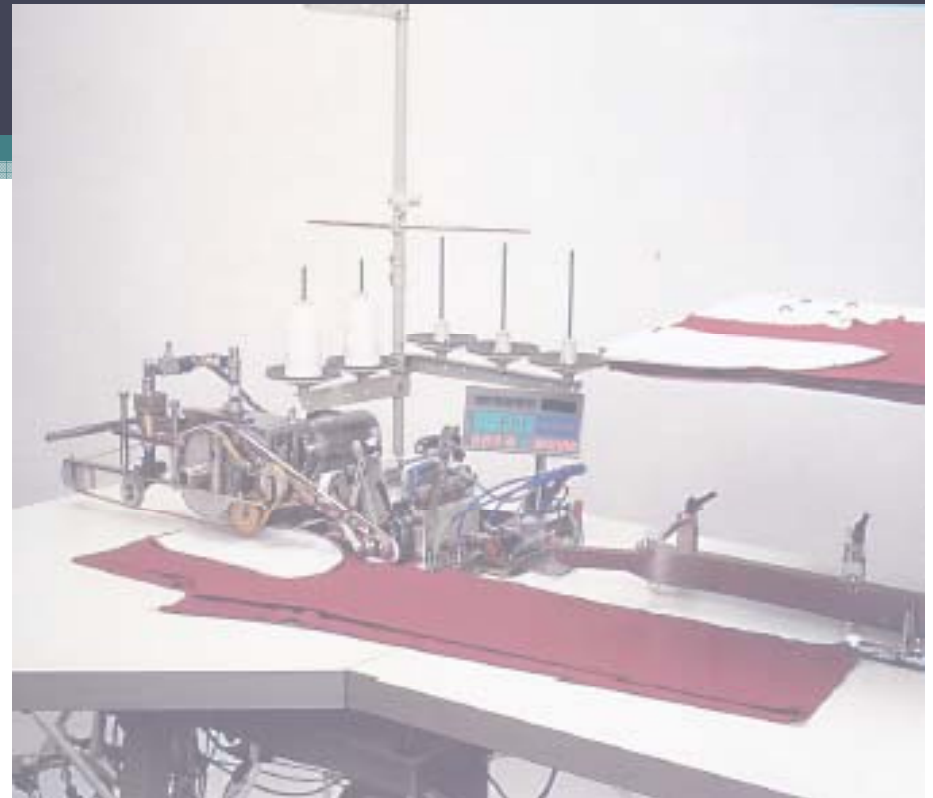


# Sewing Process Transport



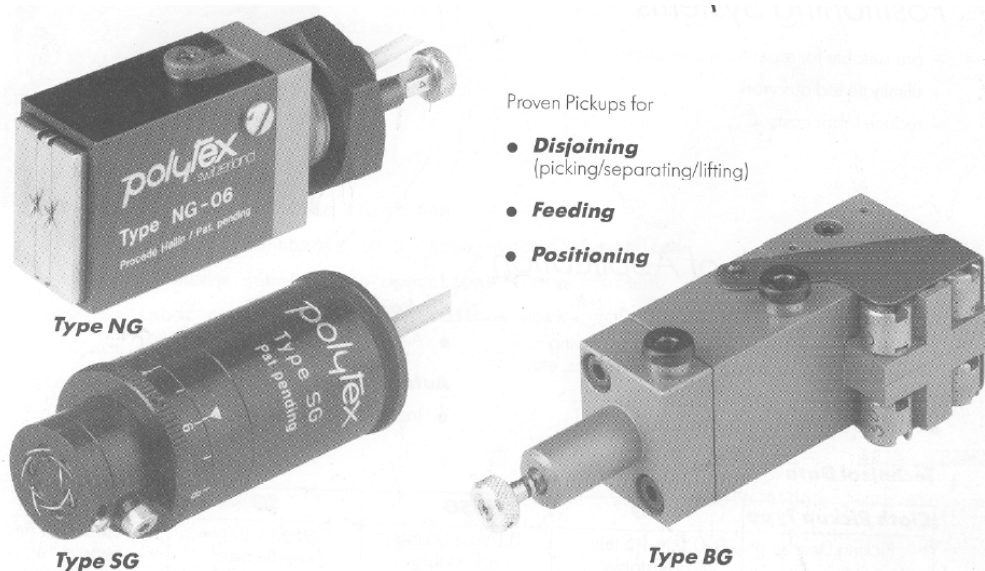
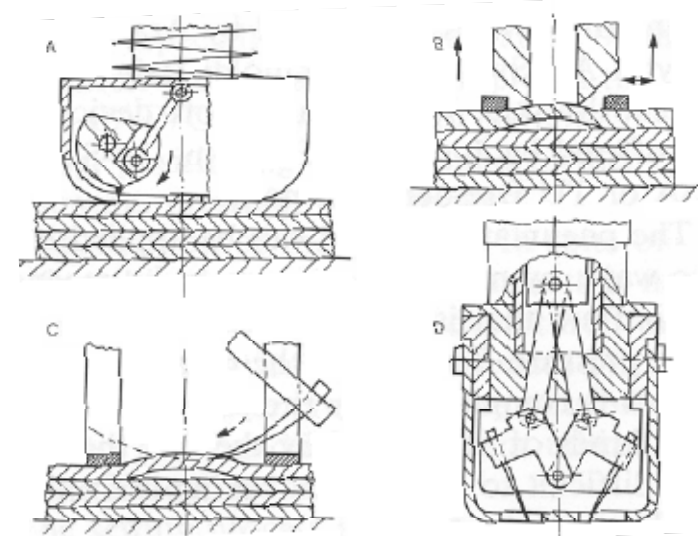
Doc. Ing. Antonín Havelka CSc.



# Picking Heads

Picking heads for textile fabrics can be divided to:

- mechanical – needles
- pneumatic – suction pods
- adhesive – adhesive belts
- electrostatic –
- friction – roller

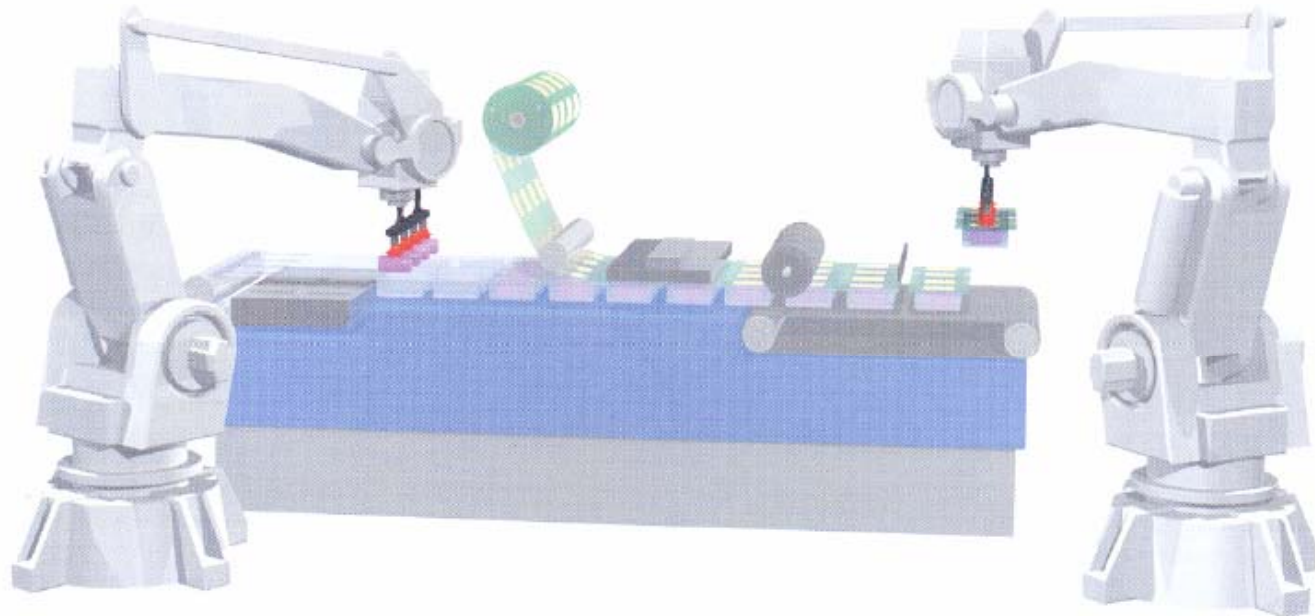


For real application the best and the most reliable material picking was realized within a mechanical picking gripper, so called “cat-claw”



We tested the reliability of cat-claws and for many fabrics it worked well.

For many textile fabrics it is possible to use a pneumatic pick up effector. The air permeability is not so important! The problem of the reliable picking is mainly a separating from a layer of textile fabrics.



# Pneumatic effectors-vacuum

- Very simple application
- Active effectors - it is possible to control the force
- Passive effectors - it has a steady force for handling
- Vacuum pumps- expensive
- Ejectors- active end effectors, simple control, single or group applications
- Fabrics, glass, metal sheets, wood table....
- Basic principle is flow of the pressurized air through the ejectors
- Bernoulli equation

## Possibility of improvement of logistic and transport system.

In clothing industry transport and material handling is a great deal of the whole technological process.

Scientific branch called *logistic* deals with optimization of transport and material handling, transport of energy and transport of information.

In production process there must be **material + energy + information at right time at right place**. Time is a very important factor.

At EU approximately 40% of workers deal with handling and transport of material in production. This time is, of course, non-production time.

Application of logistic rules is important for:

- Improving of productivity,
- Reduced - through put time,
- Allowing true quick response to market demands,
- Reducing work in process, production optimization
- Improving quality control.
- Storage, stock administration and commissioning are electronically controlled and monitored - big profit!!!

There are many transport systems( conveyors techniks ) and means in garment industry. (Eton, Schonenbergl, Gartner, Kannegieser, Durkopp....)

The one of the best hanging conveyors - Eton.

Eton is a flexible system and its results are remarkable, as this system improves productivity by 20 percent. Apx. 60-80% handling operations are in apparel industry.

# Eton



## *The idea*

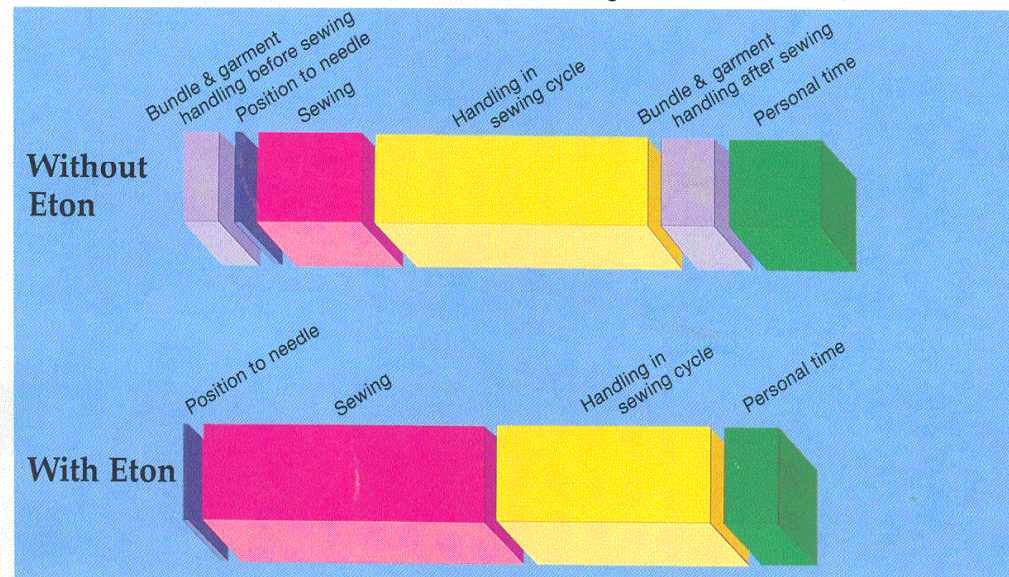
To increase productive time.



## *The solution*

The ideal handling offered by Eton 2002 chain.

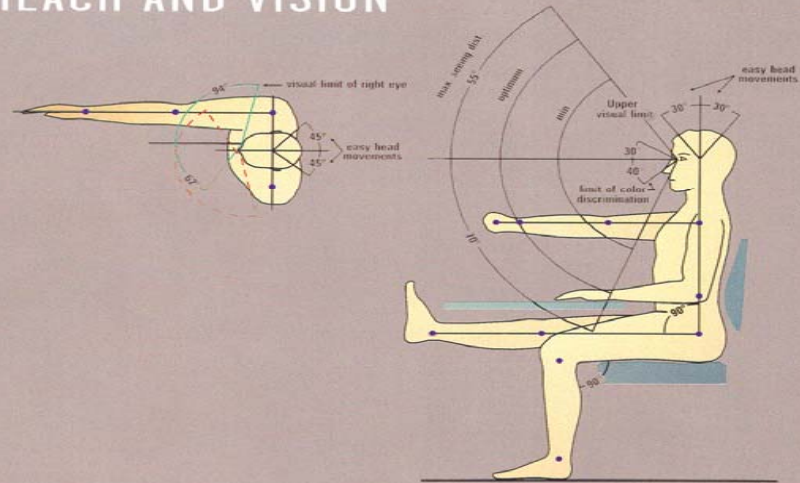
## Benefits of the Eton system



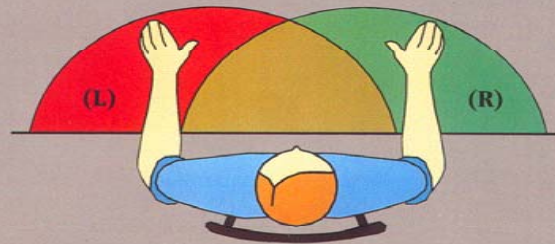


# Eton

## REACH AND VISION



At Eton Systems, we realize that ergonomics = economics. As a result, we consider the human design first and construct our systems and solutions to work well with normal human movement. Because we feel that technology should adapt to human beings, not the other way around.

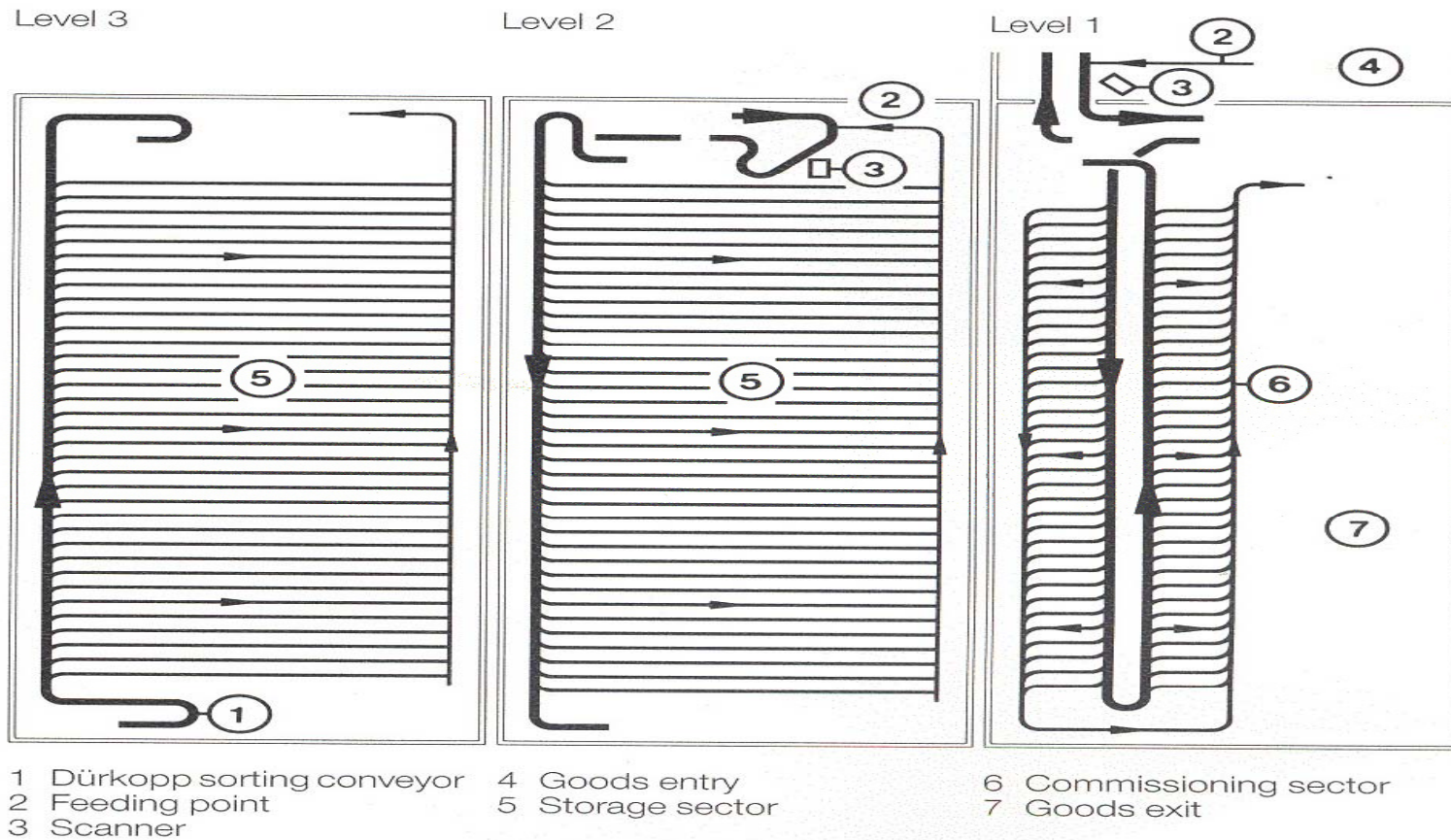


The Chain® allows operators to work within the optimal visual and reach areas. This has a positive impact on overall productivity and employee health and reduces operator fatigue.

## 1. PRESENT AND PROPOSED SITUATION

	Present situation	Proposed situation	Unit
<b>Product:</b>	Men's Shirt	Men's Shirt	
<b>Quantity per shift:</b>	1 056	1 400	Units
<b>Quantity per year:</b>	264 000	350 000	Units
<b>Total SAM per unit:</b>	23,19	22,20	SAM
<b>SAM per unit for assembly:</b>	10,44	9,45	SAM
<b>Efficiency:</b>	<u>75</u>	<u>90</u>	%
<b>Indirect labour</b>			
<b>Supervisor:</b>	1	1	Persons
<b>Service:</b>	4	2	Persons
<b>Quality:</b>	1	1	Persons
<b>Mechanic:</b>	1	1	Persons
<b>Minutes worked per shift:</b>	480	480	Minutes
<b>Shifts worked per day:</b>	1	1	Shift
<b>Days worked per year:</b>	250	250	Days
<b>Work in progress:</b>	7 500	714	Units
<b>Throughput time:</b>	14	0,5	Days

# Storage technology

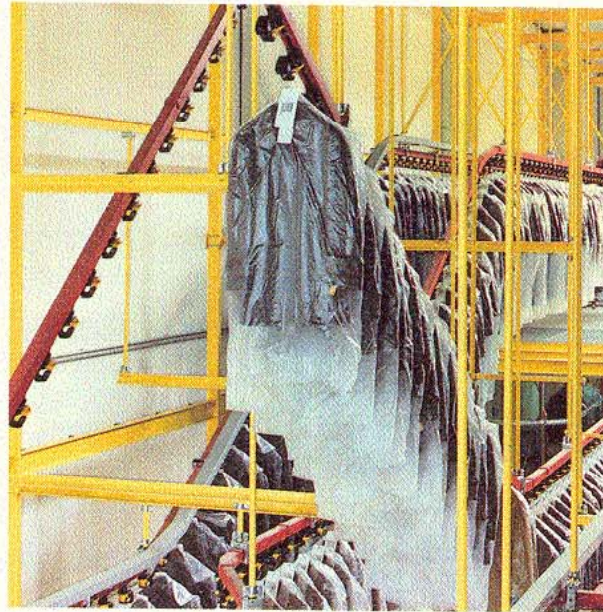


The Conclusion

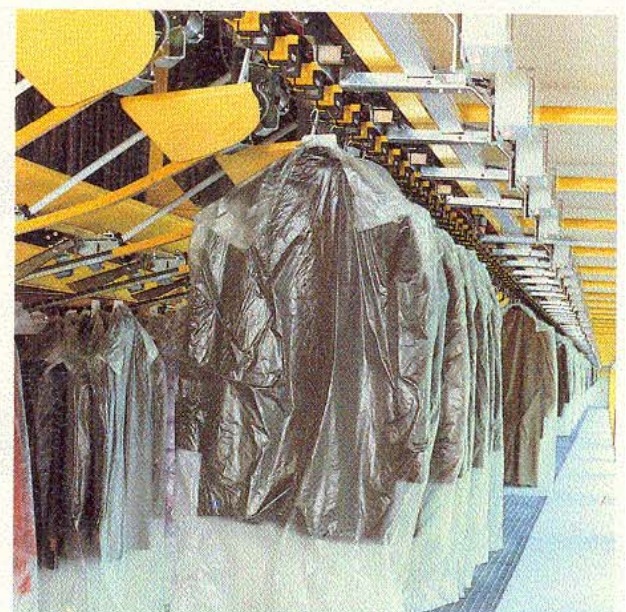
# Storage technology



A scanner reads the data on the tag.



The jacket is stored on a rack.



The racks are organized in a grid pattern.

# Storage technology



The material will be transported to the Wanderregal units by means of the DÜRKOPP overhead rail trolley system

## The problem

The byword was to create space. In particular, a solution had to be found for the storage area's space problem, which was made worse by girders. The production, storage and dispatch areas had to be integrated by a single transportation system. Greater overall surveyability and readier access to the goods were demanded. In addition, transportation areas had to be reduced to an absolute minimum.

## The solution

DÜRKOPP "Wanderregal" shelving unit fitted with 3 carrying bars to use available space to maximum effect. Transportation of goods from production area to Wanderregal shelving units by means of DÜRKOPP overhead rail trolley system, which can also be used to transport goods on to goods outward area. Concentration of handling areas at front of Wanderregal shelving units avoiding loss of space due to lanes running between shelving units and avoiding excessive movement by operator. DÜRKOPP electronic pre-selection guidance system guarantees quick access to goods and controlled on or off loading. The "shortest distance" device ensures shelving unit section arriving at operator's zone as quickly as possible. One operator can work on several units simultaneously. Slow gear used to continuously revolve unit to exhibit goods. The reduction in lighting, heating and air conditioning necessary for the Wanderregal operator's zone means considerable savings in both equipment and energy.

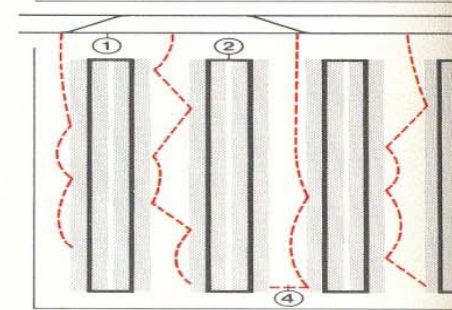
## The Conclusion:

Take a careful look at your own company's throughput. If, on closer inspection, you feel that your production, storage and dispatch areas could be improved, then take that first important and logical step towards the solution now: Please write to us at this address: Dürkoppwerke GmbH, Postfach 6, D-4800 Bielefeld 1, ☎ 0521/556-01, Tx 932400-60 dw d, Telefax 0521/556 1577

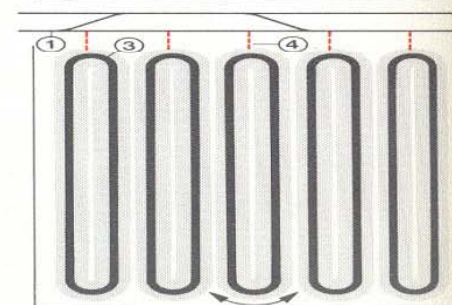


Low noise friction drive unit

## Conventional storage system



## DÜRKOPP-Wanderregal storage system



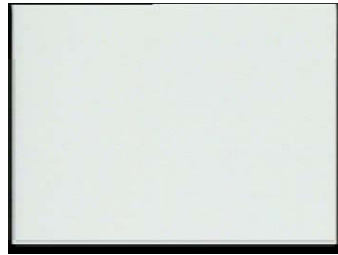
- 1 DÜRKOPP overhead rail trolley system
- 2 Conventional storage system
- 3 Wanderregal storage system
- 4 Area covered by operator during loading/unloading

 **DÜRKOPP**  
FÖRDERTECHNIK

...und auf einmal läuft's!



**A broader perspective**



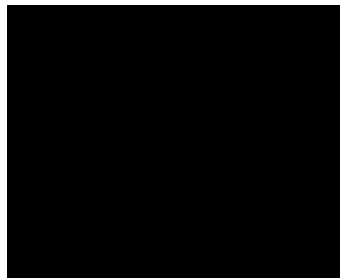
**Concept and applications**



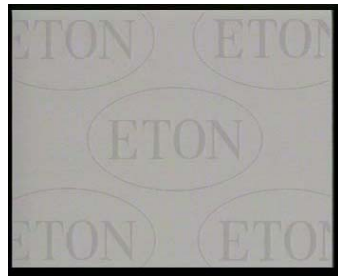
**Jeans production**



**Polo-shirt production**



**Raising creativity**



**Testimonials**



**Jacket production**



**Shirt production**



**Trouser production**



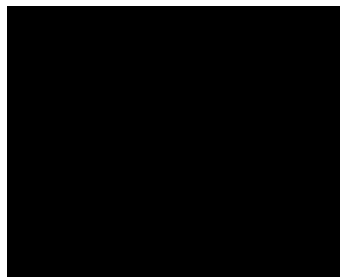
**Quilt production**



**Curtain production**



**Office furniture production**



**Integrating automation**



**4000 Syncroload**