

DIVERSE APPLICATIONS, UNLIMITED

# PERSPECTIVES.

Busse can do it.

\* BUSSE.  
FOR PATHBREAKING  
IDEAS.

**BUSSE**

HEIZPLATTENTECHNIK GMBH



\* BUSSE.  
FOR UNLIMITED  
FREEDOM.



SMALL DETAIL, LIMITLESS

# POSSIBILITIES.

Busse heating plates can do it.

SCARCELY A SINGLE  
CARAVAN WITHOUT  
BUSSE: SANDWICH  
PANEL FRONT  
SECTIONS, SIDE  
WALLS AND MDF  
PARTS IN THE  
INTERIOR OF THE  
CARAVAN – MOULDED  
AND GLUED USING  
BUSSE HEATING  
PLATES AND TOOLS.

Our product range is specific, our applications infinitely varied. There can hardly be a single production process in which something does not have to be heated, dried or joined – our market of limitless possibilities. Our products are small details with a major impact – very small or really big. From small 30mm heating plates to steel press tools weighing tonnes. Our target group is equally diverse: any company considering a heating plate or a press tool has come to the right place here. Every year 3,000 parts leave our heating plate factory in the East Westphalian town of Espelkamp in Germany. You are sure to often meet our products without knowing it.

As a specialist in heating plate technology, we have been developing, producing and marketing our heating and cooling plates, as well as our aluminium or steel press tools, for 30 years. Individually tailored to the needs of our customers. We have become a versatile and high-performance partner to our international customers in the woodworking and wood processing sectors. As one of Europe's largest manufacturers of standard electric heating plates we have the

confidence of almost all press manufacturers. The same applies to our many customers in other sectors, such as automotive construction, food processing, wing construction or the sports industry.

The construction of moulding tools is closely linked to heating plate technology. We have thus been supplying national and international moulded wood manufacturers for decades and have a 90% market share. As a tool manufacturer, for many years we have been regarded as a technology leader at the forefront of the international market in the plywood manufacturing industry.



Plant Espelkamp



6,500 m<sup>2</sup> production area

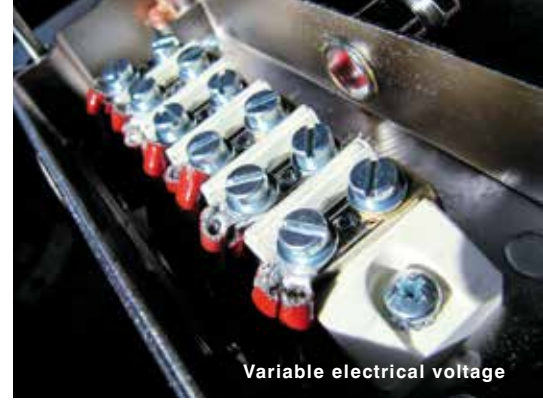


SMALL DETAIL, STRONG

# COMPOSITE.

Busse heating plates can do it.

\* **BUSSE.  
FOR DARING  
DO-ERS.**



**FREESTYLE,  
FREERIDING, CARVING  
OR RACING BOARDS –  
THEY ARE ALL SHAPED  
WITH PRESSURE AND  
TEMPERATURE USING  
BUSSE TOOLS.**

Our unique and individual products have one thing in common: they are all Made in Germany! We attach great importance to our commitment to our production site in Germany. Our factory in Espelkamp has been owned by the Busse family since 1986, and is now managed in the second generation by Petra Hoffmeyer and Thorsten Busse. The best solutions occur when we contribute our knowledge and expertise during the very early stages of development of projects. We regard ourselves as innovative development partners for our customers, providing them with expertise and creativity. We develop simple and complex, custom and standardised solutions. Always with the aim of delivering a high-quality, cost-effective result to our customers.

Aluminium plays a key role in our production, as it is an exceedingly good conductor of heat with short heating-up and cooling-down phases, which ensures even temperatures with very low energy losses for heating plates and tools. The low net weight of the material provides for simpler machine designs, straightforward transport and, above all, higher heating-up rates than any other material. We only use precision steel and aluminium rectangular pipes for the heating coil in medium heating panels, which enables us to achieve high throughput speeds and, as a result, excellent temperature distribution on the surface of the heat exchanger.

**QUALITY CRITERIA OF OUR PRODUCTS:**

- Long service life
- Energy efficiency
- Sustainability

SMALL DETAIL, EVEN

# HEAT DISTRIBUTION.

Busse heating plates can do it.



\* BUSSE.  
FOR  
WONDERFUL  
TASTE.



THE PERFECT BURGER IS FRIED ON EITHER SIDE FOR TWO MINUTES AT APPROX. 170°C. OUR HEATING PLANTS CAN ALSO BE EQUIPPED WITH ADDITIONALLY CONTROLLED PERIPHERAL ZONE HEATING TO OPTIMISE TEMPERATURE PRECISION AND EFFICIENCY.

Here at Busse, we are the proven specialists when it comes to heating plates and press tools. You can rely on our extensive expert knowledge and thirty years of experience. Our engineers are inspired by the challenges they face with each new project. They know their craft and bring their total commitment, wealth of knowledge and expertise to the table. Because one thing in particular sets Busse apart from the crowd: we cannot rest until we've found the best possible solution for each customer and for every project, which we then implement with the same level of quality in our production plant.

Every year we process close to 300t of aluminium on state-of-the-art computerised CNC

machining centres and lay over 150km of heating wire into heating plates and press tools. We permanently store over 200t of aluminium for instant access in our factory in Espelkamp, which enables us to react quickly and flexibly to urgent customer requests.

**The unique feature of Busse:** We are able to cut up to a length of 7,500mm, a width of 3,300mm and a height of 1,300mm. Our presses offer us a maximum pressing area of 6,000x2,200mm with an opening height of 1,800mm (Max. dimensions based on our machinery). We are constantly adapting our systems to the state of the art.



A woman in a white top and floral skirt is laughing while standing in an open wardrobe. Another woman in a green top is sitting on the floor, surrounded by various pieces of clothing, looking up at the first woman. The wardrobe is filled with clothes, and several items are floating in the air.

\* **BUSSE.**  
**FOR PASSIONATE**  
**KEEPERS.**



SMALL DETAIL, RELIABLE

# PERFORMANCE.

Busse heating plates can do it.

ONE FOR ALL: PRESS  
MANUFACTURERS,  
CRAFTSPEOPLE AND  
THE FURNITURE  
INDUSTRY ALL PLACE  
THEIR TRUST IN  
THE RELIABLE  
PERFORMANCE OF  
OUR HEATING PLATES  
– IN THOUSANDS OF  
VENEERING, VACUUM  
AND MEMBRANE  
PRESSES. FOR  
SATISFIED CUSTOMERS.

Our electric combined heating plates are designed to meet the demands of small artisan businesses and series production. They are designed individually, adapted to your requirements and available in any size. Busse heating plates consist of an aluminium heating plate and the iso-pressing plate. The iso-pressing plate creates a completely flat press surface free of rivets and bolts for seamless veneering work.

The aluminium plate is made of two exceptionally flat rolled sheets, fully bonded to each other. We thus achieve a completely even distribution of heat across the whole pressing surface. An operating temperature of 90°C is achieved within 12 to 15 minutes, enabling short cycle times of approx. three minutes with a heating power of around 2.7kW/m<sup>2</sup>. The maximum operating temperature of all standard plates is 120°C. Mineral materials, like Corian, have become important materials in the woodworking and furniture industry. They permit innovative design solutions. The possibilities of three-dimensional moulding are almost limitless. We produce special electric heating plates and tables with maximum operat-

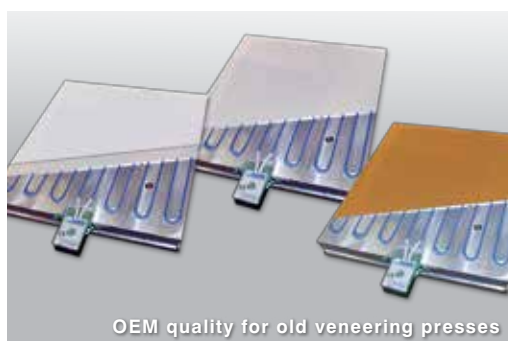
ing temperatures of up to 170°C for the moulding of mineral materials.


## ELECTRIC COMBINED HEATING PLATES:

- **Combi S:** the standard design for all veneering presses
- **Combi Splus:** the standard design with adhesive-repellent Mylar foil
- **Combi E:** with anodised aluminium plate
- **Combi T170:** for operating temperatures up to 170°C

## ELECTRIC HEATING BARS

Our electric heating bars have proved themselves many times over, both in trade companies or on site. Our heating bars are made of thermomechanically-resistant aluminium profiles and are anodised in silver as standard. The low-maintenance heat conducting system produces a constant, thermostatically controlled surface temperature.





\* BUSSE.  
FOR EXCELLENT  
SOUND.

SMALL DETAIL, ACCURATE

**RADIUS.**

Busse heating plates can do it.





Heating the aluminium heating plate



Moulding the heating plate



Varying press thickness due to additional metal panels

THE RIM OF A  
CONCERT PIANO IS  
MANUFACTURED  
ON A RIM BENDING  
BLOCK. BUSSE  
ELECTRIC HEATING  
PLATES REDUCE THE  
PRODUCTION TIME TO  
A MINIMUM AND  
INCREASE EFFICIENCY  
WITHOUT ANY LOSS  
OF QUALITY.  
OUR CUSTOMERS  
HAVE COME TO  
RELY ON THAT.

Three factors determine the design of a pressing tool: the degree of moulding, the quality of the end product and the desired production quantity. We incorporate our proven specialist knowledge into three tried-and-tested tool lines.

Press tools made of beech plywood with a 10 to 12mm thick aluminium heating plate or flexible electric heating plate offer compelling benefits for simple moulding in small batches:

- Short lead times, minimal heat losses
- Separate control of upper/lower mould
- Cost-effective, fast manufacture
- Max. temperature up to 100°C, max. pressure 25 kg/cm<sup>2</sup>
- Suitable for high-frequency machining

Long lifetimes, dimensional stability of mouldings and three-dimensional moulding in large numbers require solid aluminium moulds electrically heated or heated with a liquid heating medium. These tools have an unlimited lifetime and permit short cycle times and complex moulding.

- Max. temperature up to 250°C, max. pressure 50 kg/cm<sup>2</sup>

Solid steel tools are used in the manufacture of Festholz or Paghholz parts and can produce high levels of compression and very large batch sizes. Steel press tools are electrically or oil-heated. They stand out on account of their:

- High operating temperatures up to 400°C
- Max. pressure of 150 kg/cm<sup>2</sup>

\* **BUSSE.  
FOR UNCONVENTIONAL  
THINKERS.**





SMALL DETAIL, PRECISE

# TEMPERATURE.

Busse heating plates can do it.

A TOTAL OF 46 GW  
OF SOLAR MODULES  
WERE PRODUCED IN  
2014 – BUSSE HAS  
A 40% MARKET  
SHARE OF THIS.  
INTERESTINGLY  
HEATING PLATES IN  
PHOTOVOLTAIC  
MODULES OPERATE  
WITH A TOLERANCE  
OF ONLY +/- 1°C.

Our electric heating plates are used wherever surface heating systems are needed for contact heat, regardless of whether they are operated at only 60°C or at precisely 300°C.

Our heating plates are based on exceptionally flat rolled aluminium sheets, into the entire surface of which heat resistors are cut. The even spacing of the heating wires guarantees constant heat distribution over the entire surface of the panel: whether 30x30 mm or 17,000x4,500 mm. The entire surface of the heating plate is bonded to an additional sheet, which produces a flat surface, free of rivets and bolts, and also enables the construction of extremely thin 9 mm plates. The output of the heating plates is selected to meet requirements, from 2 kW/m<sup>2</sup> for the processing of PUR to more than 40 kW/m<sup>2</sup> for industrial applications.

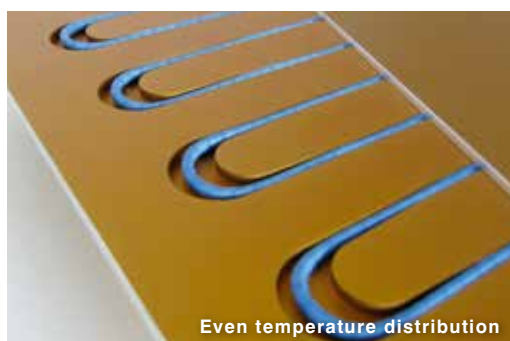
High-output heating cartridges can be used with extremely high output densities or operating temperatures above 250°C. We install cartridges in press fits between two aluminium plates,

which are threaded throughout for the quick replacement of individual cartridges.

We also individually tailor our medium plates, which are used for cooling as well as heating, to the requirements of our customers.

## FLEXIBLE HEATING PLATES FOR WOODWORKING

Flexible heating plates offer a max. compressive strength of 25 kg/cm<sup>2</sup> at an maximum operating temperature of 150°C for 2D moulding in small numbers and individual items. Their flexible carrier material with embedded heating wires makes them extremely versatile and adaptable. Available in any size, even with continually adjustable temperature control.



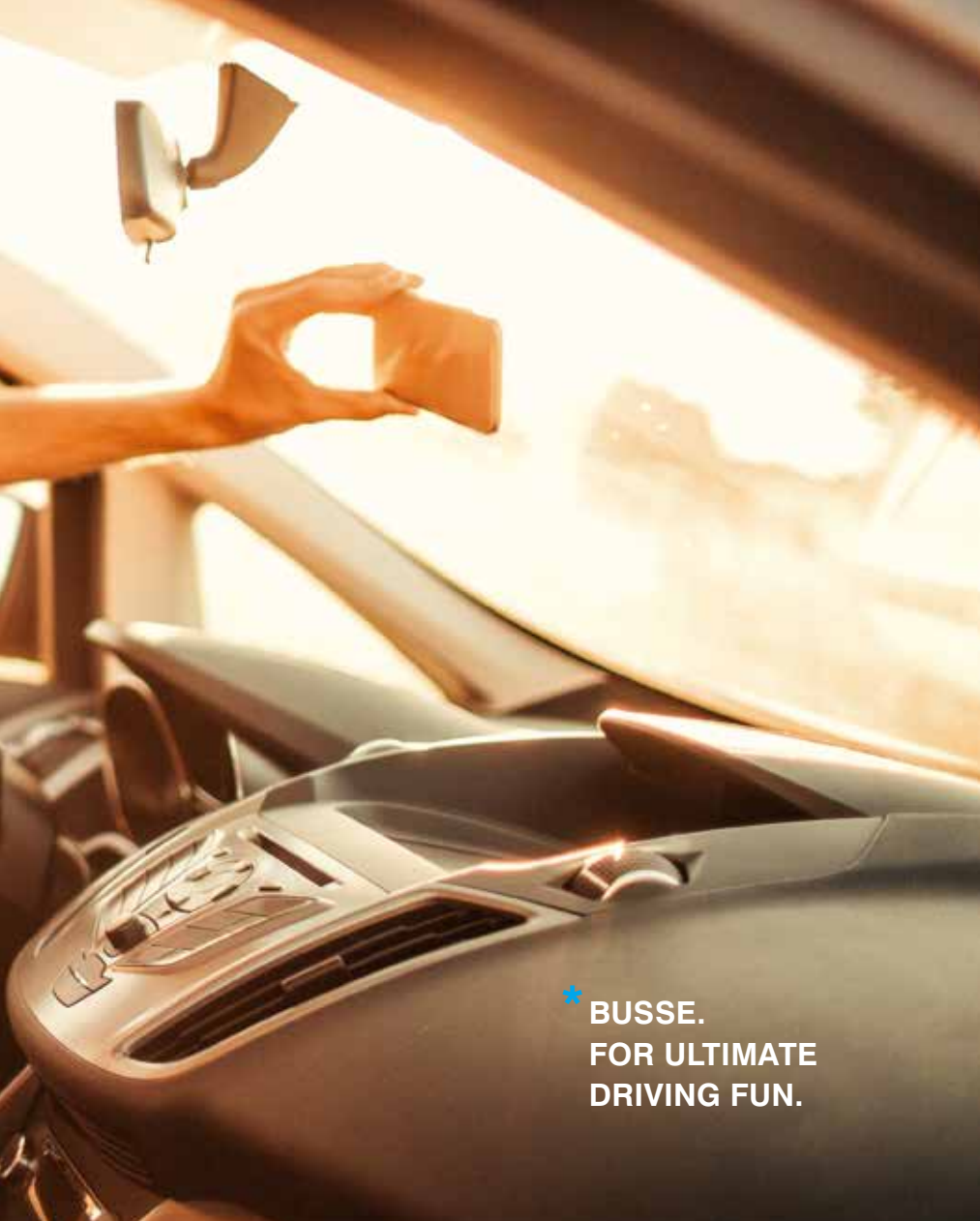


SMALL DETAIL, SWEEPING

# CURVES.

Busse heating plates can do it.





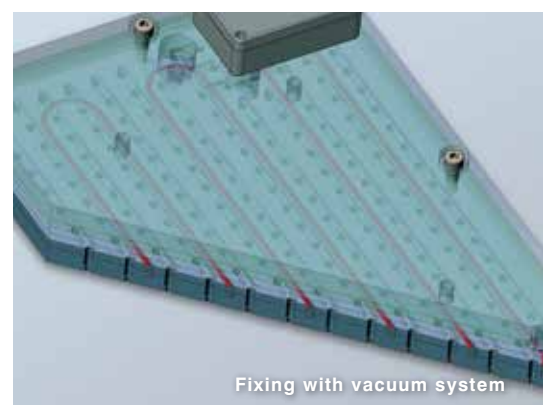
★ **BUSSE.  
FOR ULTIMATE  
DRIVING FUN.**



High flow rate



Damage protection



Fixing with vacuum system

**BUSSE DOES NOT JUST MANUFACTURE STRAIGHT HEATING PLATES. HEATING PLATES WITH A CONTOUR OR RADIUS CAN BE USED IN LAMINATING SYSTEMS. FOR THE RIGHT CURVE OF THE DASHBOARD OR THE PRECISE SHAPE OF THE GLOVE COMPARTMENT.**

Busse medium heating plates were developed for use with liquid heating media. At their heart is a welded continuous heating element made of precision steel or aluminium pipes. Steam or liquids, like thermal oil and water, are circulated within the medium heating plate and provide for even, degree-precise temperature distribution over the surface of the plate: without heat accumulating in the centre of the plate and falling around the edges. The heating plate can be divided into several heating and cooling zones. Unlike electric heating plates, medium heating plates are significantly less sensitive to constantly changing use of the surface and even permit the integration of different configurations of vacuum and forced air channels. The unique feature: Busse medium plates can be used as heating or cooling plates.

The combination of the medium heating plate with an electric surface heating system optimises heat distribution and prevents temperature drops where a high degree of precision is required.

#### **BASIC VERSIONS:**

- **VAR St** continuous heating element made of precision steel for high pressing pressures and for temperatures over 120°C.
- **VAR AI** completely made of aluminium, for "slide-through" operation and series production, suitable for use as recooling plates.
- **VAR Alplus** made of aluminium. Combination of continuous heating element and electric plate. The combination of efficiency and minimum temperature tolerance.





\* BUSSE.  
FOR VISIONARY  
IDEAS.

# SMALL DETAIL, UNUSUAL SOLUTION.

Busse heating plates can do it.

TODAY GLASS-MAKING  
DEMANDS FAST  
HEATING AND COOLING  
RATES THAT CANNOT  
BE ACHIEVED WITH  
NORMAL AUTOCLAVES.  
BUSSE MODERN  
HEATING AND COOLING  
PLATES OPEN UP  
COMPLETELY NEW  
POSSIBILITIES FOR THE  
LAMINATED GLASS  
INDUSTRY.

We are always looking for the optimum solution for your application. We construct the majority of our heating plates as made-to-measure plates and, of course, our tools are always tailor-made. Precisely adapted to the needs of customers in terms of:

- Size
- Thickness/Density
- Capacity
- Voltage
- Temperature
- Surface coating

Simple, pragmatic designs are produced with minimal requirements. We deliver practical and creative solutions for complex requirements, regardless of whether degree-accurate temperatures or mechanical tolerances are required. We also manufacture heating plates with contours and can incorporate any openings. The heating surfaces can be milled with vacuum grooves. We can integrate forced air or vacuum channels into the heating plate. Different cross-sections and gradients of rectangular tube pipe systems

are possible, which plates permit counter-flow operation. Copper and stainless steel pipes can also be used with shallow heights.

## TEMPERATURE CONTROL

Temperature controls are needed to control electric heating plates and press tools. The more precise the temperature, the more important does temperature control become. It is essential that the control is adapted to the process. Digital or analogue controllers, capillary tube systems or bimetal temperature limiters precisely control the temperature as required. Complex control systems with PLC connection or integrated heating element control complete the product range.



Modular construction



Semiconductor relay or circuit breaker



SMALL DETAIL, PERFECT

# PRECISION.

Busse aluminium processing can do it.



\* BUSSE.  
FOR ENTHUSIASTIC  
DEVELOPERS.

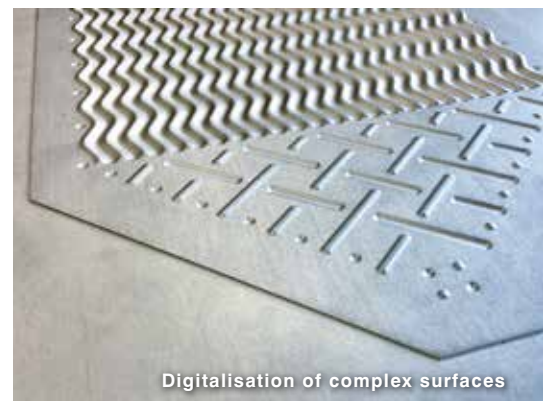
SPEAKING OF AIR  
HOCKEY: WE PRODUCE  
ALUMINIUM PLATES  
FOR FEEDERS AND  
VACUUM TABLES. WITH  
ULTIMATE PRECISION.  
THE SMALLEST  
PERFORATION  
DIAMETER IS 0.5 MM!

Any company that processes 300t of aluminium a year knows what it is talking about. And knows, above all, how to do it! Welding, milling, drilling – the range of our capabilities is extensive. We do one thing really well, perhaps even better than all the others: large components. From any kind of aluminium, taking into account the most exacting tolerance requirements.

We manufacture almost anything that can be produced from lightweight material on state-of-the-art machines with ultimate precision: supporting plates for plastic and PUR processing, feeding equipment for wood processing or cooling equipment for mineral material processing are just a few examples.

Our machines offer unique possibilities and solutions. **Here's an example:** trays are used to feed the moulding presses in the production of cooling cells and are usually made of solid aluminium or steel. However, our presses machine aluminium sheets and rectangular tube profiles in a sandwich construction to form foam trays that are impressively 40% lighter than conventional trays.

Just one example of many surprising and persuasive solutions. We are pleased to be able to show you our capabilities!



**BUSSE HEIZPLATTENTECHNIK GMBH**

Fritz-Souchon-Straße 22  
32339 Espelkamp, Germany

Phone: + 49 57 72.97 75-0

Fax: + 49 57 72.97 75-55

[info@busse-heizplattentechnik.de](mailto:info@busse-heizplattentechnik.de)

[www.busse-heizplattentechnik.de](http://www.busse-heizplattentechnik.de)



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