS (control & protection relay):

- Installed version: monitoring software updates/highlighting if software updates are required
- Parameters: checking if the set of parameters is identical for same type of cubicle
- Backups: status of the protection relay saved in case of replacement/retrofit ...
- Cyber vigilance: monitoring the CPU load/free disk space and managing alarms in case of abnormal activities
- Fault recorder: downloading automatically in Comtrade format all detection curves recorded by the protection relay





# INTELLIGENT MAINTENANCE

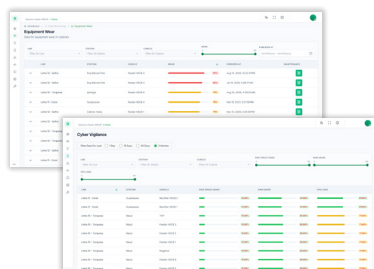
## Main features

The main function of the Intelligent Maintenance module of IOMS is the optimization of maintenance activity scheduling.

- Its main goal is to reduce equipment failures, increase reliability and improve asset performance
- The system tracks, analyses and computes data to give an overview of the status of the installation not only at the present time but also in the foreseen future
- The maintenance contractor is notified by an alarm for each maintenance action at the substation, cubicle & device level, and a report is generated with a description of the alarm (including time stamp), the action that should be taken, work instructions, materials list (including Sécheron item number), tools needed and the average time to perform the service
- Complete product documentation is embedded in the system and relevant chapters can be highlighted depending on the action to perform

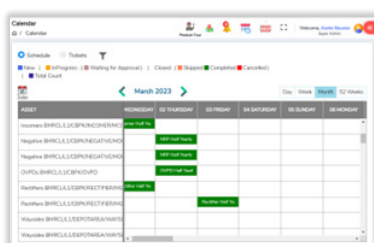
## Functions

The Intelligent Maintenance module contains several functions including an overview, a schedule & an automatic maintenance report.



### Overview

- Overview of entire system
- Sort/filter according to different parameters (substation, cubicle, etc.) and check detailed status
- View current usage of each equipment
- View forecast for usage expiration
- Override current usage percentage according to field feedback



### Schedule <sup>(1)</sup>

- Overview of upcoming actions
- Add new actions that were not automatically created
- Remove/reschedule upcoming actions
- Plan/group future actions
- Assign actions to a team



### Automatic maintenance report <sup>(1)</sup>

- Automatically generated by the system
- Actions checklist
- Replaced items list
- Tools list

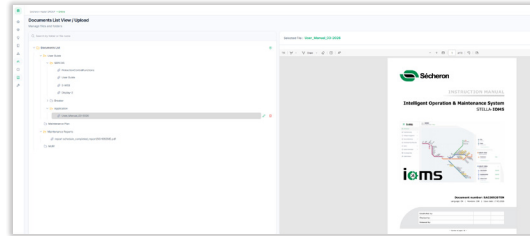
<sup>(1)</sup> With optional CMMS module

# FOUNDATION MODULES

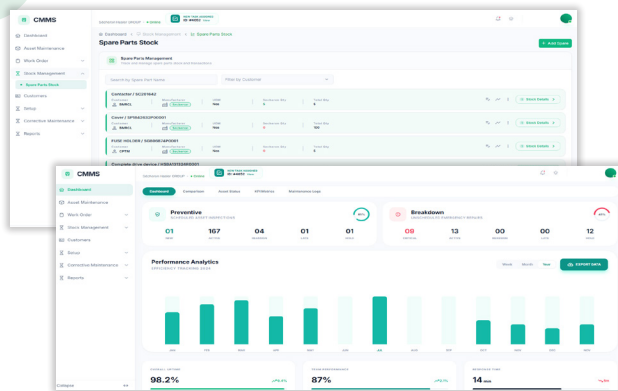


## KNOWLEDGE BASE

IOMS system embeds an important knowledge base including detailed maintenance sheets for Sécheron's devices. It also includes a large documentation set like electrical drawings, logic diagrams, product user guide, etc.



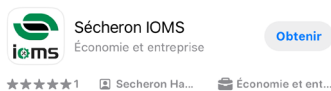
## CONNECTION TO CUSTOMER CMMS



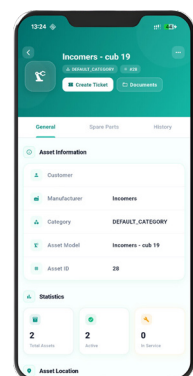
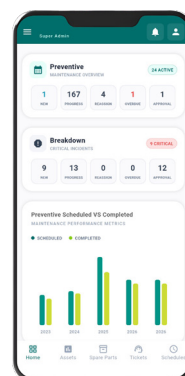
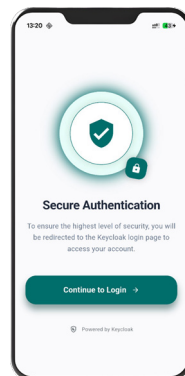
Connecting to a CMMS (Computerized Maintenance Management System) via an API (Application Programming Interface) allows seamless communication between our IOMS and the customer's CMMS.

For each maintenance action defined by the IOMS, a set of documents will be prepared, including all necessary information (schedule, expected time for the action, maintenance plan, etc.), and sent to the customer's CMMS using the API to be scheduled in the customer's asset management workflow.

# MOBILE APPLICATION



To facilitate on-site maintenance actions and operator reports, a mobile application is available, covering the CMMS part.



# ARCHITECTURE

The IOMS gateway collects all the information available in the traction power substation network and pushes it to the IOMS server (unidirectional connection for safety).

The core IOMS system can run on a cloud based server.

- Remote and safe connection to IOMS data and reports
- Backups and redundancy assured by the cloud provider
- Remote maintenance and updates possible
- System easily scalable



Cloud based single connection

# RELATED PRODUCT

## EVA+

### RAIL DATA MANAGEMENT

EVA+ can easily integrate the IOMS/TELOC Event Recorder and Energy data to provide valuable insights into fleet activity, providing a unified solution for infrastructure and rolling stock equipment management.

 Refer to **Brochure EVA+**





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