ON-BOARD ELECTRONICS
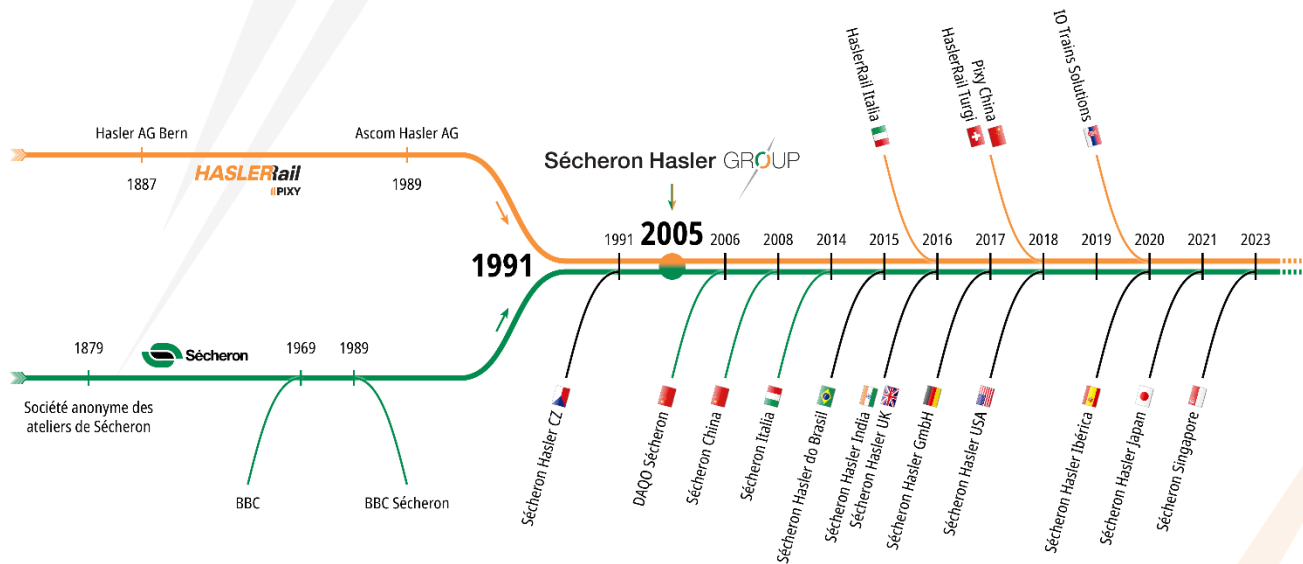
HASLERRail

EMS, DCS & DAS

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More than
140 years
of history

KEY FIGURES

⫽ **Private ownership**

⫽ Sécheron Hasler Group delivers its **products and services** to all major rolling stock manufacturers, railway & mass transit operators, general contractors for fixed installations, and service partners **worldwide**.

2023

1358
FULL TIME EMPLOYEES

SALES

267 M CHF
= 275 M € *
= 297 M US$ *

* **Exchange rates**
1 € = 0.9715 CHF
1 US$ = 0.8986 CHF

ON-BOARD ELECTRONICS

- Data recording
- Safety functions
- Rail data management solutions
- Odometry
- Cold Movement Detection
- Energy metering
- Mobile Gateway - GOCU
- HMI/DMI mobile visualization solutions
  Speed indicators
- Badge reader
- Video recording
- Vehicle Control Units (VCU)
- Remote I/O units
- Gateways
- Protection
- Sensors

MAIN LOCATIONS

 HEADQUARTER

 HaslerRail AG

Bern,
Switzerland

EUROPE

- **HaslerRail AG – Branch office**
  Baden, Switzerland

- **Sécheron HaslerRail Italia**
  Verona, Italy

- **Sécheron Hasler CZ**
  Prague, Czech Republic

- **Sécheron Hasler Ibérica**
  Madrid, Spain

- **Sécheron Hasler UK**
  Manchester, UK

- **Sécheron Hasler GmbH**
  Wetzlar, Germany

ASIA

- **Sécheron Hasler Japan**
  Tokyo, Japan

- **Sécheron Hasler India**
  Gurgaon, India

- **Sécheron Hasler China**
  Shanghaï, China

AMERICAS

- **Sécheron Hasler do Brasil**
  São Paulo, Brazil

- **Sécheron Hasler USA**
  Pittsburgh, USA

WORLDWIDE GROUP PRESENCE

Close to you
in more than
**40 countries
worldwide**

Oslo
Göteborg
Brussels
Bielsko-Biala
Zaporijie
Paris
Györ
Sangeorgiu de Mures
Belgrad
Ankara
Lisbon
Athens
Rabat
Cairo
Dorval
Mexico
Chittagong
Taipei
Hong Kong
Bangkok
Colombo
Ho Chi Minh
Kuala Lumpur
Singapore
Bandung
Seoul
Bryanston
Santiago
Buenos Aires
Taren Point
Victoria

HEADQUARTERS

MAIN LOCATIONS (GROUP OFFICES)

LOCAL PRESENCE (REPRESENTATIVES)

ON-
BOARD
ELECTRONICS

over 130 years

1887 → **2024**

FAR SYSTEMS

SAIRA ELECTRONICS
acquired in 2016

PIXY
MOBILE VISUALIZATION
acquired in 2018

HASLERRail Italia
from 2019

HASLERRail
from 2020

HASLERRail

International Railway Industry Standard
A Quality Standard for the Railway Industry

IRIS Certification

ISO 9001:2015
Quality Management System

DQS

ISO 14001:2015
Environmental Management System

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

ISO 45001:2018
Occupational Health and Safety Management System

SQS

EMS, DCS & DAS

Energy Measurement System

Building blocks for a modern on-board Energy Measurement System

⫽ **REM 102**

⫽ **DMeter**

⫽ **RTP 100**

ENERGY MEASUREMENT SYSTEM – REM 102

Dynamic energy metering to monitor consumption and drive accurate billing

REM 102

/ HaslerRail's REM102 is an **EN 50463:2017** certified device designed to measure, record and transmit metrological data related to electrical energy usage of rail vehicle operations.

/ Mounted within the rail vehicle, it tracks consumed and regenerated energy on both AC and DC traction power systems.

/ Meters are crucial for efficient energy management, enabling rail operators to monitor consumption, optimise energy use and improve economy on a route-by-route basis.

/ For energy metering over an Ethernet or serial network, REM102 can operate in conjunction with multiple HaslerRail DMeters which support distributed voltage, current measurement and energy calculation. This configuration can be used to monitor the energy consumption of the entire train or that of a specific vehicle sub-system.

ENERGY MEASUREMENT SYSTEM – DMETER

Compact solution for voltage and current detection plus an energy calculation function

DMETER

- DMeter is **a compact, stand-alone meter** designed to measure voltage and current and calculate train energy consumption.

- Its small form factor and unique integration architecture make it ideal for rolling stock with space limitations.

- It integrates the Voltage Measurement Function (VMF), Current Measurement Function (CMF), and Energy Calculation Function (ECF).

- Multiple DMeters can communicate with each other and with a Data Handling System (DHS) through an RS485 network.

- DMeter is suitable for interior applications requiring voltage detection and energy calculation on traction power systems ranging **from 600 VDC to 3,000 VDC**.

- DMeter is well-suited for a distributed architecture with multiple measurement points, such as in EMU and metro applications.

Programmable protection from electrical faults and supply excursions

RTP 100

- HaslerRail's RTP100 is a multifunctional, programmable device designed for use in both AC and DC rail vehicles.

- It monitors traction supply parameters and protects traction and auxiliary equipment from **overcurrent, short circuits, and transient out-of-range supply voltages on the contact wire**.

- If any instantaneous measured values exceed the configured thresholds, output relays wired in series with the vehicle's main circuit breaker will initiate a controlled opening of the breaker. This action ensures the safety of the vehicle, passengers, and cargo.

- Typical RTP100 applications are:

  - Over/under-voltage protection (DC, 50 Hz and 16.7 Hz)

  - Overcurrent and short-circuit protection (50 Hz and 16.7 Hz)

  - Contact wire detection (AC/DC)

  - Out of frequency monitoring and protection

  - Electrical Transient Recording (Oscilloperturbography)

EMS, DCS & DAS

Data Collecting System

DATA COLLECTING SYSTEM

Designed for train energy managers
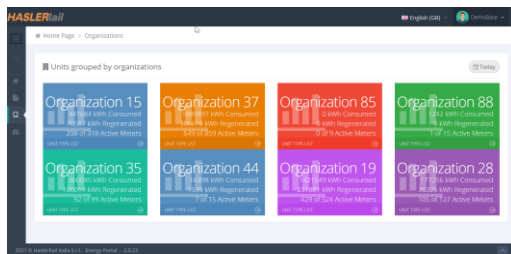
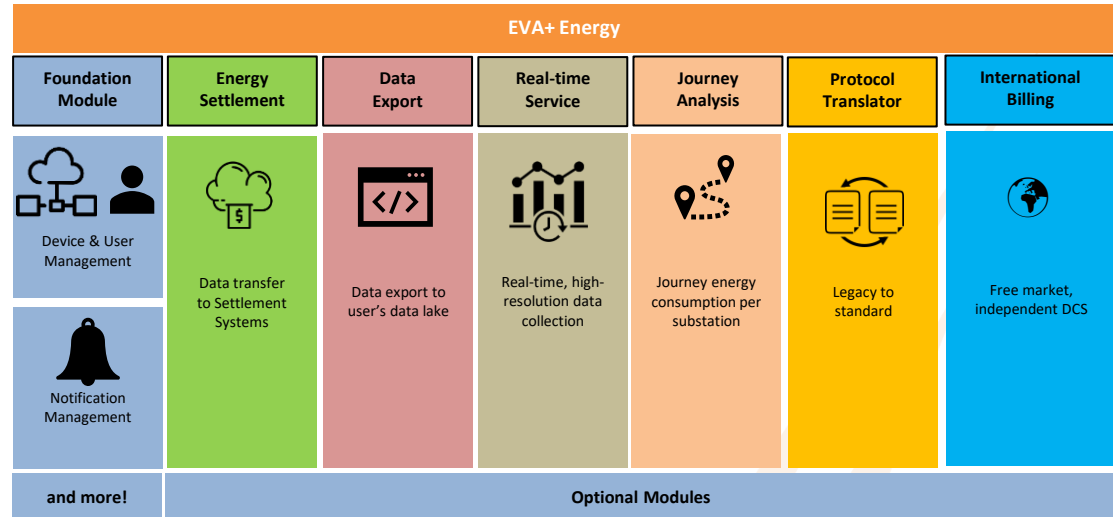

EVA+ ENERGY

(or *Energy Portal* for old friends)

⟋ Certified compliant with **EN 50463:2017**

⟋ Required by European law for billing real train energy consumptions

⟋ Easily connect any Energy Meter compliant with EN50463:2017

⟋ Automatic collect standard energy data for billing

⟋ Automatic collect extended energy data for analysis

⟋ Energy meters management

⟋ Energy data storage

⟋ Automatic transfer of energy data to energy settlement systems based on **IRS 90930**

⟋ Rule based anomaly detection

⟋ Schedulable pre-defined reports

⟋ Immediately available as a service

⟋ Wide range of automatic export protocols

⟋ Add-on modules

⟋ Open to extensions

DATA COLLECTING SYSTEM

Modules available in service mode

EVA+ Energy						
Foundation Module	**Energy Settlement**	**Data Export**	**Real-time Service**	**Journey Analysis**	**Protocol Translator**	**International Billing**
Device & User Management	Data transfer to Settlement Systems	Data export to user's data lake	Real-time, high-resolution data collection	Journey energy consumption per substation	Legacy to standard	Free market, independent DCS
Notification Management						
and more!	**Optional Modules**					

DATA COLLECTING SYSTEM

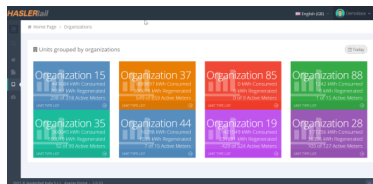## Coming soon in EVA+ Energy

SFTP

HTTPS with Mailbox

Platform integration

Master Data

Hybrid trains

High-Resolution

- Support standardization
  - CENELEC EN 50463, IEC 62888, UIC IRS 90930
  - Set up a test bench to validate standard innovations

- Support integration
  - HaslerRail EVA+ platform
  - User platform (e. g. Azure, AWS, etc.)

- Support big data
  - Enable energy data collection with TRP = 1 s
  - Integrate EVA+ Signal Analytics and Event Generator

EMS, DCS & DAS

Driver Advisory System

A cloud-based algorithm calculates the optimal driving profile based on live data from trains

EVA+ DAS

- The physical properties of the train, line characteristics, and journey information are configured in **EVA+ Cloud**.

- Journeys can be simulated using the **EVA+ DAS Online Simulator**, allowing planning and operations specialists to plan train journeys more effectively.

- Specialists can compare estimated energy consumption based on different priorities, such as punctuality, energy saving, and increasing line capacity.

- During an actual journey, EVA+ DAS receives speed, location, and energy consumption data from the train. The **EVA+ DAS algorithm** then calculates the optimal driving profile and sends it back to the train as needed.

- The latest driver advice profile can be saved on the on-board device in case of connectivity loss. The on-board HMI or tablet displays the advice at the right moment, ensuring timetable adherence and passenger comfort while minimizing energy consumption.

- In-depth data and **journey analysis** are performed in EVA+ Cloud.

DRIVER ADVISORY SYSTEM

The integration of DAS with Driver Mobile App will provide feedback to and from the driver

MYDRIVE
WITH EVA+ DAS

Key features and benefits	
Comprehensive journey review	Access detailed journey data to analyse and understand each trip
Journey performance metrics	Evaluate critical performance metrics like speed, acceleration, and braking
Advanced timetable performance analysis	Monitor train arrivals, departures and station dwell times to improve timetable hit rates
Energy efficiency tracking	Reduce fuel or energy consumption through targeted feedback
Passenger comfort enhancement	Improve passenger experience by optimising driving techniques
Safety improvements	Identify and address potential safety issues
Streamlined review processes	Simplify the review and feedback process with quick and convenient data retrieval
Adhesion and general track conditions	Detect and respond to adhesion issues and other track conditions
Employee engagement for self-improvement	Equipping drivers with a handy reference tool encourages regular self-assessment, goal setting and performance awareness
Clear and intuitive user interface	Requires minimal training for full, rapid take-up of all MyDrive features

DRIVER ADVISORY SYSTEM

Currently stand-alone but ready for connection and for AI enhancement

EVA+ DAS
EVOLUTION

- Open to C-DAS and to SFERA protocol
- Thanks to its centralized nature, EVA+ DAS is natively open to connected DAS solutions.
- IRS 90940 integration is under study
- EVA+ DAS uses a powerful graph-based, mathematical algorithm
- It will soon integrate responsible AI to enhance the challenging task of driving trains safely and efficiently

EMS, DCS & DAS

SYSTEMS

Let's build …

Measurement

Protection

Data Collecting
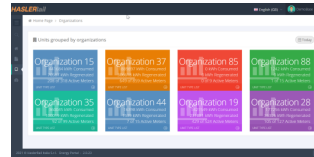
Analytics

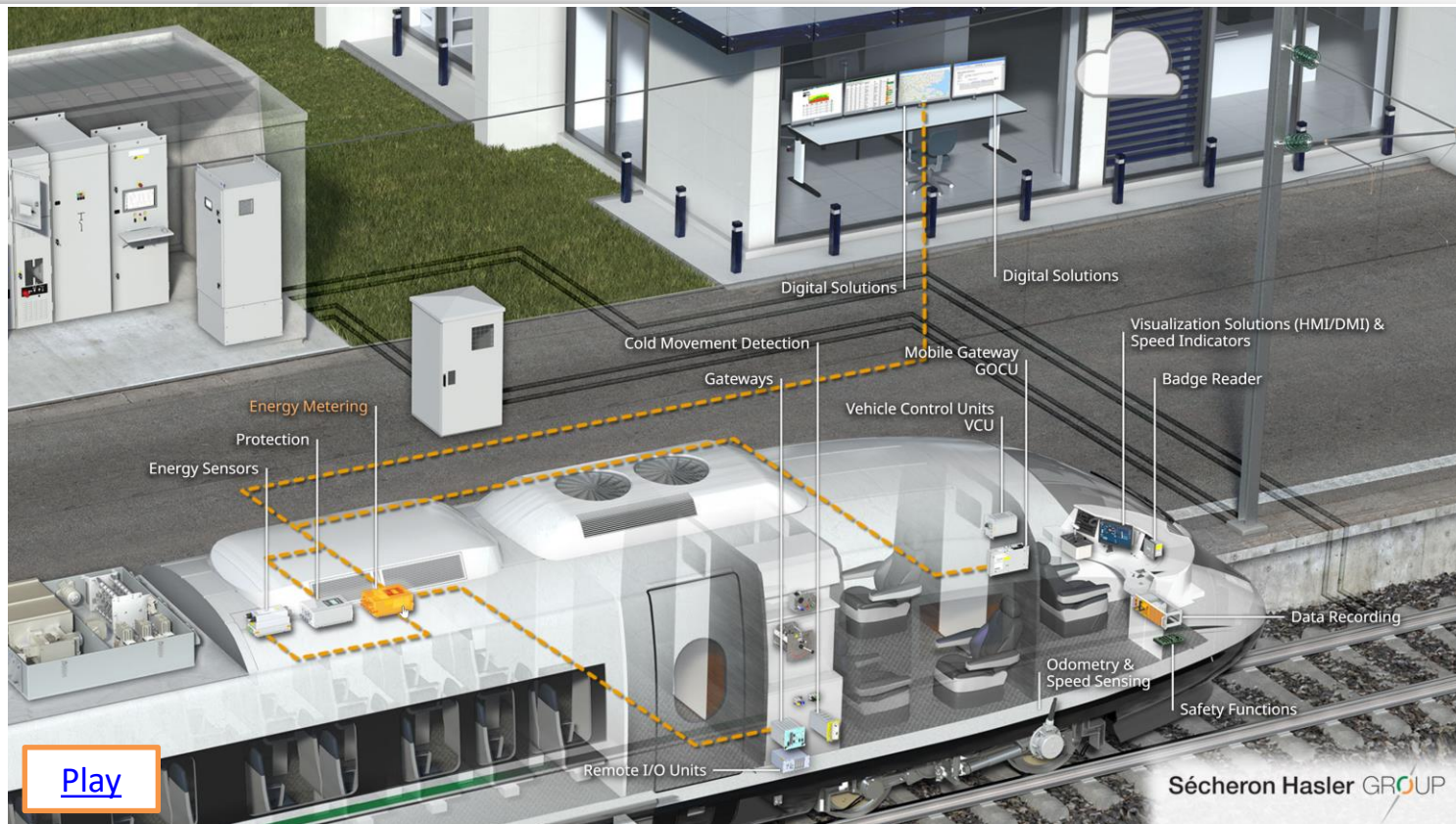Algorithms
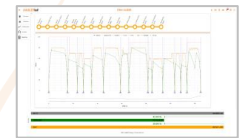
Arc detection

Data Exporting

Data recording

Driver Advisory

Driver App

EMS, DCS & DAS

SUMMARY

- Comprehensive portfolio for EMS, DCS, and DAS
- Over 140 years of expertise in rail data acquisition and management
- Components, systems, and solutions developed in collaboration with railway operators
- Compliance with all relevant standards
- Future-ready connectivity
- 100% rail-focused

Questions?

Thoughts?

Engagement opportunities?

Support needed?