



Project SOPHIA
PhotoVoltaic European Research Infrastructure
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Data Beneficiary

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WP1 “Joint management of access provision and pooling of distributed resources”

D1.1 – Infrastructure Database

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1. Executive summary

1.1. Description of the deliverable content and purpose

D 1.1 is the main deliverable of task 1.1 on “Infrastructure database”. The aim of this task is to consolidate the data from all the infrastructures that will be shared in the calls for proposals in a common SOPHIA database.

This task aims to:

- define the database topics,
- implement the database in the Website,
- fill in the database.

This database will then be updating whenever required during the course of the project, as a result of new investment or services developed by the partners.

1.2. Deviation from objectives, corrective action

No deviation on the objective. There was only an additional delay in the implementation in the website due to technical problems.

1.3. Technical progress

The infrastructure database has been made available from the SOPHIA Website (www.sophia-ri.eu).

All SOPHIA infrastructures are now listed on the website.

On top of that, as a result of the kick-off meeting, it has been decided to make possible the additional listing of European Research Infrastructures which are operated by organisations outside the Sophia consortium. A message is delivered on the website to propose this possibility (see Figure 2 in part 2 of this document).

1.4. Impact of the results

The selection of a specific research infrastructure is as user-friendly as possible. First you select the topic or the technology you are interested in, and then the list appears with the main features of each infrastructure. Then you click on a specific one to have more technical details and a specific contact point.

1.5. Dissemination activities carried out, planned

Dissemination is made through all the communication actions undertaken within the project: brochure, leaflet, website, presentations in conferences.

Besides, infrastructures will be advertised when launching the calls for proposals by emails send to the European photovoltaic industry and scientific community.

2. Technical sections

2.1. Database structure

To make it as simple as possible to the external visitor, the main keywords corresponds to the eight technical topics selected to cover most of the aspects of photovoltaics. Then the list of corresponding Research Infrastructures appears on the next page, with a short description.

2.2. Website implementation

As soon as you look at the technological topics addressed within this project, you will find the list of eight topics. Then, you have the choice between a direct link on the topic title and two menus one on the left and the other on the bottom of the screen (see Figure 1). Thus the browsing is made really easy.



Figure 1 : First page for topic selection

Once a specific topic is selected, you reach the specific page which is split in three sections:

- A short summary of the objectives and the types of research activities which are intended on this topic,
- The list of available research infrastructures open for free TransNational Access,
- A space is made available for additional research infrastructures, outside the current consortium, if any.

Two examples among the eight topics are given in *Figure 2* **Erreur ! Source du renvoi introuvable.** and *Figure 3*.

YOU ARE HERE: TECHNOLOGIES > SI MATERIAL

From the feedstock to the wafer, Silicon material represents a very important share of a PV module cost.

In order to increase the number of appropriate feedstock sources and to end up with the best possible use of each material, information will be exchanged on :

- key criteria and specifications for Si material,
- characterisation technique of some relevant parameters,
- impact on cell performances

Si dislocations and Si₃N₄ inclusions

Partner	Research Infrastructures	Main Characteristics
CEA-INES	Susi	Crucible coating equipment, crystallisation furnaces (10, 60 and 600kg), ingot and wafer characterisation (electronic and chemical, with ppb resolution)
ECN	Characterisation Lab	Electrical and optical characterisation of wafers and solar cells, in-line imaging
ENEA	High effic cSi solar cells	All steps from wafer to cell processing
ENEA	Si cell for CPV	Processing and characterisation of material and devices
Fraunhofer ISE	Wafer & Cell Imaging	Electrical and optical characterisation of silicon materials and cells, understanding of impurities and defects
IMEC	Cell modelling infrastructure	Electrical and optical characterisation of wafers, nano-characterisation, FE modelling of thermomechanical effects and stresses
Sintef	Heliosi Characterisation	Electronic and structural properties, chemical composition
Sintef	Heliosi Crystallisation	Crystallisation furnaces of 12 and 150 kg Czochralski furnaces up to 5" - 135 kg

If you would like to be listed here, as an additional research infrastructure provider (even outside this consortium), please [contact us](#).

Figure 2 : List of available Research Infrastructures on Si material with a short description



YOU ARE HERE : TECHNOLOGIES > BIPV

Building-Integrated Photovoltaic (BIPV) Systems are the key to Near-Zero Energy Buildings or Positive Energy Buildings. Such systems usually come with:

- additional functions such as transparency, solar protection or solar thermal production, thermal insulation, etc.
- additional constraints to the PV modules: operating temperatures, thermo-mechanical stresses, fires, etc.

Furthermore, some products may use bifacial solar cells or tubular devices instead of the conventional flat solar modules.

Defining the additional criteria to be measured and harmonizing the test procedures among the various test facilities in order to improve performance prediction are the main issues addressed regarding this topic.

Three research infrastructures are available to work on BIPV systems:

Partner	Research Infrastructures	Main Characteristics
CEA-INES	BIPV platform	Ten roof test benches (5x7m, tiltable) and four Passys test cells for façade applications
CREST	Module characterisation facility	Indoor measurement in a specifically designed simulator
Tecnalia	Kubik	BIPV components characterisation under real conditions of use on the Kubik building

Figure 3: List of available Research Infrastructures on BIPV with a short description

The procedure to have access to these infrastructures will be described in D1.2.

3. Conclusions

A user-friendly way of selecting an appropriate Research Infrastructure is now online. This tool will be regularly upgraded:

- Depending on new equipment or innovative procedures being gradually put into operation,
- When additional Research Infrastructures external to the consortium will wish to be listed in there.

4. References

The main reference is to be seen on www.sophia-ri.eu.