

# WP6o2 – Service S2: “Design CSPA Preparation and development plan

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## ENDORSE (Energy DOWnstReam SErvices)

Providing energy components for GMES

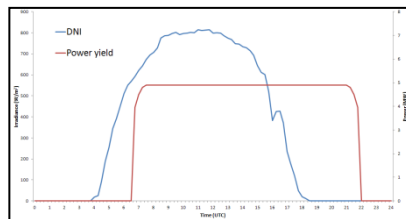
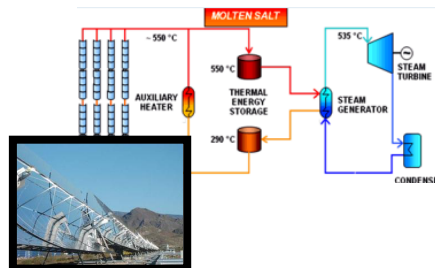
Meeting #4 ENDORSE – Wessling, Germany



# General Overview

### PRODUCT (WP402: 3/11 – 6/12)



- detailed model of each part of a CSP parabolic trough plant
- **assimilation** of near real time satellite data (DNI and air temperature values)
- **calculation of the expected power yield** every 15 minutes and of the daily energy yield



### SERVICE (WP602: 7/12 – 6/13)

- **Controller service**  
near real time comparison between the expected energy production derived from satellite and the actual one measured for **performance analysis**
- **Planner service**  
Support in new **CSP plants planning and RoI analysis**, exploiting historical datasets for satellite-based solar radiation and air temperature values, together with economic info on CSP plants

# Prime-user requirements

- Development of a system **similar to the existing Solarsat PV-Planner** (with web-GIS interface) for CSP plants planning support services  **CSP-Planner**
- Development of a system **similar to the existing Solarsat PV-Controller** (web interface) for CSP plants monitoring activities  **CSP-Controller**

# CSP Planner and Controller

Using the **product S2** that has been developed in WP402, we will develop in the next months **two sub-services**:

## 1. CSP-Planner service

- CSPS site assessment;
- optimal design of CSPS;
- return on investment assessment



## 2. CSP-Controller service

- internet-based, cost-effective and reliable monitoring solution for **failure detection**;
- **performance analysis** and cross check of in-situ measurements

## CSP-Planner

### Site selection (web-GIS interface)



DNI and air temperature averaged data (archive)

S2 PRODUCT

Expected monthly energy yield

### Desired technical features selection

#### Technical Features

Fill the following form providing technical features of your desired CSP plant

Fluid

Fluid Type

Heat Temperature  (°C)

Fluid Rate  (kg/s)

Piping

Piping Material  (m)

Insulation Thickness  (m)

Insulation Length  (m)

Insulation Material  (m)

Parabolic Trough Solar Collector Module

Overall

Length of the absorber tube  (m)

Width of the aperture area  (m)

Length of the aperture area  (m)

Radius of curvature mirror  (m)

Glass Envelope

Outside diameter of glass tube  (m)

Inside diameter of glass tube  (m)

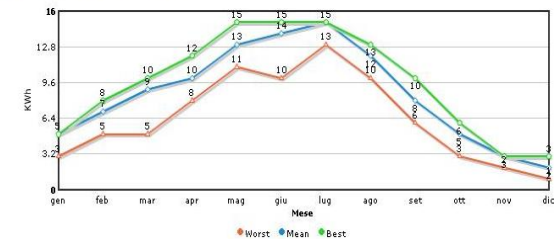
Absorber Tube

Outside diameter of absorber tube  (m)

Inside diameter of absorber tube  (m)

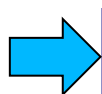
Base Material

Energy Production

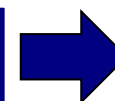


# CSP-Controller

Near Real-time DNI and  
air temperature values  
(from MACC Core  
Service and UniGe)



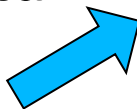
**S2 PRODUCT**



Calculated  
power (15min)  
and energy yield  
by the plant



Production data  
measured in-situ



Comparison between  
measured and calculated  
energy values:  
near real-time  
performance analysis  
and alerting system

