

# Photovoltaic plant at Jungfrauojoch

Christof Bucher<sup>1</sup>, Matthias Burri<sup>1</sup>

<sup>1</sup>Bern University of Applied Sciences, PV Laboratory, Burgdorf, Switzerland

christof.bucher@bfh.ch

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## 1. Project description

In 1993, the highest grid connected PV plant in the World was built at Jungfrauojoch (3454 meters above sea level) [1]. Since then, the 24 modules Siemens M75 (48Wp) with a total rated power of 1152 Wp reliably produced solar electricity. The PV module degradation has found to be 0.11% per year, which is roughly ten times less than predicted based on typical degradation warranties at the time. Until today, the PV system is used to monitor the long-term performance of PV technology. A generation shift in the PV laboratory of the Bern University of Applied Sciences will lead to a new research focus.

### 1.1 Activities 2021

In 2021, the PV lab faced the biggest generation shift since 2012, when Prof. Dr. Heinrich Häberlin was pensioned. While Prof. Urs Muntwyler and Thomas Schott finished their activities, the new research team lead by Prof. Dr. Christof Bucher and the group leaders Matthias Burri and David Joss started several new projects in the field of applied PV research.

The long term monitoring of the PV systems at Jungfrauojoch have continued. Sensors and the communication system have been checked and updated by Thomas Schott. Many possible new research projects have been discussed with BFH and industrial partners, see Chapter 1.2 Outlook.



Figure 1. PV system at Jungfrauojoch

### 1.2 Outlook 2022

The PV system at Jungfrauojoch is a unique site for testing of PV systems in harsh environments. Several projects have started at

BFH, which will use the data from the Jungfrauojoch PV systems and introduce new research questions to the equipment installed on site. Some of these projects are:

- BFH is currently developing a new measurement system including MPP tracking and automatic IV curve measurements of PV modules. Together with PV module manufacturer 3S, novel PV modules are being developed and tested.
- Together with world market leader for DC connectors for PV systems, Stäubli Electrical Connectors, BFH is conducting a quality assessment campaign for old MC4 connectors.
- Novel approaches for evaluating PV module degradation will be used to assess the degradation values given in [1], [2] and [3]. Abstracts for the World PV Conference 2022 in Milan have been submitted.

### References

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### Address

Bern University of Applied Sciences BFH  
Dept. Engineering and Information Technology (EIT)  
Photovoltaic Laboratory (PV LAB)  
CH-3400 Burgdorf  
Switzerland

### Contacts

Prof. Dr. Christof Bucher  
Tel.: +41 34 426 6908  
e-mail: christof.bucher@bfh.