



Our vision – our solution – our task

Presentation HELIOVIS AG

Felix Tiefenbacher and Samuel Kutter

Concentrated Solar Power (CSP): Various technologies in competition



Parabolic through



Linear Fresnel mirrors



CSP

Dish Sterling



Tower



High material consumption imply high investments – Industry needs new ideas!

Heavy metal supporting structures cause high material and installation cost for parabolic troughs



Agenda



Our vision: a solar future

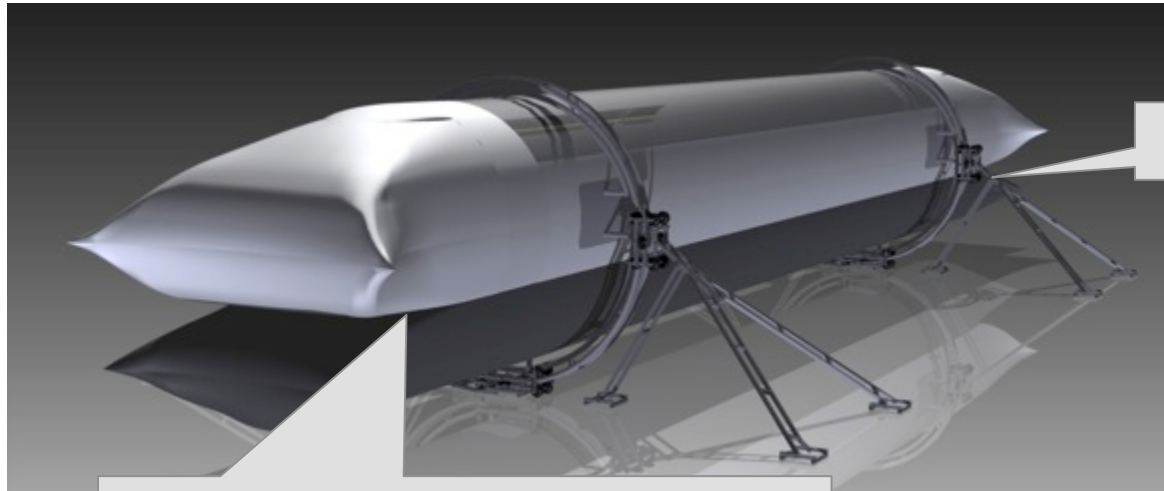
Our solution: the HELIOtube

Our task: to bring HELIOVIS AG forward

HELIOVIS



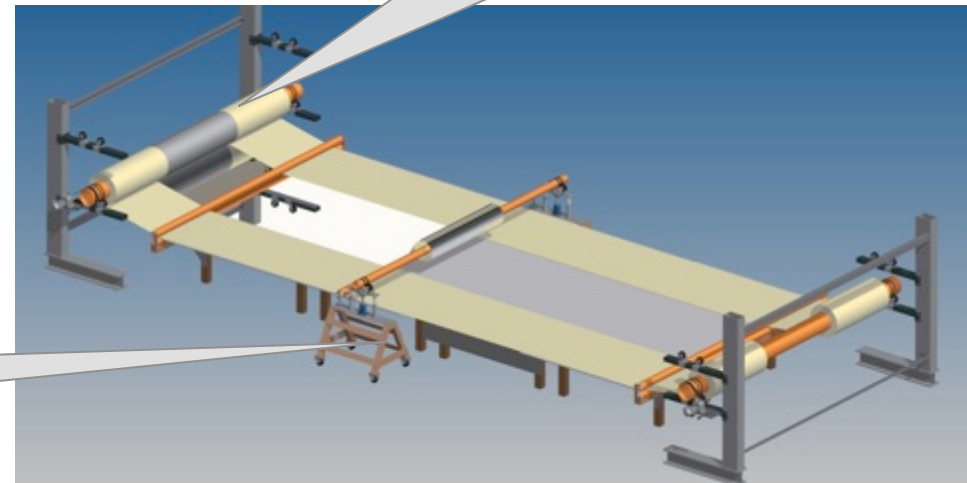
The HELIOtube with high potential to realise competitive advantage



Installation by inflating

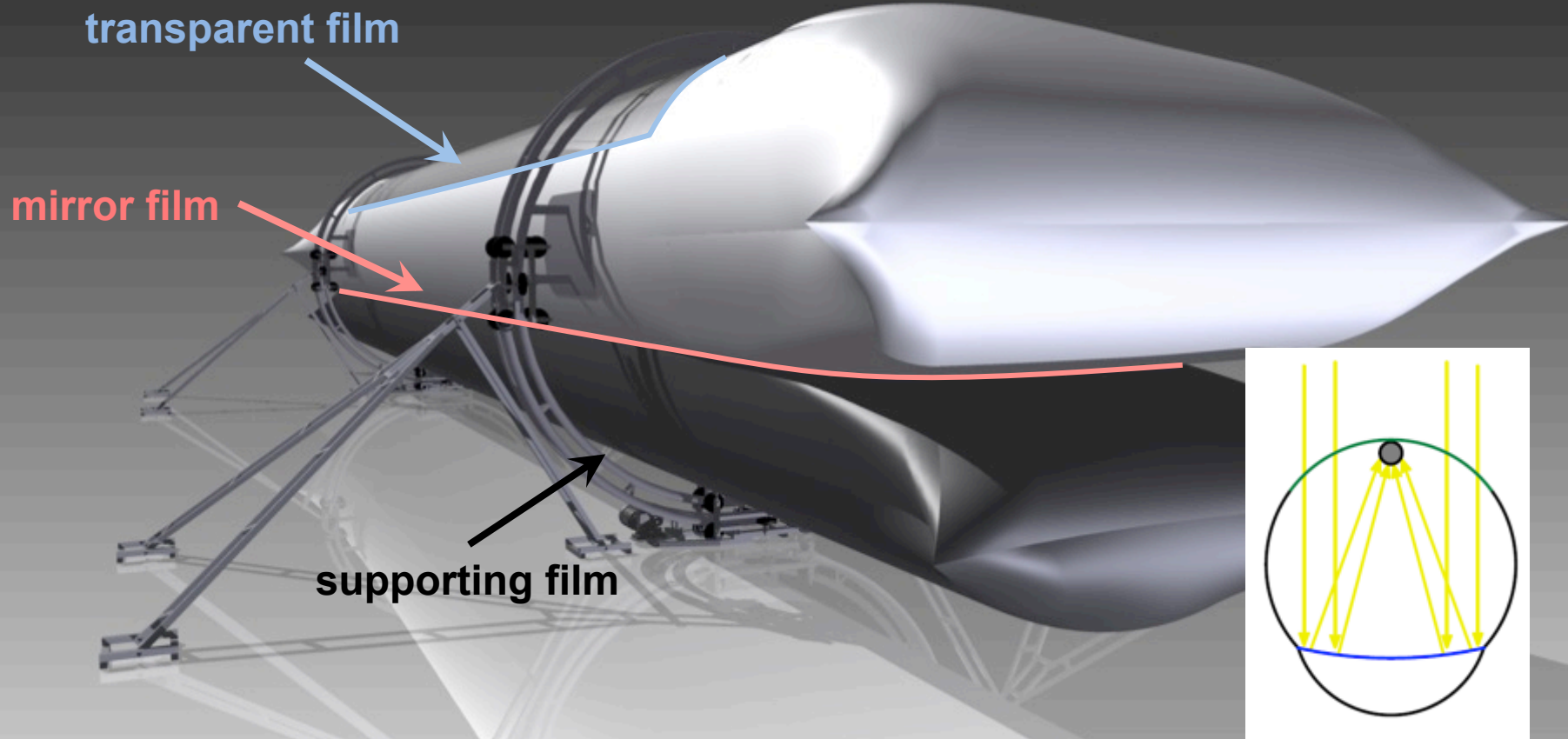
Reduced material usage:
from 50 kg/m² to 5 kg/m²

Simple transport on a roll



High production efficiency
„roll to roll“

We replace expensive metal constructions
by light weight plastic films



Each foil with unique properties



Transparent film

- highly transparent (90%)
- UV stable
- long durability (30 years)
- dust and dirt repellent

Mirror film (protected from weather)

- highly reflective
- light weight

Support film

- robust
- UV stable and weather resistant
- simple handling



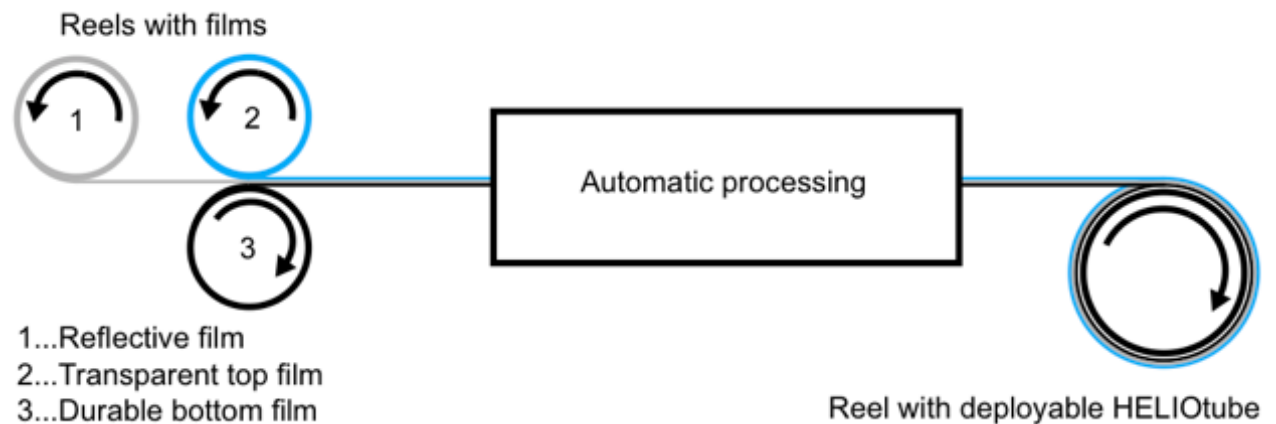
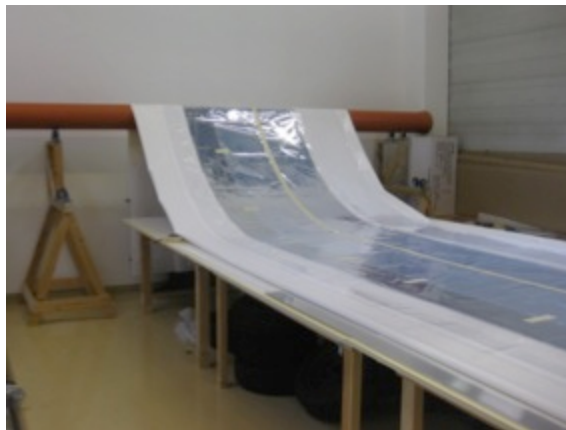
Highly cost efficient production „roll to roll“



- Patented „flat“ production process „roll to roll “
- Joining of films by a combination of gluing and sewing

→ Directed development towards an industrial mass production

- High quality
- High production speed (up to 600 running meters per hour)
- Low production costs by high utilisation
- Existing industrial experience for „Roll-to-roll“ processes



Simple, fast and modular installation



Simple **installation** of the HELIOtubes:

- Dispatch from central production plant
- Unreel at installation site
- Rig receiver line
- Mount to tracking system
- Inflate!

Conventional system with tedious and expensive installation procedure

- Mounting of individual mirror elements
- Geometrical alignment

Agenda



Our vision: a solar future

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The logo for HELIOVIS features a stylized sun with a yellow semi-circle on the right and a grey arc above it, positioned above the company name. The word "HELIOVIS" is written in a bold, sans-serif font, with the letter "O" highlighted in yellow to match the sun in the logo above.

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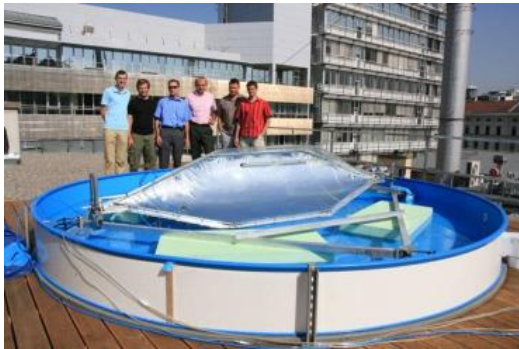


HELIOVIS AG with a continuous track record of successful milestones



Models

Vienna University of Technology



Prototype 1: 10 m x 0,8 m



Prototype 2: 10 m x 1,2 m

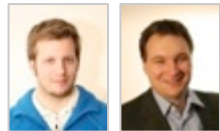


Prototype 3: 14 m x 1,5 m



Partnership HELIOVIS OG:

Johannes Höfler and Felix Tiefenbacher



Hall and Test site Neusiedl am See



Formation of HELIOVIS AG together with Business Angels

Grant of patent
pneumat. sun concentrator

New location

IZ NÖ Süd, Wiener Neudorf



Financing:

545k € by private investors



New board member:

Samuel Kutter joins from E.ON

Our next step:

Pilot system with utility partner is under construction



Location:

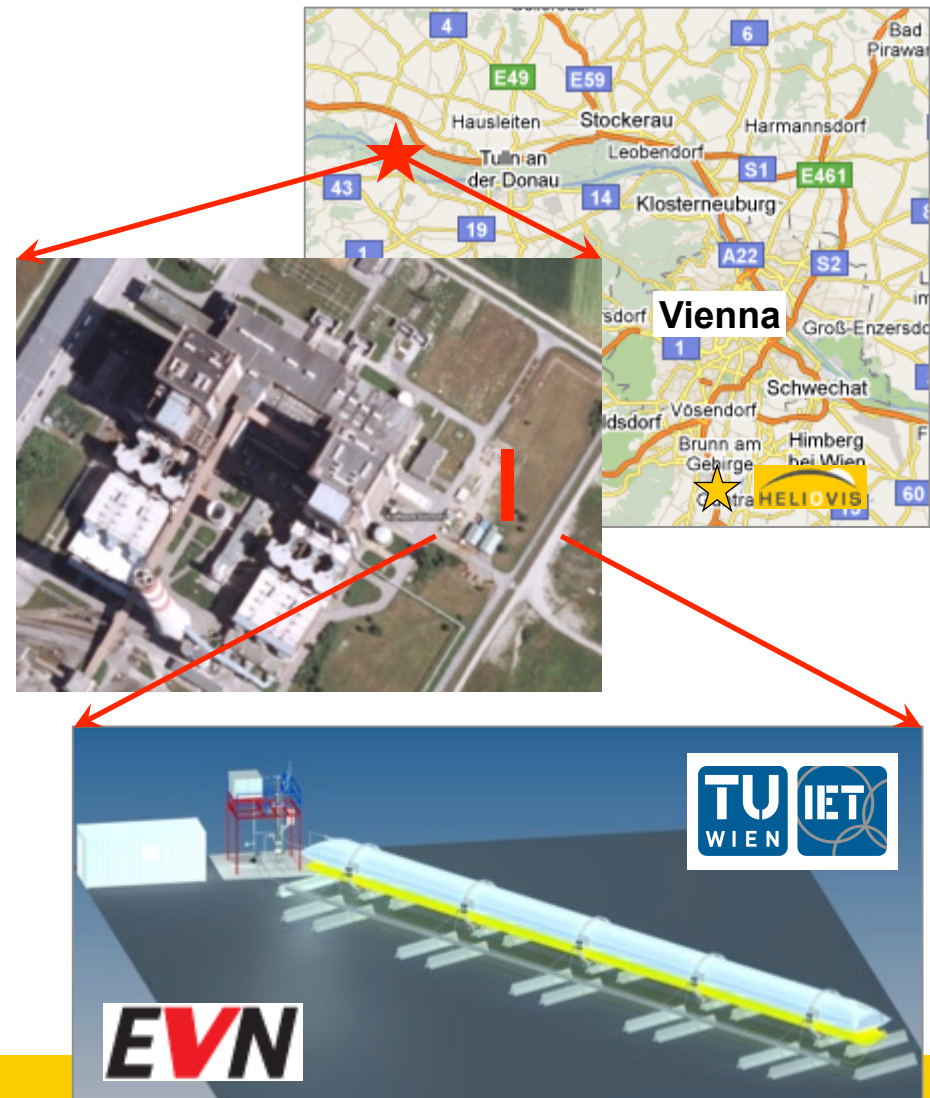
- 750 MW Coal fired power plant of EVN (local utility for Lower Austria Province)

Technology

- 40 m long, 1.6 m aperture
- Thermal output 25 kW_{th}⁽¹⁾
- Operation from summer 2011 to 2013
- Stand-alone installation with direct steam generation; potential extension to link with district heat or power plant
- Pressure up to 110 bar, temperature up to 318 °C
- Concentration factor 44 x

Partners

- EVN: site, installations, foundations
- Vienna University of Technology thermodynamic design, measurements



(1) at standard incident radiation of 1 kW/m²

HELIOVIS' path from a startup company to an industrial provider of CSP technology



- Scientific validation
- Prototyping

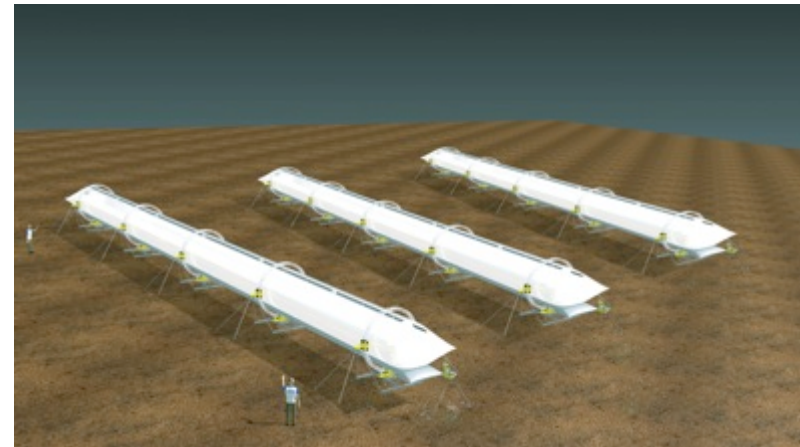
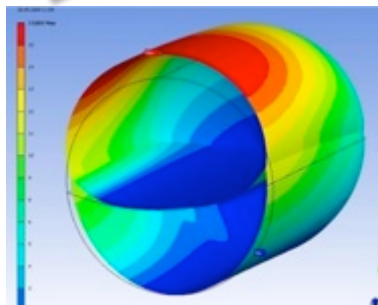
- Commercial validation
- Develop partnerships with EPCs and utilities

Market entry (roll out)
Demonstration plant 1 MW
2012 - 2014

Ramp up phase
Commercial plant 50 MW
2014 - 2017

- Scale up production
- Increase diameter of HELIOtubes

Proof of technology
Pilot systems 50 kW
2008 - 2012



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