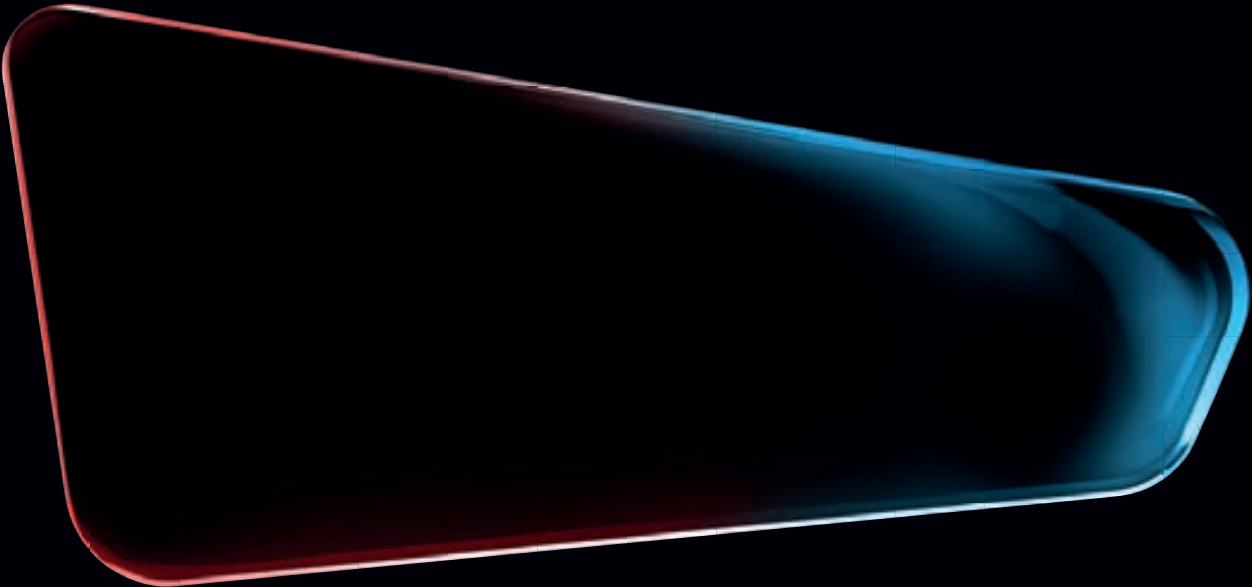
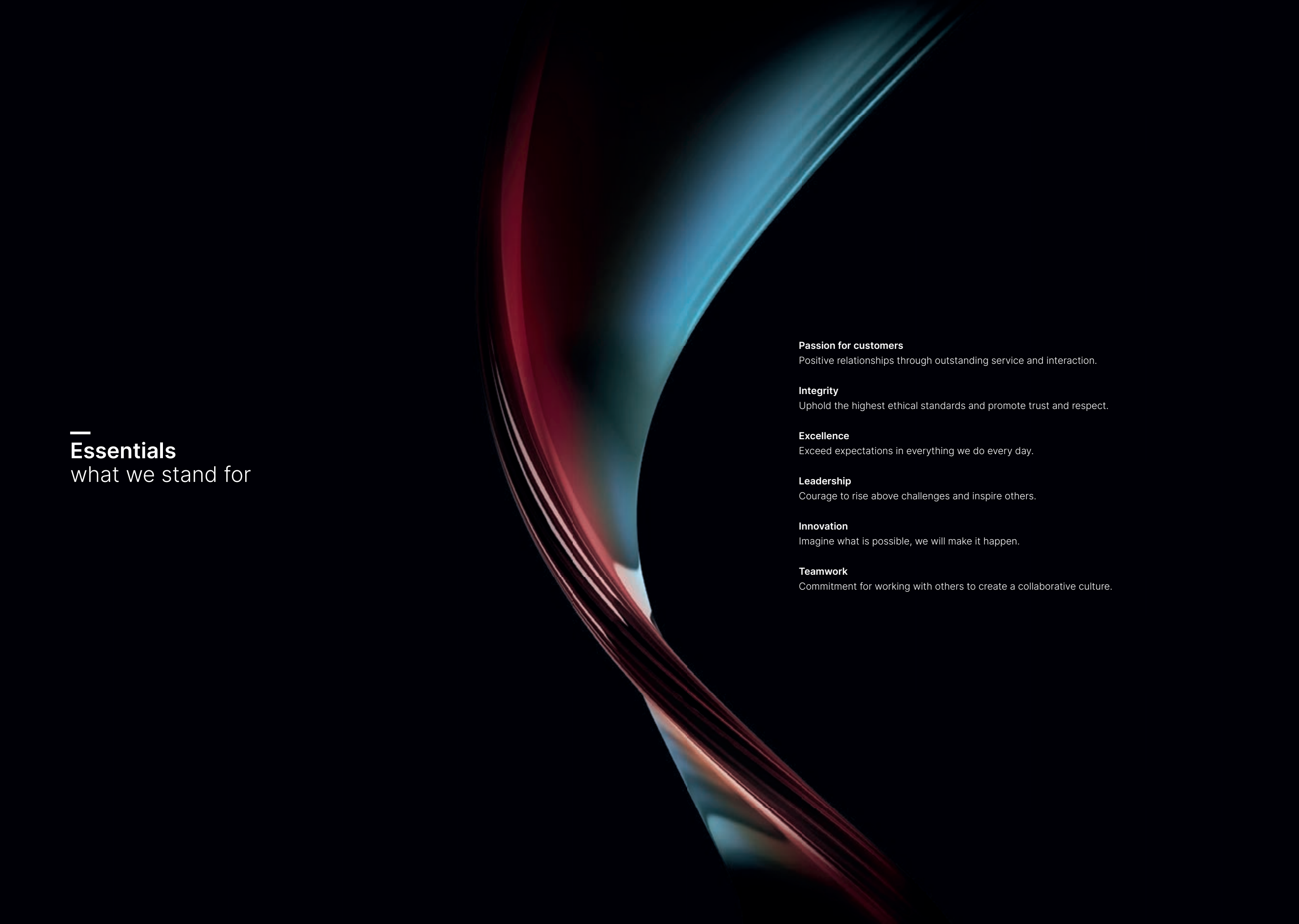






— Essentials

what we stand for

Passion for customers

Positive relationships through outstanding service and interaction.

Integrity

Uphold the highest ethical standards and promote trust and respect.

Excellence

Exceed expectations in everything we do every day.

Leadership

Courage to rise above challenges and inspire others.

Innovation

Imagine what is possible, we will make it happen.

Teamwork

Commitment for working with others to create a collaborative culture.

Quality since 1945
a history of consistency
and innovation

Future connected



Who we are

Founded 1945 in Wuppertal, Germany by Ernst Pennekamp manufacturing Container Glass Lehrs, Handling & Heating Systems as well as Mesh Belts. Taken over by Hans-J. Seidel in the mid 70's supporting the Float/Flat & TV Glass Industry and since the beginning of the Millennium in the experienced hands of the 3rd generation, feeding the growing demand in the area of Thermal Solutions for further industries, too.

What we do

The Pennekamp Group nowadays with its 85 employees is known worldwide as a technical leading manufacturer of Annealing-, Decorating- and Tempering Lehrs as well as Hot End Ware Handling Equipment and Cold End Coating Systems. The excellent reputation of this medium-sized privately owned company is supported with years of experience and its resulting knowhow. Pennekamp continuously aim to assist the worldwide industry with reliable, economical and energy efficient equipment on a higher technical level.

Made in Germany, quality matters

We as a company have the knowhow and resources under one roof (17.400m2 Production and Administration buildings), enabling to manufacture whatever the customers expect using highest quality material. This covers reliable, long lasting and precise machinery and equipment with state of the art low energy consumption, which may easily be integrated into existing production lines. Additional reasons for our success; commitment to manufacture in Germany as well as in-house production intensity. Due to our efficient and experienced engineering department, we are in a position to specifically adapt our products to the customers' needs, while realizing new developments and prototypes.

Design, Create, Support

pennekamp 

Peter Ashok Seidel, CEO



The art of thermal processing, reliable handling & coating systems



Container & hollow glass

- annealing lehrs, kilns & ovens
- mould preheating ovens
- trough & deflector ovens
- ware transfer systems
- cross & machine conveyors
- multi-axis-stackers
- cold end coating
- dosing units



Stemware and tableware glass

- annealing & thermal toughening/tempering lehrs
- handling systems



Decorating of glass & ceramics

- decorating lehrs for organic & ceramic inks, etc.
- handling systems (loader & unloader)



Pharmaceutical tubular glass (vials, ampoules, cartridges & syringes)

- annealing, decorating and siliconization lehrs
- 3-axis servo drive handling system (pick & place)



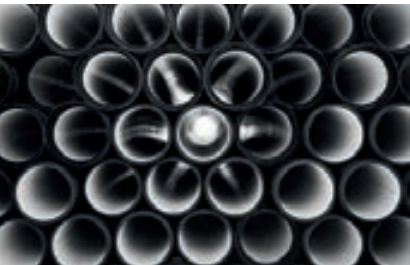
Solar, float and rolled sheet glass

- solar & photovoltaic
- architectural & automotive
- display
- figured & wired
- profile & U-glass



Foam glass (gravel & block plate)

- baking/forming & annealing lehrs/ovens
- ware handling



GFK tubes & fittings

- lehrs, ovens & kilns
- loading & unloading systems



Metals (thermal treatment)

- lehrs, ovens & kilns
- handling systems



Food industry (bakery products)

- ovens & dryers
- handling systems



Heating systems for lehrs, kilns & ovens

- natural gas
- LPG
- hydrogen
- electric (radiation/infrared & convection)

—
Thermal treatment
simply versatile



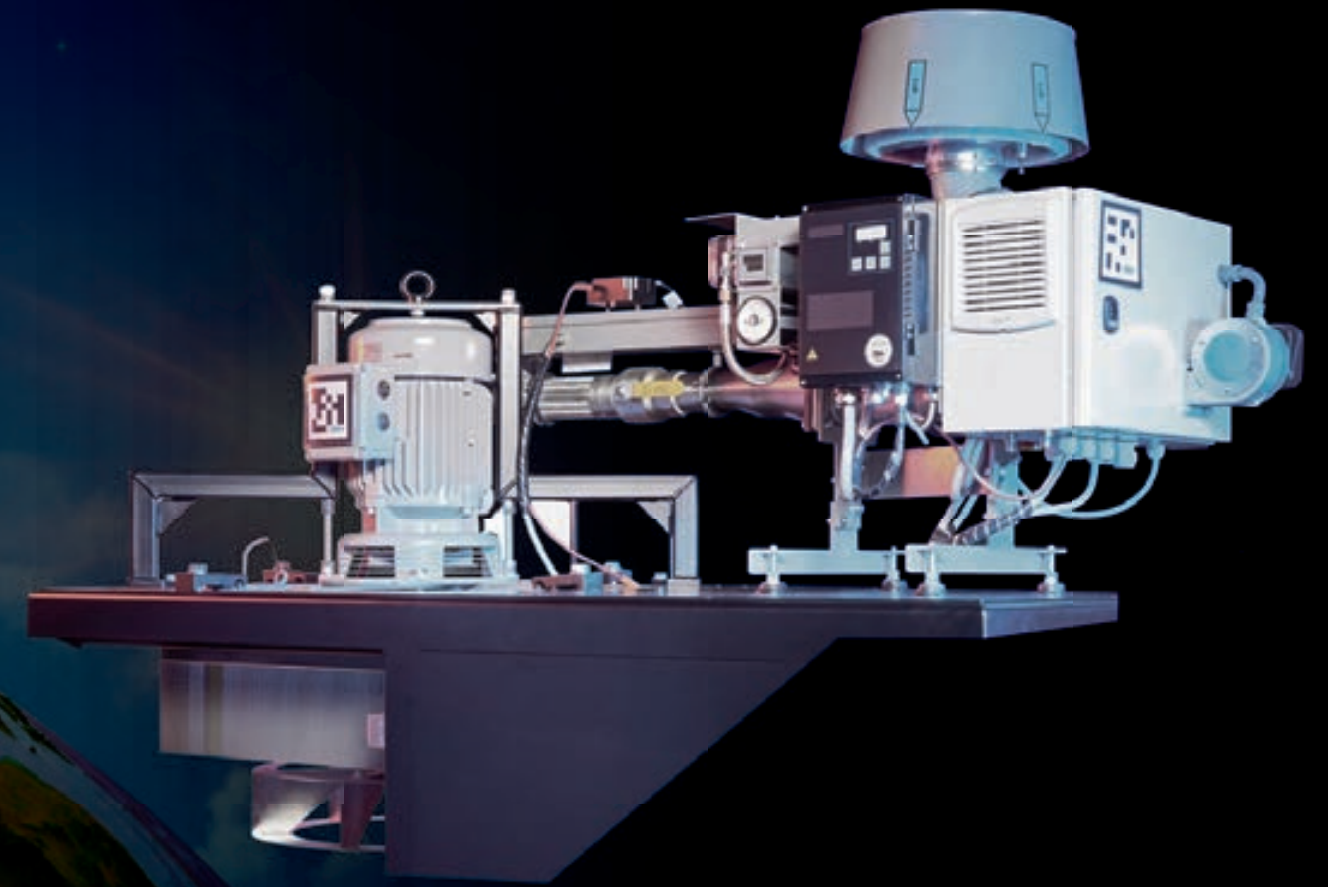
950°C – 20°C

Your challenges, our solutions

Up to 50%* less energy consumption
lower emission, better environment
saving energy, reducing cost

By using our intelligent heating system (BLEU) and Pennekamp front hood, along with the efficient draft technique that we are applying in our lehrs, our consumers around the world have experienced a considerable amount of energy saving and cost reduction in addition to other environmental benefits.

Technical leadership
innovation and reliability



Low NOx BLEU Burner

The new generation of the proportionally operating burner (for heating & cooling), is designed to be capable of a control incorporated or independent operation if retrofitted to existing lehrs. Its additional 7" Proface panel acts as master information and diagnostic system, as well as independent backup control (in case of PLC stoppage or failures).

Depending on the production type and capacities, it has been confirmed that Pennekamp's Lehrs equipped with BLEU system are consuming * 20-50% less gas comparing with conventional lehrs with side burners. Pennekamp's patented BLEU Burner will considerably (40 – 65%) reduce harmful emissions such as NOx, CO & CO2, while optimizing the combustion process at the same time. This energy efficient system improves the heat distribution around glass articles during their treatment processing as well.

We keep our promises
for your benefit

We bring you value by our solutions:
lowering energy costs
reducing toxic and emissions
minimizing maintenance costs
increasing equipment life time
producing quality products constantly

More than 2500 glass lehrs/ovens worldwide



—
Our strength, your advantages
we are engineers



Innovations, research & development

- Intelligent electrical heating systems (Radiation & Convection)
- Gas and Hydrogen heated Burners (BLEU & Porojet)
- Ware Transfer technology (WTL1000)
- Individual ceramic rollers and drives in Solar, Figured and Float glass lehrs
- Dosing units equipped with Hydro Plus & Hygiene care systems

—
Your challenges, our solutions
we support internationally



**Our equipment and services stand
for the highest quality internationally.**

**The higher quality of the machines,
the longer time they last.**

**The more user-friendly the technology,
the less downtime in production.**

Lehr loading system, Handling equipment and Coating technology the future of glass production

Our various types of Ware Transfer systems, Cross Conveyors and Multi Axis lehrs Stackers are the most reliable machines, which work maintenance-free in continuous production lines, increasing the overall performance. Furthermore, Pennekamp's automation techniques of coating at the cold end area provide our clients with the highest productivity.

Four-Axis STacker (FAST) – Robotic LS800

This highly reliable lehr stacker has been developed to meet the special needs of modern high-speed machines in the hollow glass industry. However, this machine is not only characterized by the high number of cycles, but also masters the handling of instable bottles.

By using a small moving mass, up to **27 cycles per minute** can be achieved. With the Auto Setup function, the operator is relieved from a large part of the machine synchronization.

Reproducibility of the movements and minimal service requirements characterize this high-tech stacker and clearly set it apart from the mass of conventional machines.

Solar, Float & Flat Glass

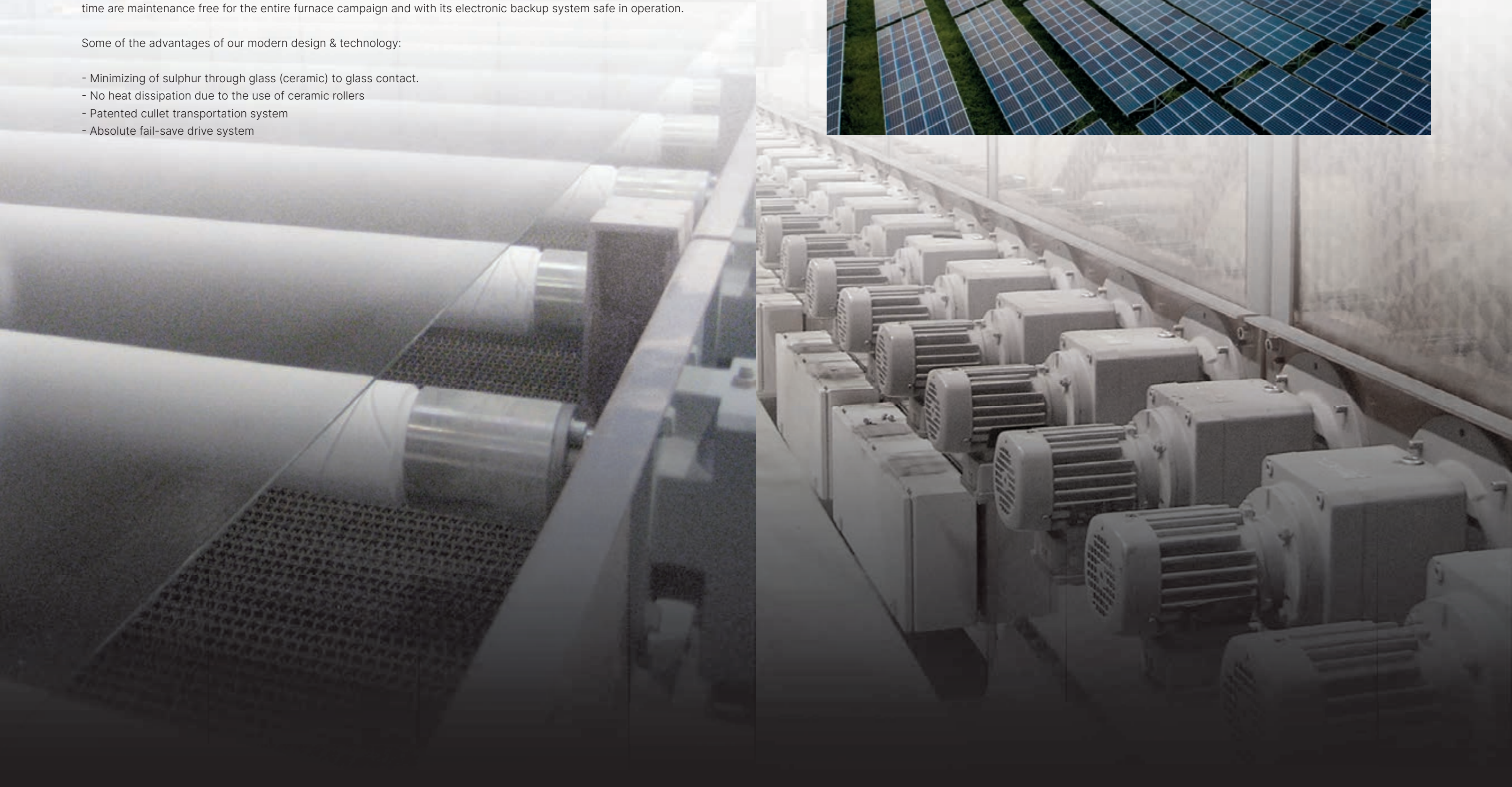
Innovation and sustainability

Float & Specialty Glass Transport System

Pennekamp has developed and installed roller transport systems with their lehrs and dross boxes with fully ceramic rollers and individual drives, one per roller. This feature allows the smooth transport of all float & solar glass through the thermal process and minimizes the potential of micro scratching, as the drives are able to compensate the thermal shrinkage rate of the glass during its cooling process. The roller drives and ceramic rollers at the same time are maintenance free for the entire furnace campaign and with its electronic backup system safe in operation.

Some of the advantages of our modern design & technology:

- Minimizing of sulphur through glass (ceramic) to glass contact.
- No heat dissipation due to the use of ceramic rollers
- Patented cullet transportation system
- Absolute fail-save drive system



Pharmaceutical tubular glassware

Technically advanced

Unique solution in annealing, decorating and handling of pharma tubular products

Our special Ovens and its Robotic Handling Systems (**Pick & Place**) are designed and developed for thermal processing of tubular glass products, and they are applicable for a vast range of **Vials, Ampoules, Cartridges and Syringes** in Pharmaceutical industry. (high speed line up to **200 articles/min**)

By using this technology, the producers of Pharma Tube Glass articles are able to fulfill customers' highest expectation on the final product quality such as:

- Perfect articles surface
- Tensionless/annealed products
- Well cured colors on the decorated items



Worldwide after sales services

a team of passionate professionals



Senior member of our after sales service team

Installation, commissioning and start-up
Rebuild & upgrade of the lehrs, hot end automation and cold end sprays
Technical audit by our experienced staff on site
Upgrading and modification of equipment/lehrs based on customers' requirements
Modernization of old firing systems by the most energy efficient techniques
Electrical control panel modification, software upgrade and remote service
Supply of refurbished lehrs and equipment

Spares and logistics

worldwide support



One of our team members in the stock & spares department

International logistic arrangements
Export/import formalities and customs clearance
Spare parts sales & customer service

pennekamp 



For more information, please visit our website
www.pennekamp.de

GET IN TOUCH