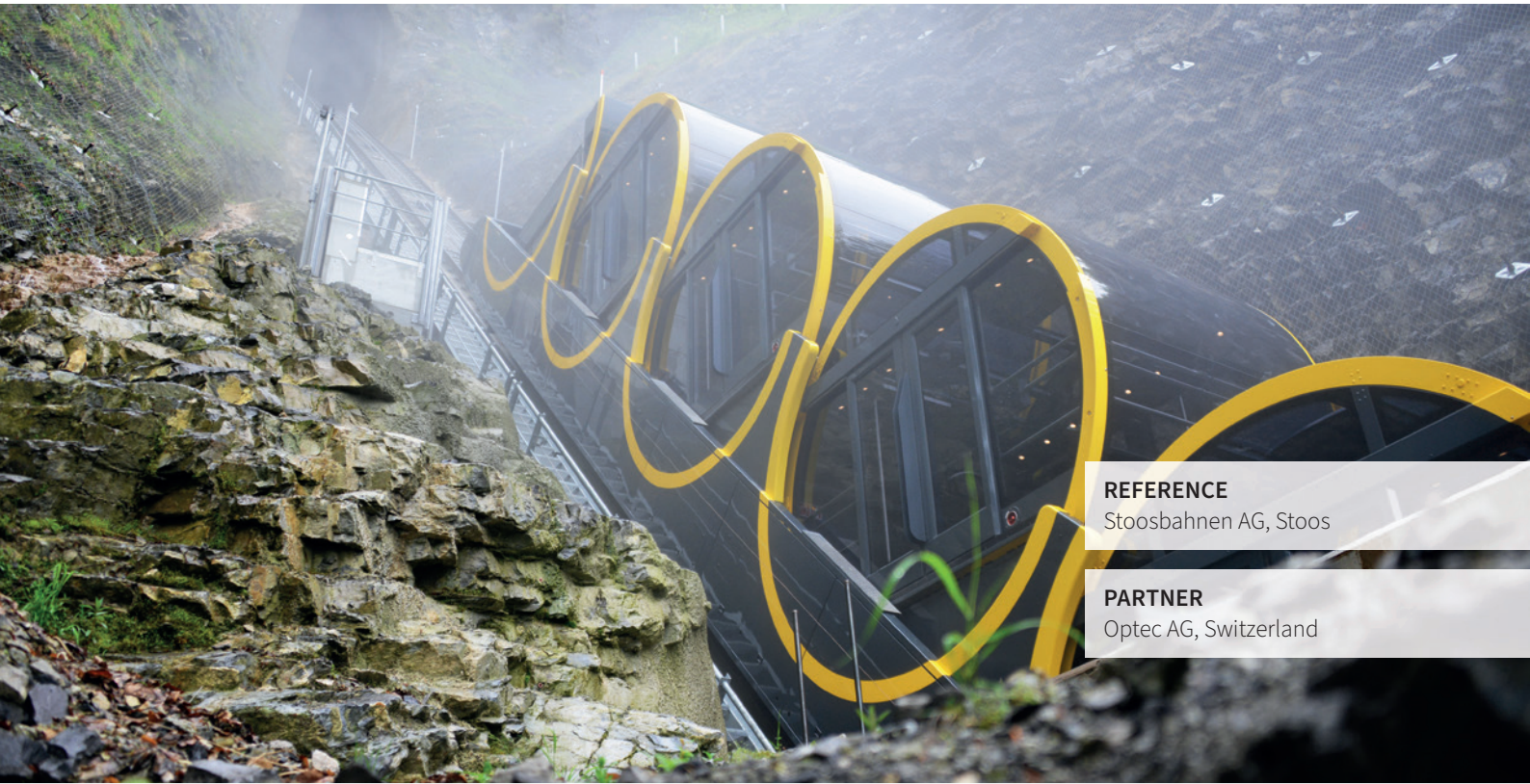


Project Brief



**REFERENCE**

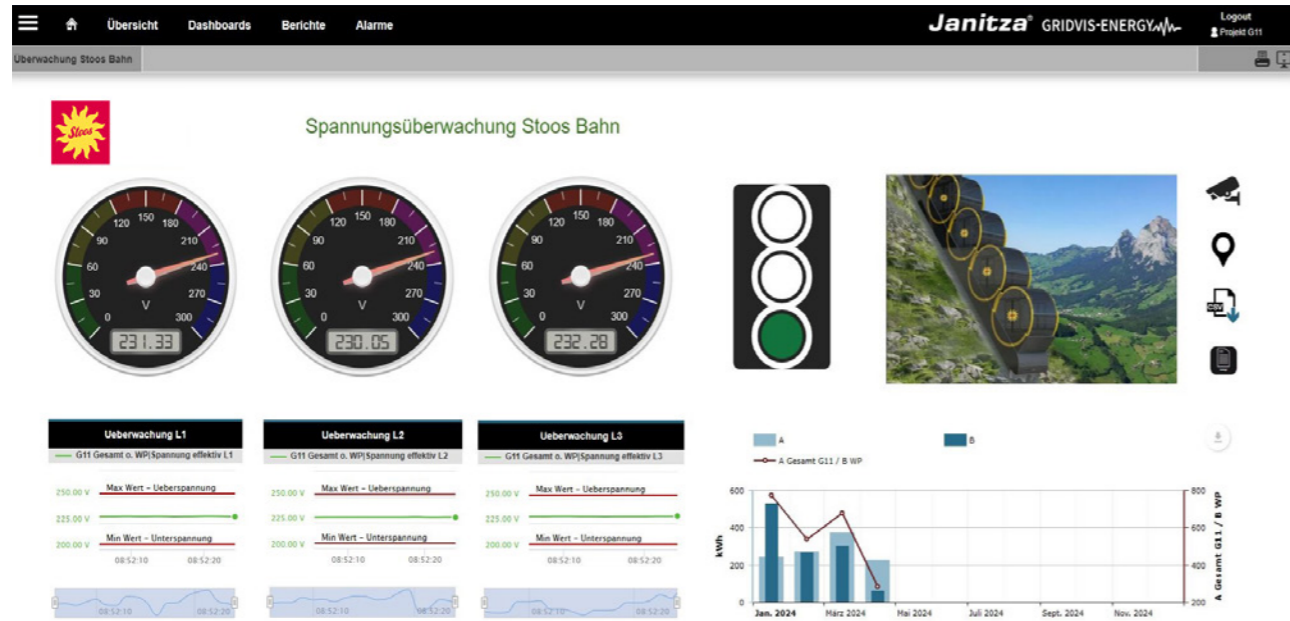
Stoosbahnen AG, Stoos

**PARTNER**

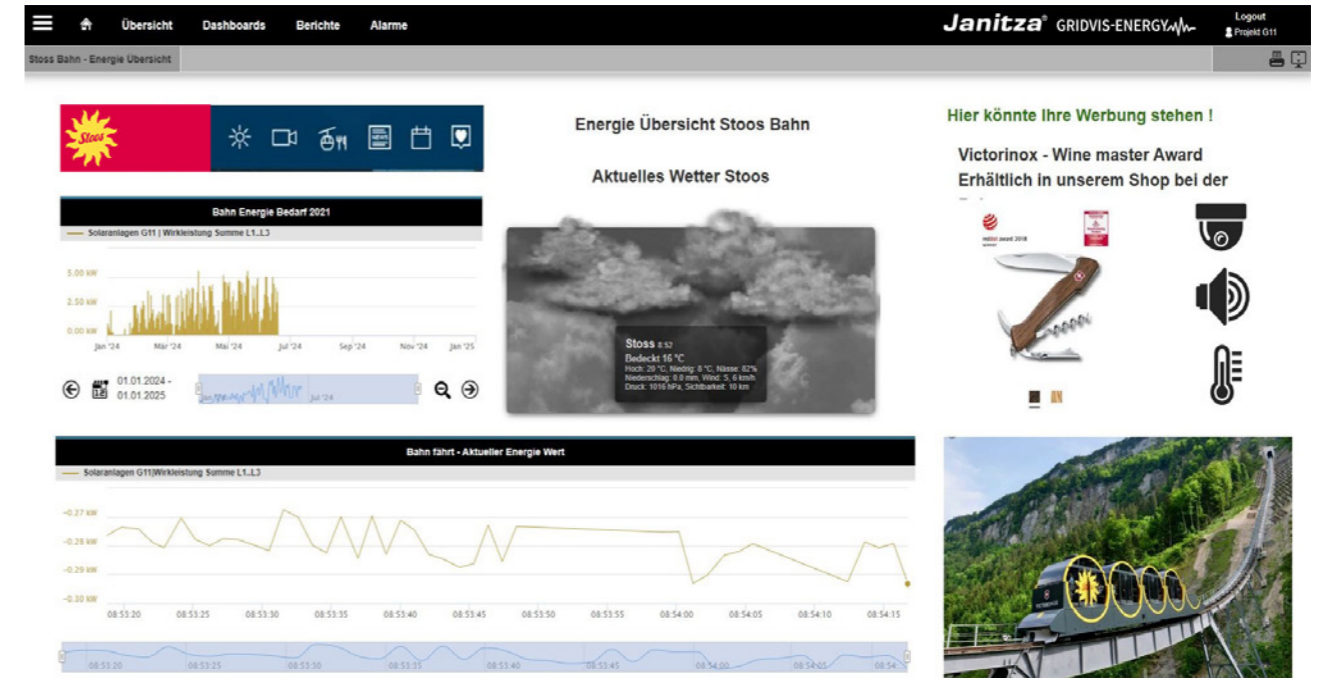
Optec AG, Switzerland

TURNING BRAKING ENERGY  
INTO HEAT

***Janitza***



The GridVis® power grid monitoring software can be used to continuously monitor and analyze network quality



Possible visualization of peak loads and consumer behavior

## A LARGE-SCALE PROJECT FOR THE STOOS MOUNTAIN RAILWAY

### REQUIREMENT

Since December 2017, the world's steepest funicular has connected Schwyz with the car-free mountain village of Stoos. With a gradient of up to 110 percent, innovative cabin technology and a travel time of only a few minutes, the system represents a technical milestone in modern, sustainable mobility. During every descent, the railway feeds recovered braking energy back into the grid along the second half of the route.

During the construction of the new hotel and the energy modernisation of the mountain station, the aim was to use this energy for hot water production and heating in the "Stoos Lodge" and the mountain station – efficient, sustainable and automated. In addition, the solution had to manage critical loads such as the hotel kitchen and the wellness area and include a peak load management system.

### SOLUTION

Two custom-built hot-water boilers form the core of the system, each equipped with eleven heating elements. Each boiler provides 442.4 kW of heating capacity, supplied by eight elements rated at 31.6 kW and three rated at 63.2 kW.

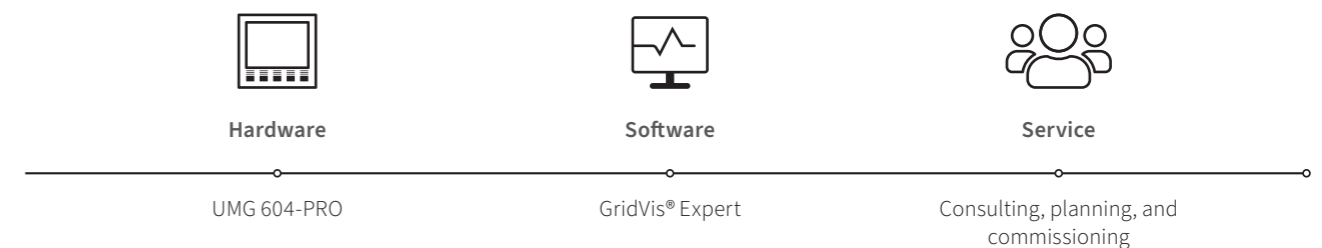
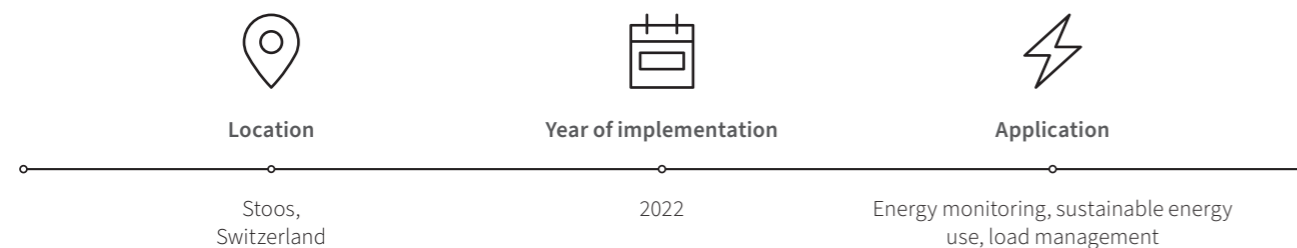
The installation is controlled by the Optec Enline Controller Type 153. It receives precise measurement data from the railway system via Janitza UMG measuring devices. When braking energy is fed back into the grid, the controller activates the heating elements – matched to the operating profile of the funicular. This allows the recovered energy to efficiently heat water with minimal losses.

### BENEFIT

The generated heat supplies the mountain station, the Stoos Shop and the entire Stoos Lodge. A second controller manages critical loads in the hotel and enables automated peak load management. The complete control process is data-driven and operates in real time. The UMG 604-PRO power quality analyzers are networked via Ethernet and allow central monitoring and evaluation of all consumption and control data.

The solution enables the efficient use of braking energy and establishes a closed, sustainable energy supply concept. Stoos Lodge benefits from a stable and efficient hot-water supply that reduces operating costs and conserves resources.

At the same time, the integrated load management system ensures targeted control of energy-intensive consumers, for example in the kitchen and wellness area. This reduces peak loads, relieves the grid and increases overall energy efficiency. The combination of customised hardware, a powerful control system and modern measuring technology provides a future-proof and environmentally friendly energy supply – at an altitude of over 1,300 metres in the mountains.



### ABOUT JANITZA

Janitza develops comprehensive energy measurement solutions that ensure transparent energy flows and monitor power quality. The global company, headquartered in Germany, provides individual solutions to meet specific customer requirements across a wide range of industries, including data centers, manufacturing, buildings & infrastructure, utilities, and renewable energy.

### ABOUT OUR PARTNER COMPANY

Optec AG brings many years of experience and in-depth expertise in energy management, electrical safety, hospital and medical technology, as well as electromobility. The company has delivered numerous customer-specific projects for small and large organizations. Optec AG understands technical requirements, applicable standards, and critical success factors.

#### HEADQUARTER

##### Janitza | Germany

Vor dem Polstück 6  
35633 Lahnau  
Phone: +49 6441 9642-0  
Email: anfragen@janitza.de

#### SOLUTION PARTNER

##### Optec AG | Location Switzerland

Guyer-Zeller-Strasse 14  
8620 Wetzikon  
Phone: +41 44 933 0770  
Email: info@optec.ch

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#### GLOBAL

##### Janitza | USA

Phone: +1 888 526 4892  
Email: sales-us@janitza.com

##### Janitza | Austria

Phone: +43 7942 214 966 194  
Email: anfragen-at@janitza.com

##### Janitza | Mexico

Phone: +52 56 6674 4808  
Email: sales-mx@janitza.com

##### Janitza | Australia

Phone: +61 411 544 114  
Email: sales-au@janitza.com

##### Janitza | UK

Phone: +44 7939 697 434  
Email: sales-uk@janitza.com

##### Janitza | India

Phone: +91 900 387 6980  
Email: sales-in@janitza.com

[www.janitza.com](http://www.janitza.com)

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