Higher performance and lower energy consumption.

JENSEN CleanTech

the steamless laundry concept.

JENSEN®


Blue and white
is also green...

Clean laundry with clean energy

Environmental responsibility

JENSEN-GROUP takes sustainability and environmental protection seriously and is pursuing a continuous energy strategy in order to rise to the challenges of the future, such as climate change and the finiteness of fossil fuels. The objective of the JENSEN CleanTech concept is to increase the efficiency of primary energy and to ensure it is consumed more economically with gas-heated laundry equipment. In its development of laundry machines, the JENSEN-GROUP focuses on high performance with as little energy and fresh water input as possible. As well as the use of direct gas operation, this involves integrating water- and energy recovery systems into machines. However, the JENSEN-GROUP does not just confine itself to reducing CO_2 emissions and energy and water consumption in its machines. The JENSEN-GROUP also handles valuable resources and energy sources carefully in production.

Advantages of direct heating with gas:

- Higher thermal efficiency
- Higher performance
- Reduced CO_2 emissions
- Direct energy availability without losses
- No central steam production required
  › no steam boiler, no water preparation, no condensate piping etc.

Advantages of JENSEN CleanTech

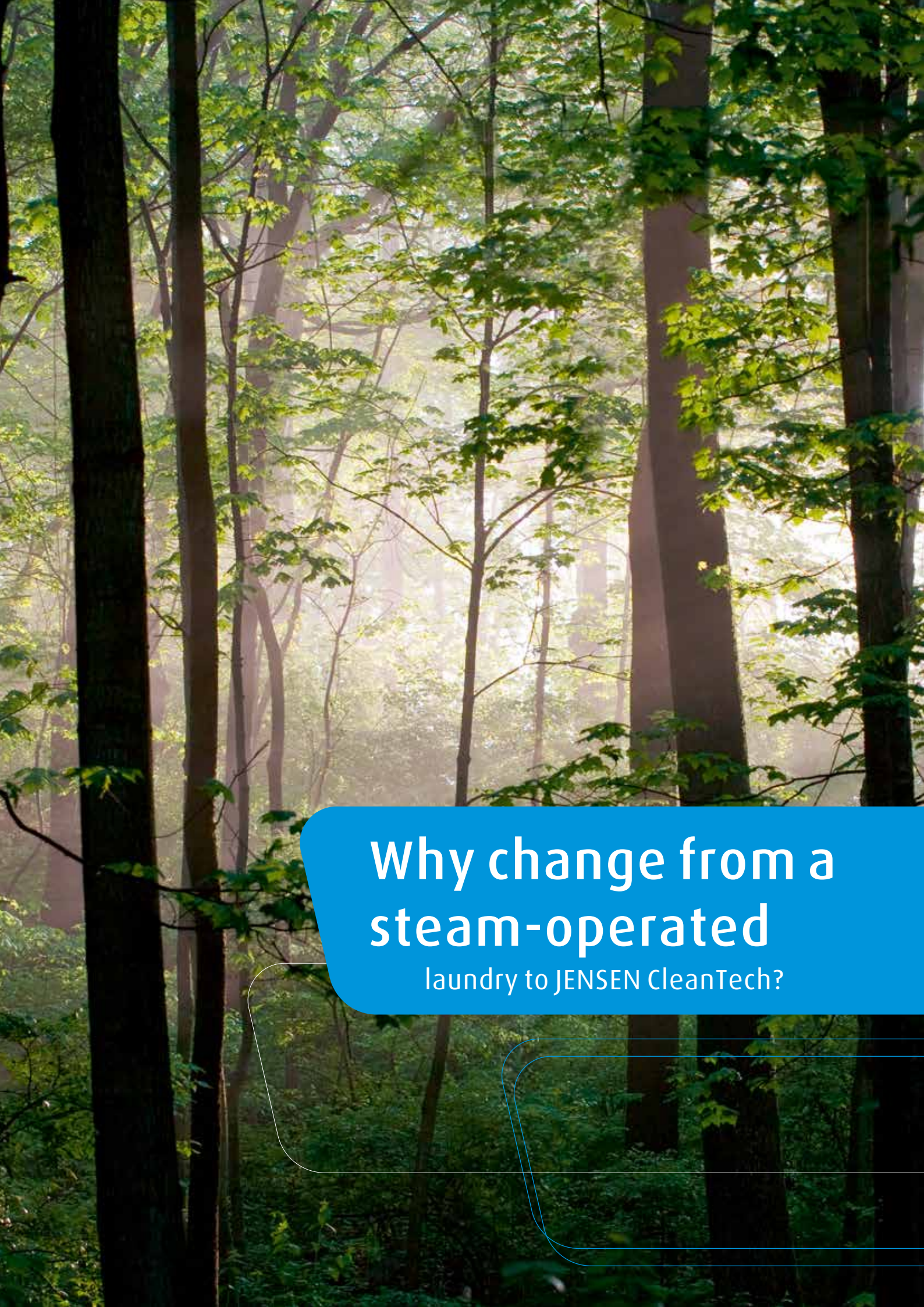
Higher thermal efficiency

- No boiler house or steam boiler
- No steam boiler maintenance
- No boiler water treatment
- No steam or condensate piping
- No energy losses due to radiation, plumes, blow down and hot emissions

Higher machine performance

- Higher operating temperatures
- Lower drying and finishing cycle times lead to higher productivity
- Space savings
- Faster and easier installation & start-up

JENSEN CleanTech consists of components with directly gas-heated equipment, which together form a complete laundry concept. The steam boiler and all associated equipment for water treatment and steam supply are no longer necessary.



Why change from a steam-operated

laundry to JENSEN CleanTech?

Two comparisons of primary energy consumption in a new, modern steam-operated laundry with JENSEN CleanTech:

Example 1

Flatwork processing

3000 kg/h

Thermal energy consumption	**Steam-operated laundry**	**JENSEN CleanTech**
Wash process (continuous batch washer)	0.3 kWh/kg	**0.2 kWh/kg**
Full drying process (50% towels)	0.6 kWh/kg*	**0.3 kWh/kg****
Finishing process (50% small/large pieces)	0.5 kWh/kg	**0.5 kWh/kg**
Thermal efficiency	62%***	**97%**
Availability	95%	**95%**
Primary energy consumption	1.4 kWh/kg	**0.6 kWh/kg**
Energy cost savings		**-57%**
Savings with 2000 operating hours per year		**- 181,000 euro****

The JENSEN CleanTech concept enables energy cost savings of up to 57% per year in comparison to a new, state-of-the-art steam-operated flatwork processing laundry. When changing from an older steam-operated laundry with significantly higher energy consumption to a JENSEN CleanTech, the savings would be much higher. This example uses a specific laundry. The figures may change depending on the different requirements of each laundry business.

* Moisture retention: 45%

** Moisture retention: 35%

*** The thermal efficiency of the steam boiler and the steam piping system consists of:
- 82% steam boiler efficiency (see „Action Energy“report by Carbon Trust UK 2003)
- -20% losses (water treatment, blow down, steam and condensate piping)

**** Assumed energy price: 0.04 euro/kWh

Example 2

Garment processing

800 kg/h

Thermal energy consumption	**Steam-operated laundry**	**JENSEN CleanTech**
Wash process (continuous batch washer)	0.3 kWh/kg	**0.2 kWh/kg**
Pre-drying process	0.3 kWh/kg*	**0.2 kWh/kg***
Finishing process	0.4 kWh/kg**	**0.3 kWh/kg****
Thermal efficiency	62%***	**97%**
Availability	95%	**95%**
Primary energy consumption	1.6 kWh/kg	**0.9 kWh/kg**
Energy cost savings		**-44%**
Savings with 2000 operating hours per year		**- 44,000 euro****

The JENSEN CleanTech concept energy enables cost savings of up to 44% per year in comparison to a new, state-of-the-art steam-operated garment processing laundry. When changing from an older steam-operated laundry with significantly higher energy consumption to a JENSEN CleanTech, the savings would be much higher. This example uses a specific laundry. The figures may change depending on the different requirements of each laundry business.

* Pre-drying from 40% moisture retention to 20%

** Moisture retention: 20%

*** The thermal efficiency of the steam boiler and the steam piping system consists of:
- 82% steam boiler efficiency (see „Action Energy“report by Carbon Trust UK 2003)
- -20% losses (water treatment, blow down, steam and condensate piping)

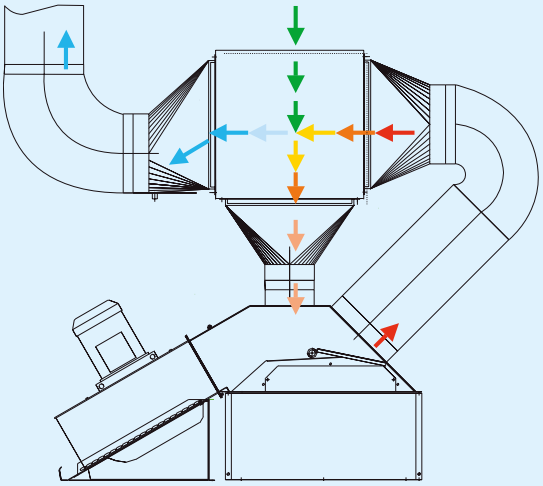
**** Assumed energy price: 0.04 euro/kWh

The steam-free
Senking Universal Gas

Senking Universal Gas

The steam-free continuous batch washer is equipped with the gas-operated heating unit, which heats up the process water in the compartments where steam used to be injected. This way, the same amount of energy is supplied to heat the process water up to the required temperature. The integrated modular tube-in-tube heat exchanger Spiraliser reduces the energy consumption of the continuous batch washer by about 30%. Depending on the process temperature, up to 0.15 kWh/kg energy can be saved with the tube-in-tube heat exchanger. Detergent suppliers recommend operating the continuous batch washer at lower temperatures. Experts claim that by washing at approximately 60°C to 65°C using the special low-temperature process, the energy consumption can be reduced by 0.1 kWh/kg compared with conventional wash programs that operate at 85°C. Maximum energy savings can therefore be gained by combining a low-temperature process with the integrated tube-in-tube heat exchanger in the Senking Universal Gas. We recommend calculating the total operating cost savings on a case-by-case basis, due to the number of different factors that influence the process.

Gas heated dryers
DT 120 with RecoCross



Airflow in RecoCross heat exchanger

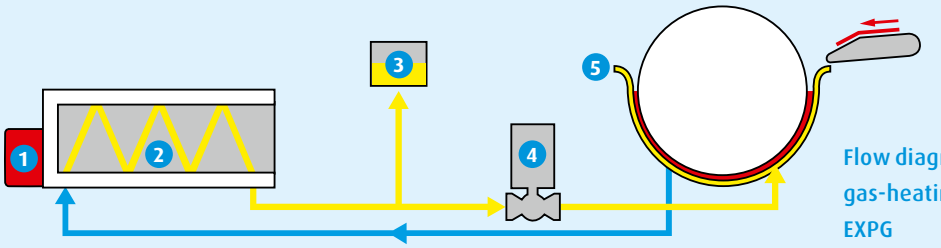
- Hot saturated dryer exhaust air
- Cool incoming air
- Pre-heated incoming air
- Cooled outgoing air

Senking DT 60-240 Gas

The gas-operated Senking dryer can achieve the most efficient performance with Infrared Control and the RecoCross heat exchanger. These two options enable energy consumption during the drying process to be reduced by up to 35%, i.e. up to 0.2 kWh/kg during the full drying process with towels, for example. The energy consumption of the dryer can be further reduced by about 20% when a Senking SEP 36-90 HP or SHP press is used for draining. Due to the high pressure (up to 57 bar), moisture retention of 35% can be achieved in comparison to 45% with a standard press. When operating with the Senking high-pressure press, the RecoCross heat exchanger and Infrared Control, a maximum energy reduction of 55% can be achieved in comparison to operation with a conventional steam-operated dryer and a standard press connected upstream.

Jenroll EXPG with 2 rollers, 1200 mm diameter each.

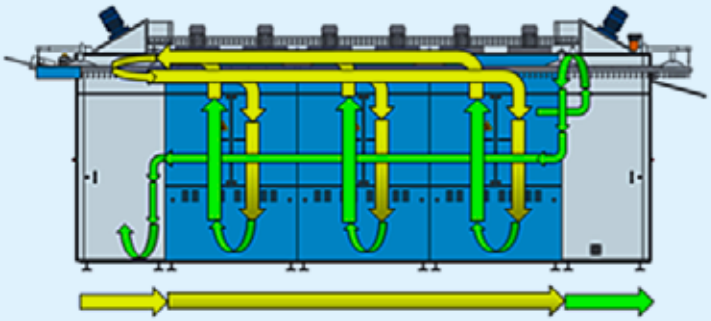
1 Burner
2 Heat exchanger
3 Expansion tank
4 Pump
5 Chest



Flow diagram of direct gas-heating of Jenroll EXPG

Jenroll EXPG

The Jenroll EXPG ironer combines a number of the latest technologies such as a flexible chest using oil as its heating medium with an integrated gas-fired burner and heat exchanger. By using chests made from high-grade carbon steel, the distribution of energy to the linen is at its optimum as heat conduction is 4 times higher than that of stainless steel, for example. Transfer of heat via the oil medium is up to 40% higher than that of steam, as oil can be heated up to 230°C, whereas only 190°C (12 bar) can be achieved with a traditional steam installation. The higher temperature increases drying capacity, especially when running heavy sheets and duvet covers. Due to the higher temperature the output of the Jenroll EXPG ironer can be increased by up to 25% compared to a steam operated ironer with flexible chests. Furthermore the Jenroll EXPG is a space saving solution because the capacity of a 2 roll Jenroll EXPG equals that of a 3 roll steamheated ironer incorporating a fixed chest.



Energy-optimising air recirculation in the new Jenform Omega Pro Gas.

Jenform Omega Pro Gas

The exchange of air is essential for optimum performance of the tunnel finisher. Saturated air must be discharged and replaced by unsaturated air. Accor-dingly, the Jenform Omega Pro Gas features not only individual temperature control but also separately adjustable inlet and exhaust air parameters per drying zone. A separately adjustable gas burner is integrated in the centre for each drying chamber and injects the heat into the circulated air through a specially developed distribution tube that points at a high-temperature baffle for ideal heat distribution.

Energy consumption can be reduced by up to 25% with the Jenform Omega Pro Gas in comparison to the Omega Plus. This is realised by recirculating air from the drying zones and the outlet zone into the inlet zone. Incoming garments are heated up in the inlet zone using the recirculated hot air. Additionally, the saturated air (exhaust air) is reduced to a minimum and is now dis-charged at the point where the air has the highest degree of water saturation, i.e. in or after the first drying zone. Instead of two exhaust ventilators to discharge the saturated air, only one was integrated into the Jenform Omega Pro; this ventilator discharges the saturated air over the roof. A further ventilator recircu-lates the hot exhaust air from the drying zones and the outlet back into the inlet zone.

Think about the future
with vision and respect.

JENSEN CleanTech

The aim of the JENSEN GROUP is to supply heavy-duty laundries worldwide with sustainable, economical and environmentally friendly laundry machines and systems in order to help them provide high-quality textile services.

JENSEN®

For more information, go to:
www.jensen-group.com

For more entertainment, go to:
www.youtube.com/jensengroupcom