



Laboratory of Energy Resources Institute of Physical Energetics

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Laboratory of Energy Resources

- **The Laboratory of Energy Resources IPE** is dealing with the research work in renewable energy using (solar, wind, small hydro, biomass, etc.), combined energy supply systems, energy efficiency and energy saving, energy planning – strategy – policy, mathematical simulation models in energetic and fuel stock optimisation, energy – environment interactions.
- Laboratory scientific activity is devoted to technology development and transfer to Latvia, focusing on the rational use of energy including use of RES and, providing the Latvian energy sector for sustainable development and heat energy production and consumption optimization.
- In the Laboratory of Energy Resources of IPE working high quality scientists and specialists with good experience, who were involved in preparation of the Latvian National Energy Program, Latvian Energy Balance, Optimisation of Heat Energy Production and Consumption in Latvia and now are working in IEE Projects.

The Laboratory specialists are working in many Latvian projects and State research programs and the main of them are:

1. Perspective energy supply systems with renewable energy resources – methodological, economical and environmental problems (2002-2005).
2. Systematically and stochastic fluctuations of fuel consumption, their compensation and methodological background of state fuel stock's formation (2006-2009).
3. Integrated systems of biofuel in combination with other renewable energy resources research and development (2006-2009).
4. Integration of the technologies for rational use of energy to ensure sustainable development of the energy sector in Latvia (2006-2009).
5. Methodological aspects, technical, economical and ecological problems of domestic and renewable energy resources utilization in the innovative economics condition (2005-2008).
6. **State Research Program** “Development of modern methods and technologies for utilization of renewable energy resources, rational use of energy and improvement of energy supply”, **Subprogram ” Research and analysis of technologies for application of renewable energy”** (2006-2009)
7. **State Research Program** “Technologies for Innovative Production and Use of Energy Resources and Provision of Low Carbon Emissions by means of Renewable Energy Resources, Support Measures for the Mitigation of Environmental and Climate Degradation”, **Project 3. “Research and development of the renewable energy resources production and consumption technologies for climate change reduction from energy sector, taking in account biological variation (2010-2013).**
8. **ERDF project** “Bioethanol Innovative Dehydration Technologies and Exploration of Measurement Equipment for Bioethanol Dehydration” (2010-2013).
9. **EU structural funds attraction of human resources to science.** Innovation technologies development for heating and cooling saving and production. Project Nr. 2013/0064/1DP/1.1.1.2.0/13/APIA/VIAA/050.

The main international projects carried out by the Energy Resources Laboratory:

1. FAIR CT 98-3826 “**Development of a Bioenergy Market Development Plant for Central Europe**” (1998-2000).
2. **BioNorm** Project Nr. NNE5-2001-00158. Pre-Normative Work on Sampling and Testing of Solid Biofuel for the Development of Quality Management (2002-2004).
3. **EnerBuild** RTD Project Nr. NNE5-2001-00837. Energy in the Build Environment (2001-2002). Brundtland City Energy Network. Project Nr. NNE5-2001-00766 (2001-2004).
4. “**Bioenergy**: Methodological improvement of statistical data collection regarding biomass availability and use in EU New Member States Contract” (382546 F1SC)
5. IEE Project **PV-NAS-NET**. Project Nr. 2002-00046 (2002-2005).
6. INTERREG IIIC Project – **REGENERGY** Network of pioneering communities and regions working on innovative heat energy solution (2005-2008).
7. IEE Project **ClearSupport** , IEE 06189: Clearinghouse Facilitation – Paving way for Better Energy Building Performance in EU Less Developed Regions (2006-2009).
8. IEE Project **PV-NMS-NET**. Supporting Development of Photovoltaics in the European Union New Member States Network (IEE/07/809/SI2.499719) (2008-2011).

Laboratory of Energy Resources

The main areas of interest for cooperation

- Renewable energy resources – policy studies for promotion of renewable energy resources use, technology development and promotion of penetration into market
- Sustainable and secure planning and management of energy supply.
- Energy - environmental policy studies.
- Solar heating and cooling.
- Environmental protection.
- Energy efficiency.

Projects proposal

- **Innovative technology development for Renewable Energy Resources effective and rational use.**
Realization period: 2014 -2020.
Project finance - 1 500 000 EUR
- **Methods and technologies development for energy supply security and independence.**
Realization period: 2014 -2020.
Project finance - 1 200 000 EUR
- **Energy efficiency approach and technologies research and development for household, state and municipal buildings, industrial and agricultural sectors.**
Realization period: 2014 -2017.
Project finance - 1 600 000 EUR
- **New technologies for low-carbon and effective Biomass burning.**
Realization period: 2014 -2020
Project finance - 600 000 EUR
- **New type PV solar cells using organic materials and innovative technologies.**
Realization period: 2014 -2017.
Project finance - 900 000 EUR

Projects proposals

- **Study on improvement of wind energy effective utilization using new types generators and processing machineries.**
Realization period: 2014 -2020.
Project finance - 800 000 EUR
- **Bio waste research of disposal technology and that use for energy plants.**
Realization period: 2014 -2020.
Project finance 800 000 EUR
- **The role of RES for smart energy problems.**
Realization period: 2014 -2017.
Project finance 800 000 EUR
- **Solar cooling system development, research and optimization.**
Realization period: 2014 -2017.
Project finance 900 000 EUR
- **Integration of solar energy equipment in district heating and power systems.**
Realization period: 2014 -2017.
Project finance - 600 000 EUR

Solar Energy Polygon

PV tracking system

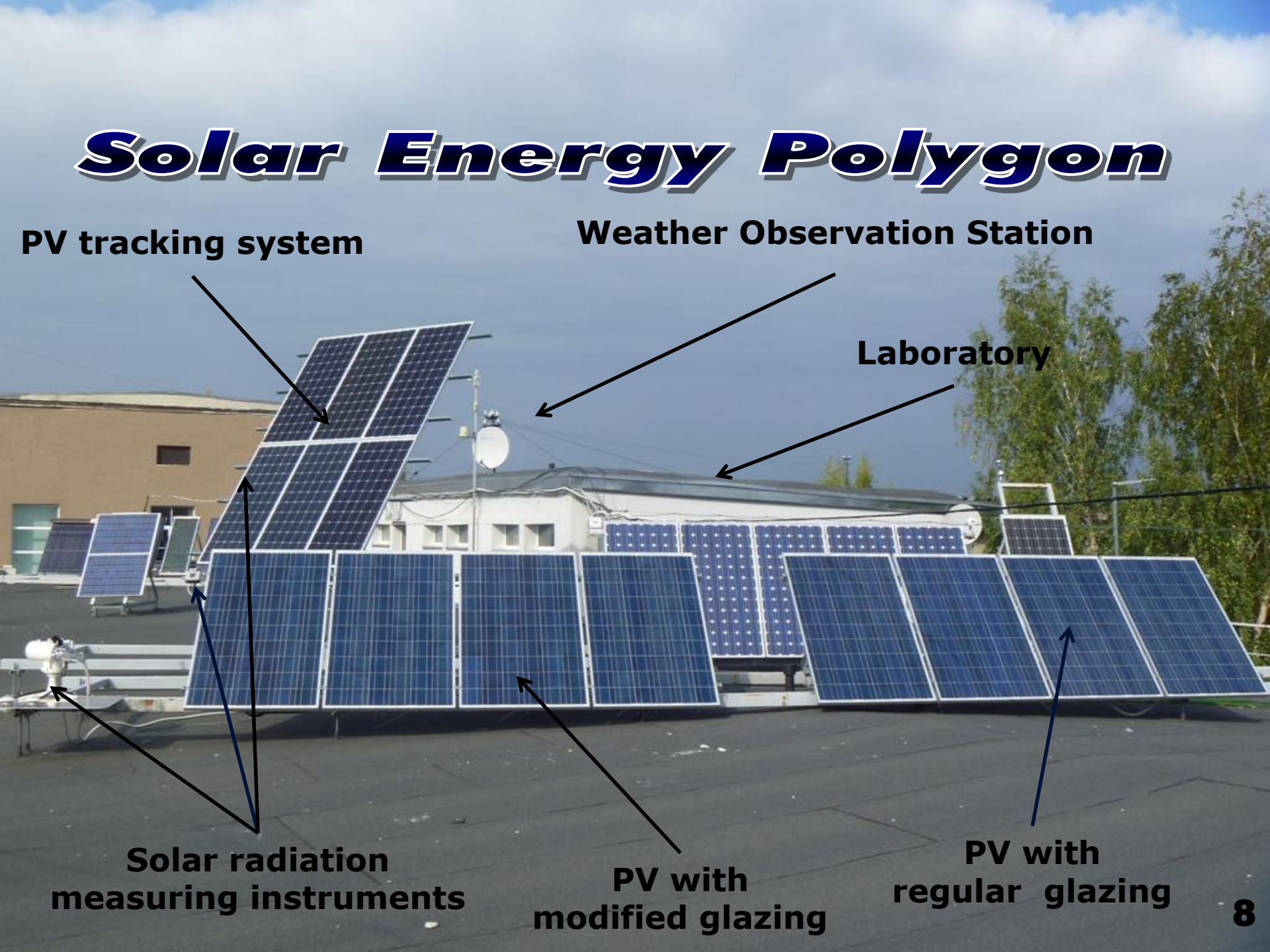
Weather Observation Station

Laboratory

**Solar radiation
measuring instruments**

**PV with
modified glazing**

**PV with
regular glazing**



Solar Energy Testing Polygon



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Solar collectors on the Aizkraukle secondary school and Aizkraukle boiler house roofs

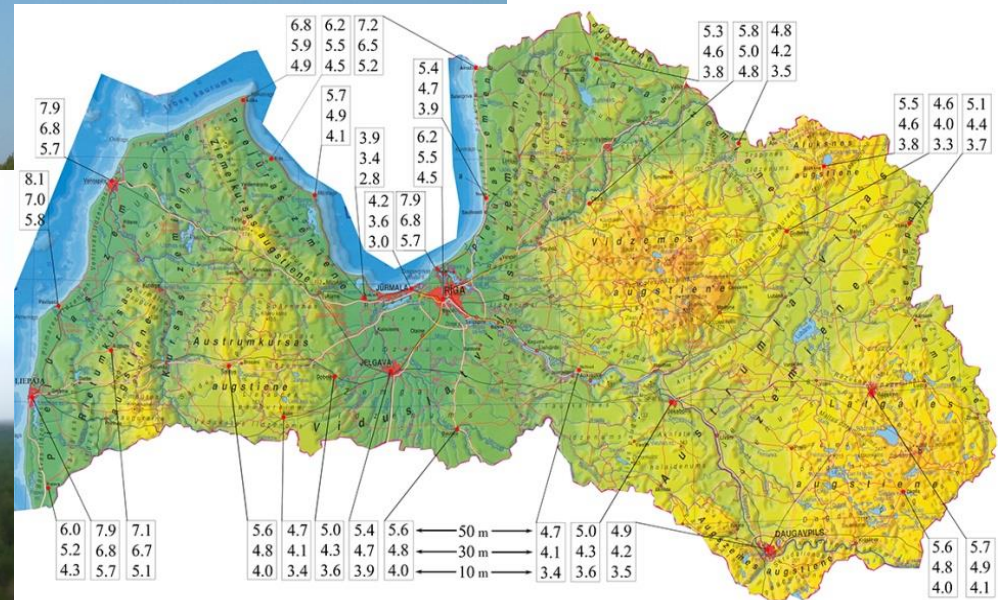
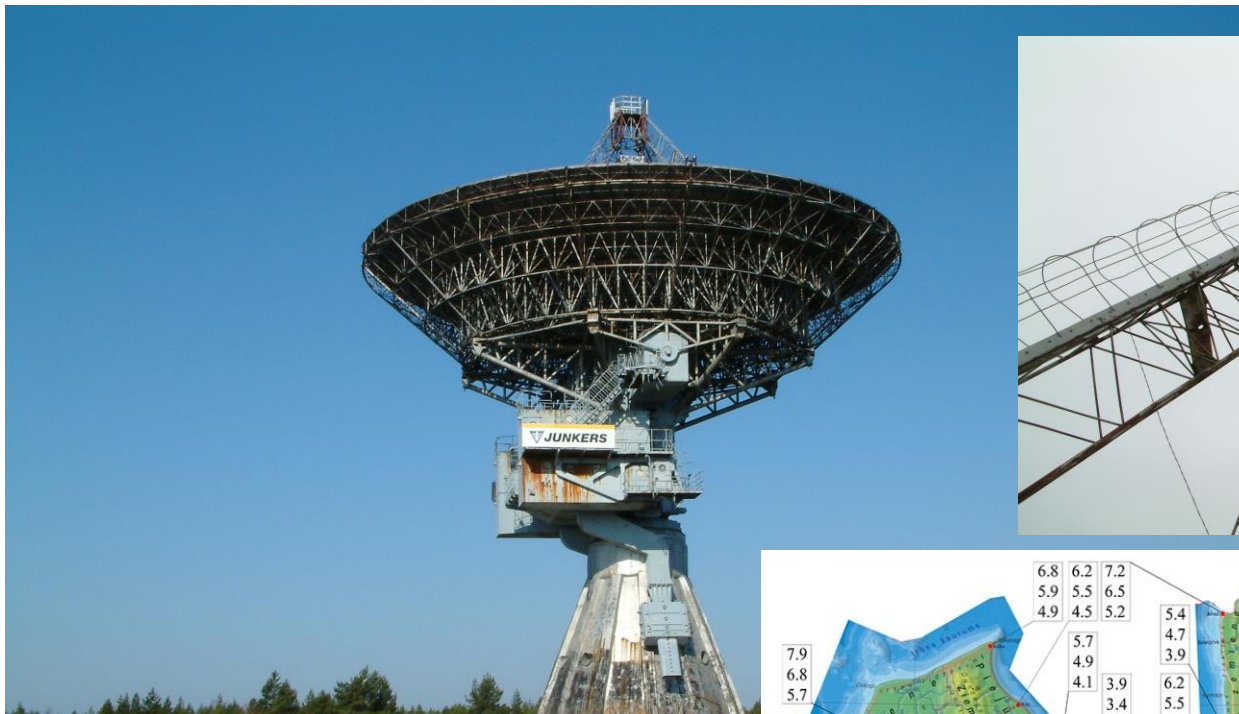


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Solar collectors project Islice children SOS



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Latvian wind map and wind measuring in Ventspils

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Thank you very much for your attention!



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