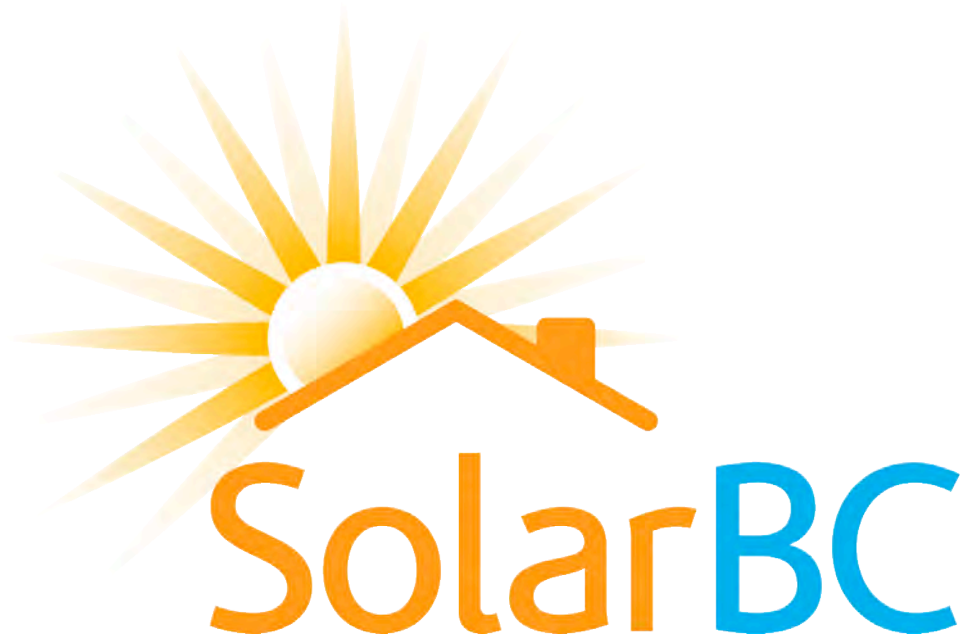




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Tap into the Sun



Webinar for Local Governments
24 September 2009
Nitya C. Harris, P.Eng.

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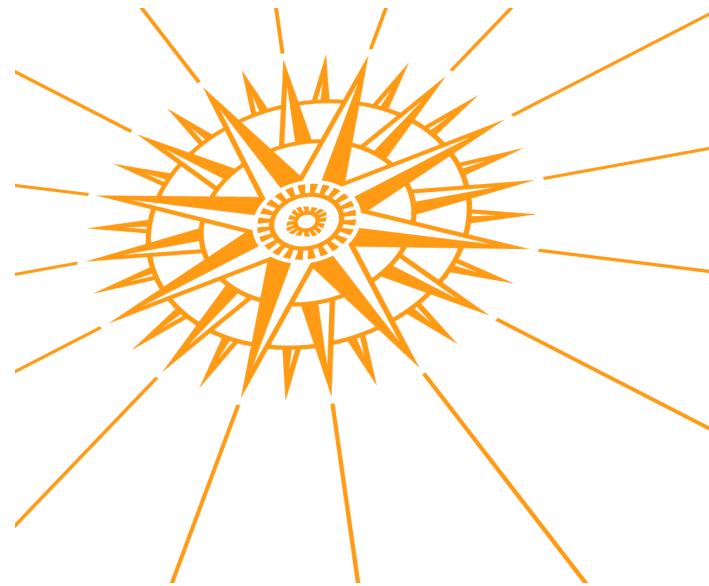


SolarBC

Residential

Solar
Communities

First Nations



Local Government
Buildings

Social Housing

Solar Schools

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Solar Communities

- Dawson Creek
- District of North Vancouver
- Kelowna
- Saanich
- Tofino
- T'Sou-ke First Nations
- West Moberly First Nations
- Whistler



- Increase awareness
- Remove barriers
- Develop by-laws
- Adopt targets
- Provide training

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Solar Thermal Energy in Europe



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Solar Thermal Energy: An Underestimated Source

Total Capacity in Operation [GW_{el}], [GW_{th}] and Produced Energy [TWh_{el}], [TWh_{th}], 2006

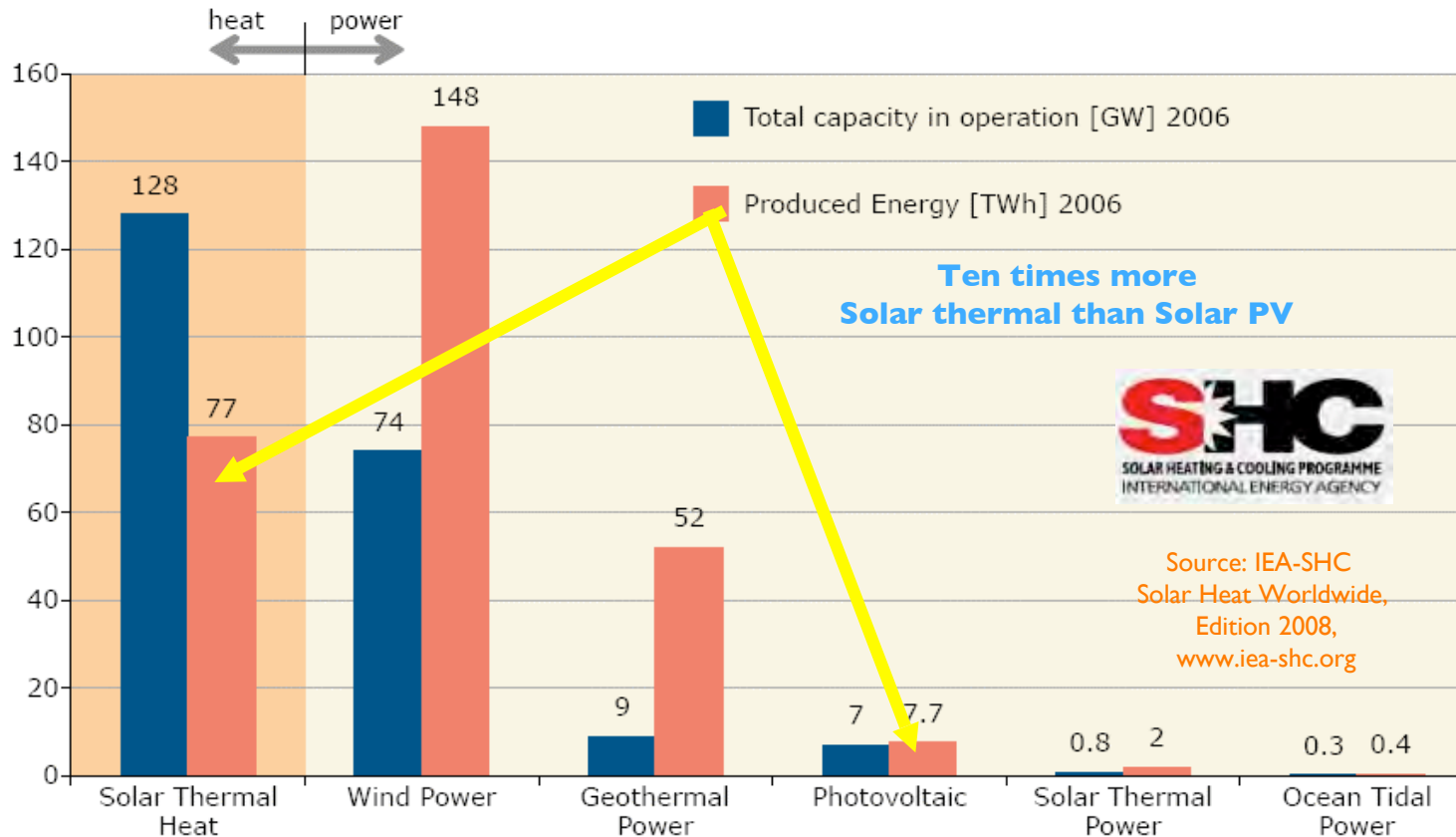


Figure 2: Total capacity in operation [GW_{el}], [GW_{th}] 2006 and annually energy generated [TWh_{el}], [TWh_{th}].

Sources: EPIA, GEWC, EWEA, EGEC, REN21 and IEA SHC 2008



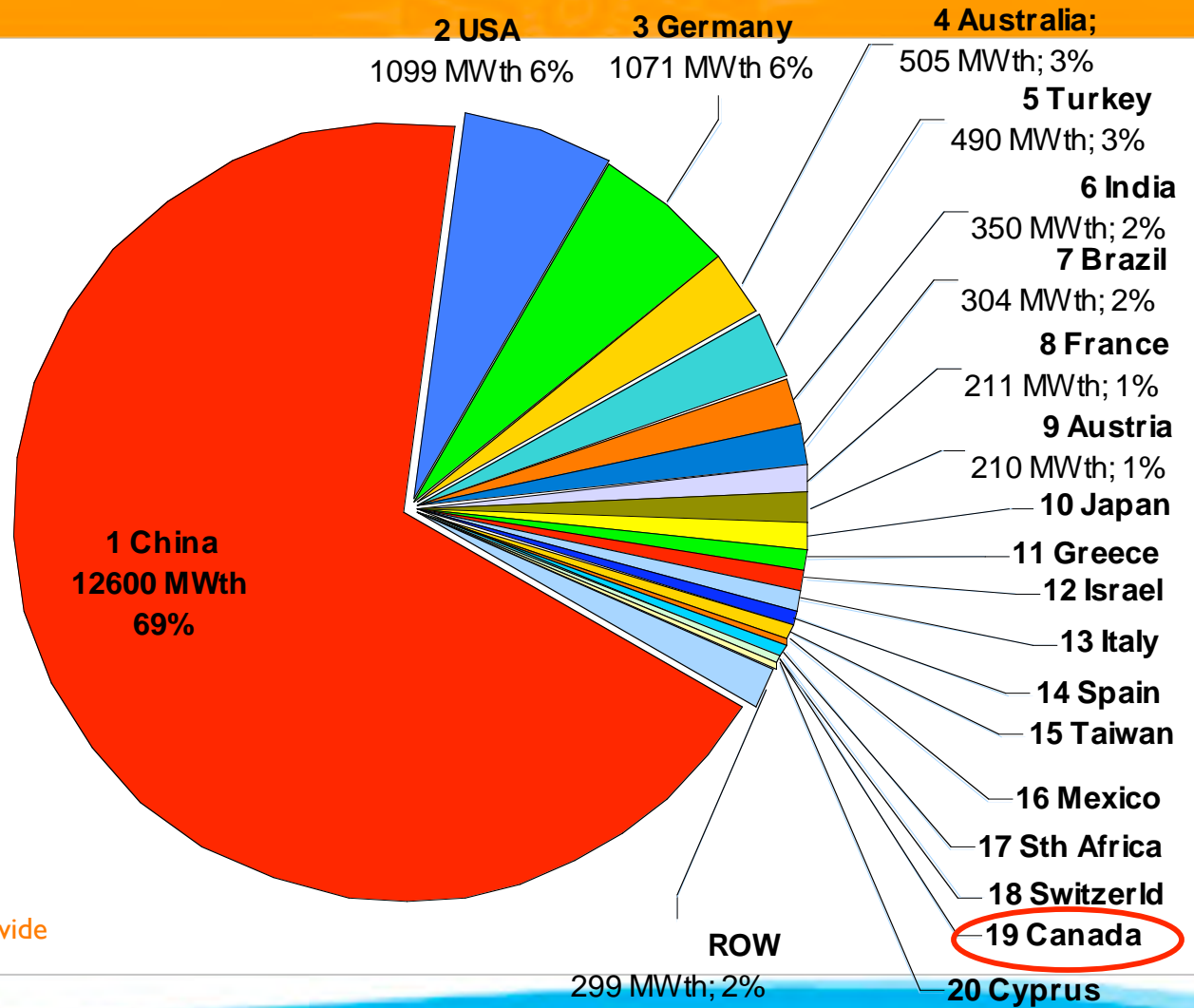
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World Solar Thermal Installations in 2006

Newly installed
in 2006:
26.1 million m² =
18,300 MWth

Source: IEA-SHC, Solar Heat Worldwide
Edition 2008, www.iea-shc.org



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Solar Thermal Energy in Europe

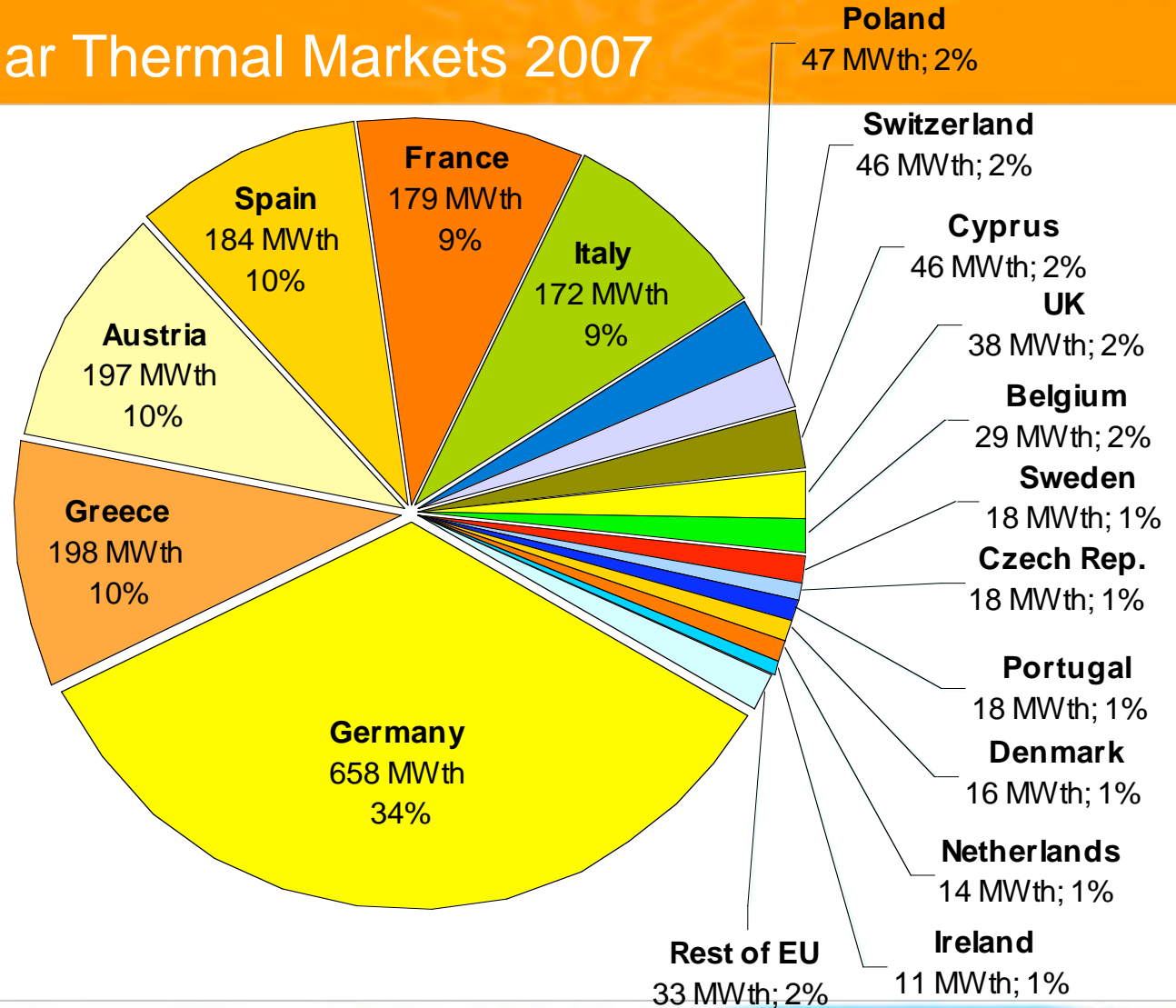
- Main use: **solar domestic hot water**
- Growing use of **combined systems** for hot water and space heating support in Austria, Germany, France
- Growing number of large **collective systems** for multi-family houses, hotels, hospitals.
- Several **solar district heating** systems with or without seasonal storage in central and northern Europe
- Some pilot plants for **process heating**
- 200 pilot plants for **solar thermal assisted cooling**



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European Solar Thermal Markets 2007

- **European Market 2007:**
2.7 million m²
= 19,000 MWth
- Source: ESTIF/BSW



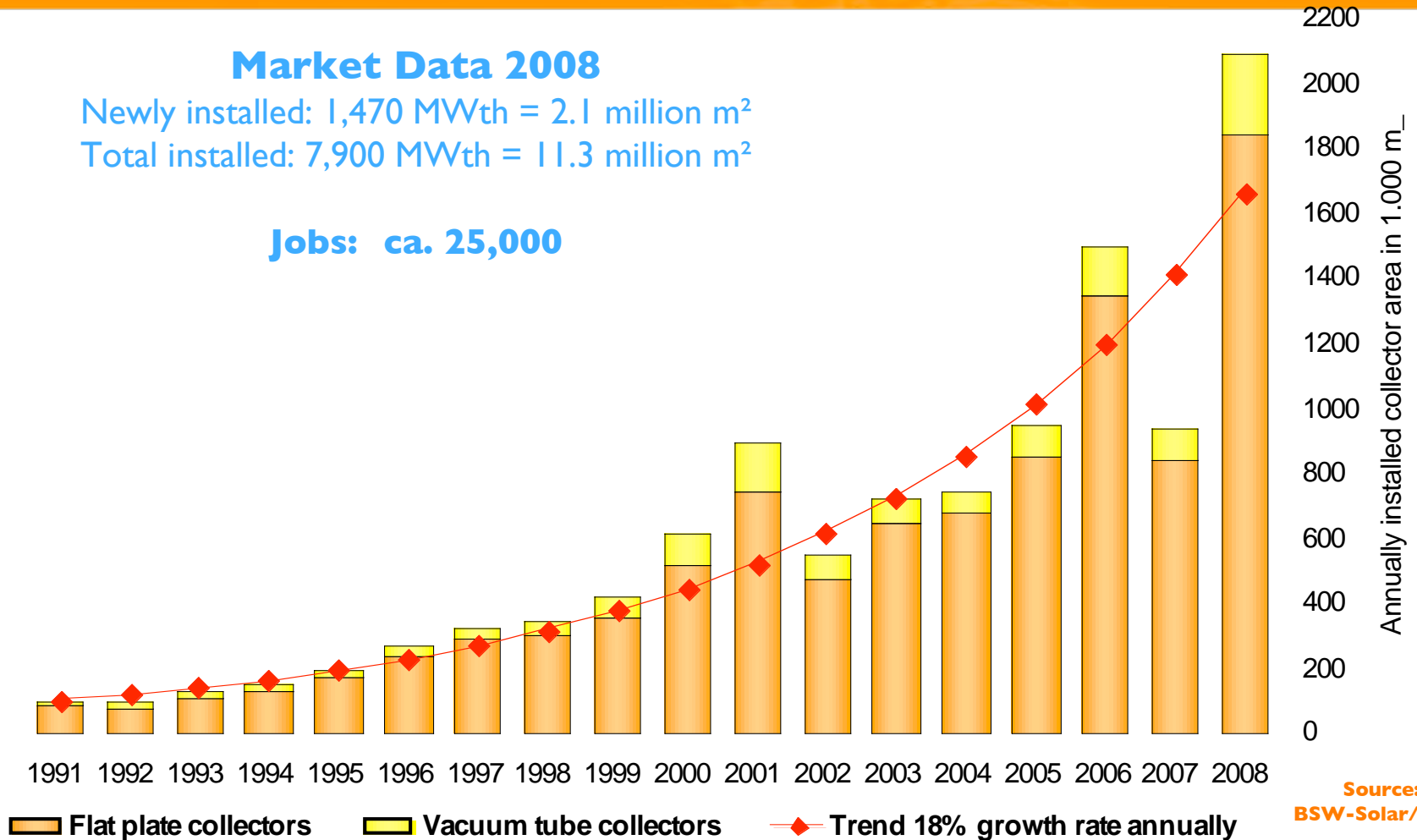
Development of the German Solar Thermal Market

Market Data 2008

Newly installed: 1,470 MWth = 2.1 million m²

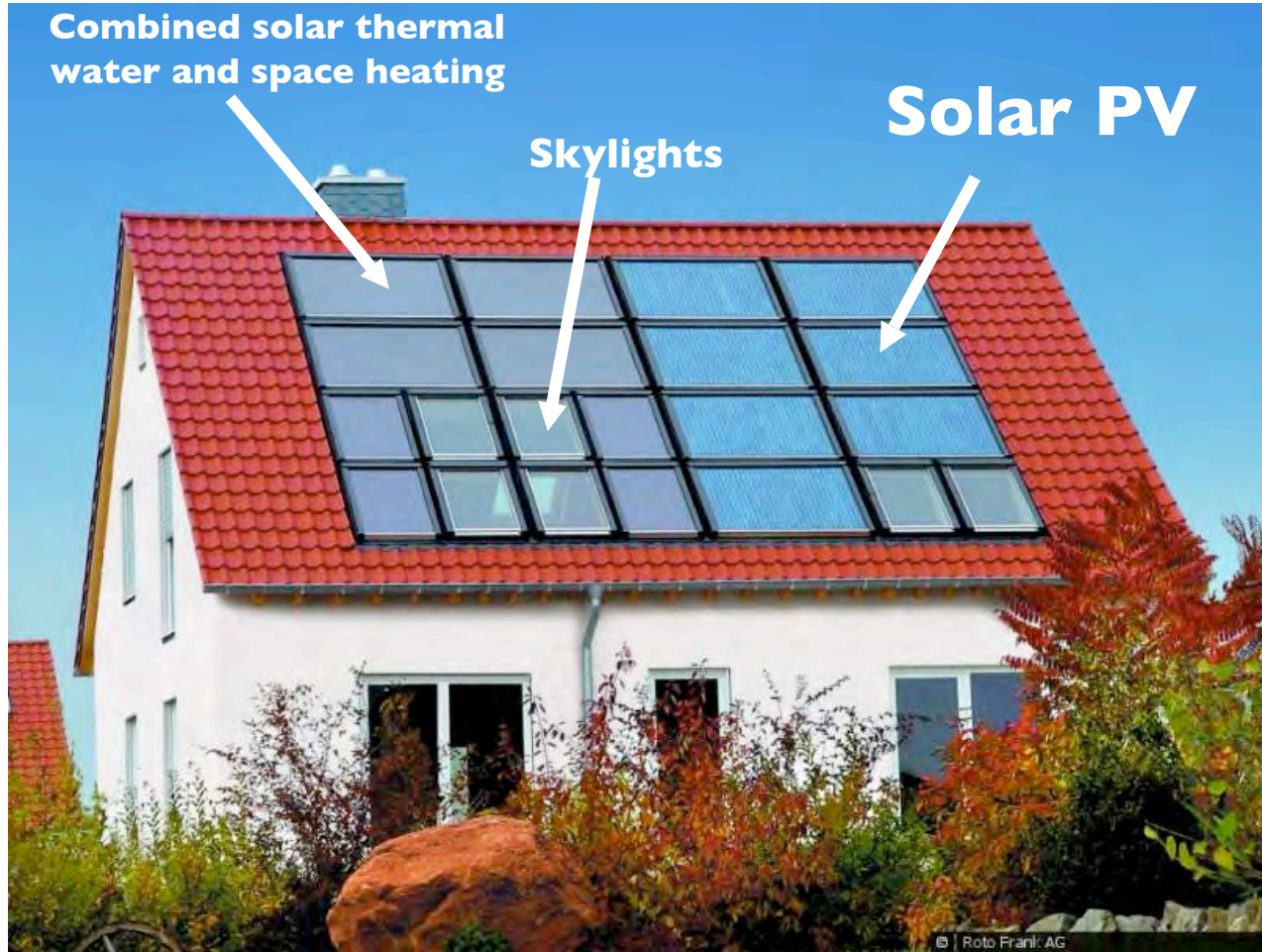
Total installed: 7,900 MWth = 11.3 million m²

Jobs: ca. 25,000





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**Combined solar thermal
water and space heating**

Skylights

Solar PV

© | Rotó Franit: AG

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Support Programs in Germany

1) Grants for solar thermal systems

⇒ **About 15% of the investment cost available as grants**

2) Low interest loans from the state-owned bank

3) Renewable Heating Law 2009

- Owner of new buildings must use renewable energy to meet their heating demand
 - **15%+** of heat demand by **solar thermal energy**, or
 - **50%+** by **solid biomass (pellets), liquid biomass (biodiesel) or heat pumps**, or
 - **30%+** by **biogas used in combined heat and power units**

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Large Scale Solar Thermal

Large solar thermal in multi-family, hotels, hospitals & nursing homes.

Must be well designed. Require a lot of experience, and mature systems.



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Old People's Home in Jena - 240 m² Collector Surface



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Housing Estate in Rostock

- 11 apartment blocks, 108 apartments
- 1,300 m² roof surface
- 1,000 m² solar collector surface
- 20,00 cubic meters ground-water heat storage tank
- \$0.35 cents kwh



Source: Solvis

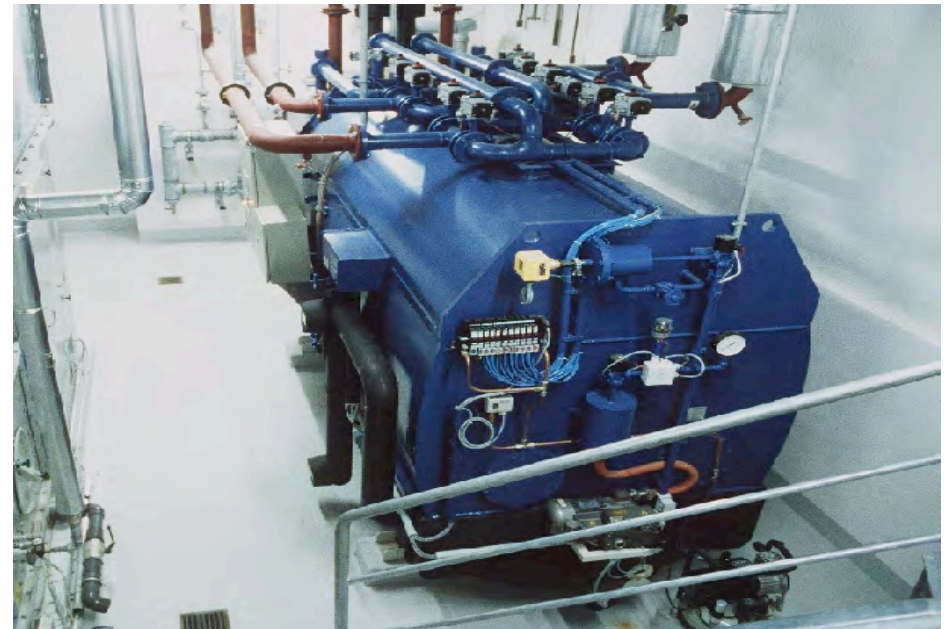
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Solar Assisted Cooling

- **Summer solar and cooling demand fit well**
- **200+ pilot systems in Europe**
- **Small systems for office buildings and family houses under development**



Bundespresseamt Berlin



Adsorption cooling machine

Source: Fraunhofer ISE



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Solar District Heating will play a big role in the future



Solar district heating, Marstal, Denmark
17,000 m² solar collector area © Arcon



Solar houses in Neckarsulm, Germany

© Solites



12,000 m³ seasonal storage, Friedrichshafen, Germany

© Solites

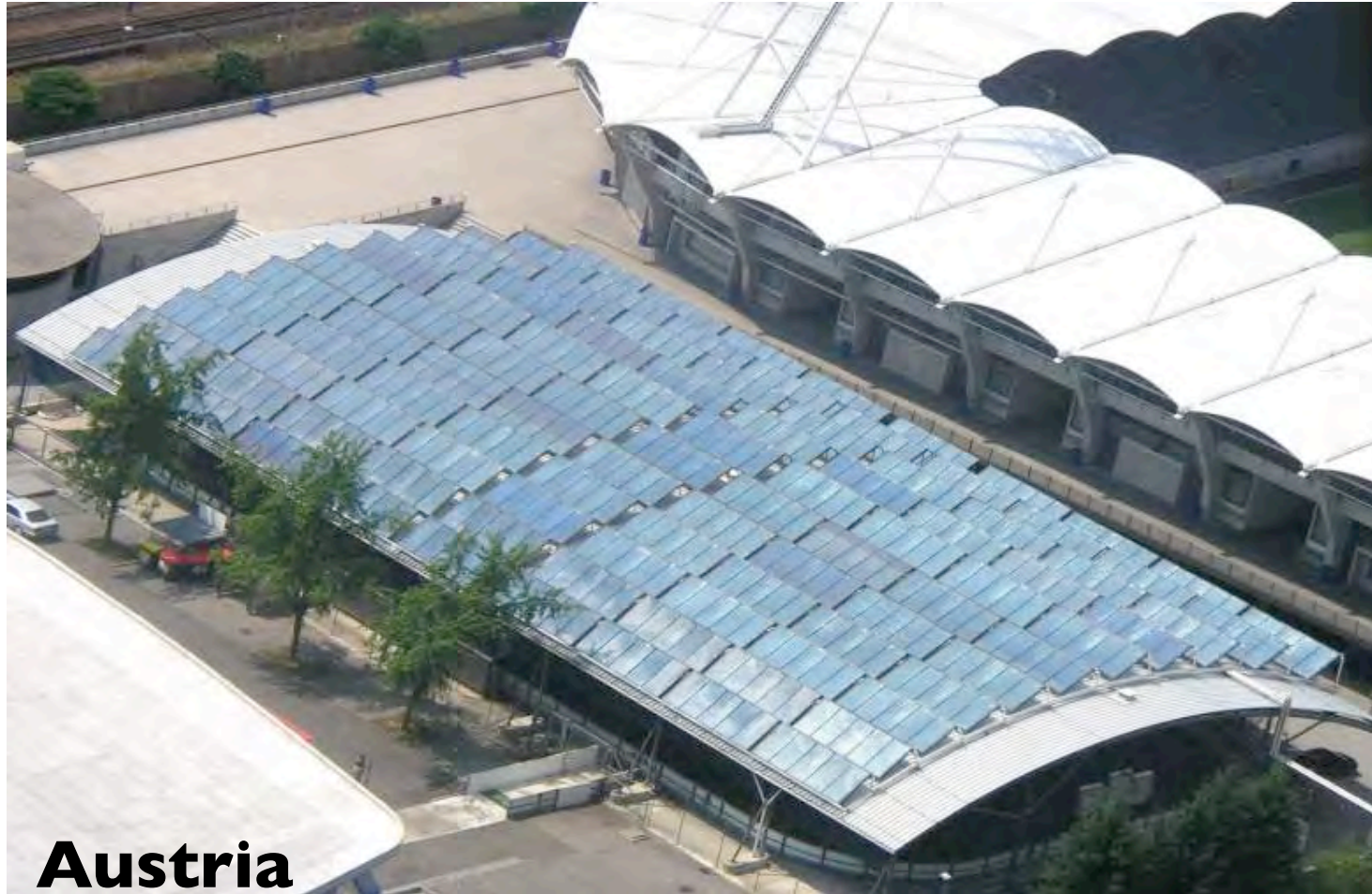
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Large Scale Solar Thermal Heating and Cooling



Austria

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Solar Thermal Vision 2030

European Renewable Heating & Cooling Technology Platform

vision for solar thermal energy

New buildings

100% solar heated buildings, by code.

Existing building stock

Solar renovation will be the most cost effective way to upgrade the building stock > 50% solar heated.

Industrial and agricultural applications

Solar thermal systems will cover process heating and cooling demands.

Overall goal:

To meet 50% of all low temperature heat needs up to 250°C with solar thermal energy.



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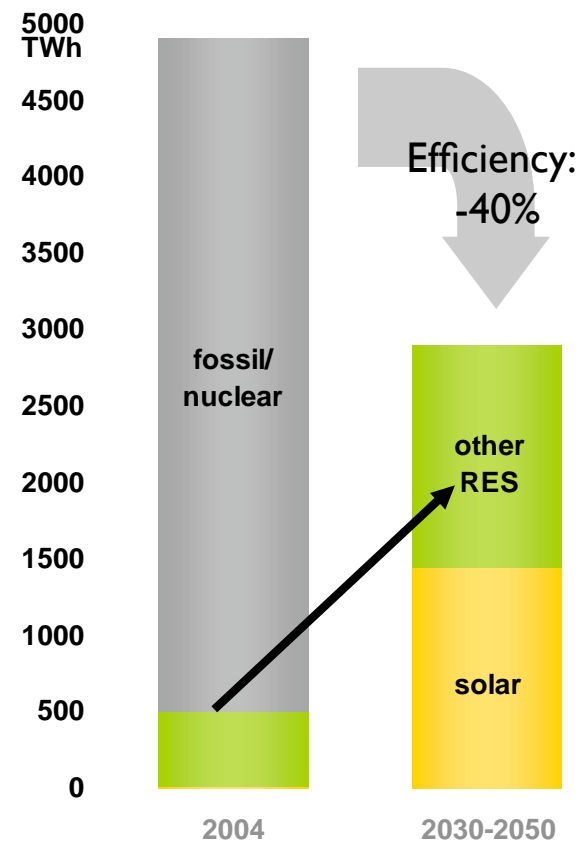


The long term goal: 50% of the economy's heat demand to be met by solar thermal energy.

Heat demand in EU25

- **Increase total installed solar thermal power from 13 to 2400 GWth**
- ⇒ **185-fold increase in solar thermal power and energy production**
- ⇒ **Cost reduction**
- ⇒ **Building up capacities**
- ⇒ **Innovations**

RES = Renewable Energy Sources





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Municipalities are Important Actors for Change

They provide the **local framework conditions.**

... provide an important **source of energy information** for local people.

... are an **important model of a sustainable energy consumer.**

... the regional economy benefits from **added value and renewable energy jobs.**



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**With thanks to
Gerhard Stryi-Hipp,
Fraunhofer Institut Solare**

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What incentives are available?

Municipal Buildings

- Upto \$400,000 from ecoEnergy grants
- Based on the performance factor of the selected collector



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What incentives are available?

Municipal Buildings

- Matching grant from SolarBC to \$40,00
- Funding available for 20 projects



Quesnel Recreation Centre

www.solarbc.ca



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The Funding Process

- Step 1: Develop design and costs.
- Step 2: Review the process at www.solarbc.ca/install/local-governments
- Step 3: Submit a signed ecoEnergy for Renewable Heat Application at:
www.ecoaction.gc.ca
- Step 4: Submit SolarBC Consent form with ecoEnergy Application
- Step 5: Receive Contribution Agreement from NRCan
- Step 6: Receive approval of funding from SolarBC
- Step 7: Upon completion of project and receipt of payment from NRCan
SolarBC will forward the SolarBC rebate.

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What incentives are available?

Schools

- Call for Solar for Schools now over
- SolarBC + ecoEnergy funding
- Next call in late 2009



UBC Okanagan

www.solarbc.ca



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Thomas Edison



*I'd put my money on the Sun
and Solar Energy,
what a source of Power!*

*I hope we don't have to wait
until oil and coal run out,
before we tackle that.*



For more information contact:

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nharris@solarbc.ca

250-590-6370t

www.solarbc.ca