

Concept for a photovoltaic pilot plant in India

Current situation

The *GEMS Polytechnic College* in the Indian state of Bihar plans to become a center of solar energy competence for the region. For this purpose, the installation of a photovoltaic pilot plant with battery storage is planned, which will provide data and knowledge for teaching and research. In addition, this pilot plant in combination with a battery management system should ensure a reliable supply of electricity to the nearby staff house.



Facts

- 98% coal power in Bihar
- 5 hours of power interruptions / day
- Electricity is expensive and unreliable
- Only instantaneous water heater

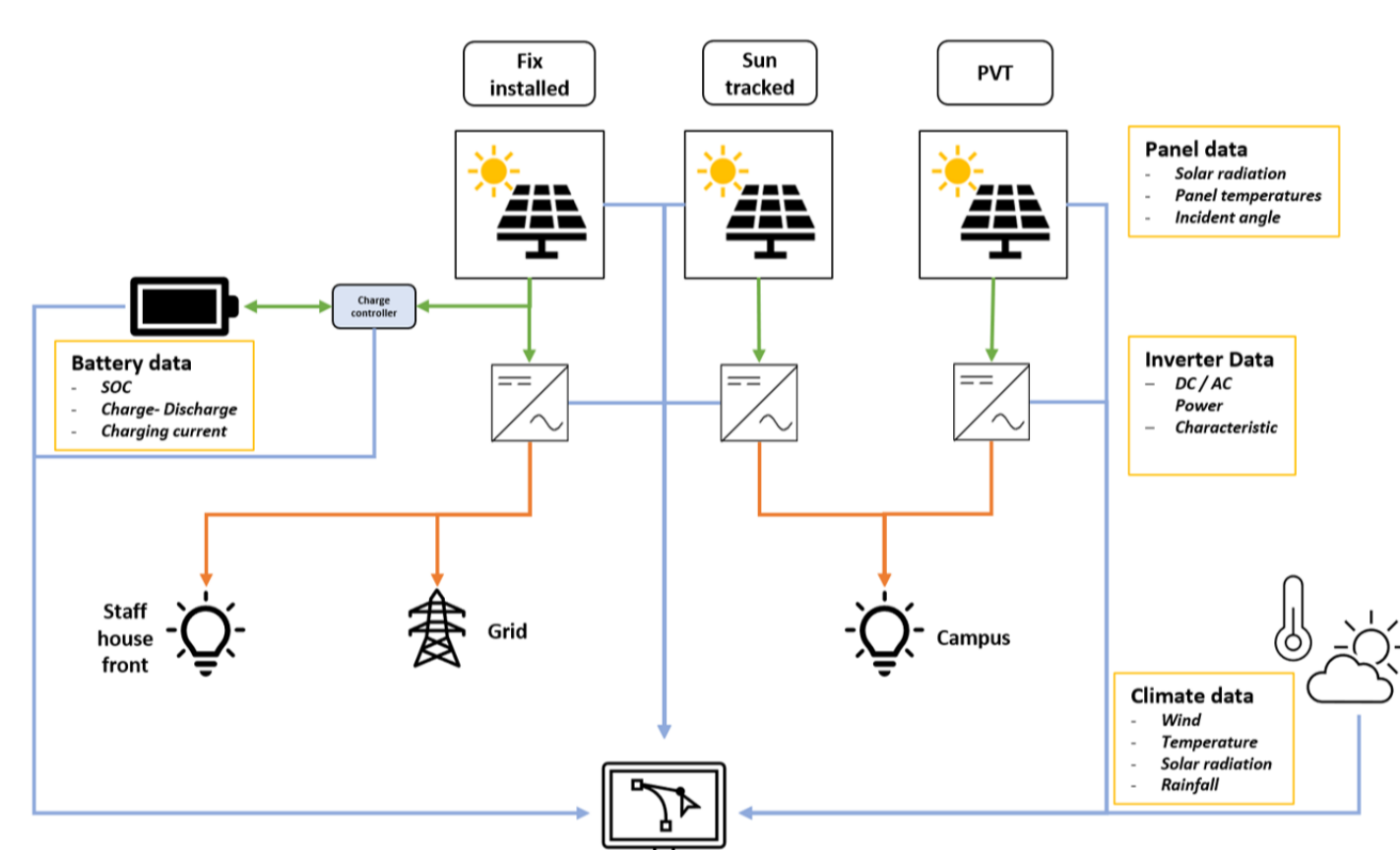
Aims of the project

- Concept of a PV pilot plant with battery storage
- Measuring system for teaching and research
- Battery and load management including an alternative hot water system

Concept development

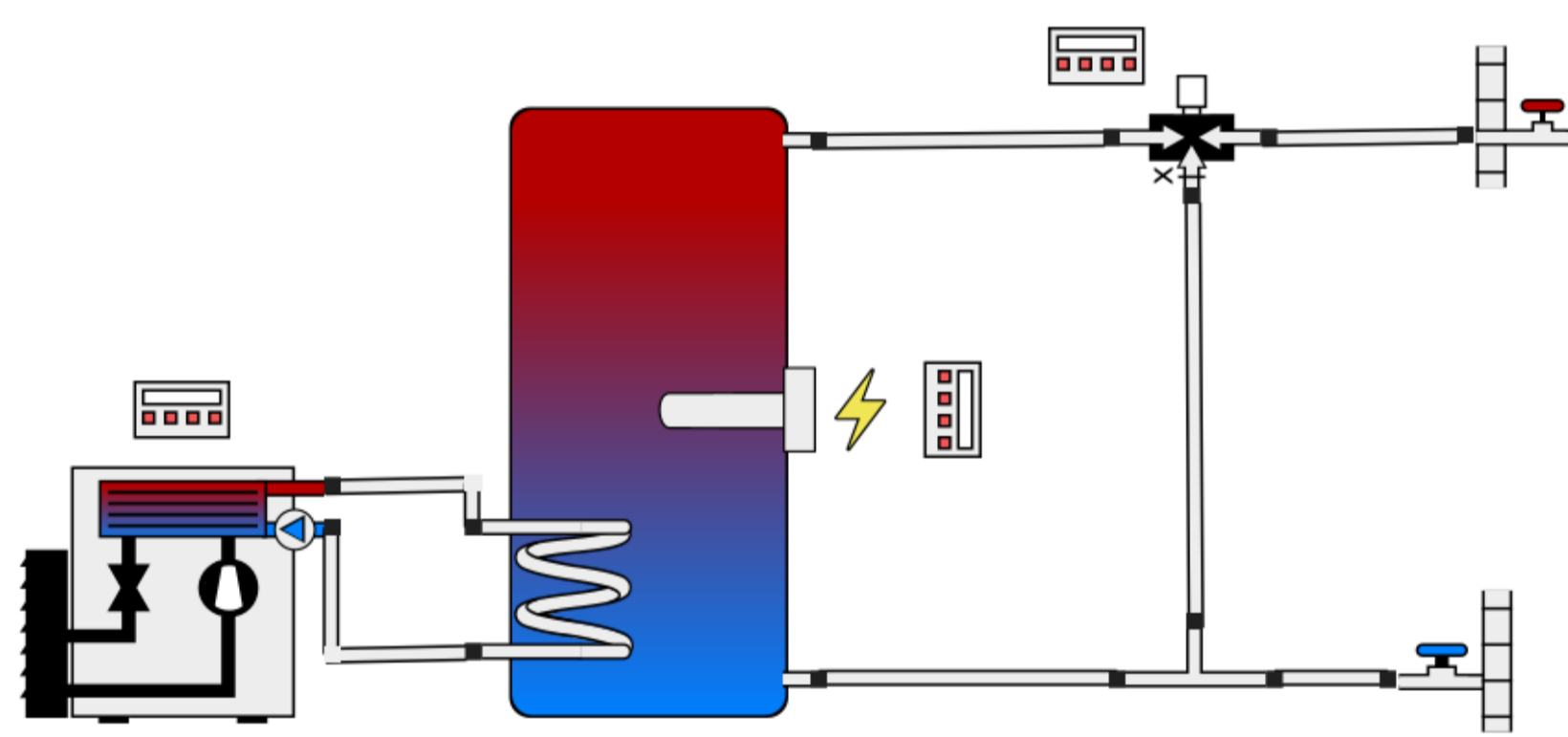
Pilot plant concept

- 20 kWp fix installed
- 1 kWp water cooled
- 1 kWp sun tracked
- Measuring system



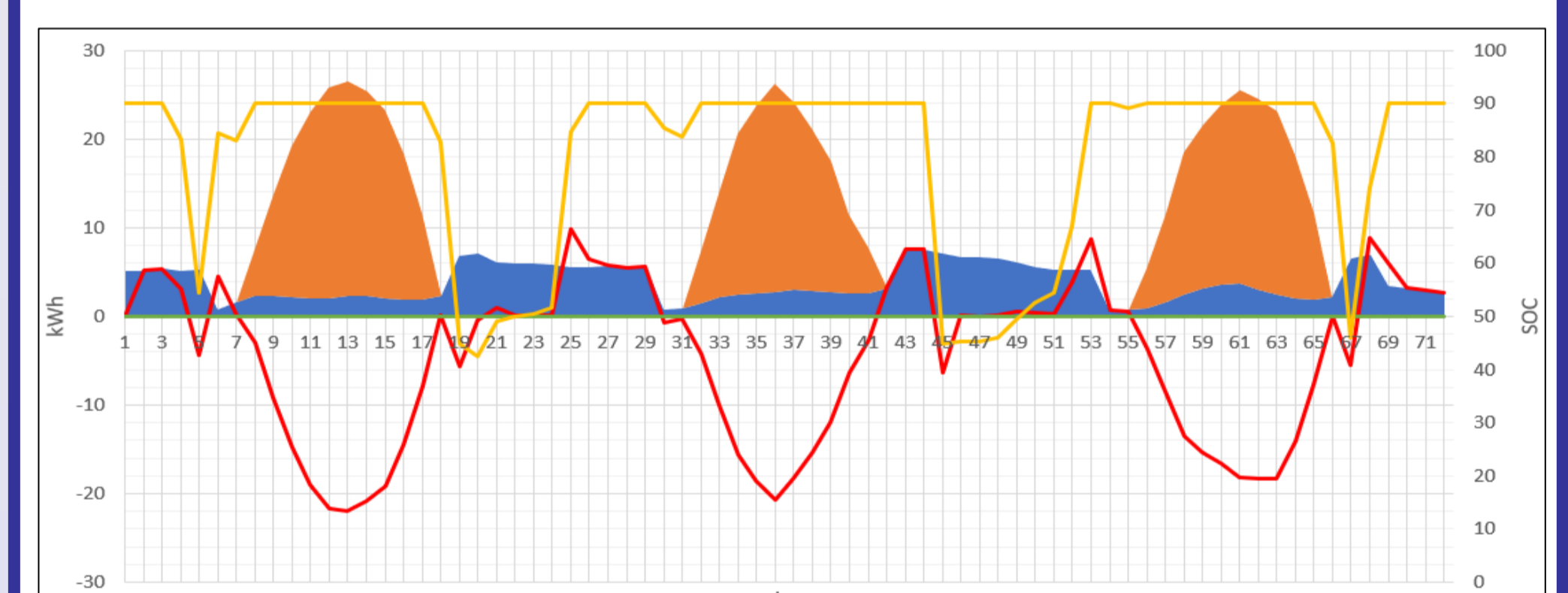
Hot water systems

- Alternative hot water systems
- Hot water storage
- Different heat sources

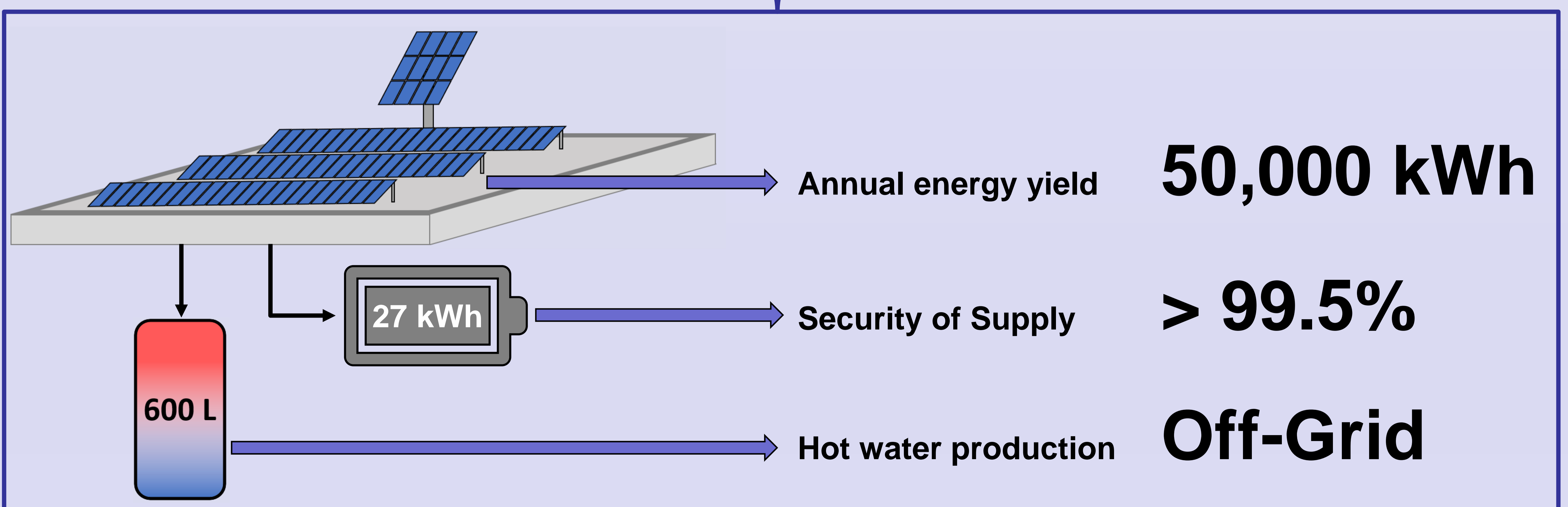


Battery and load management

- Bypassing power interruptions
- Selective switching of electrical loads
- Reduction of generator running hours



Main results



Study course: Energy and Environmental Technology / FS23
Student: Michel Aberle
Client: GEMS Polytechnic College, Bihar, India
Expert: Christian Bauer, christian.bauer@psi.ch
Coach: Prof. Stefan Roth, stefan.roth1@fhnw.ch

