Transferprinting

Laminating

Thermobonding

GROUP

Klieverik

OLDENZAAL - HOLLAND

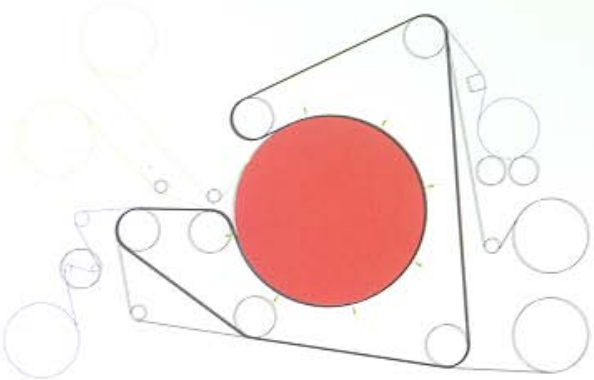
About Klieverik Heli BV

Klieverik Heli, a limited company allied with the Gerritse Systems Group, has been active for over 40 years as a designer and manufacturer of innovative systems and stand-alone units that improve the efficiency of textile printing and finishing operations.

The applications include:

- *thermoprocessing systems, such as transfer printing calenders and laminating calenders, as well as other thermoprocessing systems for bonding of non wovens and heatsetting of fabrics.*
- *the preparation of thickeners and binders, straining under vacuum, cleaning of squeegees, screens, and containers from the smallest buckets to the largest vessels, mixing of pastes and dyes.*

Transferprinting Line



Transferprinting

Introduction transfer printing

Transfer printing is a well proven technology. The key advantage of this process is that it is a relatively simple operation in which dyes are transferred from printed transferpaper to textile by the effects of heat and time. This simple process technology makes for a reliable and compact system. The process uses disperse dyes and synthetic woven or knitted goods like PES, Nylon 6-6, Acrylic and blends. At temperatures of 170 °C and more the dyes sublimate and penetrate into the synthetic fibres.

Klieverik calenders are the ideal tool to arrive at top quality prints.

Transfer printing offers an optimum combination of economy and simplicity. However, the process demands precise temperature control to ensure high-quality results. For this reason Klieverik has developed a transfer printer which allows the required temperature to be maintained to within only ± 1 °C.

Klieverik recognizes that further developments in transfer printing technology offer attractive new perspectives:

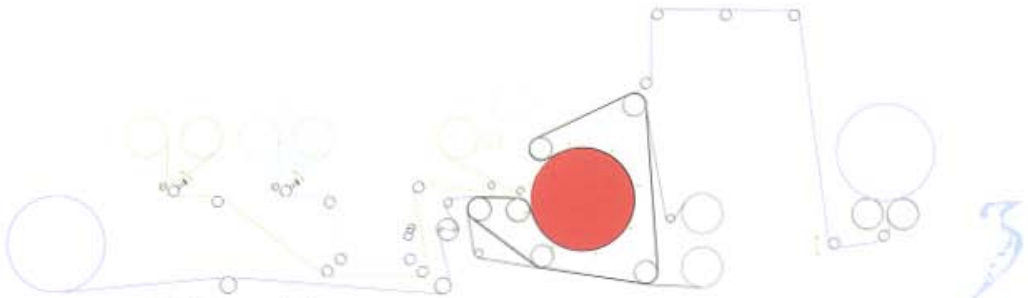
Twin Transfer Calender (TTC)

Using two narrow webs of transfer paper side-by-side makes it possible to print up to 3200 mm wide fabrics. Swiftly adjustable and very accurate paper guiding systems result in prints on the wide fabric that do not show a line in the middle of the print. The obvious advantage is that the transfer printer can use relatively cheap narrow transfer paper instead of the far more than twice as expensive wide paper.
This TTC system can also be delivered as a stand alone unit.

Warp yarn transfer printing

Warp yarn transfer printing offers new opportunities for exclusive interior decoration and fashion designs. The individual yarns are printed before the substrate is woven. This method requires great precision in web tension and web guiding. Klieverik's transfer calenders in combination with efficient winding and rewinding equipment fully meet these requirements.

TTC System

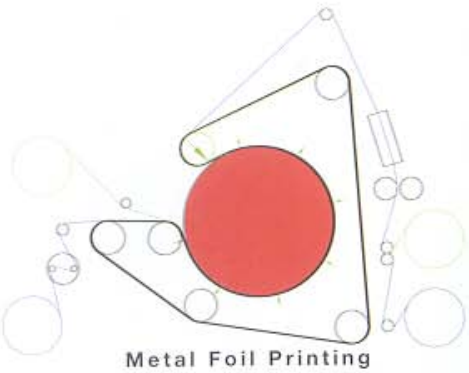


TTC line with automatic paper change

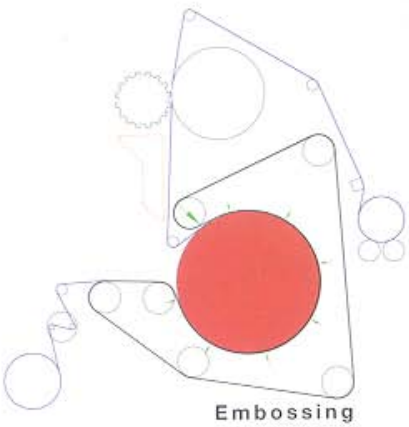
Metal foil printing

The possibility of performing metal foil printing by the transferprinting technique opens up numerous opportunities for the creation of highly fashionable products: fabrics are first partly pre-printed with adhesive and are then fed into the transfer printer together with a metal foil. The adhesive then combines the metal foil with the fabric.

Metal Foil Printing



Metal Foil Printing



Embossing

Embossing in line

The Klieverik embossing unit is a multifunctional concept which together with a calender can be used for transfer printing and embosssing in one passage.

Description of the process.
In the calender the temperature is brought to a level at which the textile is transformable. To feed the material in the right shape into the embossing unit, the substrate then passes the conditioner.
In the embossing unit the material gets the desired profile and after the embossing unit the temperature of the material is brought back to below the weakening point. The fabrics used in this process must be from manmade fibres or mixtures with natural fibres.

The webtension between calender, embossing unit and outfeed construction is very important. For this purpose the installation has a hi-tech synchronisation which enables a precise adjustment of the tensions. Especially important is the minimal tension in order to avoid overstretching of the material during the process and when leaving the embossing unit.

Crush & Heatsetting

A Klieverik calender is often used for the fixation of crushed material.
On top of that quite a few customers are using our calender as a heatsetting machine for woven and knitted fabrics. The advantage is that the investment is far lower than the ordinary stenter frames and the temperature that can be reached can easily go up to 250 °C if needed.

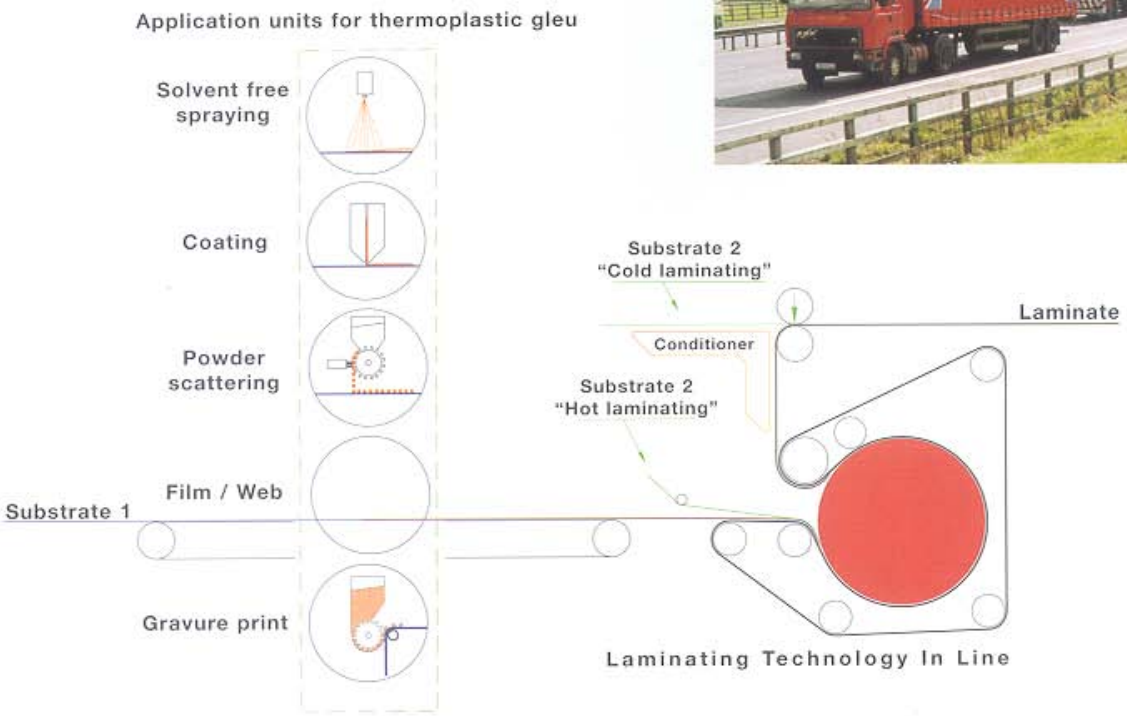
Introduction laminating

The laminating process by means of a beltlaminator allows two, three or even more substrates to be combined under the influence of temperature, pressure and dwell time. The adhesion between the substrates is obtained by the use of thermoplastic glues, such as films, powders or melting fibres. Klieverik has developed a complete range of laminating systems which are able to manufacture products meeting virtually any desired specification.

The Klieverik systems are ideally suited for the production of materials used for:

- *footwear and clothing*
- *medical garments*
- *disposables and dressings*
- *domestic applications and wall coverings*
- *car upholstery*
- *industrial applications such as acoustic and thermal insulation laminates*
- *any combination that could be done so far by flame bonding.*

A Klieverik beltlaminator is compatible with most glue application units.

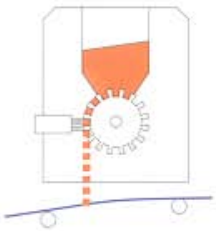


Laminating Technology In Line

Powder scattering device

Despite the numerous suppliers of powder scattering devices, Klieverik decided to develop its own powder scattering device with state of the art technology, and even more important, with the right price/performance ratio.

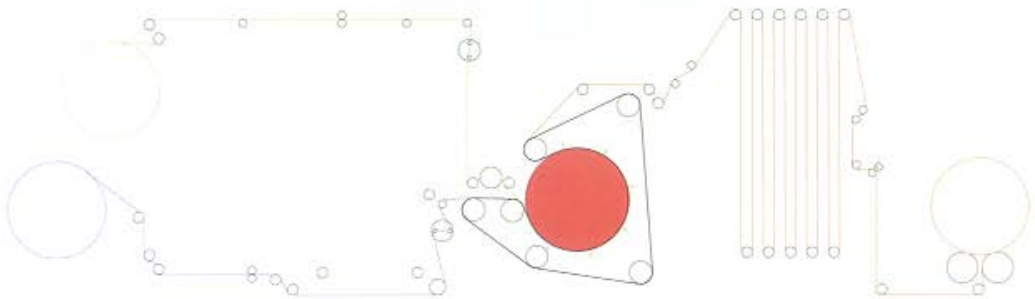
The Klieverik powder scattering device ensures a regular scattering of the powder which gives a good surface equality in width as well as length.



Other features of the Klieverik powder scattering device are:

- wide range of powders can be applied
- user friendly operating system
- powder coating weight can easily be set in grams/m²
- working width easily adjustable
- optical powder level indicator
- desired coating weight synchronised with speed of the production line.
- minimal pollution and still very accessible for cleaning: so fast and easy change-over of powder type.
- heavy duty construction.

Laminating by means of film



Double roller beltlaminator

Thermoprocessing done by the beltlaminator can be done for most products. However in case that heat has to be applied from both sides for special surface effect and completely through bonding Klieverik developed the double roller calender.
The available working widths are the same as supplied by the ordinary beltlaminator.
(fig. 3 page 9)

Hotmelt PUR spray laminating

The principle is quite simple. A reactive polyurethane glue is heated until it becomes liquid. This requires a temperature of about 150 °C.
The liquid glue is pumped to a number of specially designed spray nozzles. These nozzles atomize the polyurethane glue uniformly over one of the two substrates to be laminated.

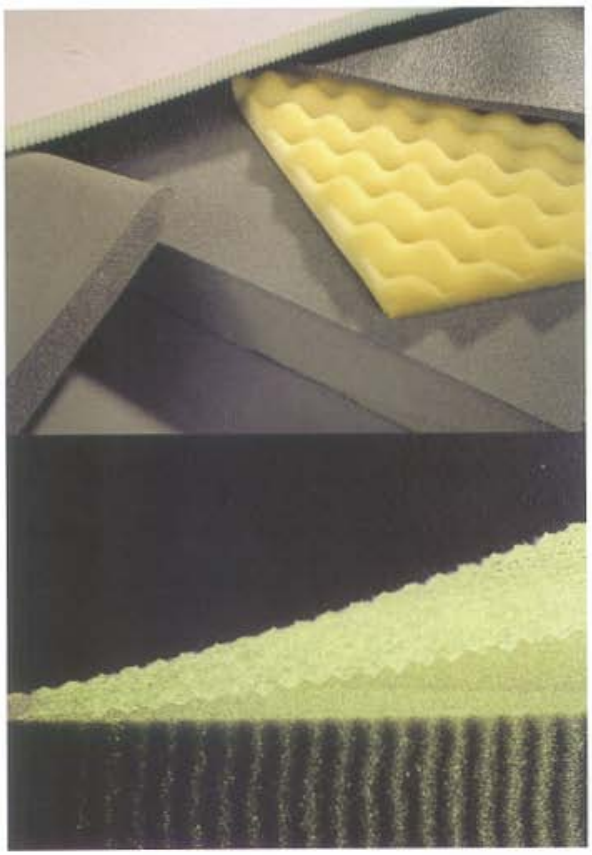
Immediately after the glue has been applied the second substrate is pressed onto the first one.
The Polyurethane glue now cross-links by the moisture in the air. After about 8 hours the laminate is suitable for further processing, and after 24 hours the maximum adhesion is obtained
(this process is irreversible).

Klieverik spray laminator

Ecosafe

Environment friendly and economical.

For many years, flame bonding has been the most commonly used method of laminating with foam. As a substitute to this system Klieverik has developed the Ecosafe: an eco-friendly system which can be used to laminate any type of substrate. It is also an economically attractive alternative to, for instance, flame bonding systems.

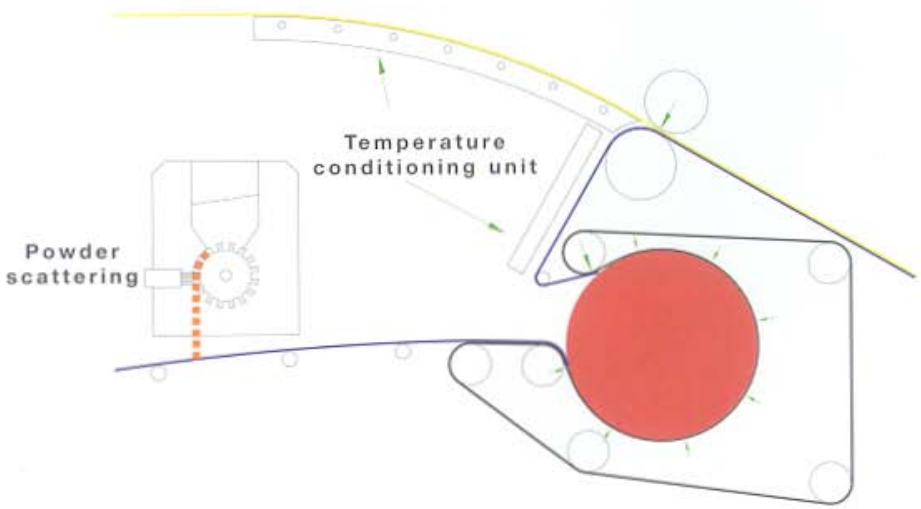


Unique properties

The ecosafe is a laminating concept that brings together a number of unique performance properties. This processor can operate in-line with just any thermoplastic glue application unit, e.g. (spray) coating and powder scattering. The speed of the Ecosafe can get as high as 100 metres per minute.

Another important technological advantage is that the supplied glue can be applied onto or into the substrate. This implies that the hand of the laminated materials can be controlled. It also means that rigid materials, such as expanded polyurethane, hardboard and even non-flexible panels can be processed on the Ecosafe without any problem. Processing of such materials does, of course, have consequences for the production speed.

In a nutshell, the Ecosafe produces laminates with a cost price up to 25% lower than that of products made on other systems. And as the Ecosafe is friendly to both environment and man, it is safe to say that Eco in Ecosafe stands for ecological as well as for economical.



Thermo (Belt) bonding technology

Klieverik beltbonders are used for the thermobonding of nonwovens.

The principle of a Klieverik beltbonder is always a heated cylinder with pressure rollers, while the cylinder is sometimes covered with a felt belt. Thanks to this heated drum, and by varying dwell time, temperature and pressure, the Klieverik beltbonder can be used in many cases instead of a high-pressure roller calender.

Klieverik has developed three types of beltbonders which can be used for a wide range of materials such as footwear, geotextiles, interlinings, household products, filters, surgical dressings and tissues.

fig. 1

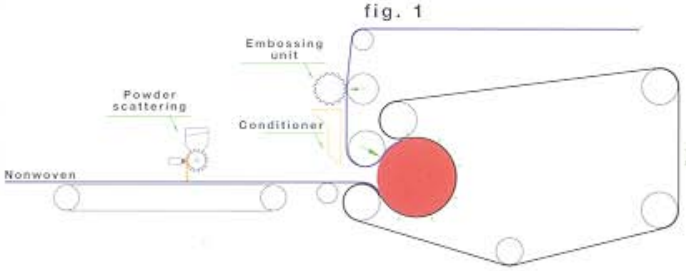
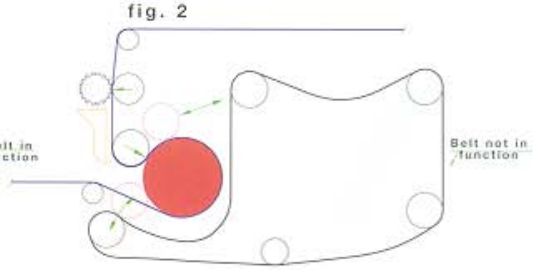
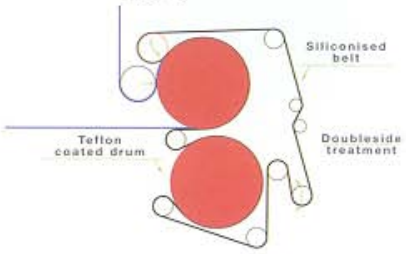


fig. 2



1. the beltbonder (fig. 1)
2. the beltbonder where the machine can be used with or without the belt. This belt is automatically removable within 15 minutes. (fig. 2)
3. the double drumbonder. This type of machine is used for simultaneous two-side thermo treatment and is very suitable for thick substrates. (fig. 3)

fig. 3



Klieverik delivers its beltbonder as stand alone units or as components of a complete production line. The main advantages of the systems are:

- working width up to 6 metres
- speed up to 100 m/min
- the drum is heated by means of thermo-oil with infinitely variable temperature up to 260 °C and an accuracy within ± 1 °C
- automatic control and guide rollers ensure accurate running of the calender's blanket and the web(s)
- pressure between blanket and drum for 0 to 160 g/cm2 is regulated by an adjustable roller but a pro vision for pressures of up to 20 kg/lin.cm can be incorporated if so desired where bending can be under 0,01 mm
- in-line embossing is possible
- calibration
- silicone blankets that are resistant to a temperature of 250 °C
- teflonised long life (300 micron) coating of heating drum

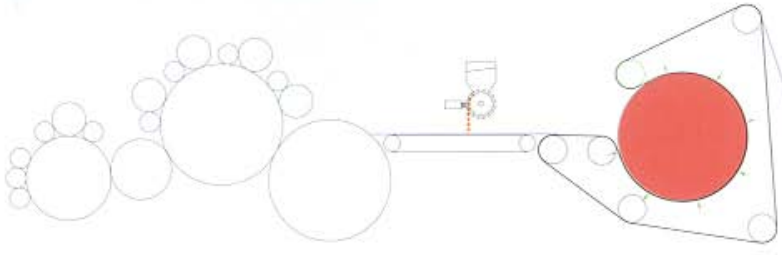
4,5 m. wide beltbonder under construction

Powderbonding

A Klieverik beltbonder in combination with a Klieverik powder scattering device is well suited for very soft, lightweight products with extra bulkiness and good drape.

Some examples:
- new generations of coverstock
- interlinings
- insulation and similar materials

This process also offers opportunities for binding different fibre layers or mixtures of synthetic and natural fibres as well as for simultaneous lamination of substrates to the fibre web to achieve the desired combination of properties.



Klieverik
OLDENZAAL - HOLLAND

Edisonstraat 8, 7575 AT Oldenzaal, Holland
Tel. +31 541 511155 Fax +31 541 520545
E-mail: info@klieverik.nl
www.klieverik.nl