

Uhde innovate 2024

High pressure technologies for the solar energy revolution

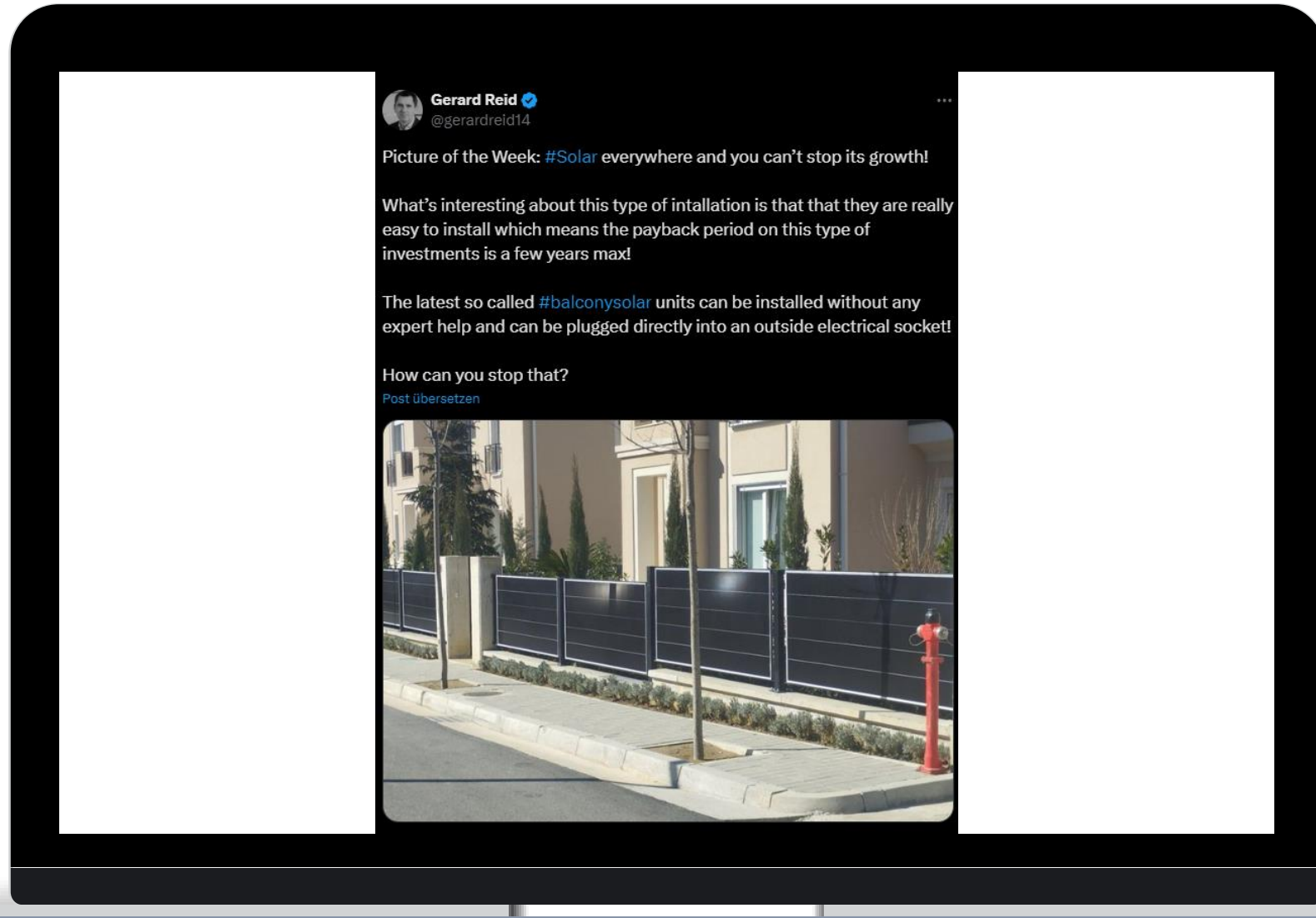
06.06.2024 | Waldemar Hiller
thyssenkrupp Uhde

engineering.tomorrow.together.



thyssenkrupp

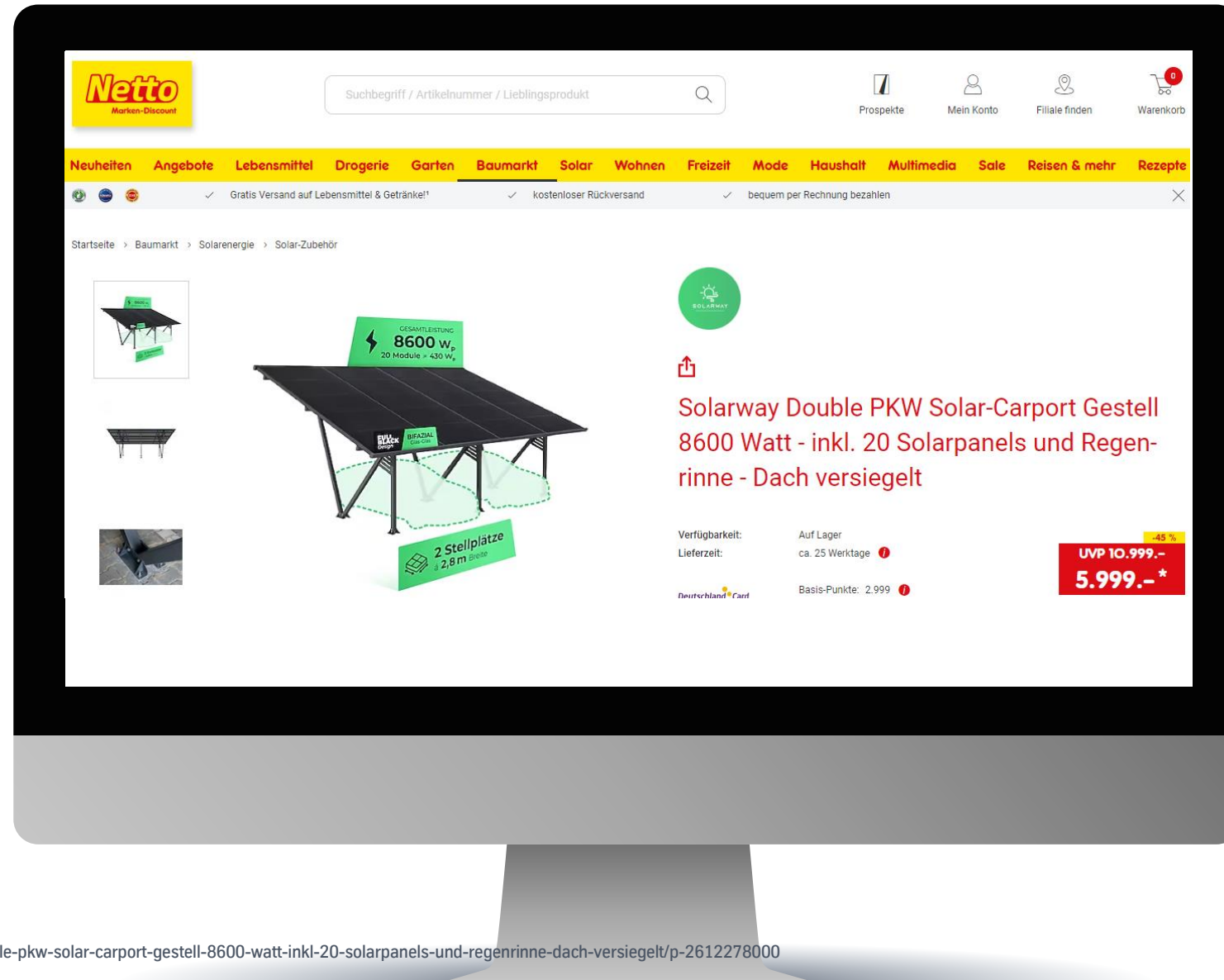
Today, low-cost solar is everywhere...



Source: Post on X by Gerald Reid on 12.03.2024



How about a carport with 30Y free energy from your local supermarket?

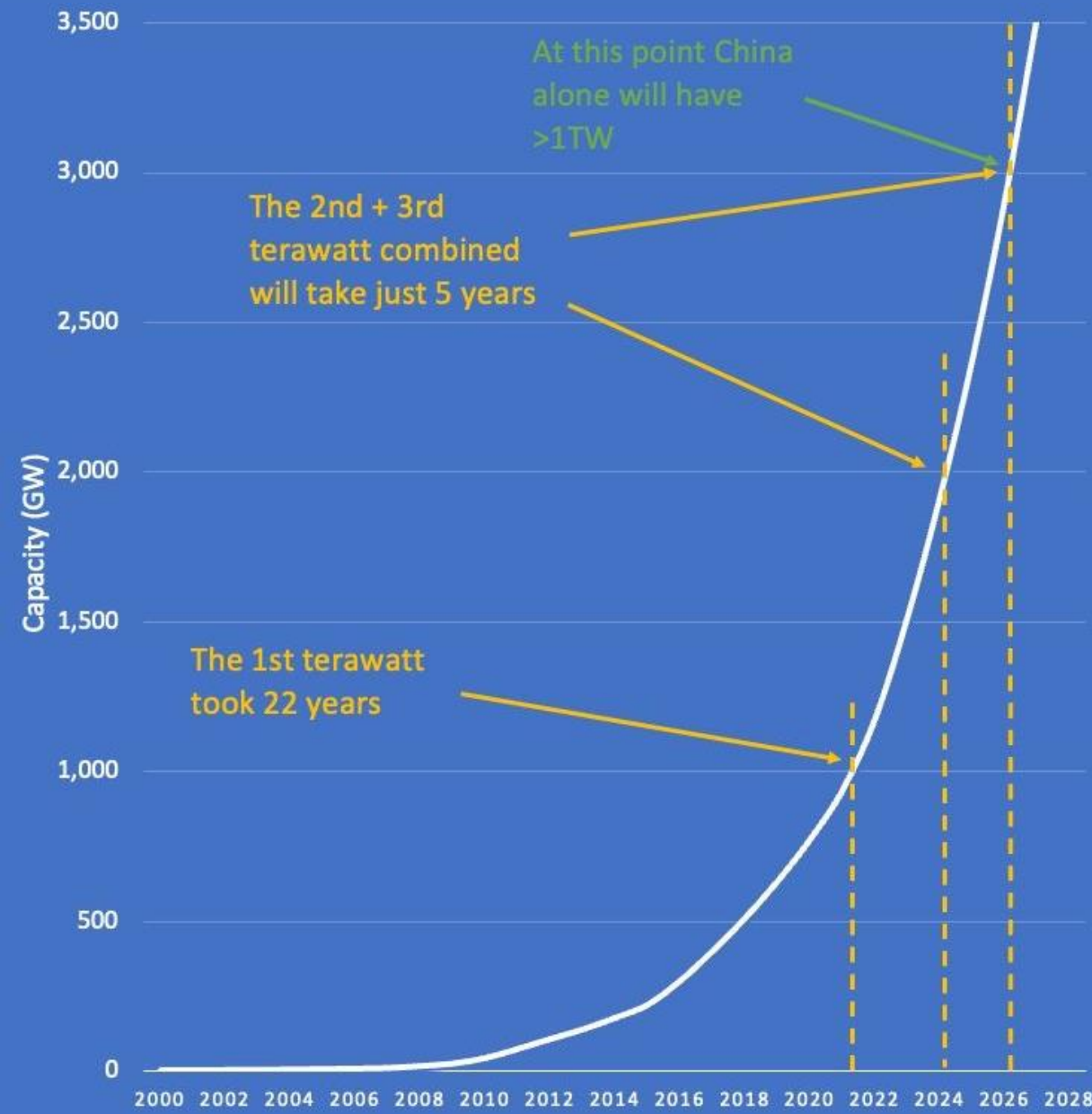


Source: <https://www.netto-online.de/solarway-double-pkw-solar-carport-gestell-8600-watt-inkl-20-solarpanels-und-regenrinne-dach-versiegelt/p-2612278000>



...and deployment keeps growing exponentially

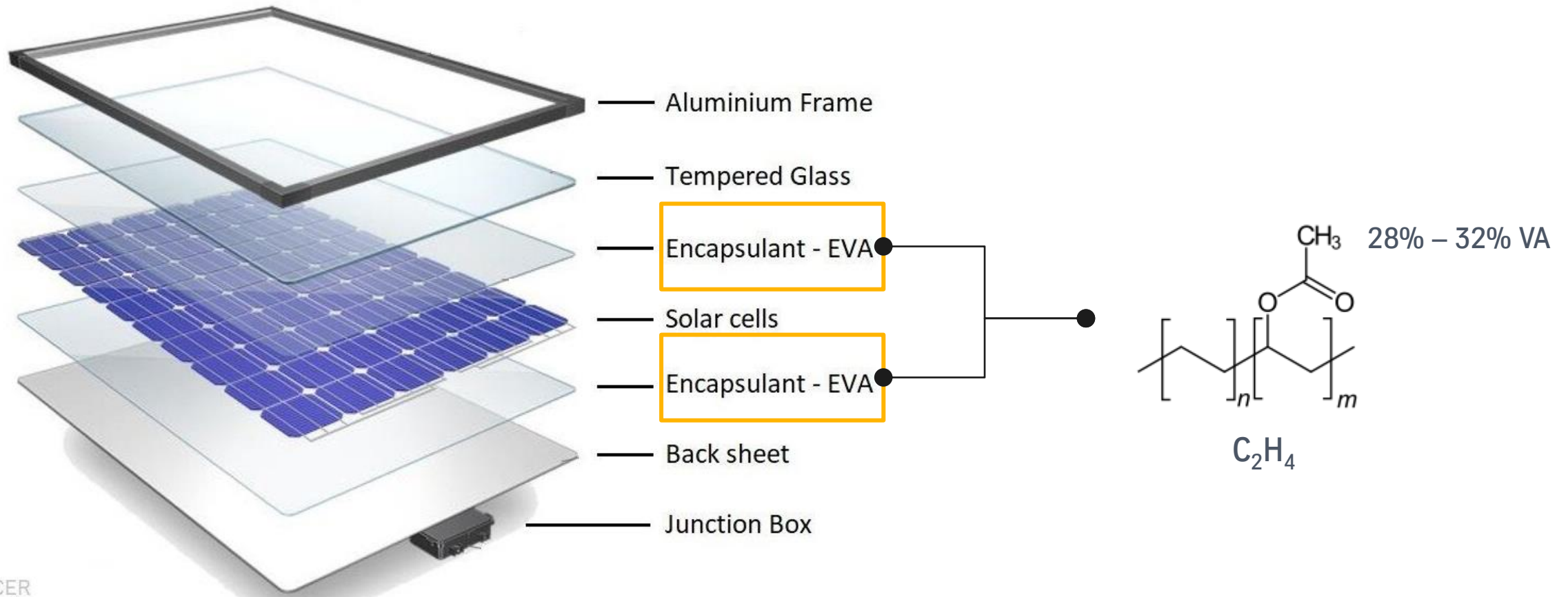
Global solar capacity is growing exponentially



Source: SolarPower Europe – Global Market Outlook 2023 - 2027



Demand on encapsulants like EVA increases



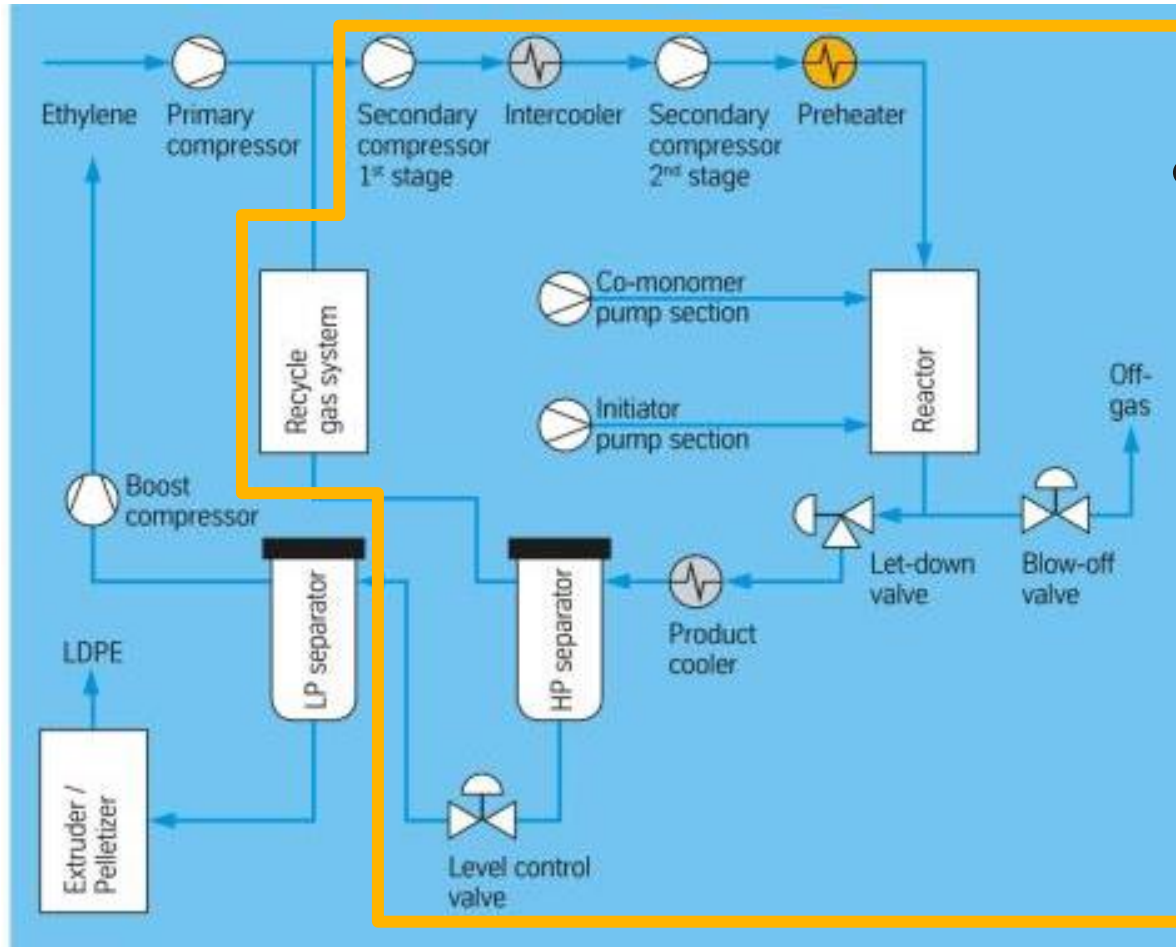
The 6 main components used in the construction of a solar panel

Source: Cleaner Energy Reviews <https://www.cleanenergyreviews.info/blog/solar-panel-components-construction> 12.03.2024 17:33, Wikipedia: Ethylen-Vinylacetat-Copolymer



EVA is created through 3,000 bar high pressure polymerization

Process flow diagram: LDPE plants

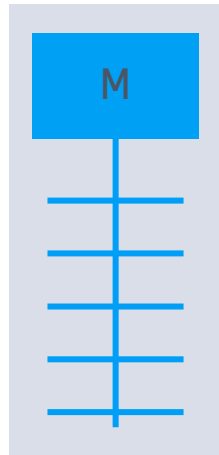


High pressure equipment 300bar – 3,000bar,
all within UHPT's product portfolio (except the
compressor)

3 plant types dominate the market

Autoclave reactor

e.g. LyondellBasell, ExxonMobil, ECI, capacity 100kta



Autoclave with tube extension

e.g. ExxonMobil, ECI, capacity 150-200kta



Tubular reactor

e.g. LyondellBasell, ExxonMobil, Sabtec
capacity 200kta – 300kta



Chinese and Western fabricators race to scale for the high market demand

Customer's core requirements

UHPT's positioning

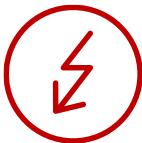
Safety and quality



Equipment technology e.g. precision, uptime



Equipment fabrication capacity and delivery time

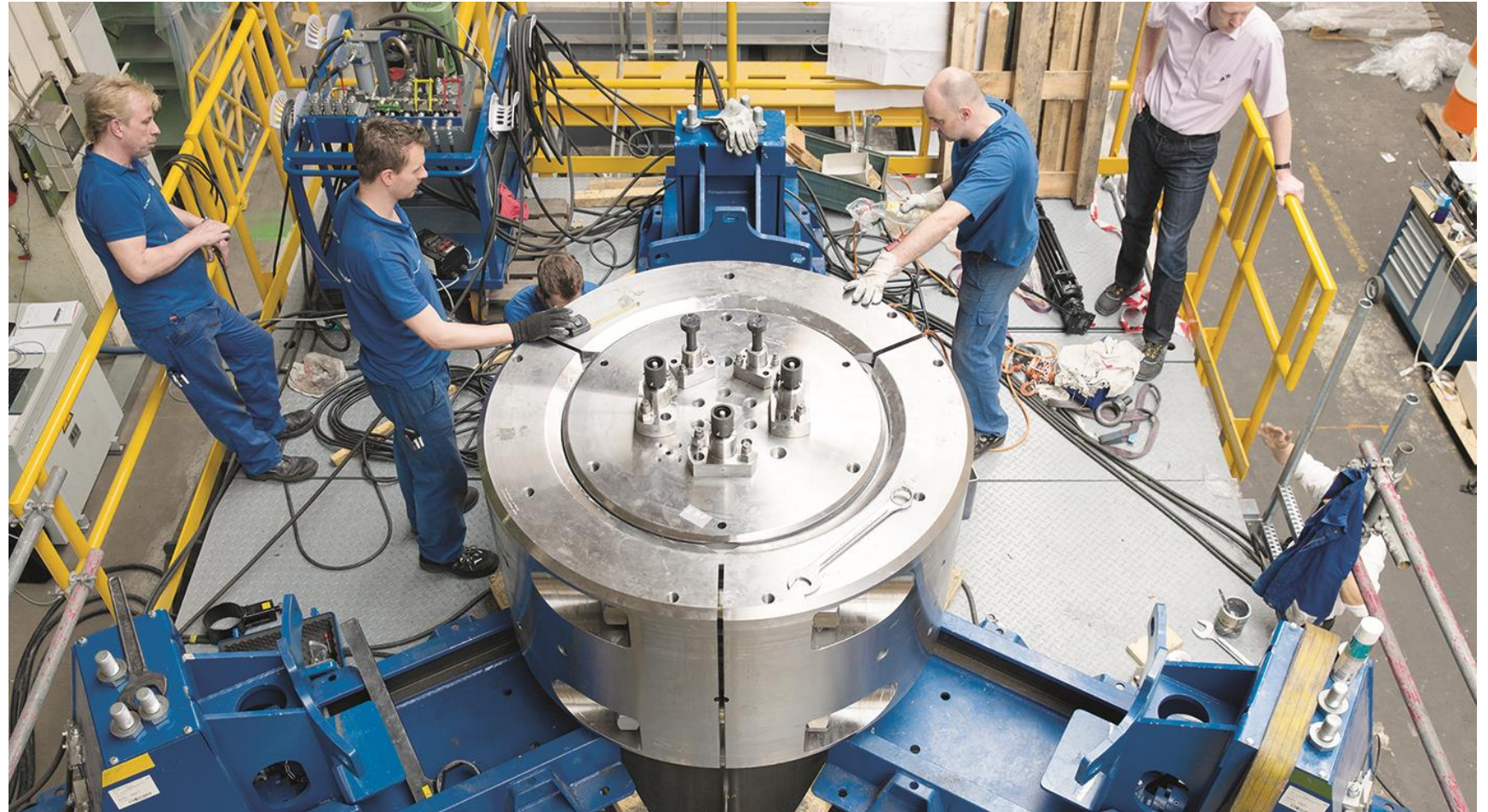


Challenge!

High quality local service



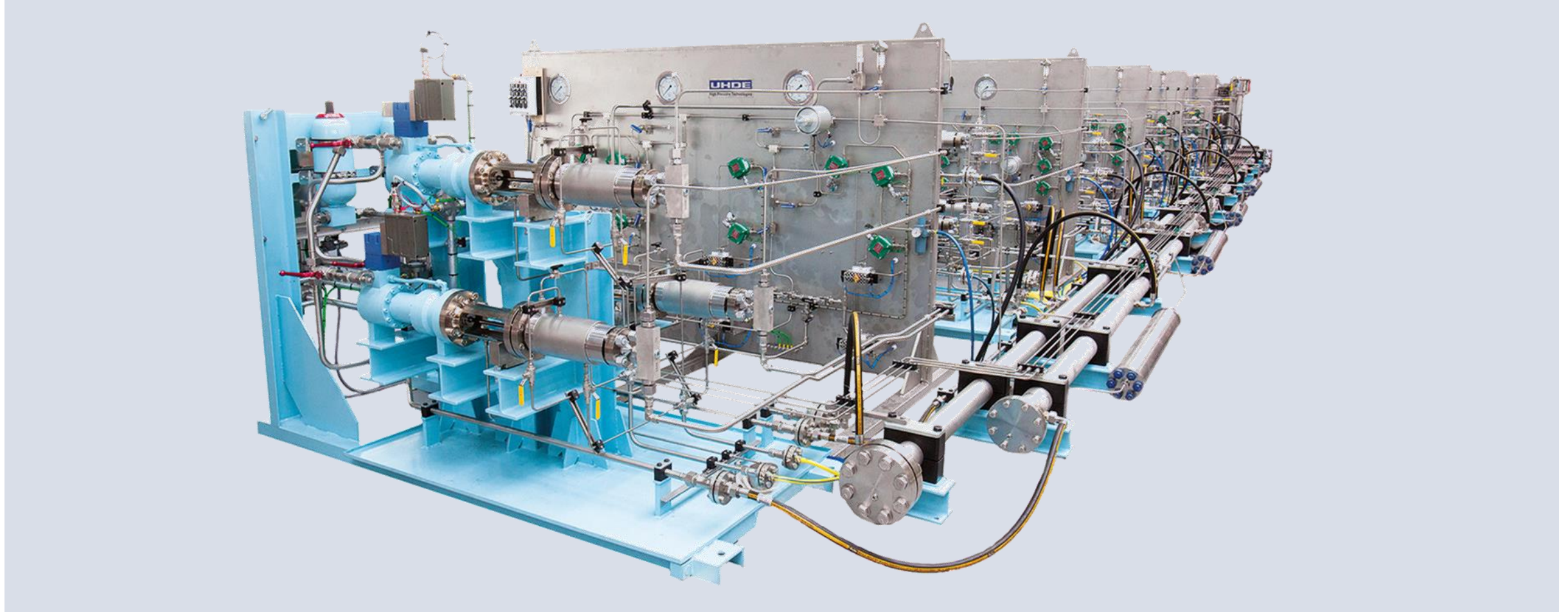
Autoclave reactor: Vessel body and upper clamp closure



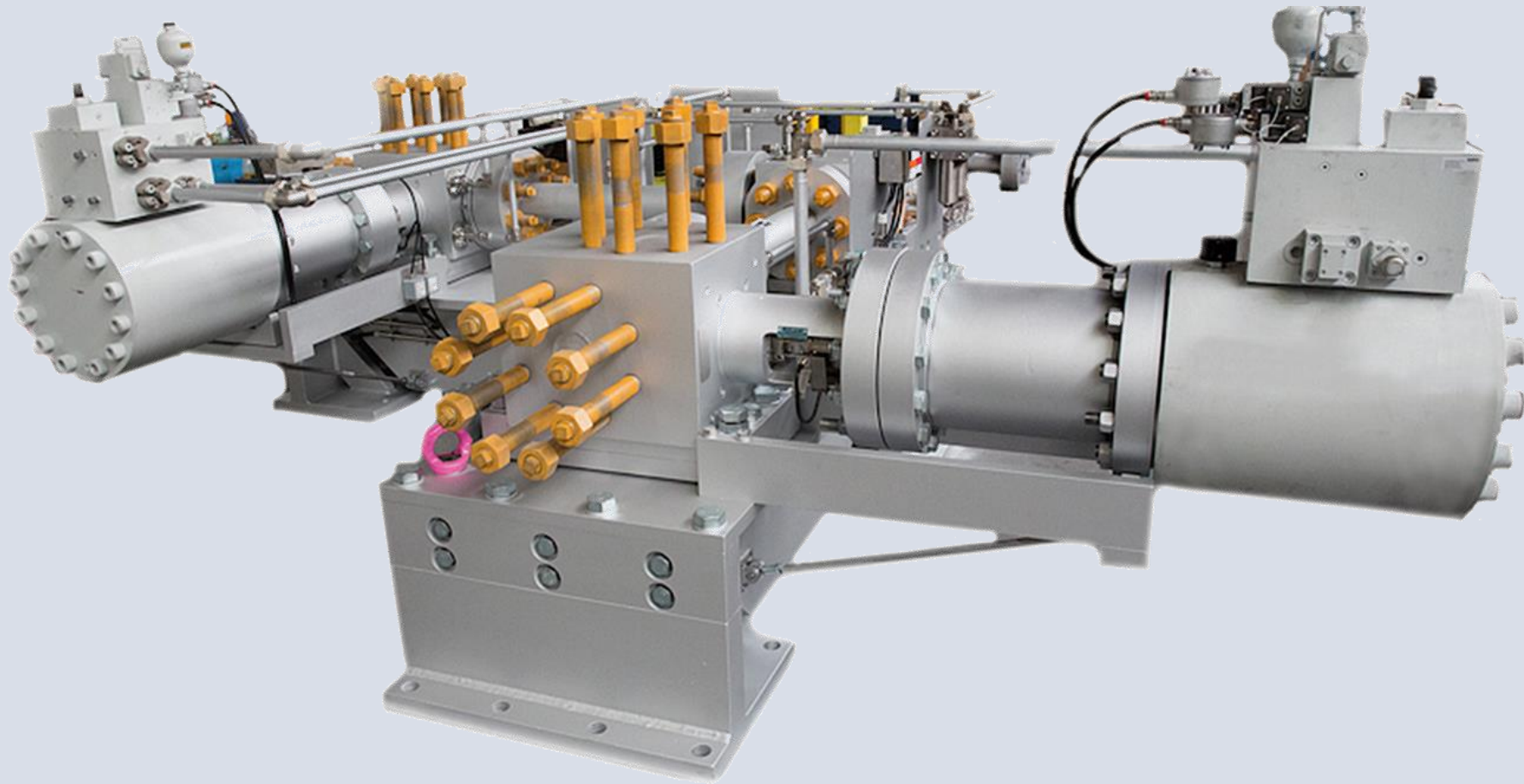
Tubular reactors and high pressure double pipe cooler



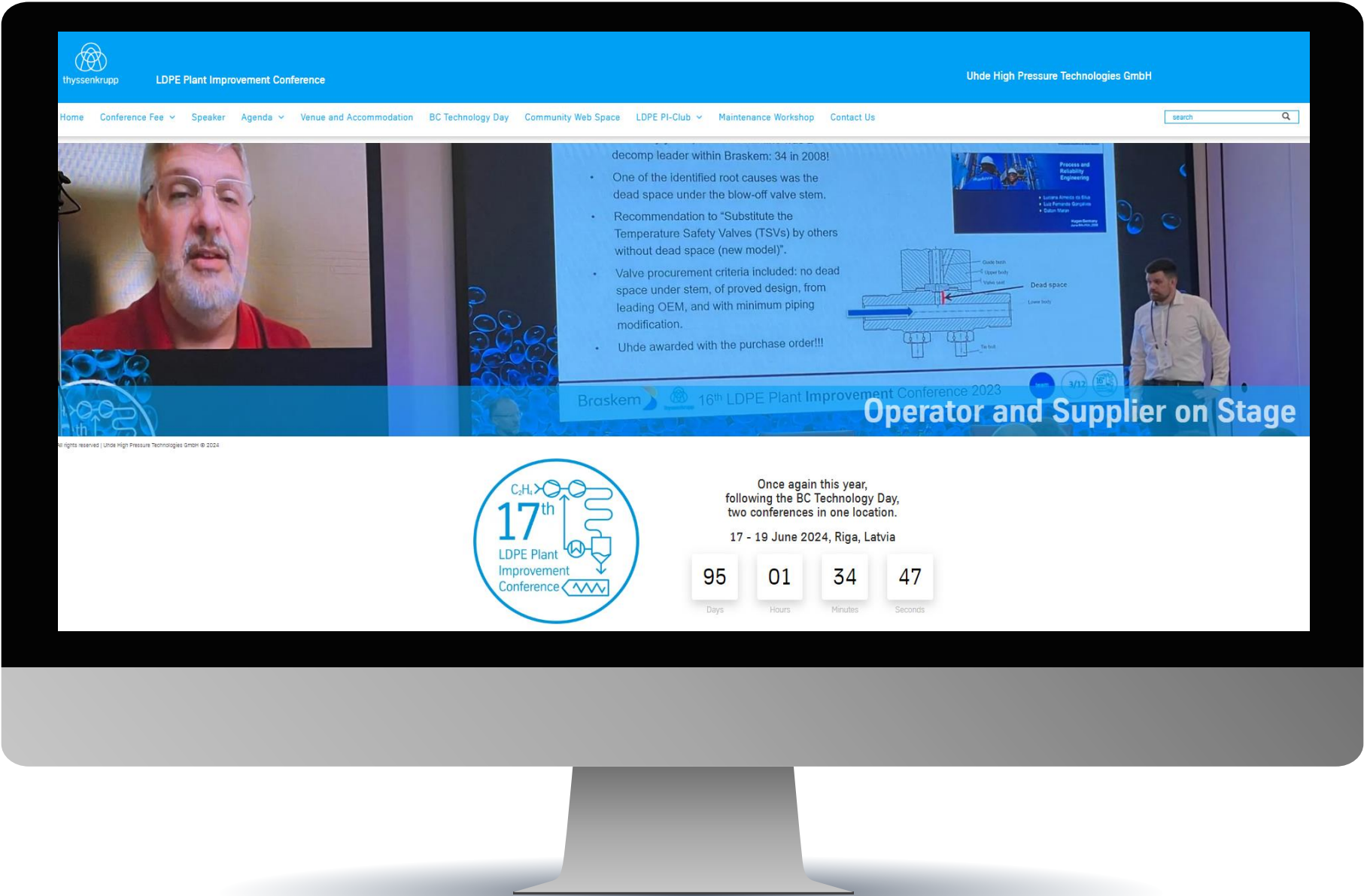
High pressure pumps



High pressure valves



Find out more at the world largest LDPE conference



Conclusions

It **feels great** when
your product
supports the
green transition

When you're
in the right
field, growth
can be mind
boggling

Be sure,
Chinese
competitors
are at your
heels

Every day:
***How quickly
can you
scale?***



Thank you for your attention



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