



profi line
Optimat
Masterform Presses MF

Lamination of positively and negatively shaped parts with thermoplastic foils and veneers

Masterform Presses MFP



Progress based on tradition... Systematic continuation of what is tried and tested and at the same time the careful realisation of new ideas. High-tech based on competence is reflected in advanced technologies, high perfection, up-to-date economy, and great reliability.

Friz - a world-wide reputation in membrane presses for over 50 years:

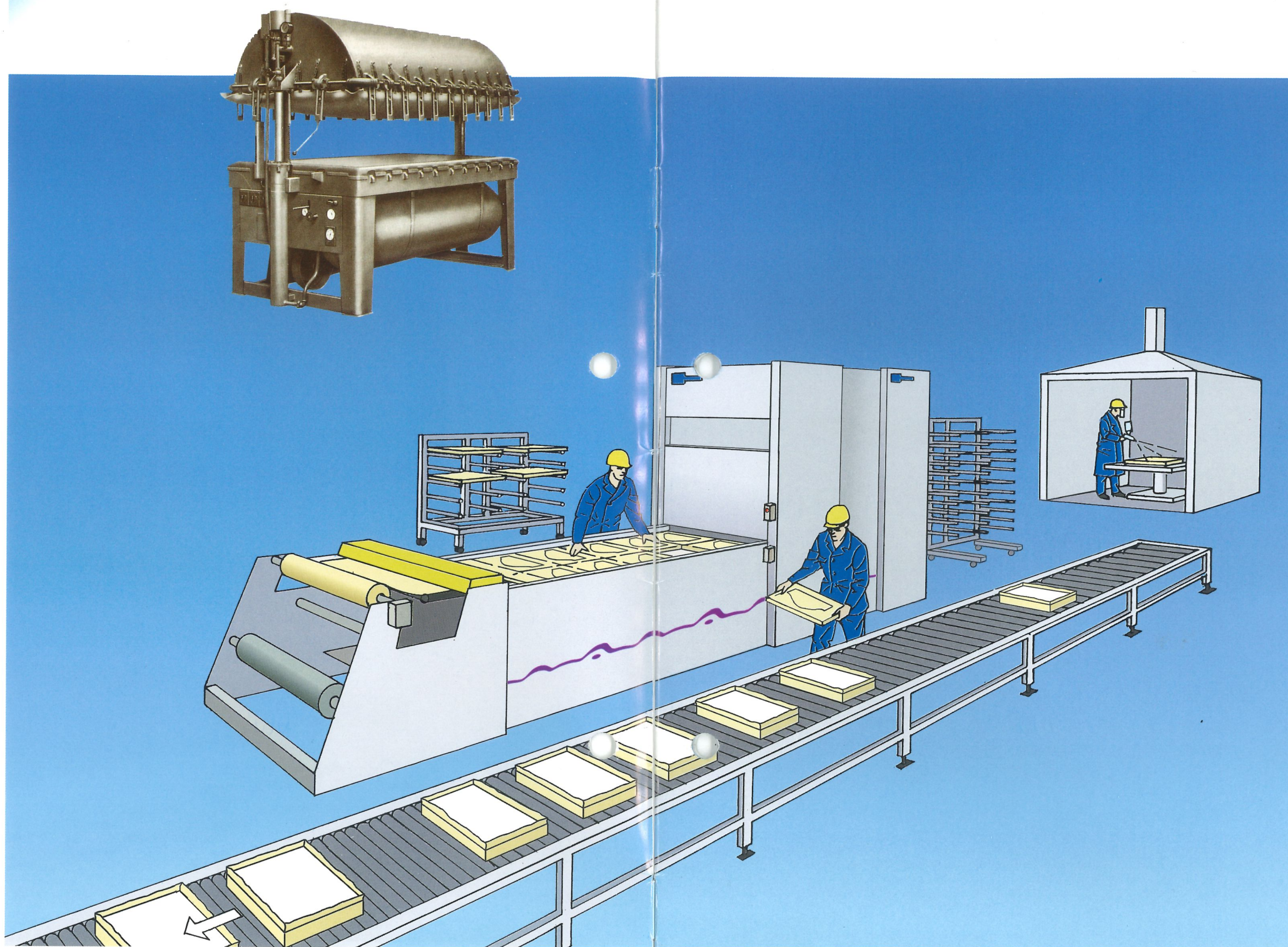
- 1937 first membrane press
- 1978 first membrane press as hydraulic piston press
- 1993 first MASTERFORM press setting new standards for the industry

Today Friz is ahead in technology with a wide range of most modern membrane form presses for all users

- for veneer application
- for PVC application
- for new thermoplastic foils such as polypropylene (PP) or PET
- for industrial production
- for small and medium size companies.

For Friz speaks

- over 50 years of experience in manufacturing presses
- sophisticated technologies for all users
- modern PLC controls (Homatic)
- expert advice
- know-how transfer and advice
- world-wide backup by trained engineers
- complete system
- energy-saving heating systems for all applications
- modern loading and unloading systems
- technology centre for development and tests with customers' materials and tests to support our users



The Friz Masterform Program

■ Optimat Masterform Presses MFP 20

The attractively priced standard machines with proven Masterform-technologies

MFP 20/MO

A Press working without membrane for the processing of thermoplastic foils.

MFP 20/MT

A press working alternatively with or without membrane, for the processing of thermoplastic foils, but also veneers. A model with a very high flexibility in applications.

MFP 20/MF

A press designed to process veneers.

■ Profi line Masterform press MFP 30

The special machine out of the Friz-building-block system. Designed for highest demands and individual customer requirements.

MFP 30/MO

Press without membrane for processing of thermoplastic foils.

MFP 30/MT

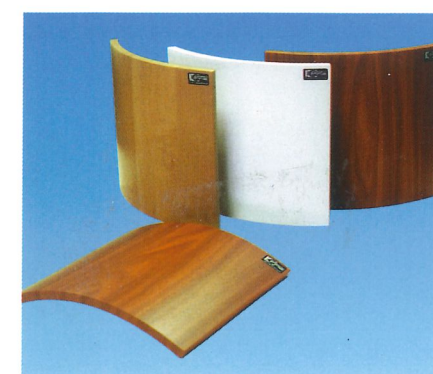
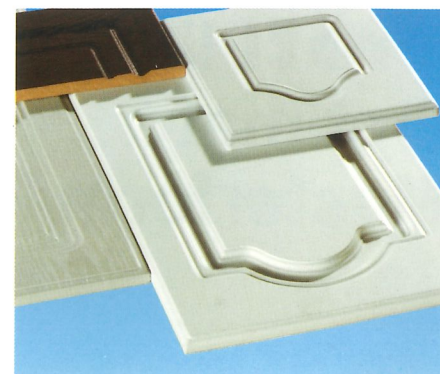
A press working alternatively with or without membrane, for the processing of thermoplastic foils, but also veneers. A model with a very high flexibility in applications.

MFP 30/MF

A press designed to process veneers. Optionally also as double sided membrane press with throughfeed belts for highest performance.

■ Power line Masterform MFD 40

High performance production lines for 3D-lamination as throughfeed. Special line for the high volume front production.



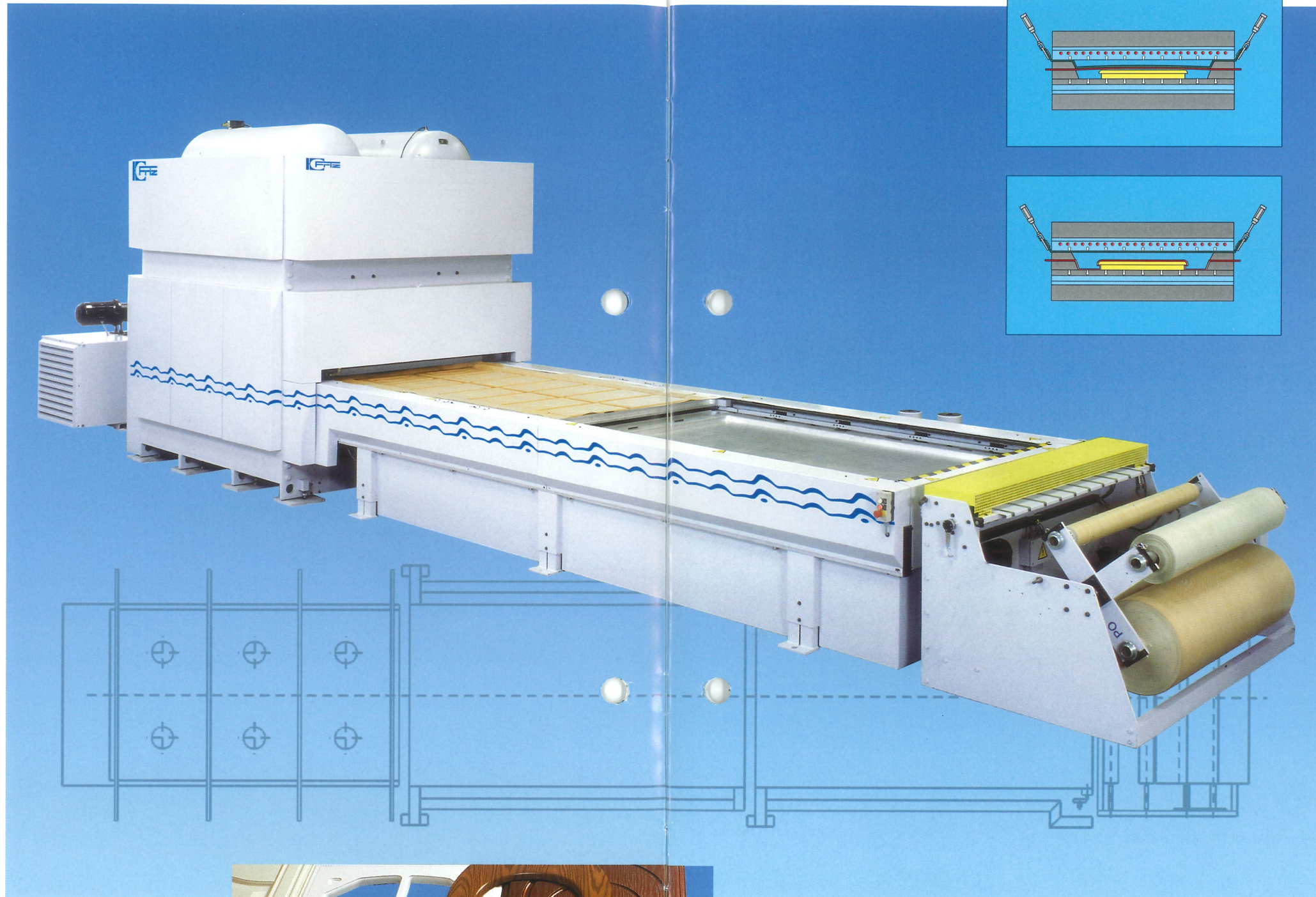
profi line MASTERFORM - MFP 30/MT



This new generation of membrane presses was designed for three dimensional lamination with PVC and other thermoplastic foils as well as for veneers. The demands for realisation of details are constantly increasing: deeper profiles, crisper contours, more details, and improved surface quality. Added to this is the need to comply with the new recycling legislation by using new surface materials - so-called non-PVC foils such as polypropylene (PP) and PET. The answer to these demands are Friz Profiline MASTERFORM presses - an industry leading invention by Friz.

The benefits of Profiline MASTERFORM presses are:

- versatile application of any surface materials known today, such as plastic foils and veneers
- For every material the individually adapted process technology selectable over menu, this means no mechanical changes
- special program for three dimensional lamination of heat transfer finish foils
- usage of the benefits of classical membrane pressing with membrane for the inevitable production of prototypes and samples, and for veneers
- usage of the benefits of pressing without membrane
 - superior definition
 - more complex profile design
 - shorter cycle times
 - superior economy
- highest heat resistance of the glue bond also in critical profile areas and panel edges



The MASTERFORM MFP 30/MT offers

better quality with improved process security by new Friz technologies:

- A new foil preheating technique reduces to a large extent the memory effect of foils due to processing at maximum temperatures.
- Vacuum forming instead of pressure forming allows gentle forming even of sensitive foils, but also superior definition.
- Pressing with cold compressed air cools and stabilizes foils under full pressure.
- The new double chamber concept with large air channels enables extremely fast build-up of vacuum and pressure. With this, no heat is carried off the foil in its critical state of forming, and the glue line is uniformly activated.
- Membrane as heat exchanger suspended outside the pressure frame with quick change and tensioning system.
- Electronic proportional control for pneumatic and hydraulic pressure.
- Incorporated pressure and vacuum storage tank and the oil-cooled high-performance vacuum pump guarantee optimal adaptation to process program.
- PLC control allows the optimal usage of 5 process programs which can be stored in over 100 user programs.

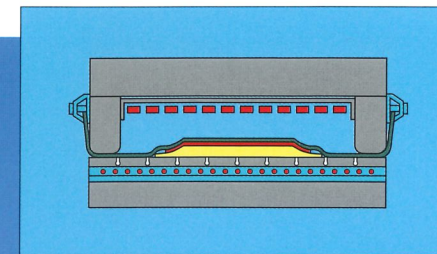
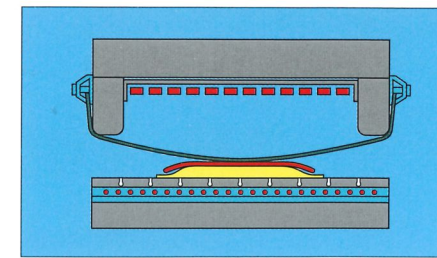


profi line

Masterform MFP 30/MF – single sided

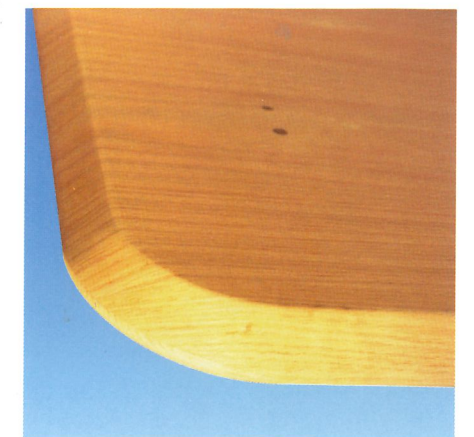
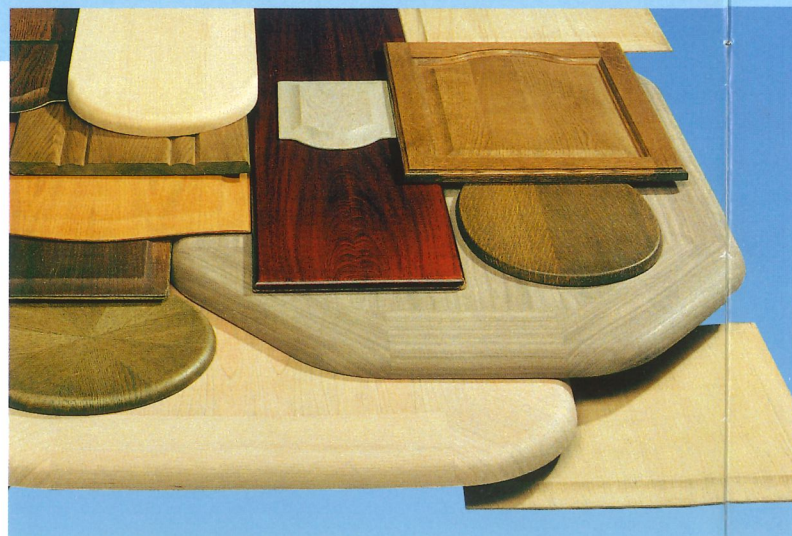
MFP 30/MF was especially designed for veneering. Today veneers can be applied with nearly all membrane presses; but only special machines guarantee most efficient economy at highest quality. Friz membrane presses MFP 30/MF are used today e.g. for the lamination of raised door panels, two- or three dimensionally shaped furniture parts such as table and desk tops, in the production of coffins, and to a great extent in the automotive industry for veneered components like dashboards and consoles.

The technology of the membrane press, i. e. the optimal use of heat and pressure in the right measurement and time, has a decisive influence on the quality of the readily veneered formed parts. Here the experience of Friz of over 50 years shows. We do not offer you only technique, but also the know-how that finally determines quality. Performance is determined by the appropriate feeding system and automation - here, too, we can offer you solutions.



Friz offers

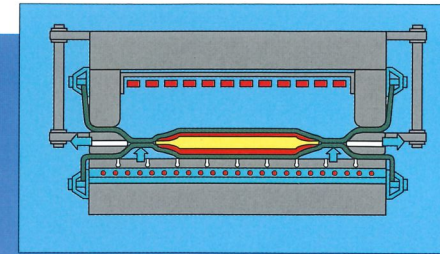
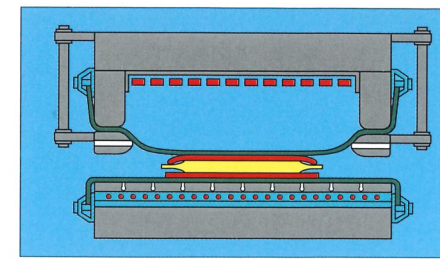
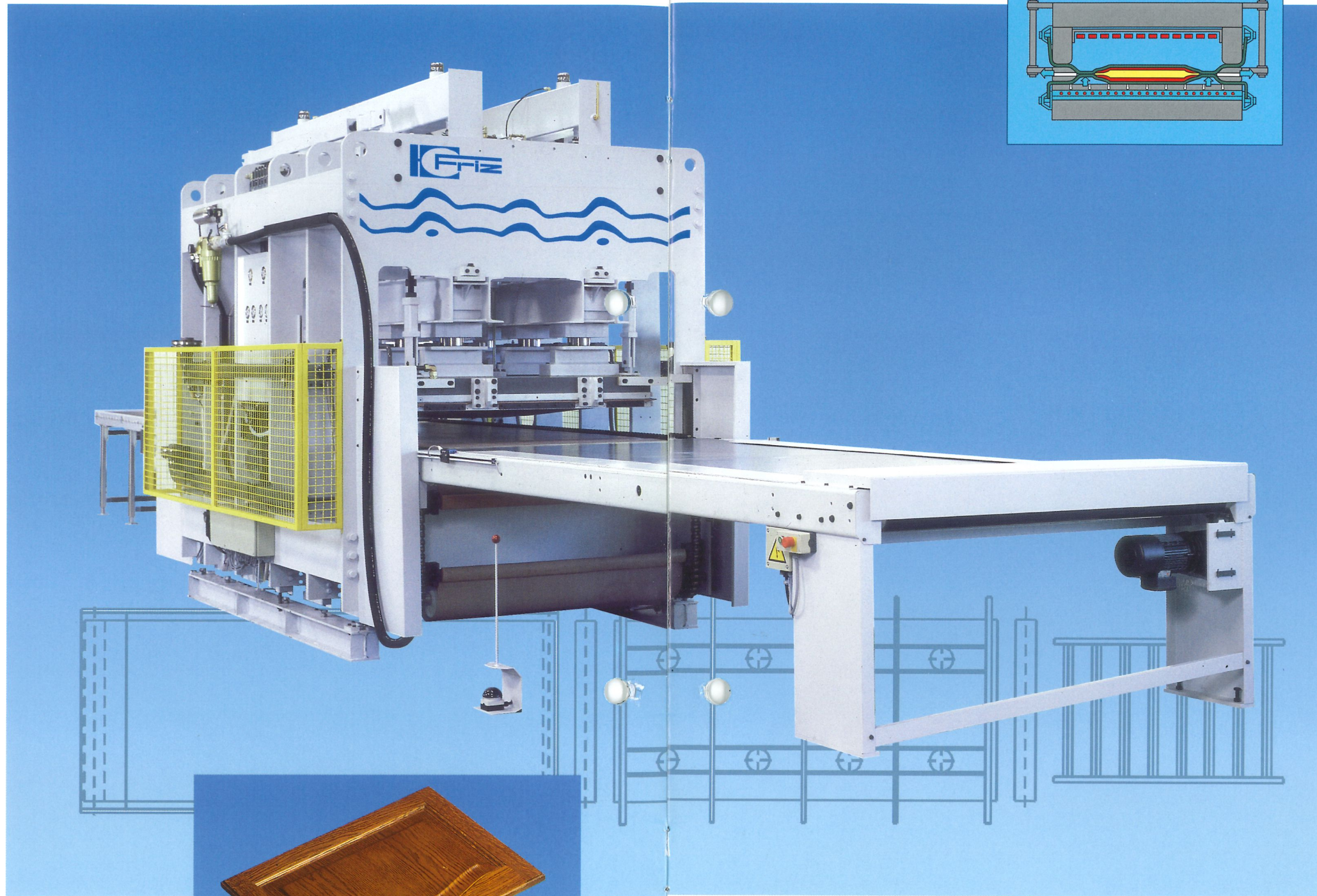
- fast, uniform, and economic heat transfer by dark radiators
- incorporated compressed air supply adapted to the press
- pneumatic-hydraulic pressure control by electronic proportional control for long life of membranes
- a PLC control always gives you the optimal program
- over 100 customer-specific user programs which can be stored
- consulting prior to sale by qualified sales engineers
- know-how transfer and training for short times of commissioning
- after sale customer backup by world-wide service network, factory trained engineers, and our technology centre
- appropriate mechanization from a manual feeder to the through-feed press
- glue spreaders especially designed for short veneers
- quick change system for membranes



profi line

Masterform - MFP 30/MF – double sided

Double membrane presses for panels profiled on both sides, such as raised door panels, are high-performance machines for large numbers of units; this is why these machines are mainly manufactured as through-feed presses. In this case the bottom membranes also work as feed belts inside the press. Here, high performance is not only determined by the heat transfer inside the press, but also and in particular by heating the membrane that is not used during the press cycle (return feed membrane heating).

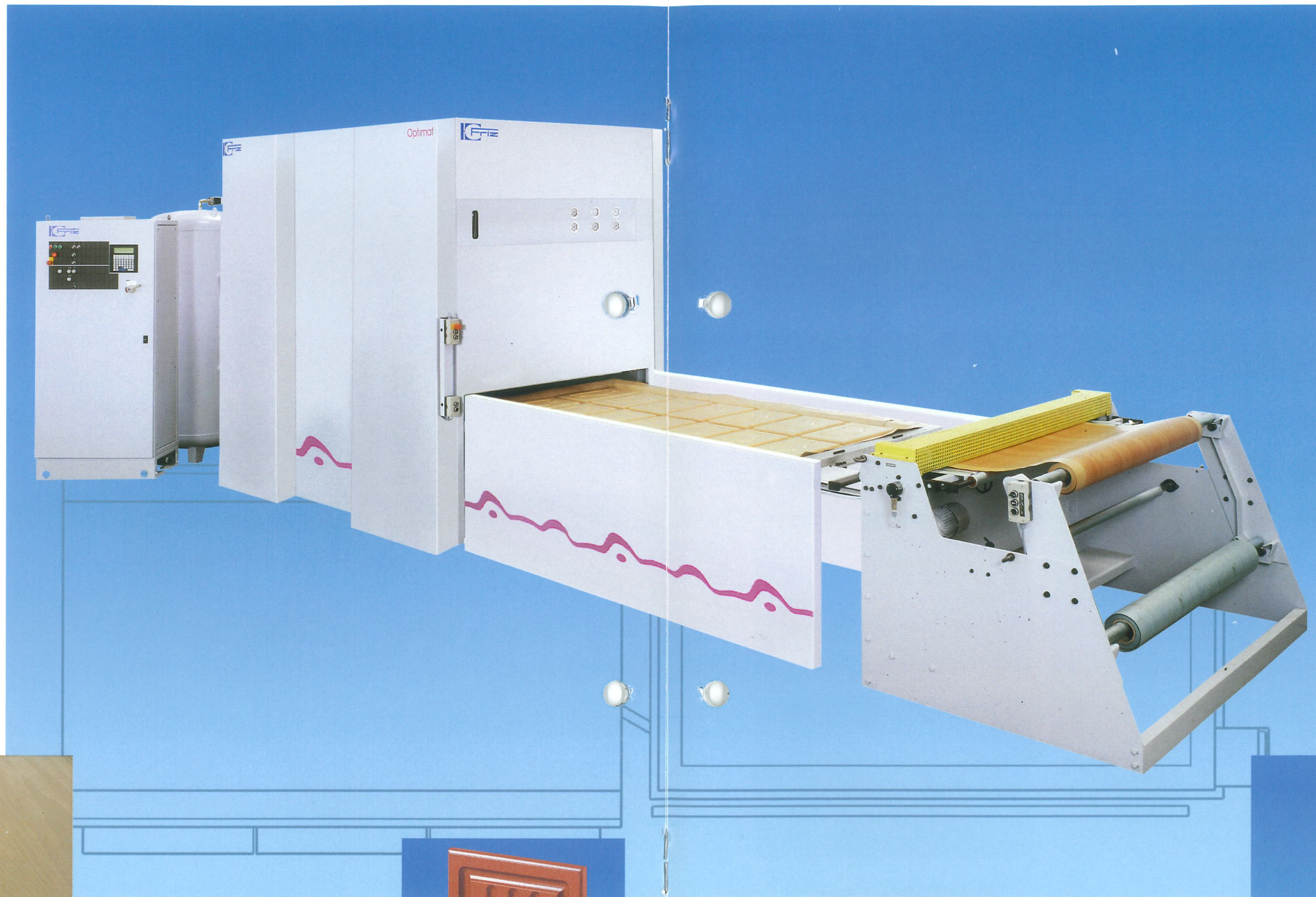


Friz offers

- fast, uniform, and economic heat transfer by dark radiators
- incorporated compressed air supply adapted to the press
- pneumatic-hydraulic pressure control by electronic proportional control for long life of membranes
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The attractively priced series membrane press for foil and veneer lamination. Series production reduces costs. We pass on this cost saving to our customers. But to realise a series production in practice, we manufacture this press only in one size (platen size 1.500 mm x 2.700 mm) - the preferred size of the MASTERFORM presses. The Optimat press has the same process technology as the MASTERFORM presses, this means it works with the same wide variety of programs, and above all it produces the same high quality.



The Optimat press offers

better quality with improved process security by Friz technologies

- Vacuum forming instead of pressure forming allows gentle forming even of sensitive foils.
- Large air channels enable extremely fast pressure and vacuum build-up.
- Heating plates with independently controlled heating fields guarantee an absolutely even heat distribution.
- An oil-cooled vacuum pump and a large vacuum tank guarantee optimal adaptation to program sequences.
- Modern PLC-controls allow the optimal usage of up to 6 process programs, which can be stored in more than 100 user-programs.

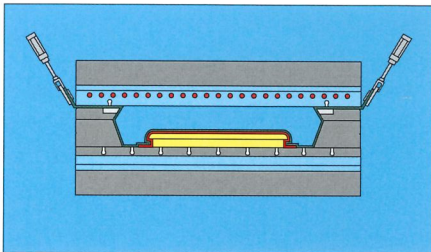
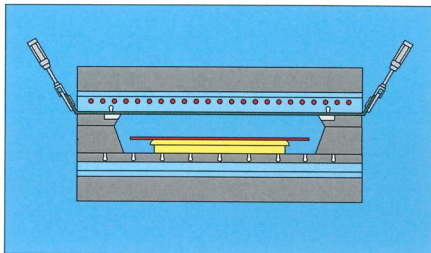


Optimat MFP 20

The attractively priced Standard-Machines of the Optimat Program are built in series and offer the right Model for every application.

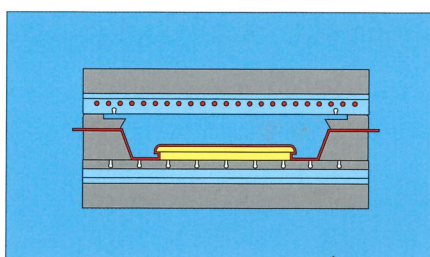
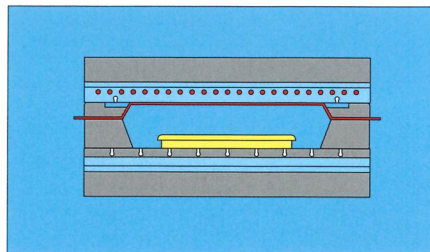
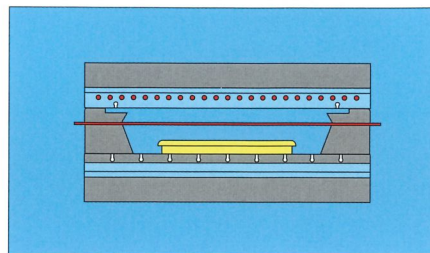
The Friz-building-block system enables, irrespective of the series production, a machine adapted to your requirements.

MFP 20/MF



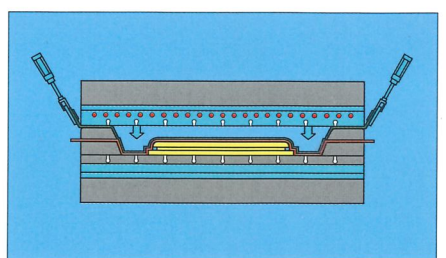
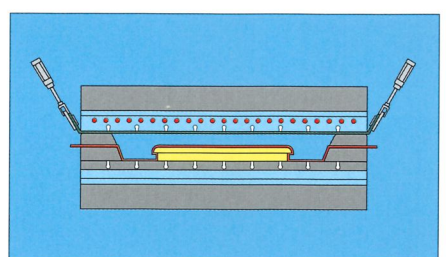
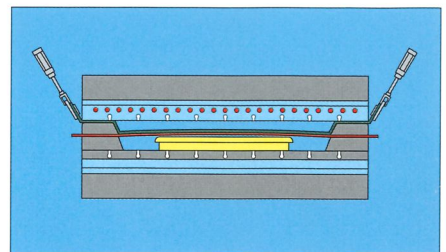
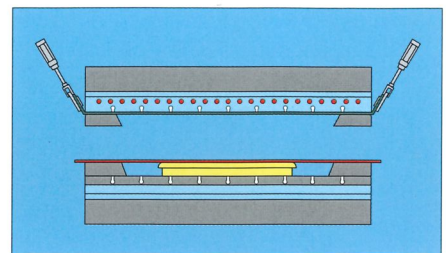
The model for pressing of veneers with membrane. If you want to process veneers only, this model is the most economic one for you. In connection with the heated bottom plate many parts can be pressed both sides simultaneously if the bottom side is not profiled.

MFP 20/MO



A membrane-less Masterform press for the economic production of bath and kitchen fronts and many other applications with thermoplastic foils. The pressing without membrane is not only the most economical, but offers at the same time the best detail reproduction.

MFP 20/MT

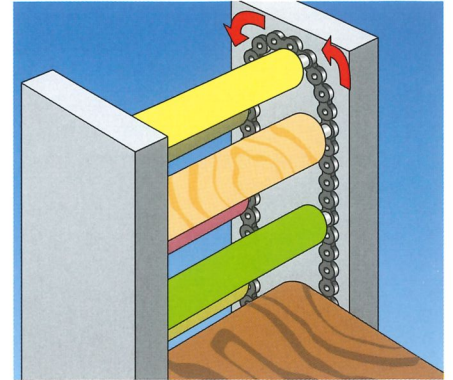


The top-model out of the Optimat program works optional with or without membrane. On this press you can not only produce fronts without membrane, but also economically single doors or samples, or high parts with a specially adapted program, with membrane, or for the lamination with transfer-finish-foils. But naturally you can press veneers as well on this machine.

Unwinding and cutting systems

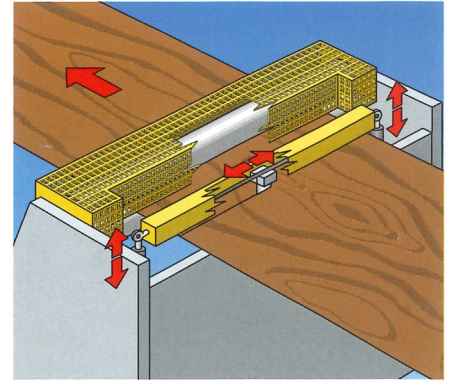
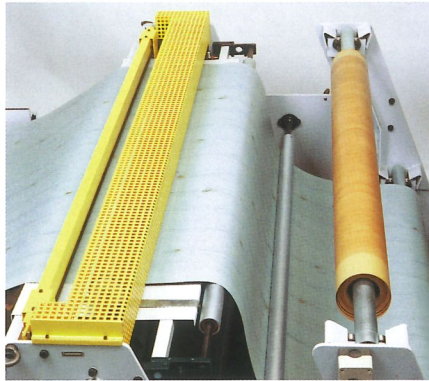
AMP 0 – Paternoster

This foil storage system enables the storage, ready for use from 8 to 20 rolls of foil on a very small storage area. This system allows to work with a multitude of different foils at the same time, as it is necessary with a production to order. The axles of the foil rolls are mounted in motorised transport chains. The supports for the foil axles are easily repositioned for changing roll diameters.



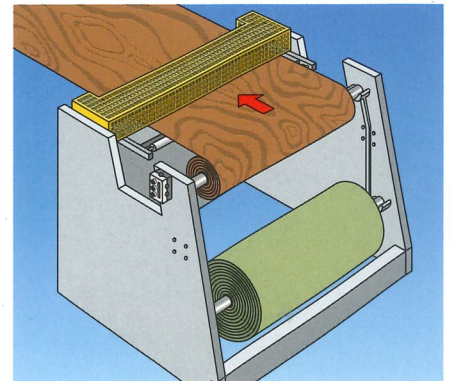
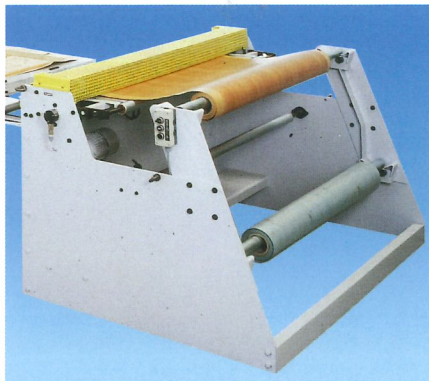
TMQ 0 – Foil Unwinding and Cutting System

With the use of the Paternoster foil storage this unit takes care of the foil unwinding and cutting to a preselected length.



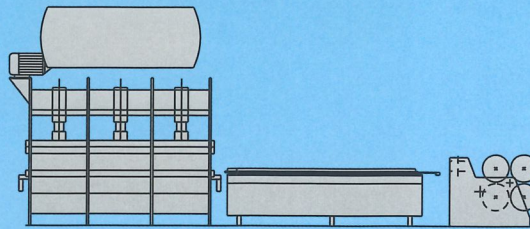
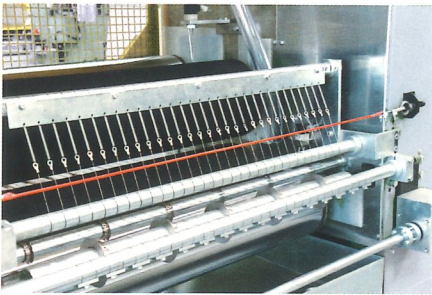
AMZ 0 – 2-fold Foil Unwinding and Cutting Station

For smaller installations or series production this unit is sufficient.



Feeding and automation

The surrounding equipment of the press largely determines the performance of a membrane press. This is why Friz offers effective and economic feeding-, foil unwinding-, and foil trimming systems that meet customers' needs.



EMT – 2-Table Feed on one side of the press

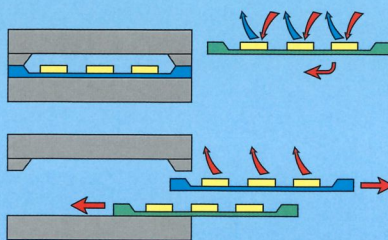
The press is always operated from one side only. During loading or unloading one table is always in the press.

■ EMT 1– Manual Design:

The change of tables is executed by pushing the table manually into the press and pulling the other one out of the press.

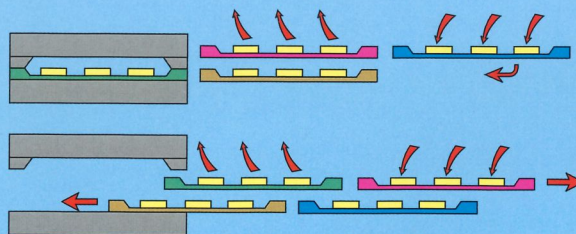
■ EMT 2 – Automatic Design:

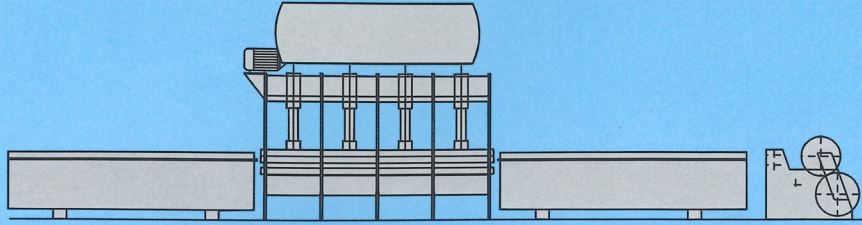
With confirming the readiness for change the tables are exchanged automatically.



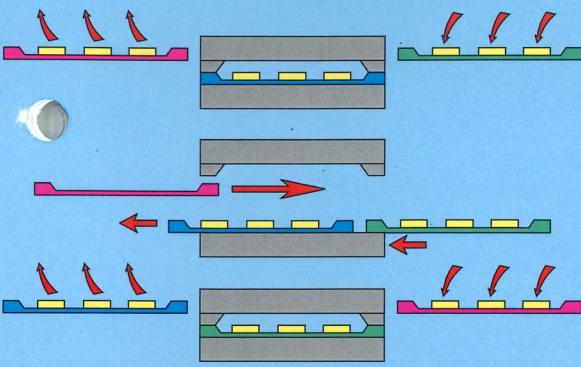
EMT 4 – Automatic 4-Table Feed

With this system always two tables are in front of the press, where the one team is unloading the first table, while the second team is already loading the other empty table. One table is always in the press. A fourth table is in loaded waiting position in front of the press in a lower level. An advantage of this system is, that one team can help the other if need arises.

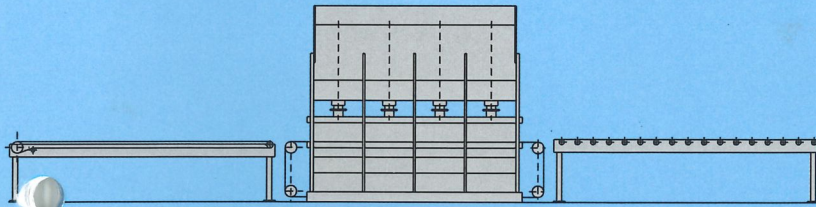




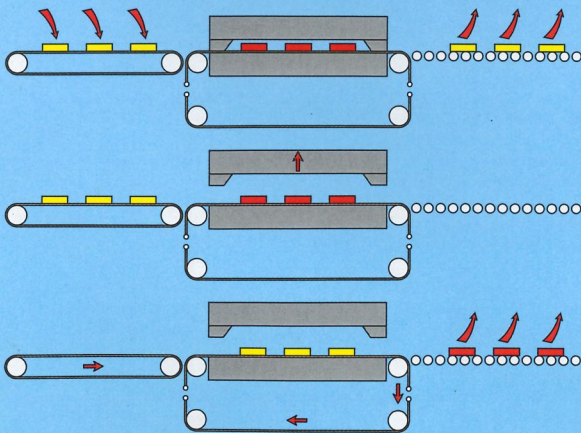
EMT 3 – Automatic 3-Table Feed



With this feed system for higher automated presses, the press is charged from one team in front of the press, one table is in the press, the second team behind the press is unloading the third table. With changing of tables the empty third table is returned with high speed through the press to the loading station. Due to the clear separation of loading and unloading areas unloading can be automated by vacuum suction system without interfering or endangering of the loading personnel.



EMB 0 – Throughfeed system



The throughfeed system is only used for veneered parts, which are pressed without raiser-panels. The ready pressed parts are taken over by a outfeed roller conveyor from which they can be stacked manually or automatically.



Technical Data MFP

profi line MFP 30/MT

| | MT/14/11 | MT/15/28 | MT/15/33 | MT/15/38 | 25/MO/15/28 | 20/MT/15/28 | 20/MF/15/28 |
|--|-----------|-----------|-----------|-----------|-------------|-------------|-------------|
| Platen size [mm] | 1400x1100 | 1500x2800 | 1500x3300 | 1500x3800 | 1500x2800 | 1500x2800 | 1500x2700 |
| Max. effective area [mm] | 1150x850 | 1250x2550 | 1250x2500 | 1250x3550 | 1250x2550 | 1250x2550 | 1250x2450 |
| Feed system | - | - | - | - | two-table | two-table | two-table |
| Feed side | 1400 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |
| Workpiece height max. [mm] | 60 | 60 | 60 | 60 | 50 | 50 | 50 |
| Specific pressure [bar] | 6 | 6 | 6 | 6 | 5 | 5 | 5 |
| Number of cylinders | 4 | 6 | 8 | 8 | 1 | 1 | 1 |
| Total weight [kg] | 8.500 | 18.000 | 19.500 | 21.500 | 12.500 | 12.500 | 12.500 |
| Connected loads | - | - | - | - | - | - | - |
| Top heating plate [kW] | 10 | 28 | 30 | 38 | 28 | 28 | 28 |
| Bottom heating plate (Option) [kW] | 4 | 11,5 | 14 | 16 | - | 10,5 | 10,5 |
| Hydraulics [kW] | 4 | 11 | 11 | 11 | 4 | 4 | 4 |
| Compressor (Option) [kW] | 3 | 10 | 10 | 10 | 7,5 | 7,5 | 7,5 |
| Vacuumpump [kW] | 3 | 5,5 | 5,5 | 5,5 | 4 | 4 | 4 |
| Total connected load (without options) | 17 | 44,5 | 49,5 | 54,5 | 36 | 36 | 36 |

Optimat MFP 20

profi line MFP 30/MF - single sided

| | MF/15/28 | MF/15/33 | MF/15/38 |
|---|-------------|-------------|-------------|
| Platen size [mm] | 1500x2800 | 1500x3300 | 1600x3800 |
| max. effective area [mm] | 1350x2600 | 1350x3100 | 1350x3600 |
| Feed system | trough-feed | trough-feed | trough-feed |
| Feed side | 1500 | 1500 | 1500 |
| Max. Workpiece height with 145 mm frame height [mm] | 40 | 40 | 40 |
| Specific pressure [bar] | 7 | 7 | 7 |
| Number of cylinders | 6 | 8 | 8 |
| Total weight [kg] | 19.500 | 21.000 | 23.000 |
| Connected loads | - | - | - |
| Radiator heating, top [kW] | 40 | 48 | 56 |
| Heating plate bottom [kW] | 11,5 | 14 | 16 |
| Hydraulics [kW] | 11 | 11 | 11 |
| Compressor (Option) [kW] | 15 | 15 | 22 |
| Total connected load (without options) | 62,5 | 73 | 83 |

Optional thermo-oil heating-systems can be supplied instead of radiator-heating

profi line MFP 30/MF - double sided

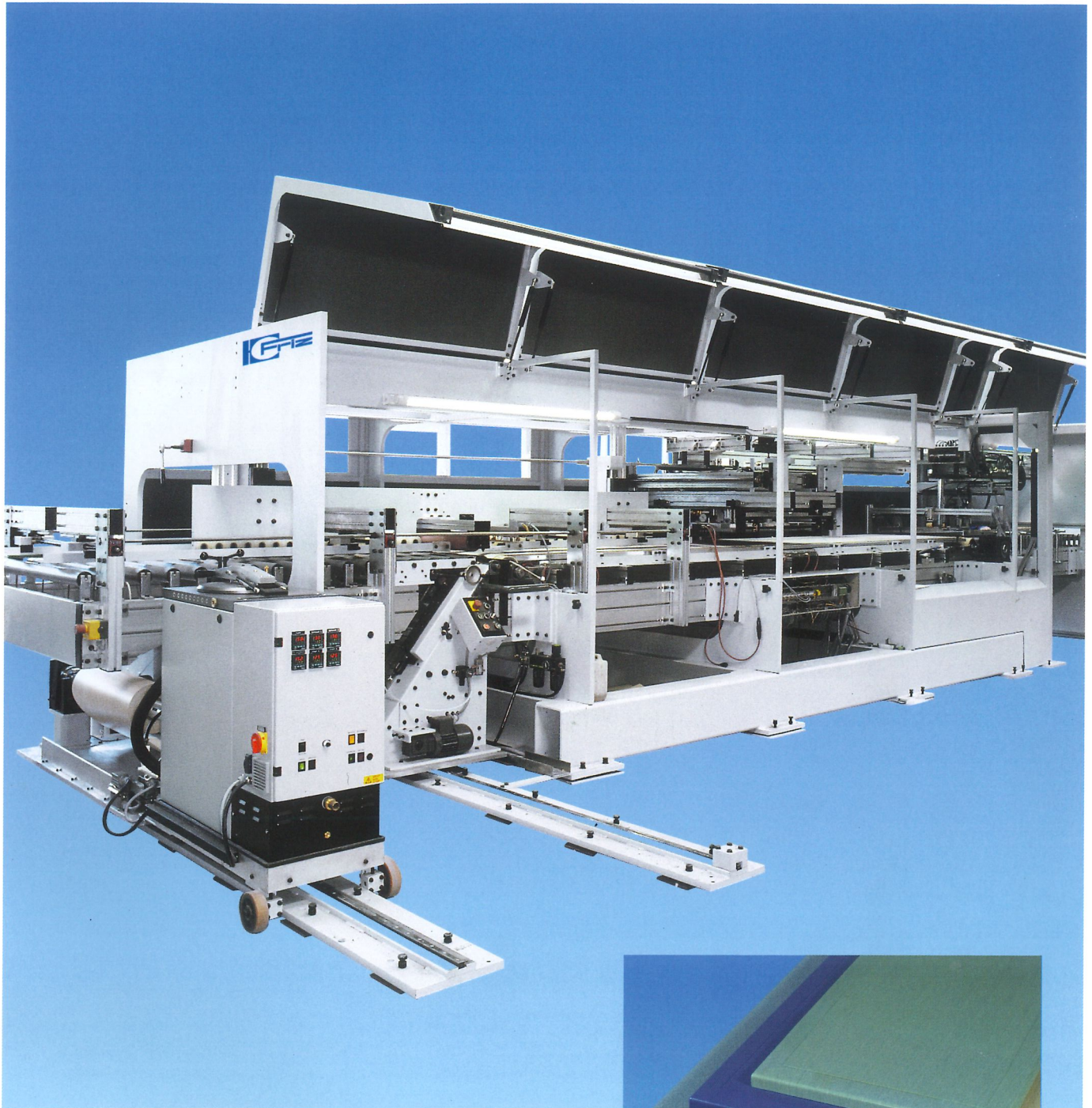
| | MF/15/28 | MF/15/33 | MF/15/38 |
|---|-------------|-------------|-------------|
| Platen size [mm] | 1500x2800 | 1500x3300 | 1600x3000 |
| max. effective area [mm] | 1350x2600 | 1350x3100 | 1400x2800 |
| Feed system | trough-feed | trough-feed | trough-feed |
| Feed side | 1500 | 1500 | 1600 |
| Max. Workpiece height with 1400 + 40 mm frame height [mm] | 40 | 40 | 40 |
| Specific pressure [bar] | 7 | 7 | 7 |
| Number of cylinders | 6 | 8 | 10 |
| Total weight [kg] | 19.000 | 20.500 | 22.500 |
| Connected loads | - | - | - |
| Radiator heating, top [kW] | 40 | 48 | 56 |
| Heating plate bottom [kW] | 11,5 | 14 | 16 |
| Heating plate in return feed [kW] | 11,5 | 14 | 16 |
| Hydraulics [kW] | 11 | 11 | 11 |
| Compressor (Option) [kW] | 15 | 15 | 22 |
| Total connected load (without Options) | 74 | 87 | 99 |

Optional thermo-oil heating-systems can be supplied instead of radiator-heating

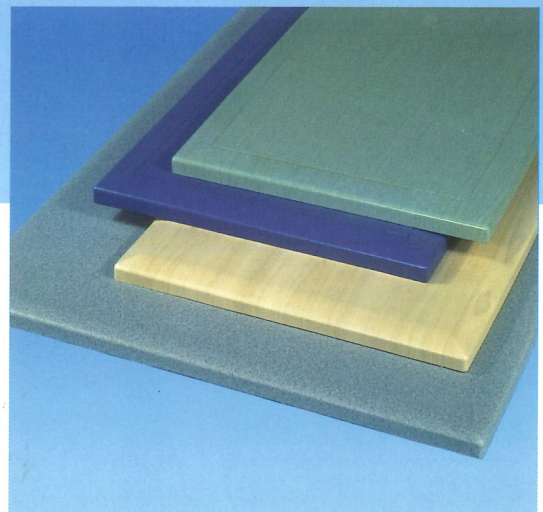
Subject to technical alterations.

power line

MFD 40/MO/60/120



High performance lines with through-feed technology. These lines were designed for the high volume production of doors. The performance of such a line is that of several conventional (stationery) membrane presses. Furthermore these lines integrate the adhesive application, the lamination and the trimming of the foil overhang.



power line

MFD 40/MO/60/120

The future of economic 3D Lamination is called:

“Friz-Throughfeed Technology”

Membrane press development concentrated itself over the last few years, throughout the industry, mainly on the improvement of existing technologies quantum jumps in performance could not be realised. The demands of the industry were, and still remain, the drop of unit cost to safeguard the added value margins also with increasing competition and price squeezing.

The throughfeed technology realised by Friz allows an enormous increase in performance (up to 300 %) compared to the stationary technology, and that with highly reduced personnel requirement – as one to two men can operate the line. The automatic throughfeed technology offers as a by-product a far more reliable process-security, as human error and environmental influences are eliminated. The PUR-adhesive system used in this process achieves temperature resistances of above 100 deg. C, which are the demands of industry, but have not yet been realised.

Friz-Throughfeed technology means:

- economical industrial flow production with highest automation, e.g. foil infeed, foil cutting, adhesive application and foil trimming.
- High performance line (up to 10 pieces/min) with highly reduced cost per piece.
- Short return on investment
- Reliability due to constant quality, reproducible and controllable parameters.
- One-man operation.

The Friz throughfeed technology offers even more:

- High temperature resistance (above 100°C) due to optimal heat distribution and PUR glue bond.
- Standard 3D foils are used (PVC, PP, PET)
- Quiet surfaces due to PUR glue, no chip swelling or overspray.
- Reduced floor space requirement.
- Computer assisted line control with graphical screen, on-line programming, teach-in, offset and contact-plan diagnosis.

MFD Technical line specification

Workpiece cleaning

Rotating brushes and air jets.

Foil infeed

Rollmagazin with automatic unwinding and cutting device.

Adhesive application

PUR-slot-nozzles with width adjustment and length control. PUR premelter.

Workpiece conditioning

Workpiece and foil preheating

Forming and laminating

Masterform vacuum technology with programmed workpiece size adjustment.

Trimming

2 traced trimming aggregates, programmed workpiece size adjustment.

power line MFD 60

| MFD 60 | | | |
|------------------|---------|----------|---------|
| Workpiece width | maximum | [mm] | 600 |
| Workpiece width | minimum | [mm] | 150 |
| Workpiece length | maximum | [mm] | 1200 |
| Workpiece length | minimum | [mm] | 450 |
| Performance data | | | |
| Feed speed | | [m/min.] | 15 – 18 |
| Line data | | | |
| Line length | | [mm] | 10.400 |
| Line width | maximum | [mm] | 2.400 |
| Line height | | [mm] | 2.150 |
| Connected load | | [kW] | 55 |
| Compressed air | | [bar] | 6 |

How functions this 3D through-feed line ?

Furniture fronts today can be produced continuously in double end tenors with the relevant CNC-router technology.

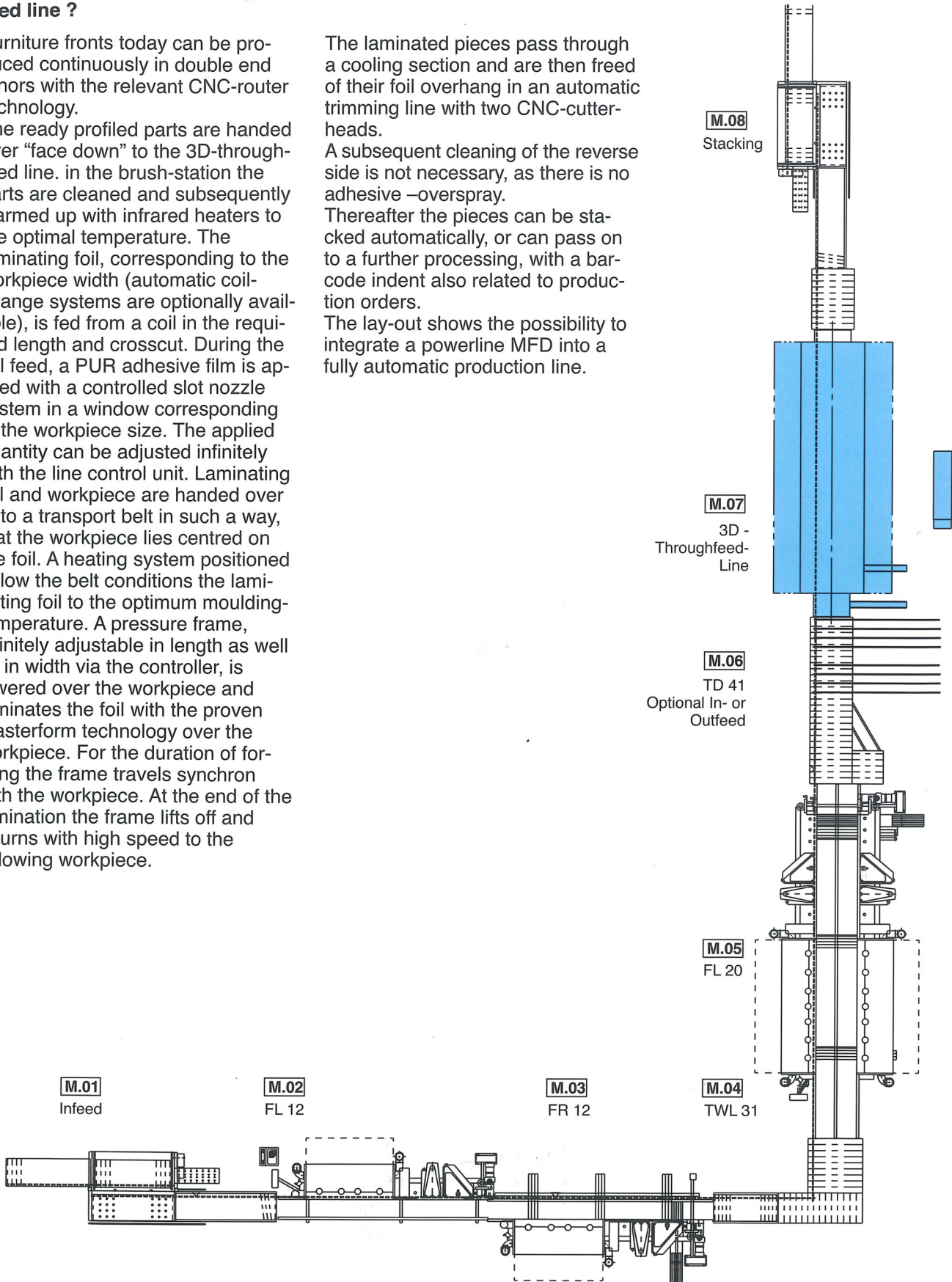
The ready profiled parts are handed over "face down" to the 3D-through-feed line. In the brush-station the parts are cleaned and subsequently warmed up with infrared heaters to the optimal temperature. The laminating foil, corresponding to the workpiece width (automatic coil-change systems are optionally available), is fed from a coil in the required length and crosscut. During the foil feed, a PUR adhesive film is applied with a controlled slot nozzle system in a window corresponding to the workpiece size. The applied quantity can be adjusted infinitely with the line control unit. Laminating foil and workpiece are handed over onto a transport belt in such a way, that the workpiece lies centred on the foil. A heating system positioned below the belt conditions the laminating foil to the optimum moulding-temperature. A pressure frame, infinitely adjustable in length as well as in width via the controller, is lowered over the workpiece and laminates the foil with the proven Masterform technology over the workpiece. For the duration of forming the frame travels synchron with the workpiece. At the end of the lamination the frame lifts off and returns with high speed to the following workpiece.

The laminated pieces pass through a cooling section and are then freed of their foil overhang in an automatic trimming line with two CNC-cutter-heads.

A subsequent cleaning of the reverse side is not necessary, as there is no adhesive-overspray. Thereafter the pieces can be stacked automatically, or can pass on to a further processing, with a bar-code indent also related to production orders.

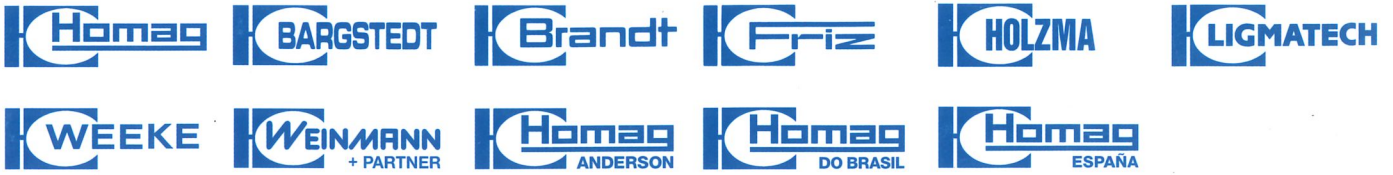
The lay-out shows the possibility to integrate a powerline MFD into a fully automatic production line.

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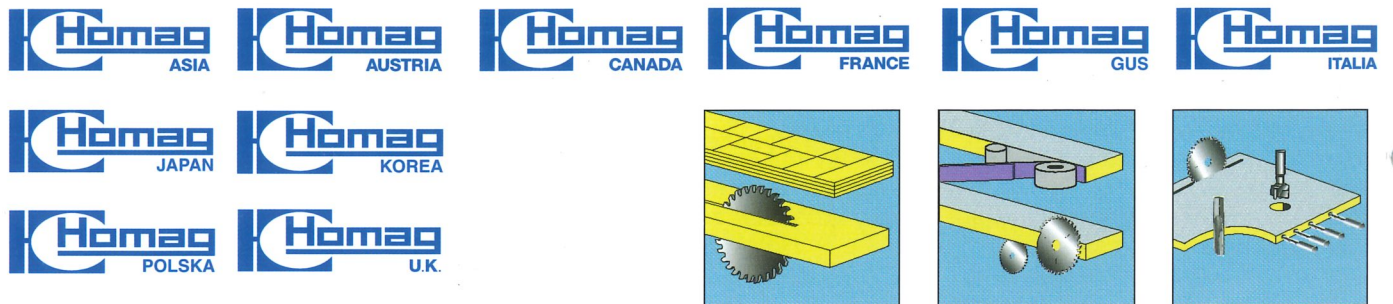


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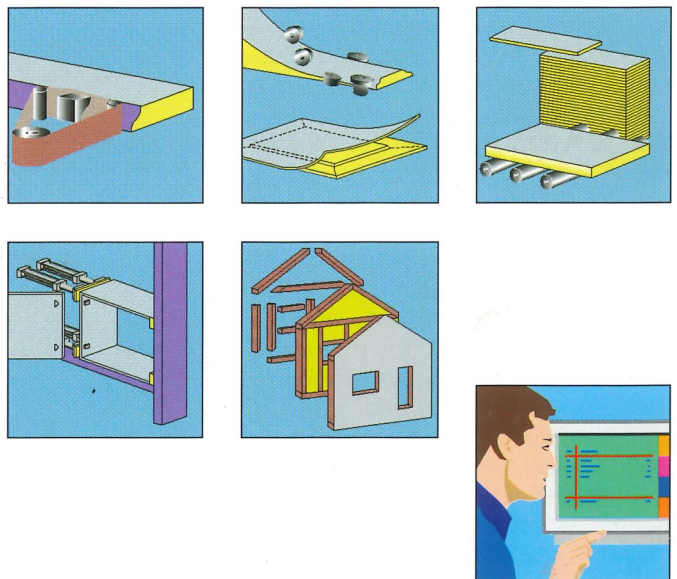
Production



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Service



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