Solar collectors, in particular flat panel solar collectors, are well-known devices which are usually used to absorb and transfer solar energy into a collection fluid. Principally, solar collectors consist of a blackened absorbing cylinder or plate contained in a housing which is frontally closed by a transparent window panel. Due to the diluted nature of solar light, in order to increase the operating temperature by reducing the thermal losses, solar collectors may be evacuated during use to eliminate gas convection and molecular conduction. Very high temperatures could also be achieved by light focusing. However, only direct light is focused, while diffuse light is lost.

**Area of expertise**
Mechanics

**Applications**
- Cooling
- Water desalination
- Electricity generation
- Buildings heating
- Water heating

**Related CERN technologies**
- Non-Evaporable Getter (NEG) thin film coatings
- Palladium thin film coatings

**Innovative features**
Use of Ultra High Vacuum (UHV) technologies and continuous vacuum pumping (NEG Technology) to reach higher operating temperatures (~300°C).

**Specifications**
- The initial pressure after sealing is in the 10-8 Torr range, and it would increase to the 10-5 Torr range during 20 years of operation.
- The stagnation temperatures were recorded in different meteorological situations for the best and worst absorbers. For 900 W/m² a temperature of 350°C may be exceeded.

**Advantages**
- Contribution to a clean environment.
- Potential candidate to contribute with the European Union Directive 2001/77/EC which aims to have renewable energy sources providing 21% of electricity by the year 2010.
**Intellectual Property status**
Non exclusive license to a start-up company. A new prototype of the solar flat panel collector has been developed with the start-up company for further industrial large scale production. Ready for further licensing. Patented technology. WO2005075900.