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AGENCIJA ZA
PRESTRUKTURIRANJE
ENERGETIKE d.o.o.

Slovene Feed in System and the Barriers for PV

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WIP

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ISTRABENZ ENERGETSKI SISTEMI

Semy

Iskra Sistemi

LETEHNIKA

Konik Solar

ISKRAEMECO

ISKRA ZAŠČITE

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teta za arhitekturo

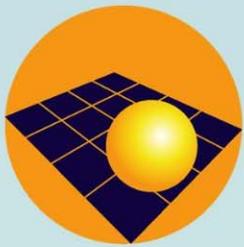
hse
Holding Slovenske elektrarne d.o.o.

TAB
Tovarna akumulatorskih baterij, d.d.
Medve - Slovenija

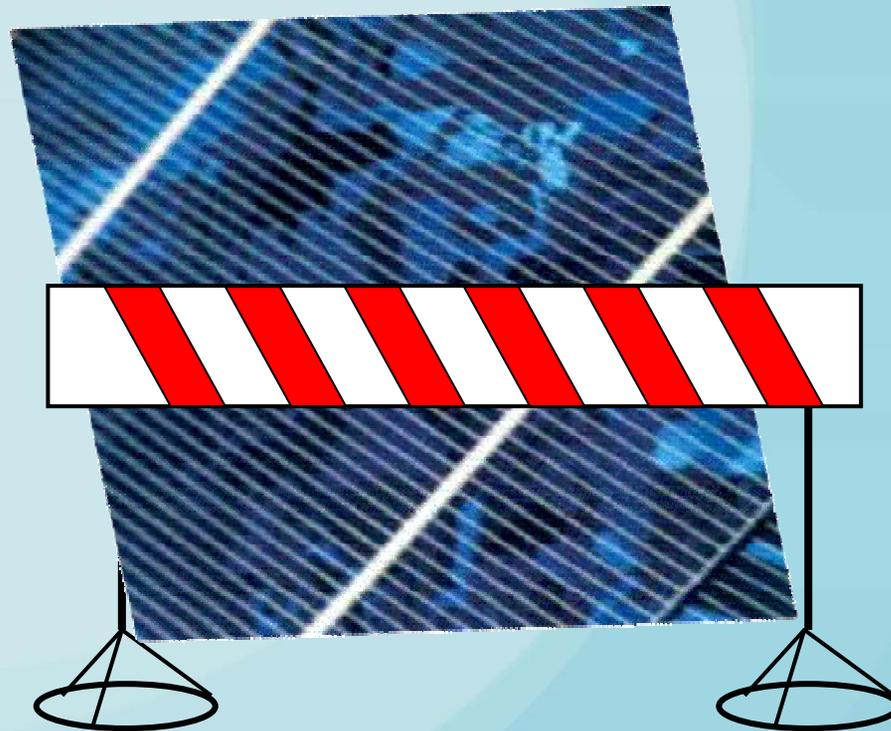
superform

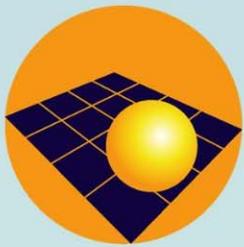
BLUES





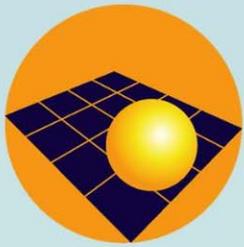
BARRIERS





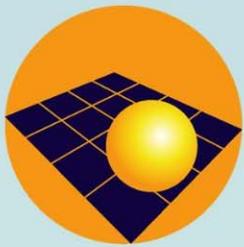
BURDENS - LONG AND TWISTY WAY FROM IDEAS TO RESULTS



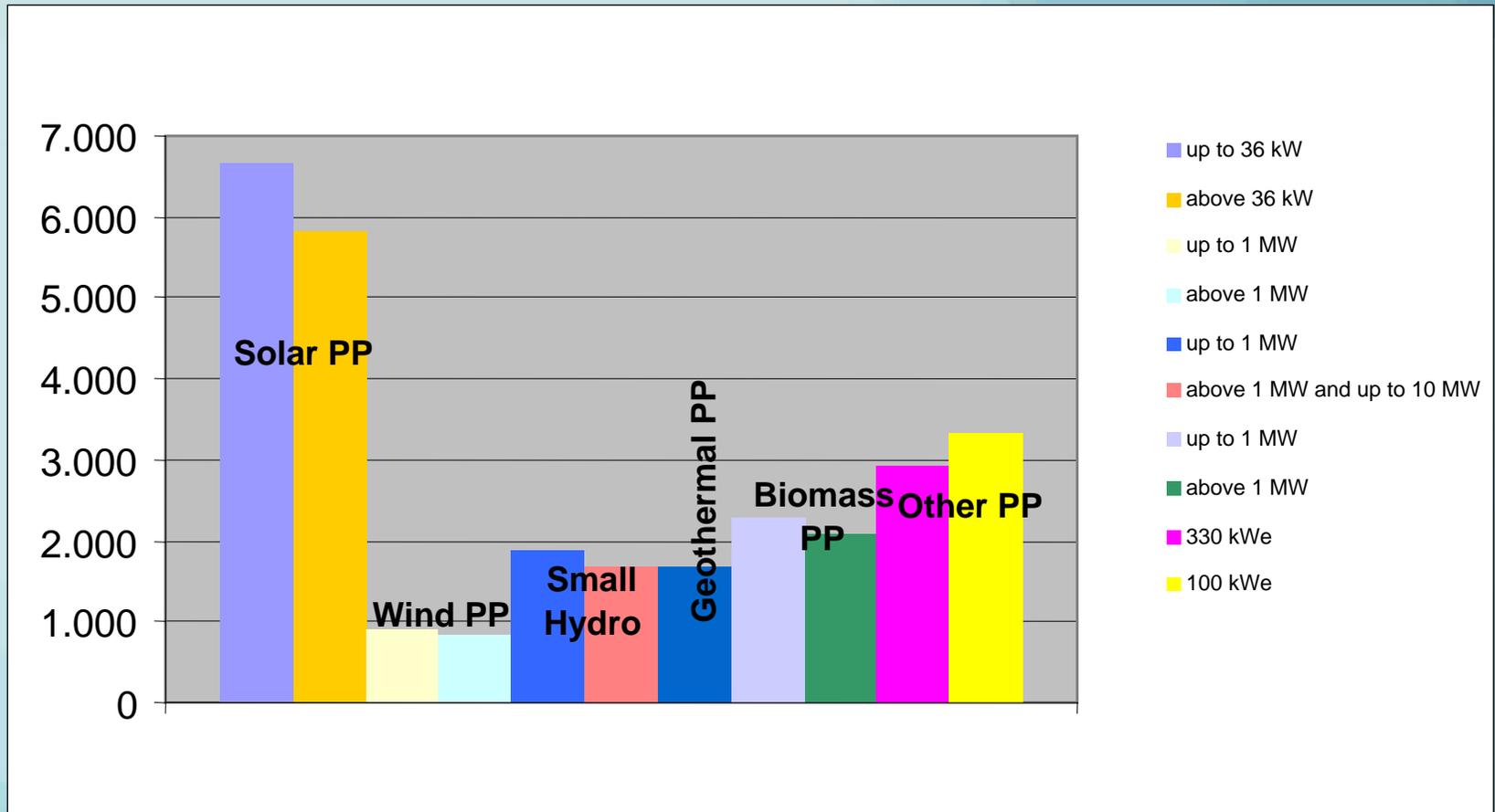


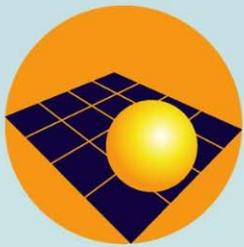
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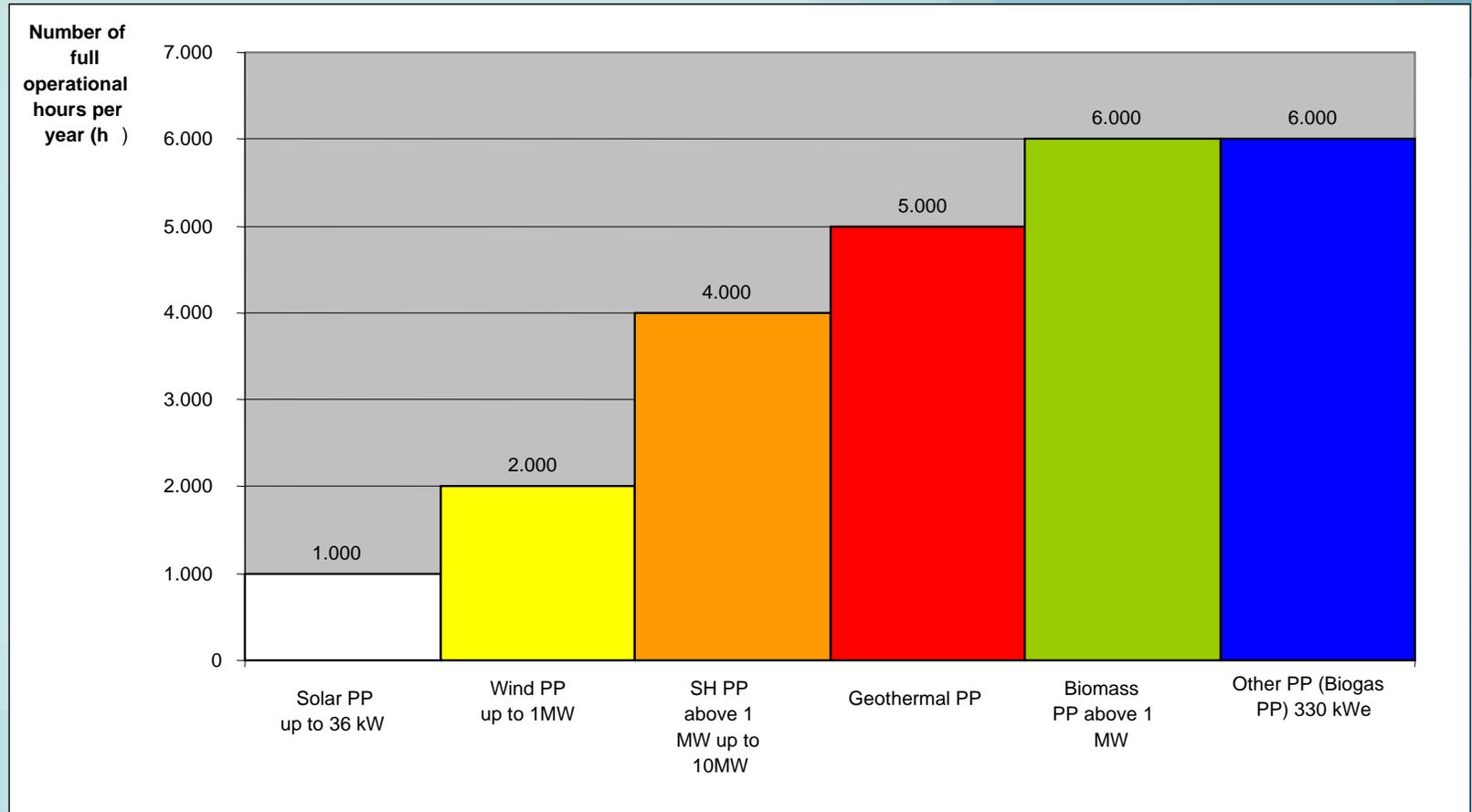


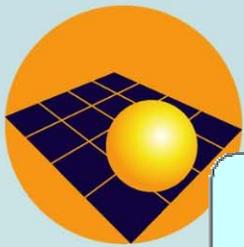
Specific investment costs (EUR/kW)



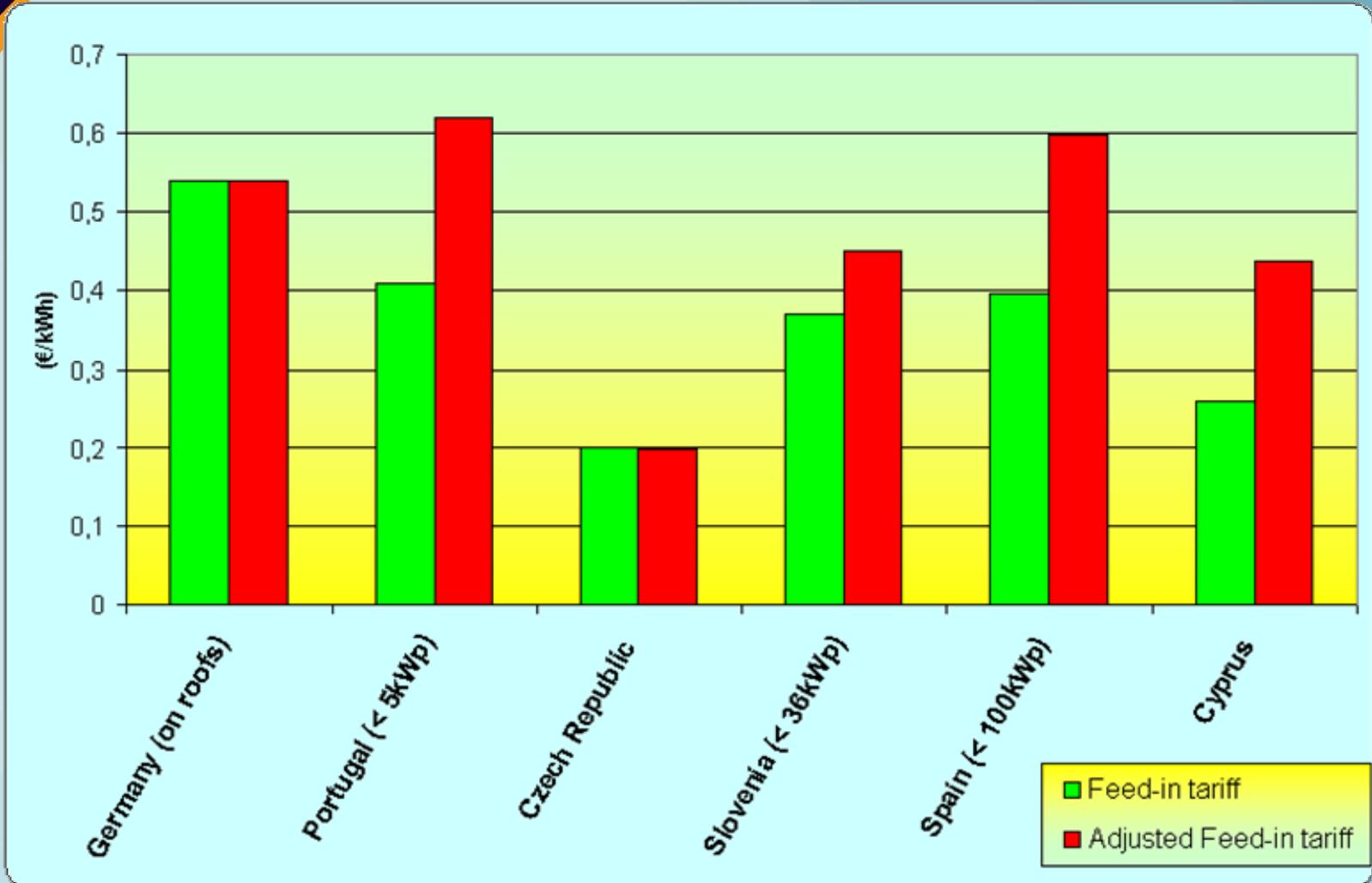


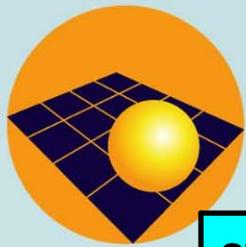
Operating hours of RES Power Plants





Feed-in tariff systems





10 steps from idea to PV plant

STEP	ACTIVITY
1	THE INVESTOR DECISION FOR CONSTRUCTION (power and building integration of the PV plant)
2	GET THE PROJECT CONDITIONS FOR CONNECTION TO THE GRID - BY DISTRIBUTION UTILITY
3	ELABORATION OF THE PROJECT DESIGN FOR CONNECTION – QUALIFIED DESIGNER
4	APPLY FOR CONSENT FOR CONNECTION
5	SELECT THE PV INSTALLER
6	INSTALLATION OF THE PV PLANT – BY PV INSTALLER
7	APPLY FOR CONTRACT FOR CONNECTION
8	AFTER INSTALLATION OF PV - APPLY FOR CONNECTION TO THE GRID TO DISTRIBUTION UTILITY
9	APPLY FOR ACQUISITION OF THE STATUS “QUALIFIED ELECTRICITY PRODUCER” - MINISTRY
10	APPLY FOR CONTRACT FOR SELL THE ELECTRICITY



Requirements for Qualification

The status of Qualified produces of electricity (QPP) can receive:

- Power plants on renewable energy sources (RES)
- Cogeneration power plants, with high efficiency

The whole process for acquisition of status is complicated and time consuming, time is money.

Even for each 1 kWp PV system – qualification is given by the minister responsible for energy (? of efficiency of public services).



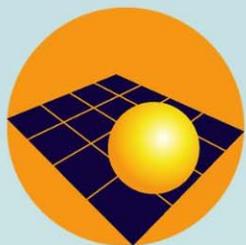
Other Governmental barriers

- The support with higher fixed tariff has been foreseen only for small PV plants, up to 36 kW.
- The tariff for bigger PV units is unreasonable low (only 6,4c€/kWh).
- The contract for selling the electricity is signed only for 10 years (comparison with the pay back period of PV).
- The tariffs are reduced for 5% after 5 and additional 5% after 10 years of operation.
- The government should positively revise the tariffs for QPP each year; foreseen adjustments (at least with the inflation rate) are not always taking place.



Comparison SLO-GER (1)

STEP	ACTIVITY	REQUIREMENTS IN SLOVENIA	REQUIREMENTS IN GERMANY
1	DECISION FOR CONSTRUCTION (defined power and BIPV plant)	Feasibility study regarding the size, financing and profitability.	Feasibility study regarding the size, financing and profitability
2	PROJECT CONDITIONS FOR GRID CONNECTION	Standards for connection are not defined. Utilities define the requirements on the case to case basis	-
3	ELABORATION OF THE PROJECT DESIGN FOR CONNECTION	Formal Basic Design according the law for construc. performed by authorised institution	-
4	CONSENT FOR GRID CONNECTION	Application supplemented by formal Basic Design	-
5	SELECTION OF THE PV INSTALLER	Consent for grid connection and decision for one of the offers form a PV company	Decision for one of the offers from a PV company

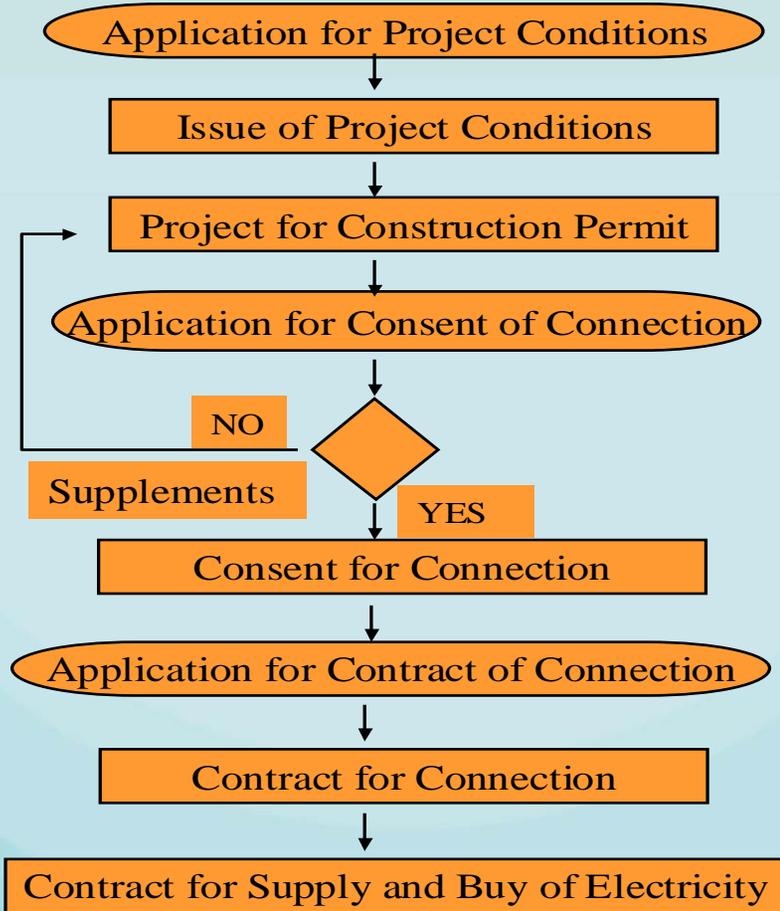


Comparison SLO-GER (2)

STEP	ACTIVITY	REQUIREMENTS IN SLOVENIA	REQUIREMENTS IN GERMANY
6	INSTALLATION OF THE PV PLANT	Contract with installer, Basic Design (or Design for Construction Permit) and Architectural design	Contract with installer, Basic Design (or Design for Construction Permit) and Architectural design
7	CONTRACT FOR CONNECTION	Defines who make the installation up to connection point, payments, ownership etc.	-
8	CONNECTION OF THE PV PLANT TO THE GRID	Application supplemented by declarations of authorised installer	Technical regulations and standard exists, like ENS for inverters of LV power connections!
9	ACQUISITION OF THE STATUS "QPP"	Application supplemented by summary of project design and consent for connection, physical persons are not getting back the VAT	Application to financial authority for the status of power producer, physical persons are getting back the VAT
10	CONTRACT FOR SELLING OF ELECTRICITY	Standard contract for 10 years is defined, prices are defined by government	Standard contracts are available, the prices are fixed for 20 years



Procedure to get the consent for connection to the grid

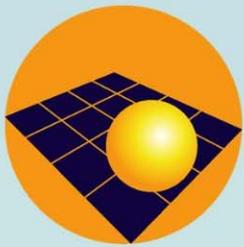


★ The project conditions are defined by the referee for consents in collaboration with the departments of energy planning, protection and operation measurements, dispatching and metering service.

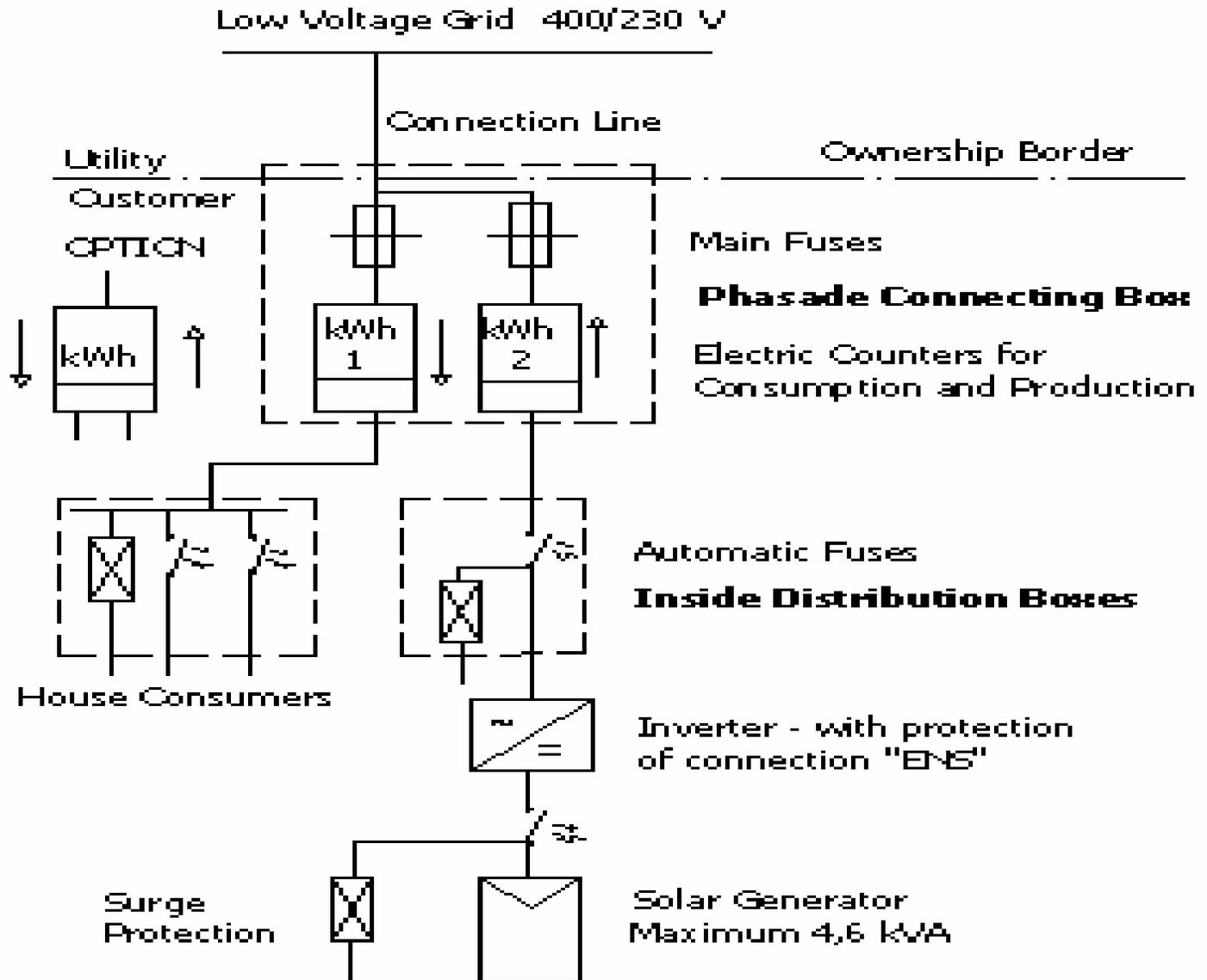
★ Timing – cca 15 days

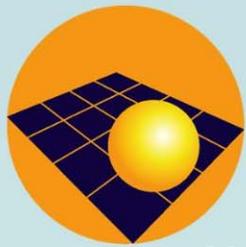
★ In the project conditions are defined the way for connection to the electrical network, required measurement and protection devices, the mode of operation, eventual required grid reinforcements etc., according the “Guides for connections and operation of power plants up to the power of 10 MVA”, GIZ, May 2001

★ The guides were prepared for small HPP, which are normally bigger than 50 kW and are far too much complicated for PV plants smaller than 5 kW



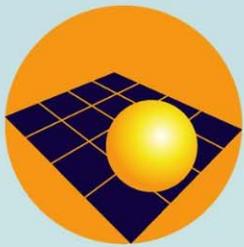
Connection to the grid





PV industry, Cluster and Platform

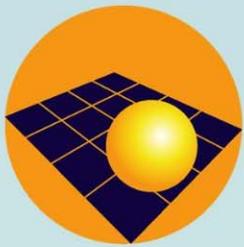
- Until recent there were no important actors in the PV sector.
- Slovene companies were not involved in equipment production for PV; except the multi purpose electrical components, as counters, surge protection and some other typical devices.
- In 2004 we established a PV Cluster composed of three faculty research institutions, ten private companies and four big energy companies. In 2005 we transformrd it into PV techn. platform (www.pv-platforma.si)
- Important results: Instalation of 120 kW new PV plants in 2005, Blues, one of the partners, is establishing a production line for PV modules with capacity of 15 MWp – the investment will be completed in 2006.
- The government should strategically support cooperation and development of new industries together with the associated research.
- The government should support also well known foreign companies to invest in Slovenia.



Public awareness

- The general level of knowledge and availability of information on PV technologies is rather low.
- There is a urgent need for education, information dissemination and promotion:
 - support of education on sustainable development, RES (also PV) and environmental problems,...
 - raising general knowledge on PV with wieder support of new projects,
 - proposal: on each school a PV power plant should be installed,
 - results: interest for more efficient use of energy and RES, consequently also the interest to decrease the energy consumption.





Role of architects (1)

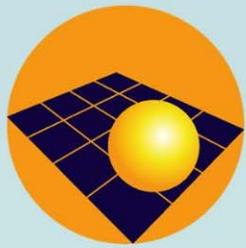


Barriers:

- Conventional approach to designs.
- Lack of education and knowledge on PV integrations.

Opportunities:

- Possibility to use new materials.
- New approaches when designing new buildings.
- Influence on design of new buildings, such as huge energy consumers (shopping centers, halls etc.).

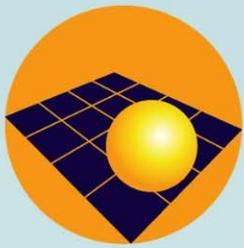


Role of architects (2)



Future involvement:

- Current situation will change by execution of PV installations – learning on the basis of the best practice projects.
- In the future we expect improvements in shaping of the PV modules, they will for sure become more attractive also for the architects.
- The PV modules must become a nice building elements, widely applicable and with easy montage approaches, like “click in” systems.



Institutional investors

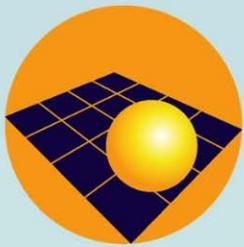


Bigger institutional investors have to found enough time and interest for investigating the opportunities in the PV sector.

Proposal:

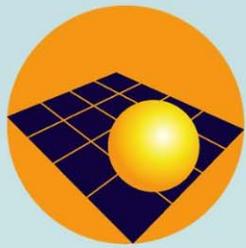
- **Support for implementation of PV plants on public buildings.**
- **Implementation of the investment capital of the energy companies, owned by the government.**
- **Initial initiatives will increase confidence in PV technologies and will also stimulate private business.**





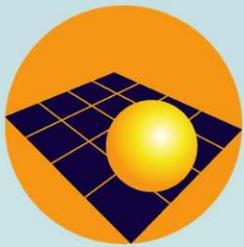
SUMARRY

- Specific investment costs are much higher compared with the other producers from RES or fossil fuels.
- Solar irradiation in Slovenia enables operation of PV plants with 900 to 1.100 equivalent full hours per year.
- For economy of investments in PV an adequately higher tariff is presently required also for bigger plants.
- Feed-in tariff system introduced in Slovenia in 2002 and supplemented in 2004 is following the successful market approach of Germany.
- The rise of market in 2005 was over 100%, with good expectations also for 2006.
- In 2006 we are expecting to have the first more important industry in PV sector, a domestic producer of PV modules with a yearly capacity of 15 MW.



CONCLUSIONS

- The governmental support is available, but not transparent and too complicated – need for simplification.
- Requirement for connection to the grid is quite huge barrier – connection must be safe, simple and standardized.
- Important industry and other actors are not yet sufficiently involved and supported.
- The level of general knowledge is relatively low- there is a urgent need for suitable actions- PV plants on schools.
- PV plants have been not yet recognized as opportunity for architects - new projects are wellcomed.
- Lack of bigger institutional investors - need for governmental initiative.



***THE BARRIERS WILL BE REDUCED
BY NEW PROJECTS,
DEVELOPMENT, BETTER
KNOWLEDGE AND MAINLY BY
HIGHER INTEREST***

Thank you for your attention!

Franko Nemac, ApE Ljubljana