

GenOSys

Online conditions monitoring

User's manual

LEROY-SOMER™

Nidec
All for dreams

Online conditions monitoring GenOSys

This manual concerns the GenOSys which you have just purchased.
We wish to draw your attention to the contents of this maintenance manual.

SAFETY MEASURES

All servicing or repair operations on the GenOSys should be performed by a qualified technician.

Our technical support service will be pleased to provide any additional information you may require.

The various operations described in this manual are accompanied by recommendations or symbols to alert the user to potential risks of accidents. It is vital that you understand and take notice of the following warning symbols.

WARNING

Warning symbol for an operation capable of damaging or destroying the machine or surrounding equipment.



Warning symbol for general danger to personnel.



Warning symbol for electrical danger to personnel.



All servicing or repair operations performed on the GenOSys should be undertaken by personnel trained in the commissioning, servicing and maintenance of electrical and mechanical components.

WARNING

This manual is to be given to the end user.

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Share Capital: 32,239,235 €, RCS Angoulême 338 567 258.

We reserve the right to modify the characteristics of this product at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.

This document may not be reproduced in any form without prior authorization.

All brands and models have been registered and patents applied for.

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1. Identity sheet

GenOSys is designed by:

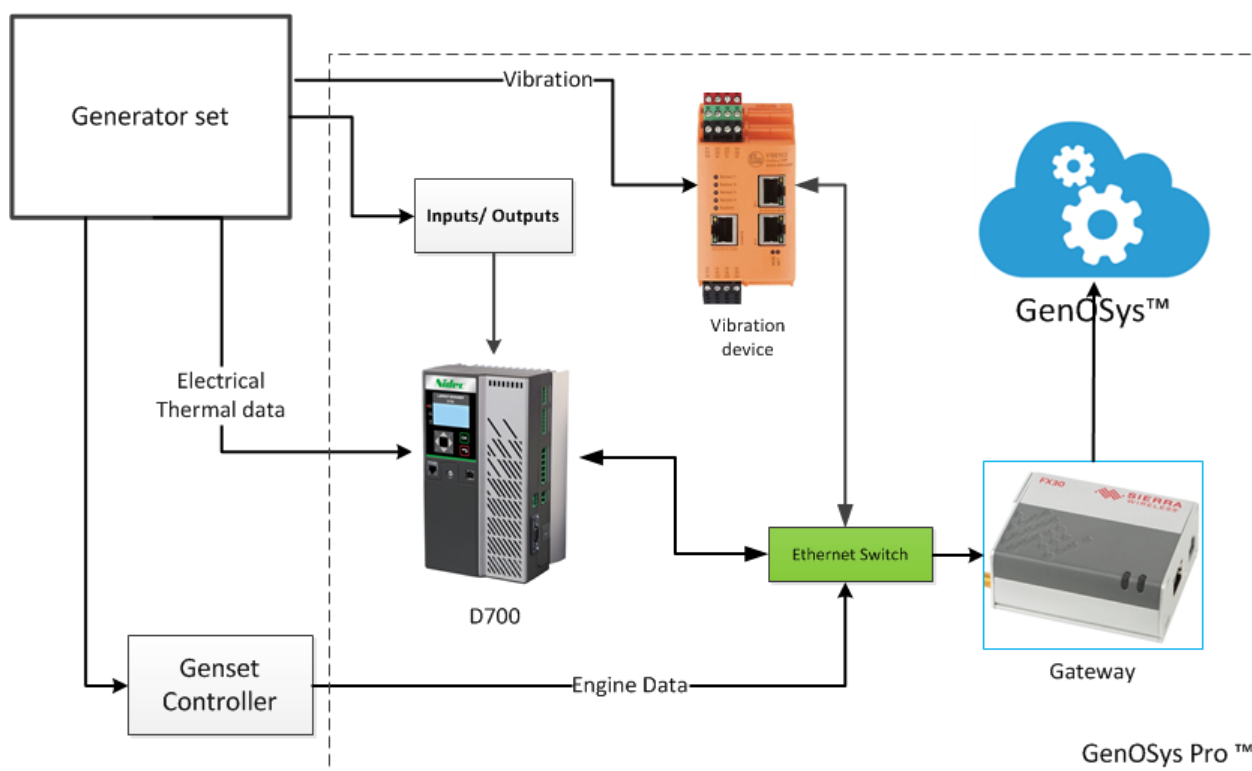
MOTEURS LEROY-SOMER
Boulevard Marcellin Leroy, CS 10015
16915 ANGOULEME Cedex 9
France

2. General overview

GenOSys is a flexible, high featured management tool for monitoring, tracking, alerting and providing key data on the performance of electrical systems. GenOSys is available for both new built generators and existing ones for retrofits purpose. It is available in three standard versions, with additional options depending on the customer's needs.

2.1. GenOSys Pro

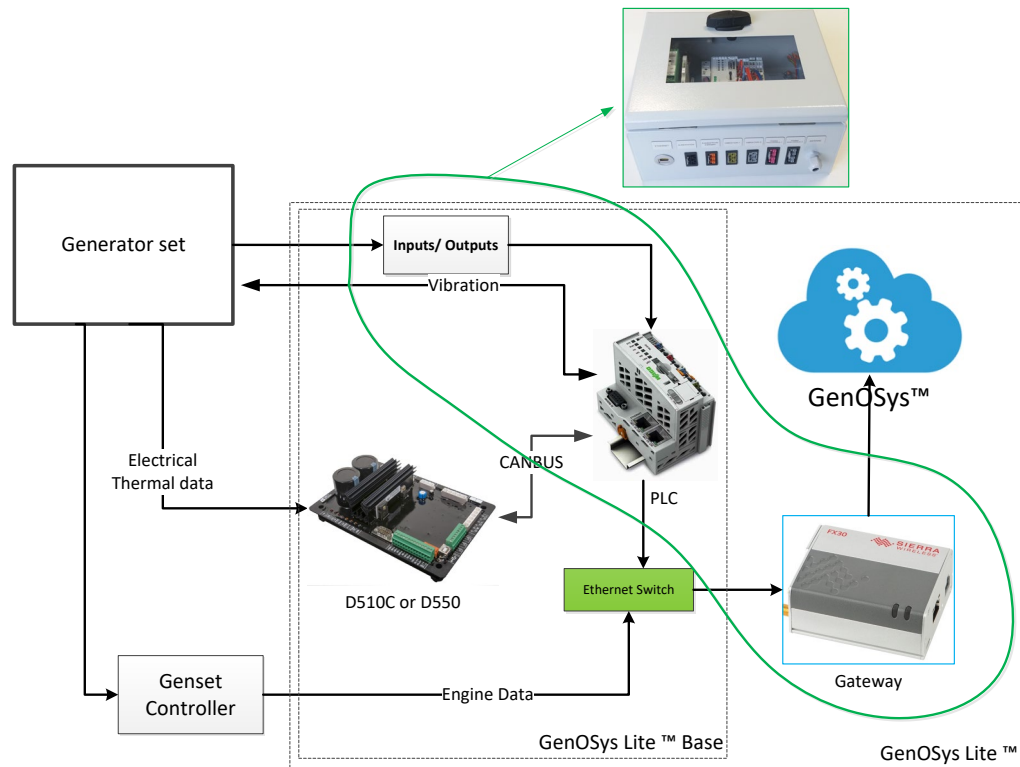
It's a flexible, fully customizable solution. The architecture is shown below and is recommended for high-power installations, particularly those over 3MW.



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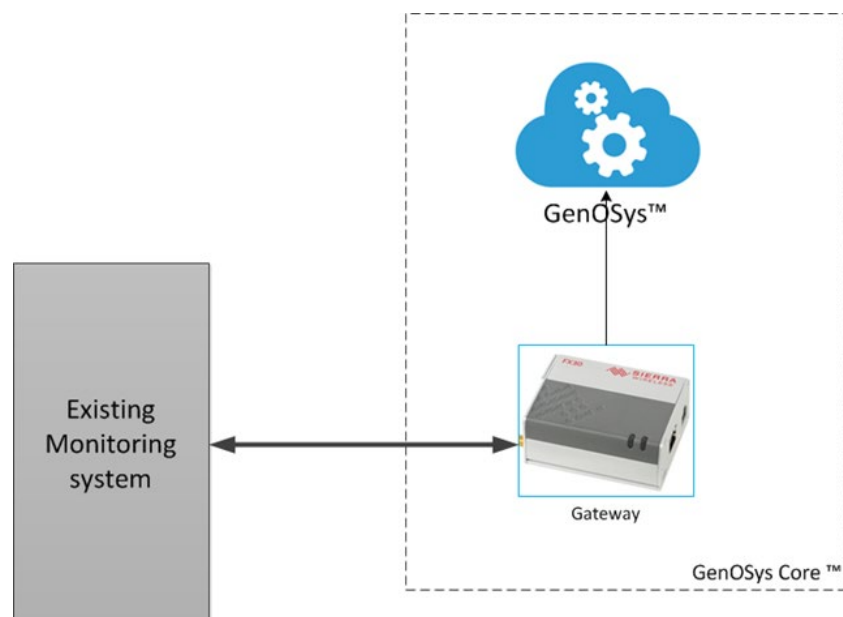
2.2. GenOSys Lite

It's an easy-to-install, box-integrated solution. The architecture is shown below and is suitable for small and medium power installations. This solution interfaces with digital voltage regulators type D550 to collect electrical data.



2.3. GenOSys Core

This version is suitable for installations already equipped with data collection devices. It allows to benefit from GenOSys functionalities while optimizing the hardware dedicated to data collection. The architecture is very simple, as shown below.



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2.4. GenOSys contract

The GenOSys contract includes :

- online monitoring of alternator health (thermal, vibrations and electrical data) using algorithms
- alerts via SMS and/or e-mail when algorithms detect deviations
- technical assistance from Leroy-Somer teams
- quarterly and yearly reports with recommendations for maintenance and optimization of the installation
- access to [Genosys.net](https://www.genosys.net)
- access to alternator data from the date of first commissioning

Thanks to this continuous monitoring, gradual and abnormal parameters deviation can be detected, and on-site interventions organized to correct faults and improve the lifetime of the generator.

3. The equipment

Several types of equipment are required to ensure GenOSys running smoothly.

3.1. Standard equipment

It includes :

- a box with connection terminals
- a PLC for input/output cards
- a gateway for communication and data transmission
- electrical measuring equipment
- temperature probes for bearings, stator windings, air and water
- accelerometers and a vibration measurement unit for alternator bearings

Depending on requirements, the options hereafter are used to collect additional information to ensure better predictive maintenance of the machine.

3.2. Option: Humidity

Measuring humidity helps preventing corrosion problems linked to the presence of moisture. The importance of this probe is to monitor the evolution of ambient humidity in the alternator and its impact.

3.3. Option: Partial discharge

Partial discharge is a localized electrical discharge that can damage the insulation and lead to premature ageing of the alternator. This phenomenon occurs on Medium and High Voltage alternators. Installing this option enables to anticipate stator winding contamination, detect insulation degradation and detect cracks (varnish, insulation, etc.).

This option requires the installation of 3 capacitive couplers and a partial discharge monitor. Thanks to GenOSys, continuous monitoring is possible to prevent premature failure of the stator insulation wall.

3.4. Option: Rotor insulation

This option makes it possible to monitor any degradation of rotor insulation due to ageing or specific site conditions (pollution, high ambient humidity, heavy network load). This equipment makes it possible to monitor the rotor's state of health in order to anticipate and limit damage as far as possible.

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This option requires:

- wireless transmitter and receiver equipment
- mechanical holder for transmitter/receiver equipment
- modification of the diode bridge cover

3.5. Option: Poles slip/internal angle measurement

This option is important in the event of an unstable electrical network and voltage micro-interruptions, in order to monitor the alternator's internal angle and detect pole slip, which can significantly affect the alternator's lifetime. This option uses a shaft-mounted incremental encoder and requires modification of the diode bridge cover.

Note: This option is only available if the alternator is equipped with a Leroy-Somer digital AVR type D550, D510C or D700.

4. Instructions for using the web portal

The data collected and processed by GenOSys can be accessed via the following web portal:

Genosys.net

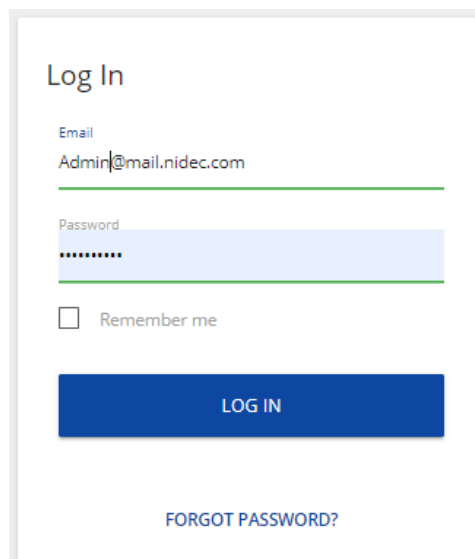
4.1. Overview of the web portal

Access rights are nominative and security rules have been implemented to properly manage the information flows. The home page is shown below:

The screenshot shows the GenOSys web portal. The top navigation bar includes the GenOSys logo, links for 'How It Works', 'The Edge', 'Are You Ready?', and 'Who We Are', along with a 'Contact Us' link and a 'LOG IN' button. The main content area features a large banner with the text 'Get smarter with GenOSys™' and 'Cloud-enabled power generation asset monitoring & optimization'. Below this, there is a 'REQUEST A DEMO' button. The 'How It Works' section is displayed below the banner, showing a diagram of the data flow. The diagram illustrates the process of collecting data from power system components (alternator, engine, turbine, motors, batteries, radiators, fuel tank, etc.) and sending it to a cloud platform (Internet/Cloud) for monitoring and optimization. The cloud platform then sends data to a Service Center for Total system Monitoring.

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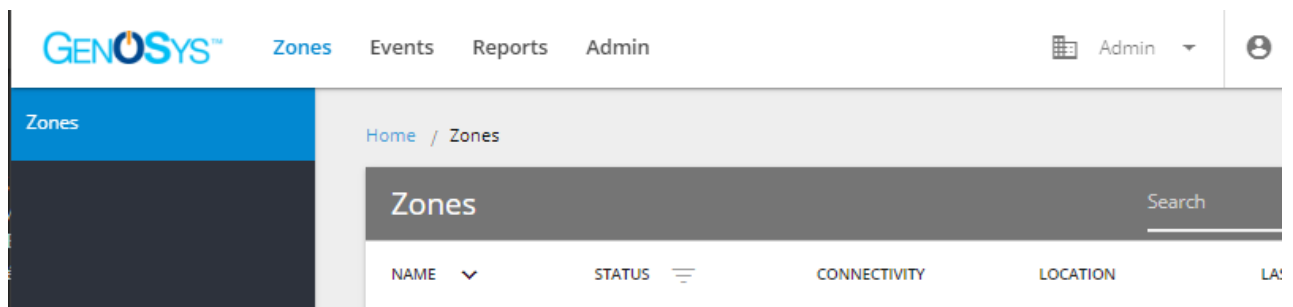
Click on the button "**LOG IN**" and then enter the connection details.



The image shows a 'Log In' form with the following elements:

- Title: Log In
- Email field: Contains 'Admin@mail.nidec.com'.
- Password field: Contains masked characters '*****'.
- Remember me checkbox: Unchecked.
- LOG IN button: A blue button.
- FORGOT PASSWORD? link: A blue link below the button.

Once the connection has been established, the user accesses authorized areas.

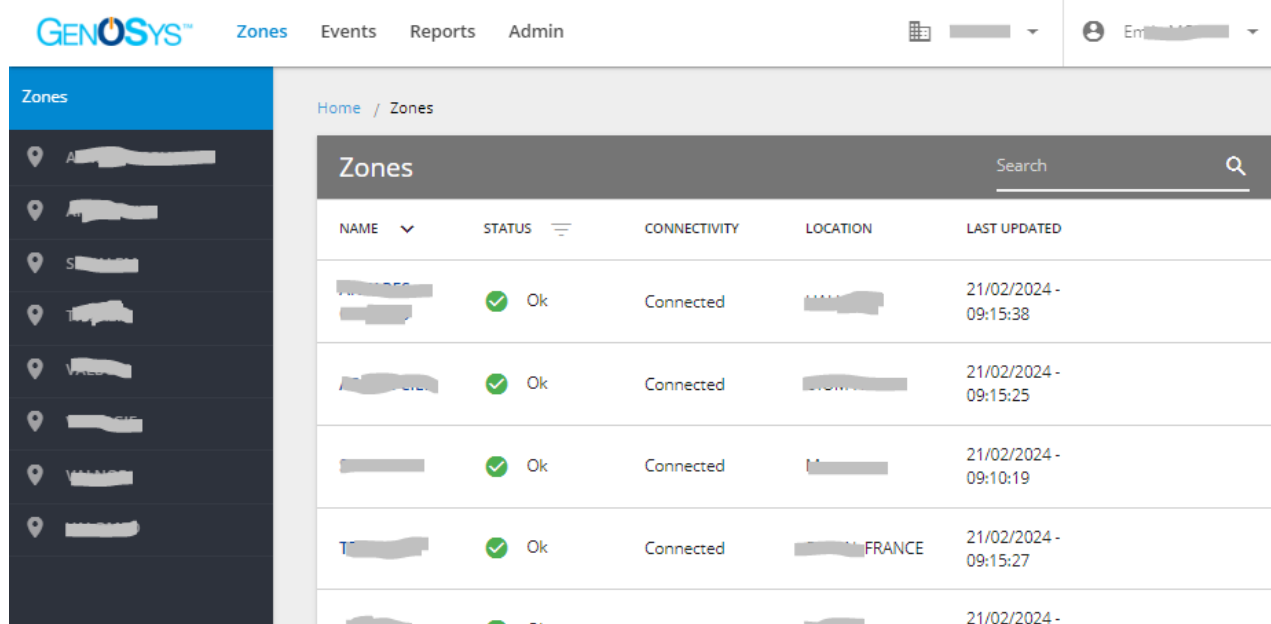


The user can then read and download the available reports, go through and possibly acknowledge some events and alarms, or view data in graph mode.

4.2. Zones

For each organization or customer, this menu contains all the machines under GenOSys supervision.

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The menu "Zones" provides an overview of the connectivity status of the machines fleet.

Three states are available:

- **"Connected"**
- **"Partially connected"**, when the gateway is unable to collect data from one of the available equipment, or when the internet connectivity is weak.
- **"Not reporting"** when the gateway is unable to connect to the Internet.

In the example above, all the gateways communicate perfectly with the equipment and the Internet network is well established.

In each zone, data can be viewed in table or graphical mode.

DATA	GRAPHS	GATEWAY
<div>AIR ^</div> <div>TEMPÉRATURE ^</div> <div>Temp air 36,80 °C</div> <div>Entrée: 49,50 °C</div> <div>Sortie:</div>	<div>AVR ^</div> <div>ANGLE v</div> <div>EXCITATION ^</div> <div>Bus DC: 260,00 V</div> <div>Courant d'excitation: 3,60 A</div>	<div>PALIER ^</div> <div>TEMPÉRATURE v</div> <div>STATOR ^</div> <div>COURANTS v</div> <div>DP ^</div> <div>Qm Phase U: 0,66 nC</div> <div>Qm Phase V: 0,93 nC</div> <div>Qm Phase W: 0,87 nC</div> <div>FRÉQUENCE v</div> <div>HUMIDITÉ v</div> <div>PUISSANCE v</div> <div>TEMPÉRATURE v</div> <div>TENSIONS v</div>

"View in table mode"

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“View in graph mode”

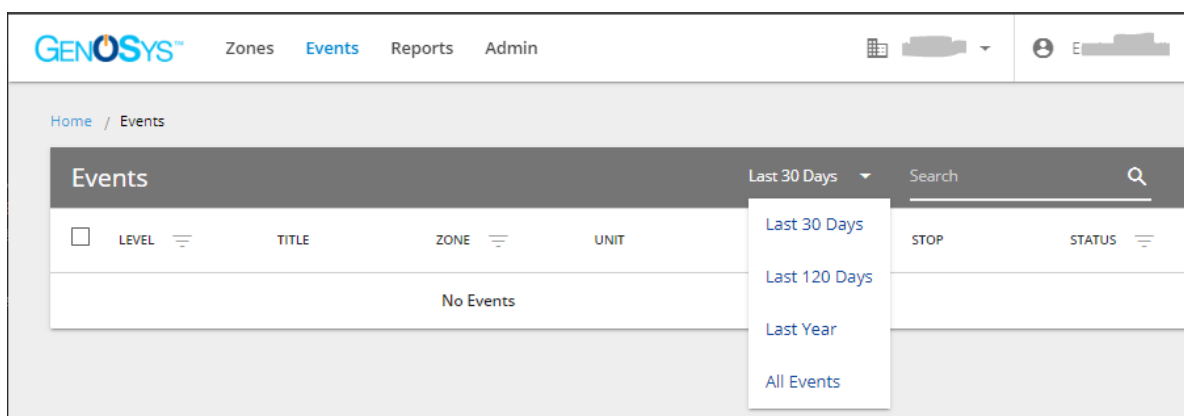
On each graph, a button () allows to download data in CSV format.

Curves can be displayed by **day**, **week** or **month**, using the selector below.



4.3. Events

All events and alarms can be viewed in this menu. The user can display them according to criticality, date of occurrence and zones concerned.

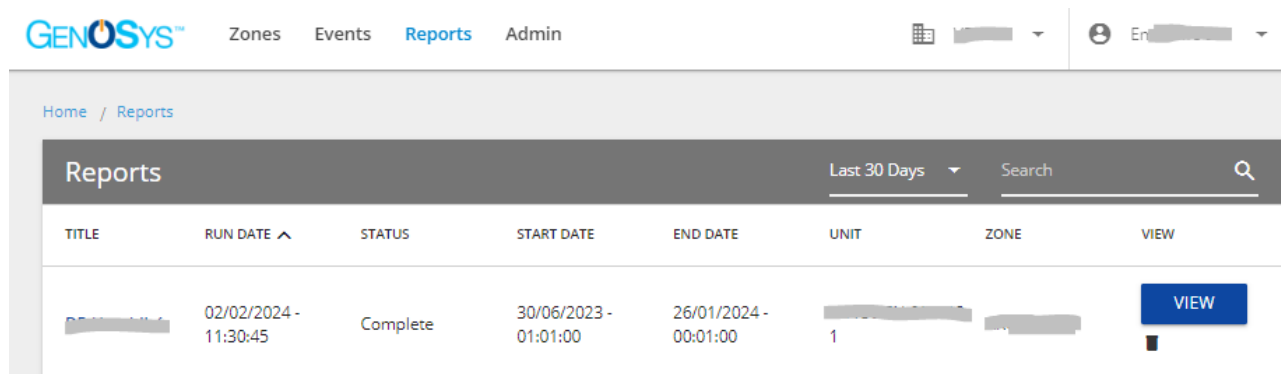


Authorized users can acknowledge some of available alarms.

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4.4. Reports

Technical reports are generated for customers on a regular basis. These reports are available in the "Reports" tab.



TITLE	RUN DATE ^	STATUS	START DATE	END DATE	UNIT	ZONE	VIEW
	02/02/2024 - 11:30:45	Complete	30/06/2023 - 01:01:00	26/01/2024 - 00:01:00	1		VIEW

Users can sort the available reports by date and zone for instance.

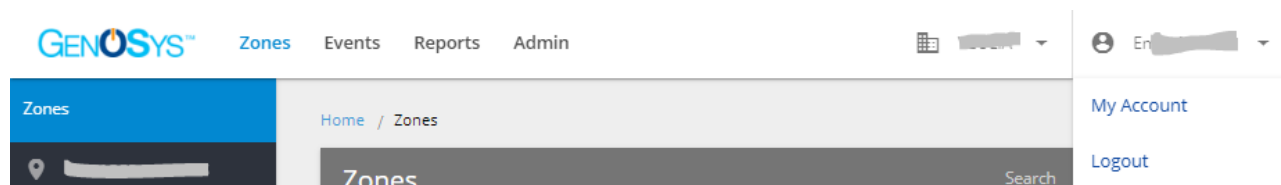
Reports can be displayed and downloaded in two formats:

- HTML
- JSON



4.5. User profil

All users can modify their personal data. This can be done through the "My Account" menu.



Then the details can be filled as needed.

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Home / My Account

My Account

Basic Information

First Name
Emile

Last Name
Mouni

Email
emile.mouni@mail.nidec.com

Phone Number
06

Time Zone
(UTC+01:00) Brussels, Copenhagen, Madrid, Paris

☒ Email Notification
☐ Text Notification

SAVE

Change Password

Current Password

New Password

Confirm New Password

SAVE

Users can configure their space to receive alerts by SMS or e-mail. To do so, they must select the following options:

- **E-mail Notification**
- **Text Notification**

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Service & Support

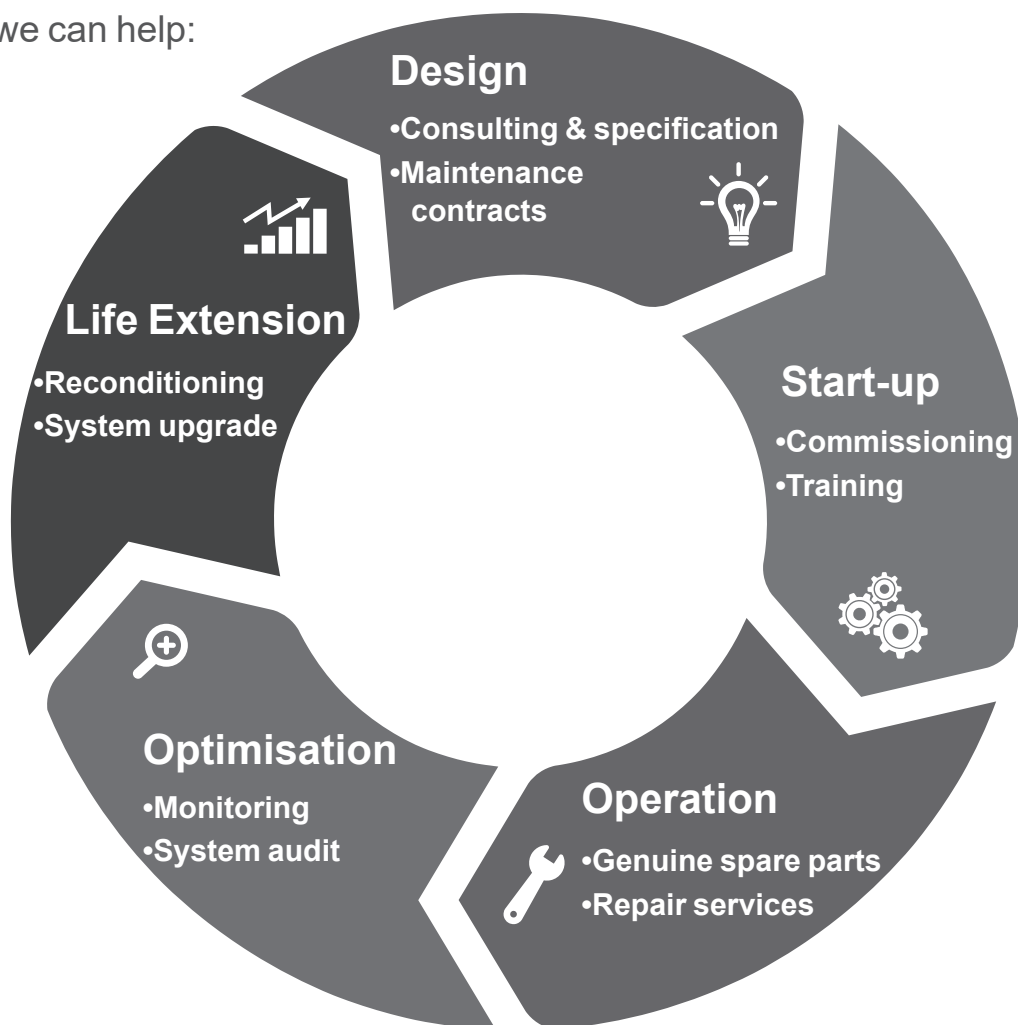
Our worldwide service network of over 80 facilities is at your service.

This local presence is our guarantee for fast and efficient repair, support and maintenance services.

Trust your alternator maintenance and support to electric power generation experts. Our field personnel are 100% qualified and fully trained to operate in all environments and on all machine types.

We have a deep understanding of alternator operation, providing the best value service to optimise your cost of ownership.

Where we can help:



Contact us:

Americas: +1 (507) 625 4011

EMEA: +33 238 609 908

Asia Pacific: +65 6250 8488

China: +86 591 8837 3010

India: +91 806 726 4867



Scan the code or go to:

 service.epg@leroy-somer.com

www.lrsom.co/support

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