

Contact:

TPV-System

Dr. Wilhelm Durisch

Tel. +41 (0)56 310 26 25

Fax +41 (0)56 310 21 99

E-Mail: wilhelm.durisch@psi.ch

Dr. Bernd Bitnar

Tel. +41 (0)56 310 40 85

Fax +41 (0)56 310 26 46

E-Mail: bernd.bitnar@psi.ch

Technology Transfer Office

Alfred Waser

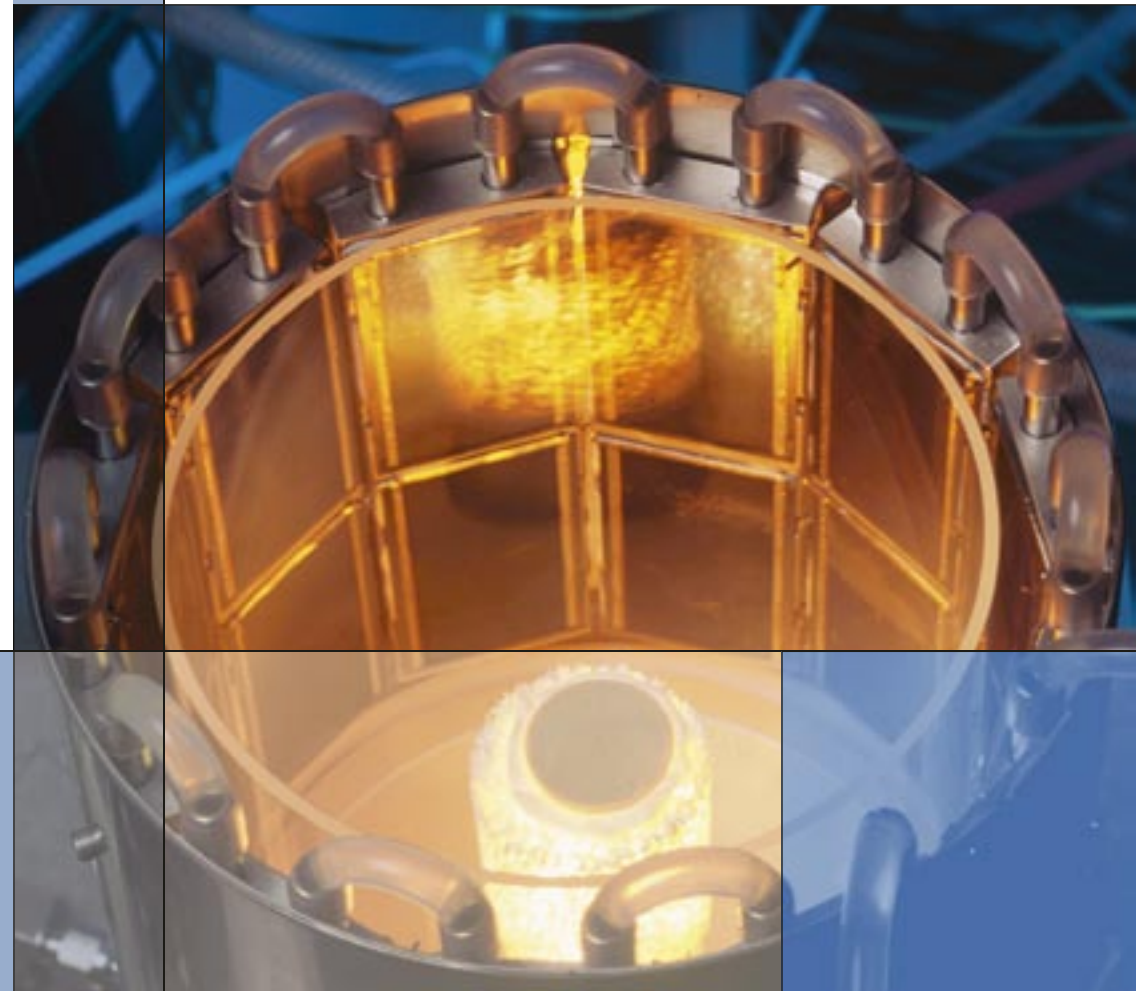
Tel. +41 (0)56 310 52 40

Fax +41 (0)56 310 27 17

E-Mail: alfred.waser@psi.ch

Electrical power from heat

Thermo-photovoltaic System

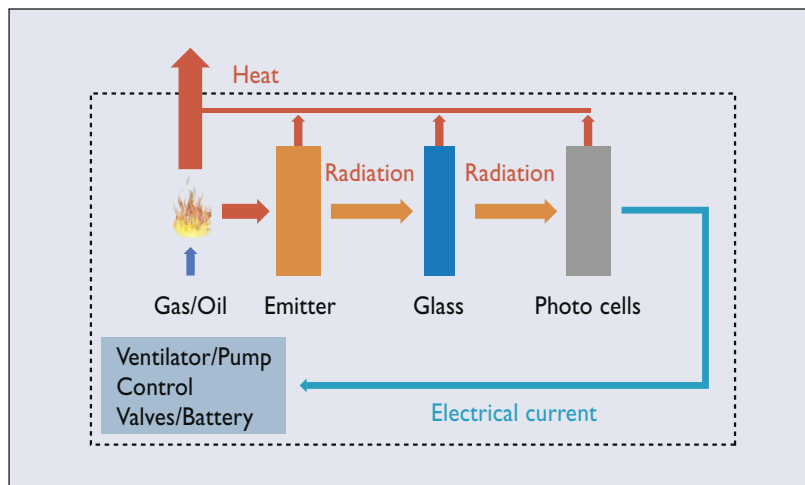


In addition to the heat produced by its oil or gas burner, the Thermo-photovoltaic System (TPV) also generates sufficient electrical power to make the heating facility independent of an external electrical supply. This TPV System has been developed by the Paul Scherrer Institut (PSI) in cooperation with partners from research and industry, supported by the KTI/CTI Innovation Promotion Agency.

Technology / Innovation

Energy conversion steps:

Heat → Electromagnetic Radiation → Electrical Energy



Fuels: Natural gas, liquid gas, oil (projected), biogas (projected).

The spectrum of the radiation emitted by the foamed ceramic material is optimally adapted to the absorption band of the photo cell:

- Radiation primarily within the spectrum which can be converted by a photo cell.
- Long-wave emittance is avoided in order to minimize radiation losses.

Why to operate a burner independently of an external electrical power supply?

To operate a burner independently of an external electrical power supply may be useful due to:

- No power supply in the vicinity
- The limited lifetime of battery-powered energy systems.
- The unreliability of some existing power supply networks (frequent interruptions, blackouts).
- The possibility of reducing costs by consuming as little energy as possible from an existing electrical power supply.

Applications

- Independent heating installations for vehicles, avoiding high demand on the vehicle battery (lorries, buses, diesel-powered trains, parking heaters for automobiles, boats etc.)
- Air humidifier independent of an external electrical power supply
- Space heating in the power range 10 ... 50 kW (thermal)
- Any gas or oil burner which needs to operate independently of an external electrical power supply

