Multi-APproach for high efficiency integrated and inteLLigent cONcentrating PV modules (Systems)

Solar Concentrators PV Systems

WP 4 – MBS²

Mirror based Spectrum Splitting Systems

Partners: ***- CPower (WP Leader)***
- UNIFE
- Tecnalia – Robotiker
- ENEA

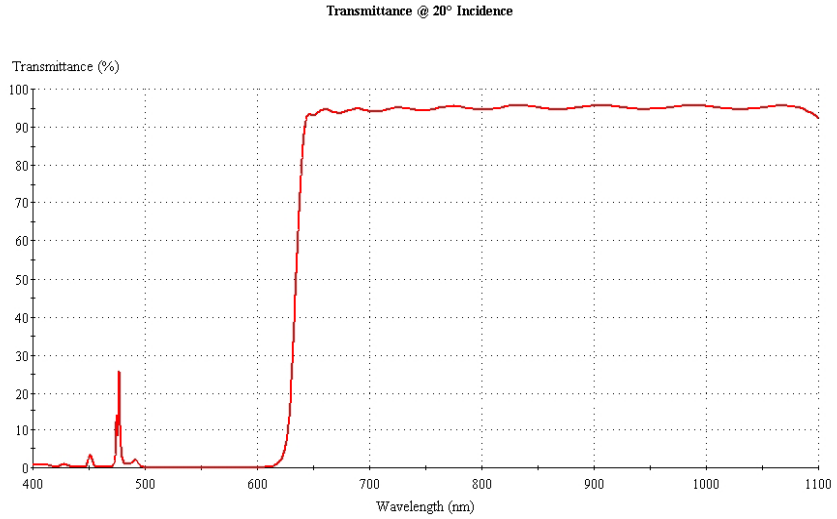
The approach: single junction SC with different Band Gaps

Spatial & Spectral Splitting

- Split of the light using geometrical optical solutions based on reflection
- Split of the spectrum using interference of the light (dichroism)

Advantages:

- No necessity of MJ SC
- Current Matching avoided
-"Distributed" cooling
- different concentration levels for different cell kinds



Problems:

- Many optical interfaces
- multipart system → complexity

WP 4.1 – Optimization of existing technologies for Mirror Based Spectrum Splitting Systems

WP 4.2 – Development of Second Generation Mirror based Spectrum Splitting System

CPower has the main purpose of commercialize PV concentrators, so:

- **Industrializing design**
- **Cost effective solutions**
- **Reliability**
- **Efficiency**

< 3.5 €/Wp 4.1

< 2.2 €/Wp 4.2

WP 4.1 – Optimization of existing technologies for Mirror Based Spectrum Splitting Systems

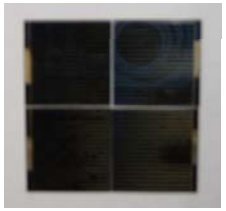
4.1.1

Delivery of, at least, 2 modules and 2 receivers with the starting technology (CPower)

6 months

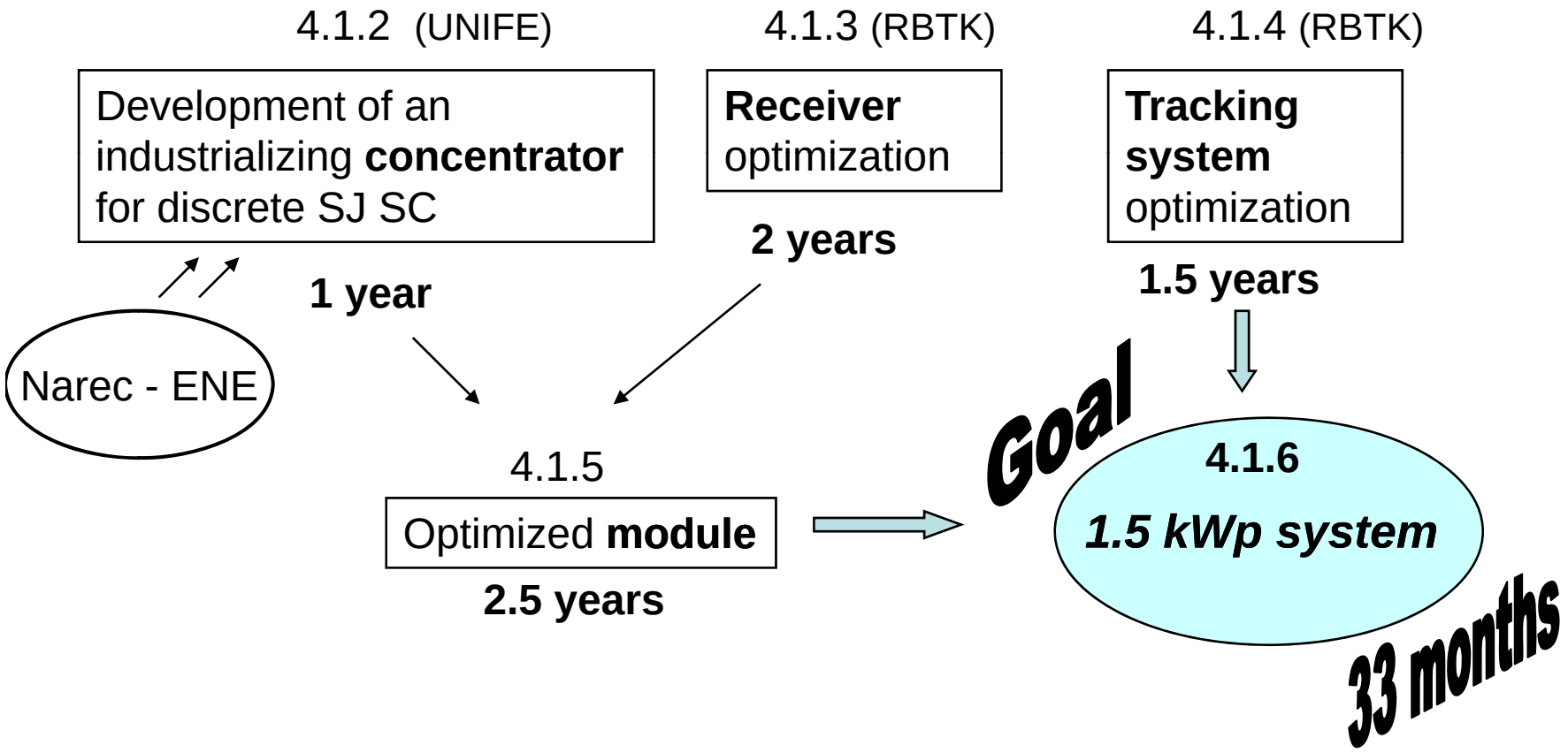
CPower has already got the definitive Si cells from Narec and InGaP sample cells from ENE for bonding tests.

Materials and layouts for dense array receivers are selected and defined



These modules will represent the initial stage

WP 4.1 – Optimization of existing technologies for Mirror Based Spectrum Splitting Systems



WP 4.2 – Development of Second Generation Mirror based Spectrum Splitting System