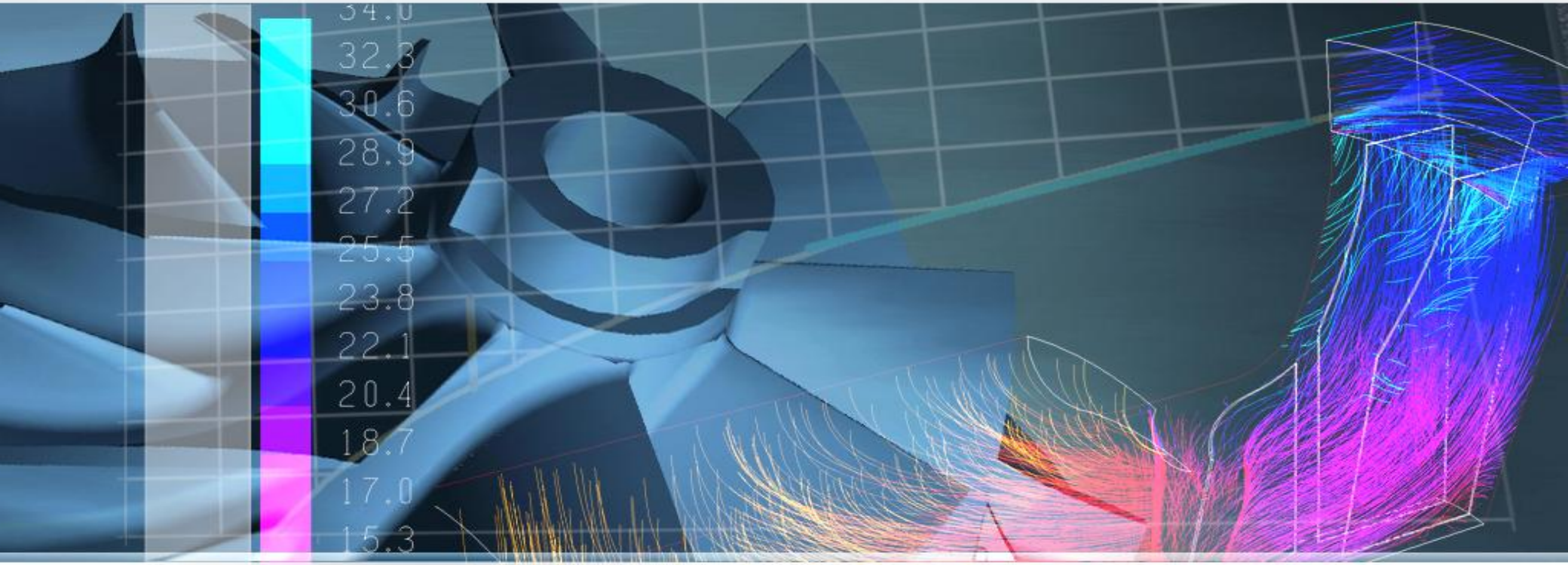
ILK Dresden



Institut für Luft- und Kältetechnik Dresden gGmbH

Solar cooling related developments of ILK Dresden

Institute of Air Handling and Refrigeration – Mathias Safarik

ILK Dresden – R&D company

- Founded in 1964
- Re-established as independent research institute in 1991

- Employees: 145
- Academics: 72 %
- mean age: 44

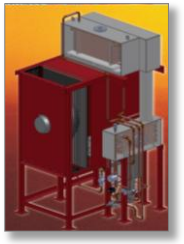
- Laboratory area: 3070 m²
- Test rigs: ~56
- Phys. / Chem. Laboratories: 25

Competences

- Strong background in absorption refrigeration technology with H_2O/LiBr and NH_3/H_2O (e.g. *EAW* and *AGO* absorption chillers)
- Several developments of stand alone PV driven cooling solutions
- Applied materials department = experts in refrigerants, working fluids and PCM materials
- Inside knowledge of compression systems (compressor test stand, heat pump laboratory for air and water based systems)
- Development and application of a highly efficient cold storage technology (direct evaporation ice slurry)

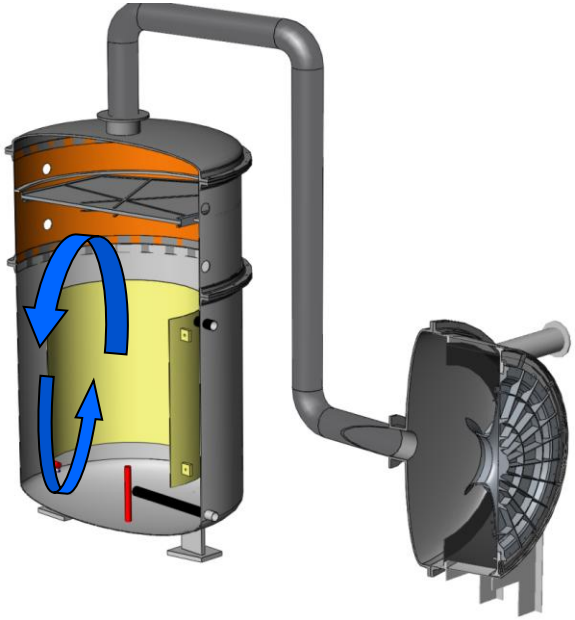







Related projects and developments

- Directly air-cooled absorption chiller (8…20 kW)
- Low capacity (50 kW) double effect chiller
- System evaluation and optimisation
  - “EvaSolK” (PV/ST-comparison, monitoring of compression systems)
  - “SolaRück” – new approaches to the re-cooling issue of sorption chillers
- Direct evaporation ice storage technology
- Low driving temperature desalination technology suitable for coupling with solar thermally driven cooling systems -> double heat usage



Related projects and developments-PCM Heat Storage

- High Temperature Phase Change Material

25 °C **150 °C**

Melting Temperature: 126 °C

System solutions by ILK

Solar Cooling Container

- 20ft container with 23 m³ cold room
- PV generator: 3.4 kWp
- nom. cooling power: 5.1 kW (-5°C / 45°C)
- room temperature: 0°C to +10°C (adjustable, fan controlled)
- ice storage for cooling over 3 days without sun

Cooling system for cold storage of perishable goods and food stuffs

System solutions by ILK

Solar Medicine Storage Container

- 10ft container with 3 different cold rooms
- room temperatures:
  5°C / 15°C / 25°C
- PV generator: 1.7 kWp
- nom. cooling power: 2.5 kW (-5°C / 45°C)
- ice storage for 3 days without sun

Cooling system for cold storage of medicines, vaccines and blood conserves

System solutions by ILK

PV Ice Maker

- 20ft container with ice maker
- PV generator: 5.1 kWp
- nom. cooling power: 5.9 kW (-10°C / 45°C)
- 250 kg crushed ice per day
- water tank
- UV water disinfection
- ice storage seizing two daily outputs

Specially developed ice machine with high efficiency

System solutions by ILK

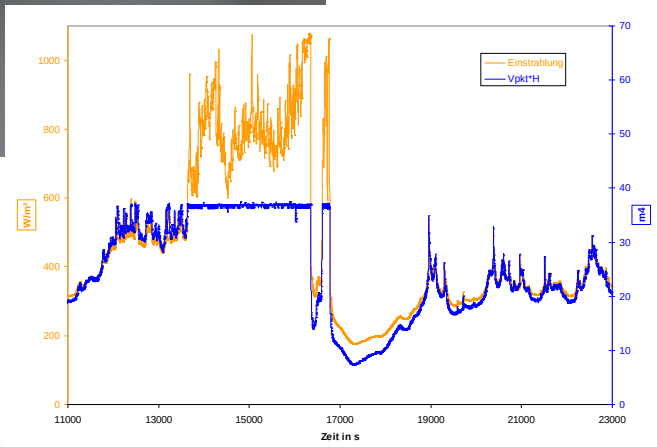
PV Milk Cooling Centre

System for cooling and cold storing of milk

- 20ft container with milk storage
- PV generator: 3.4 kWp
- nom. cooling power: 11.3 kW (15°C / 50°C)
- milk storage and refrigeration
- capacity: 1000 l
- large ice storage with 70 kWh
- two-stage milk cooling with secondary fluid cycle

Power supply: Hard and Software

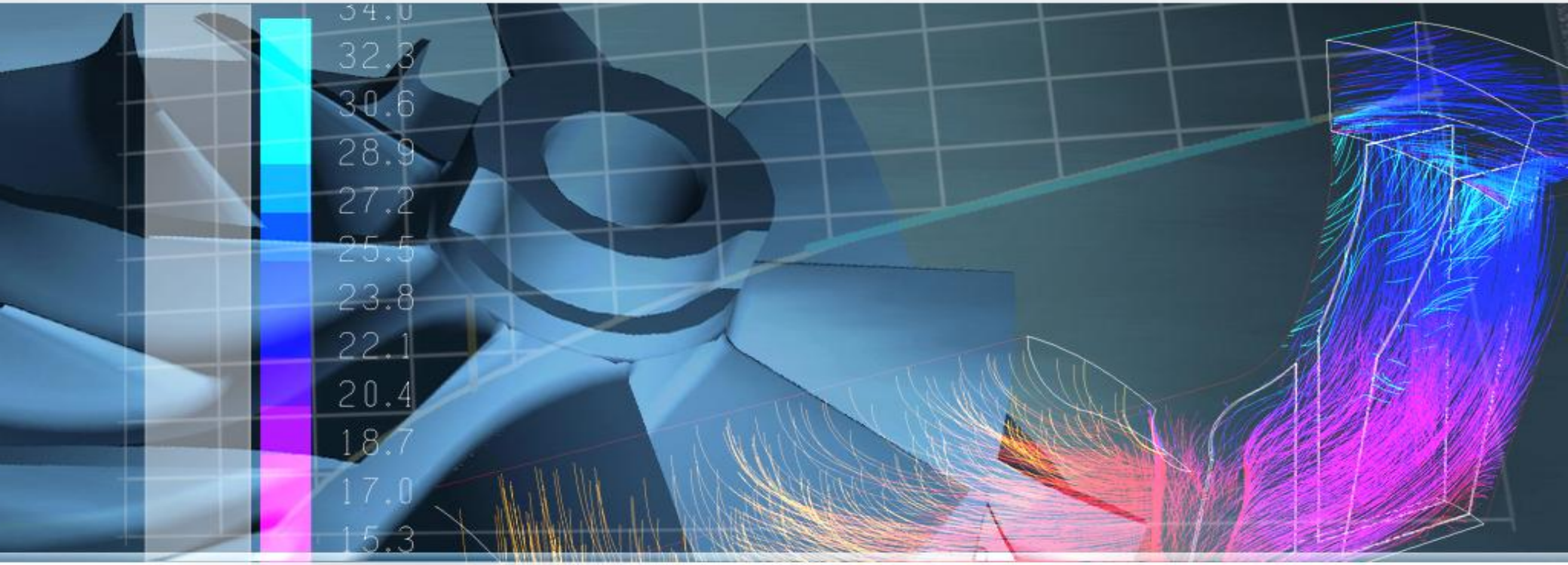
- **Standard VFD for solar pumping systems**



- Based on standard industrial products
- Cost optimized solution for stand-alone drives without battery
- Automatic operation with integrated MPP-Tracking, dry run protection
- Display with integrated data logging

Applications:

- **Solar pumping systems**
  - Use of standard pumps up to 15 kW
- **Refrigeration units**



Thanks for your attention!

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