Innovative and energy efficient brick buildings

Future of Building 2018

DI Alexander Lehmden

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Building Material Solutions

The Wienerberger Group is today the world's leading manufacturer of building material solutions

Wall :	**No. 1 worldwide**
Facing bricks:	**No.1 in Europe, Co-Leader in the US**
Roof tiles :	**No.1 in Europe**
Plastic pipes:	**leading position in Europe**
Ceramic pipes:	**No. 1 in Europe**
Concrete pavers:	**No. 1 in Central-Easteurope**

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Energy Efficiency - a megatrend

Security of supply

- Fossil fuels are mostly importet from politically instable regions. Renewable energy sources (biomas, solar, hydropower) are regionally available and secured for a long time.

Affordability

- Fossil fuels are running low, while the demand is rising esp. in emerging markets (China, India). The use of renewable energy is an economic alternative and an investment in the future.

Climate protection

- Burning fossil fuels is responsible for climate change. Substitution with CO_2 neutral energy sources is an important contribution to climate protection.

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EU Directive on the energy performance of buildings - a challenge

Mandatory: "low- energy buildings“

- by the end of 2018 for all new public buildings
- by the end of 2020 for all new bulidings

Buildings with a very high level of overall energy efficiency and a significant share of renewable energy sources.

Primary energy demand - as a key indicator

Important: cost - optimal level

EU-member states:
since 2012 transposition into national law

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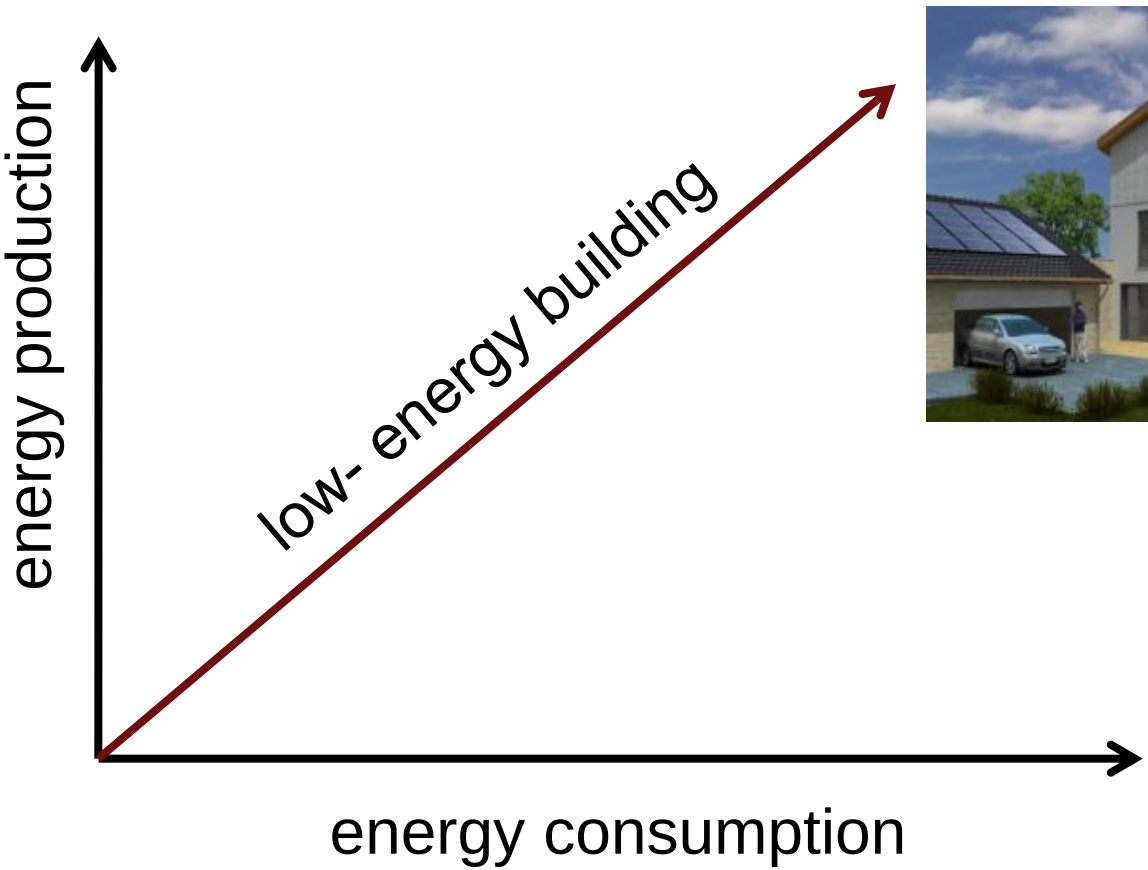
From one-dimensiononal to two-dimensional System



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Pilot project: e4 ZIEGELHAUS 2020

- **100 % supply through renewable energy**
- **Energy production higher than energy consumption**
- **Prime energy credits through photovoltaics**
- **positive CO_2 balance**

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Energy production with solar energy and biomass

Heating and hot water supply

- **48 m² solar system**
- **9.580 l solar heat storage**
- **33 modules for wall temperation**
- **Wood boiler**

electricity

- **49 m² photovoltaic system**

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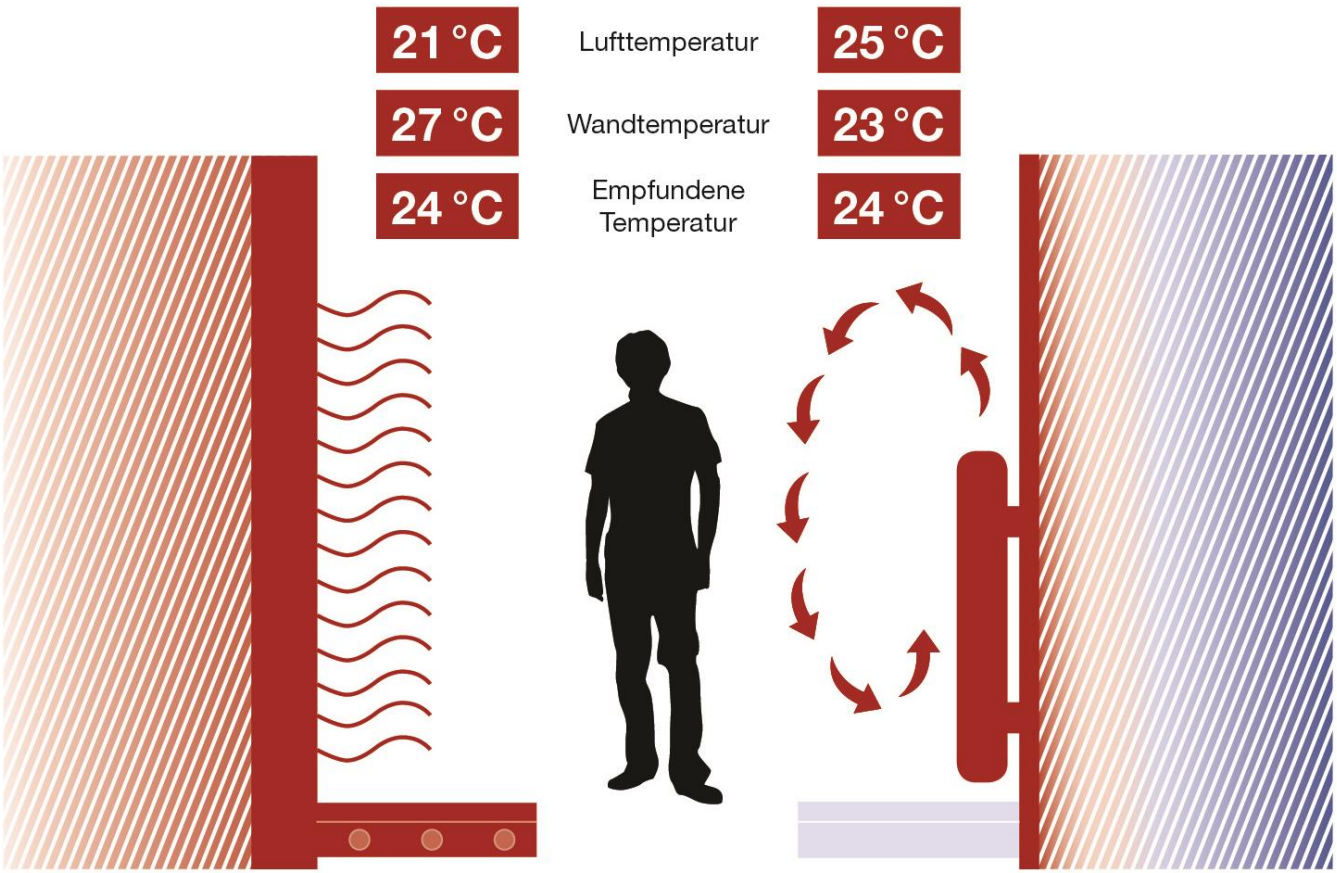
Benefit of wall temperation system



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Construction of the wall

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Installation of wall temperation and floor system

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Solar and PV - system

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brickwork

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The e4 ZIEGELHAUS 2020 (2013)

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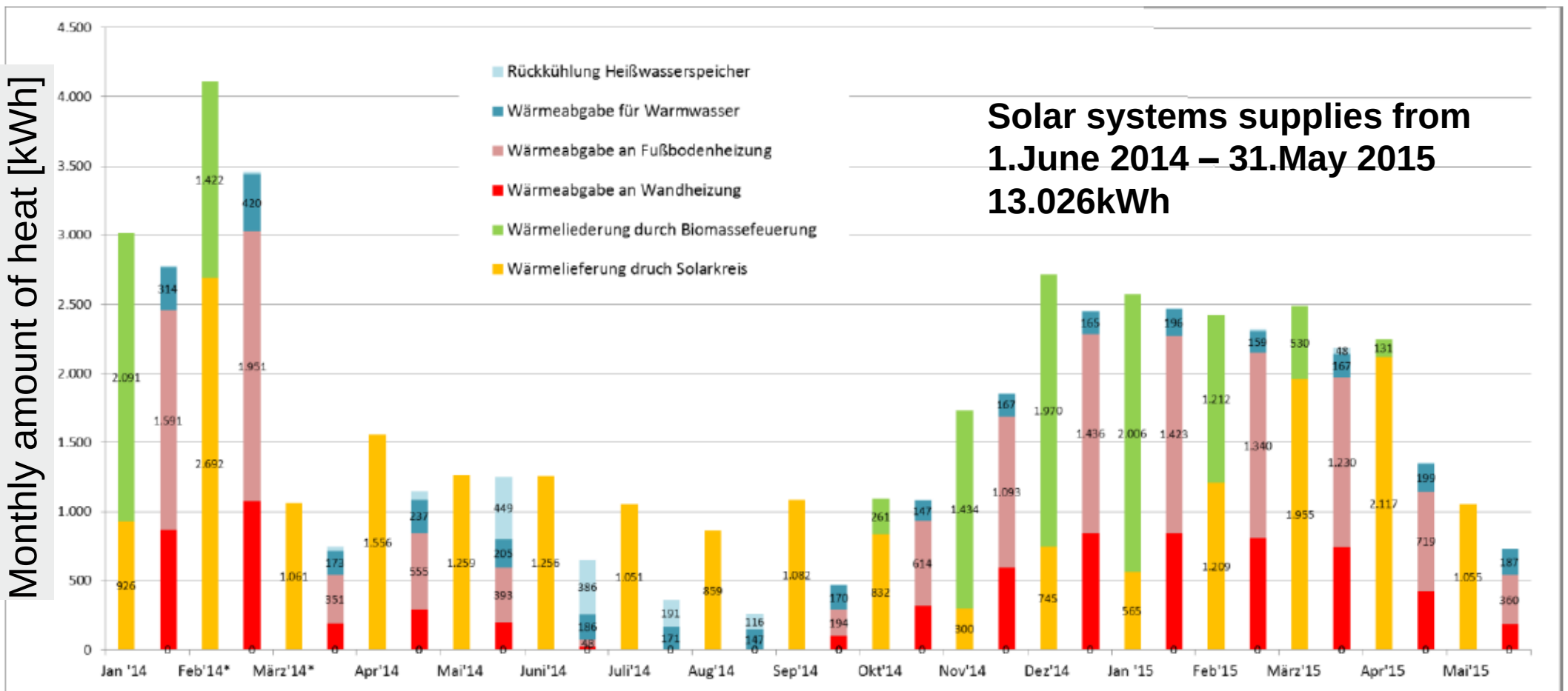
1,5 years of reality check

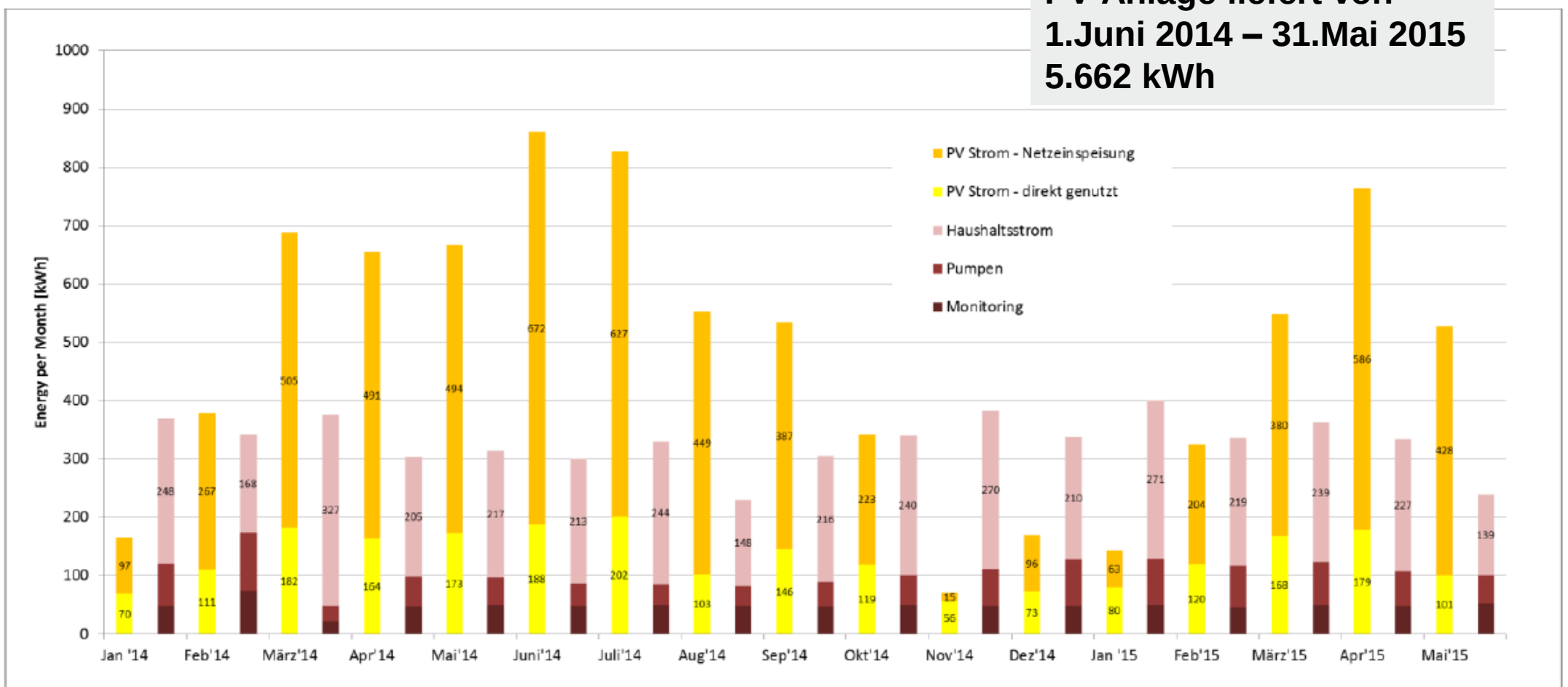
Heat balance from January 2014 till May 2015:



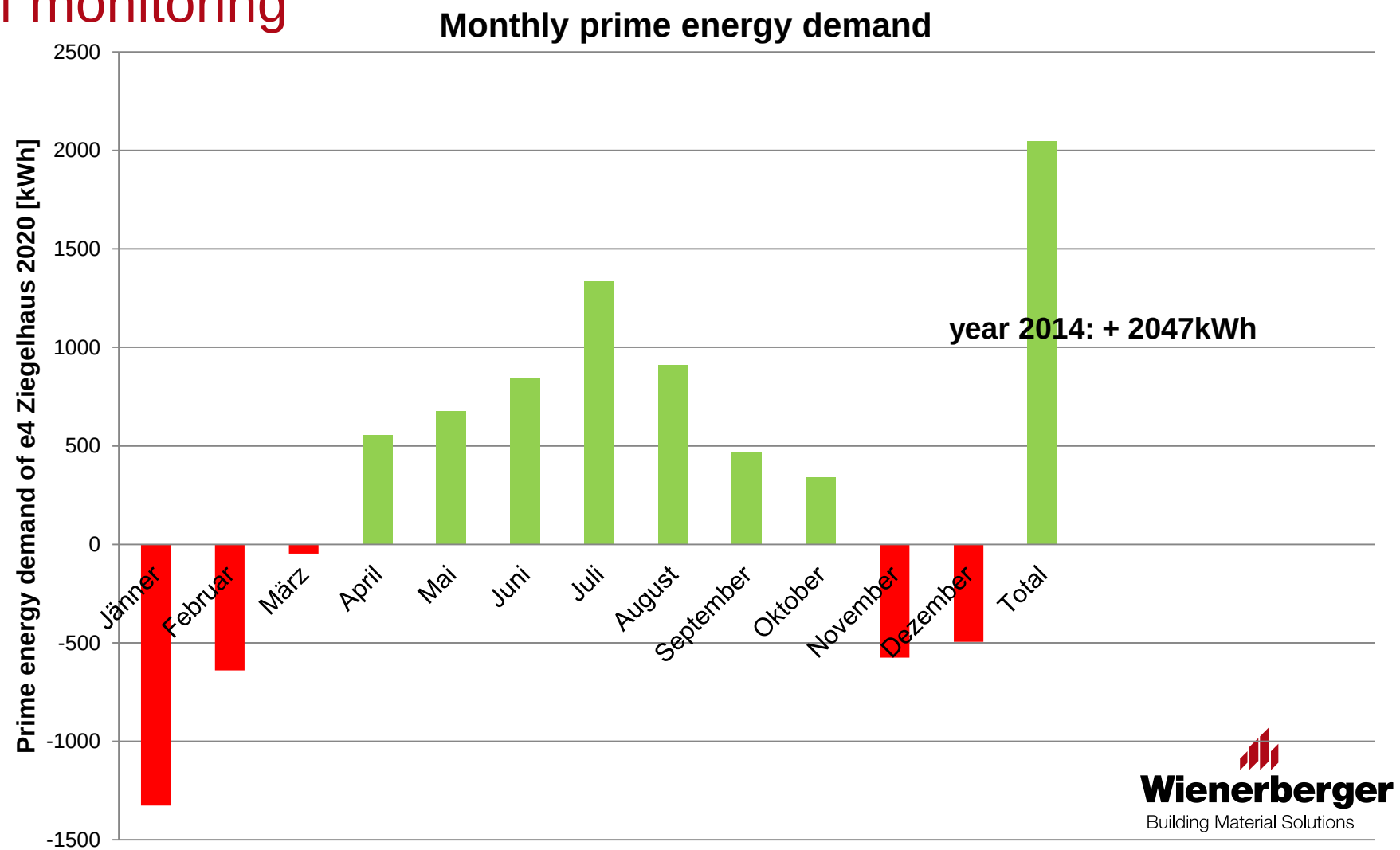
1,5 years of reality check

Electricity balance from January 2014 till May 2015:

PV-Anlage liefert von
1.Juni 2014 – 31.Mai 2015
5.662 kWh



1,5 years of monitoring



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Thank you for your attention!

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