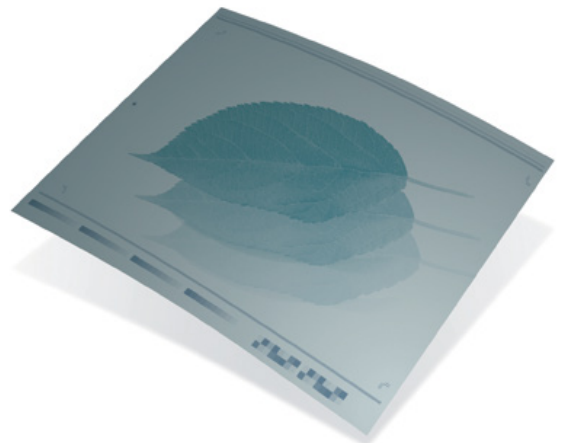




Plate manufacturing in Tilburg

A guide to Fujifilm's state-of-the-art plate manufacturing facility in The Netherlands





Our plate philosophy

Guaranteeing consistent high quality plates and uninterrupted supply requires long-term investment in sophisticated manufacturing techniques and efficient logistics. Fujifilm has invested continuously in its plate supply infrastructure over many years so that printers can benefit from consistent high quality plates, day-in, day-out.

Our aim is to deliver high quality plates that make a difference to your business in the following ways:

- ▶ Are consistently of the highest quality
- ▶ Use less chemistry and water
- ▶ Require less processor maintenance
- ▶ Allow you to achieve maximum productivity
- ▶ Optimise ink/water balance on press
- ▶ Help you reduce your environmental impact

A choice of plates and plate technologies

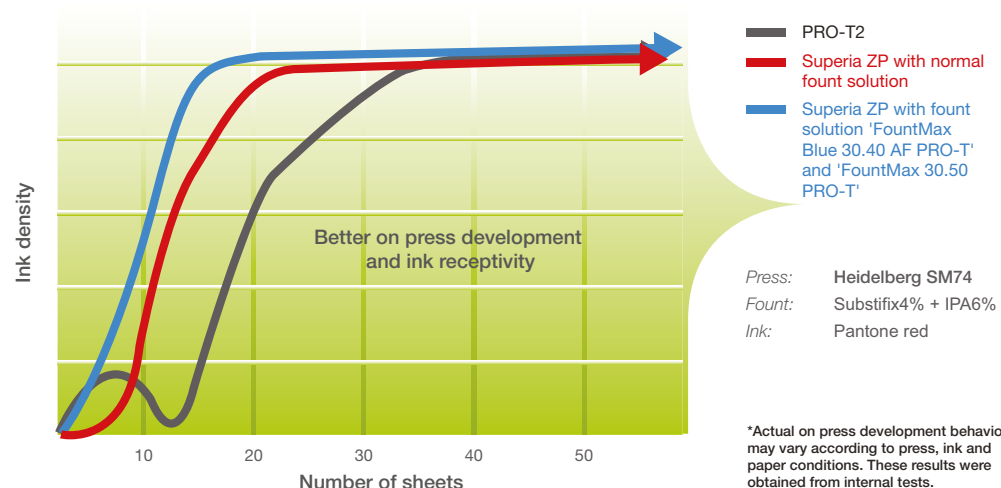
Fujifilm's philosophy is also to offer a choice of plate technologies to match particular requirements. Our industry-leading Superia range of CTP plates includes both thermal and violet-sensitive plates, in processless, low chemistry or processed variants, for commercial and newspaper printing applications, all with the same high quality and productivity benefits. Whatever the CTP application, there's a plate that's designed to suit.

Optimised plates and pressroom solutions

In addition to manufacturing high quality plates, we go one step further. The way plates perform on-press with the relevant pressroom products is critical to achieving optimum printing results. Because Fujifilm is one of the largest suppliers of pressroom solutions in the industry, we have been able to optimise the formulation of our pressroom products to match our plates. By using Fujifilm plates with our pressroom solutions, you can be guaranteed of the very best performance and print quality.

On-press development comparison: Superia ZP and PRESSMAX

Superia ZP works with any fount solution, but its performance can be further improved by using a dedicated fount from Fujifilm's PRESSMAX range. This is because the formulation of the fount has been carefully tailored to optimise the softening of the non-image area of the plate and therefore maximise the on-press development process.



The technologies that make Fujifilm plates unique

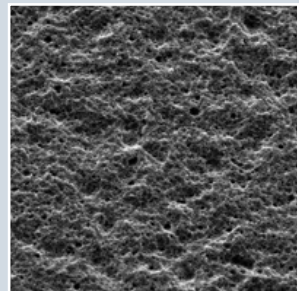
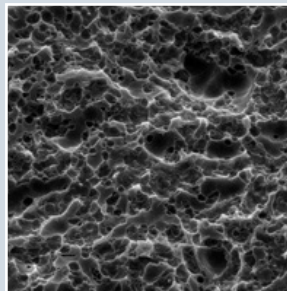
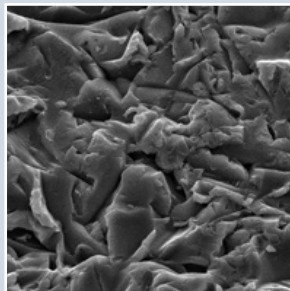
Fujifilm has been evolving the techniques and technologies used in the design and manufacture of printing plates for many years. A major milestone in this history was the introduction of one of the most successful ranges of printing plates in the world, the Fujifilm Brillia CTP plate range, probably used by more printers around the world than any other range.

The range was supplemented in 2006 by the introduction of High Definition plates, representing the ultimate in terms of advanced plate design. The result of over a decade's research and development into multi-graining and coating technologies, High Definition plates raise the bar in terms of quality and productivity, and are the benchmark by which other plates are judged. They feature new micro-graining and emulsion technologies that allow wider imaging and processing latitudes, helping to achieve higher quality print more easily.

The following sections highlight the key technologies and characteristics of Fujifilm plates.

Multi-graining

Multi-graining is the process by which the surface of the aluminium is physically and chemically treated so that very fine pores and micropores are created. Fujifilm has fine-tuned the techniques used to achieve this over a long period of time to produce a unique MultiGrain™ manufacturing process.

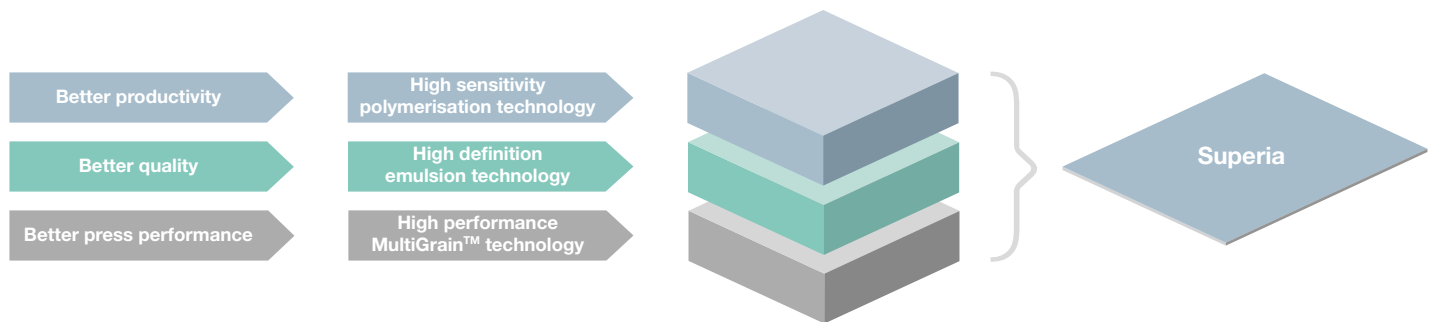


The above images highlight the different stages of the micro-graining process which together deliver the following benefits:

- ▶ **Superb tonal reproduction** Larger primary grains are receptive to water for superb tonal reproduction.
- ▶ **Long runs and better scum resistance** Smaller honeycomb grains deliver longer print runs and better scum resistance.
- ▶ **Optimum ink/water balance** Micropores further enhance surface durability for optimum ink/water balance.

Coatings

Superia plates have a number of coating layers, each designed to optimise the overall performance of the plate. The plates vary in their construction, with different coating layers depending on the specification of the plate, but the diagram below highlights the basic structure:

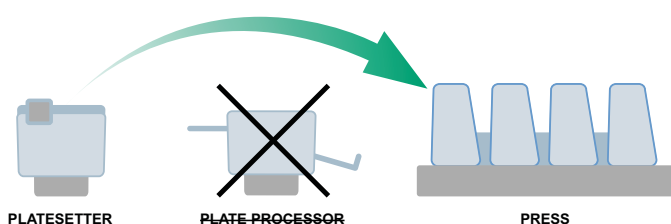


Sustainable investments

Significant R&D resources have also been directed into the development of printing plates that use the minimum amount of chemistry and therefore have minimal impact on the environment. This has resulted in the introduction of two main types of plate, processless and low chemistry, both setting new standards in commercial and newspaper printing applications.

Processless

Processless plate production represents the simplest way to make plates. Once the plate has been imaged in a platesetter, it is mounted directly on the press where the removal of the plate coating has been cleverly integrated into the start-up of the press. There is complete elimination of the processor, associated chemistry, energy required to power the processor, water and waste from plate production.



Low chemistry

Thanks to state-of-the-art plates, chemistry and processor software, Fujifilm low chemistry plate solutions can achieve the industry's lowest chemistry use figures (with cleaner working chemistry) and huge reductions in water use and maintenance time.

This graphic highlights the amount of chemistry used by different plate solutions. The calculations assume 10,000 B1 plates are produced over a 1-3 month period.

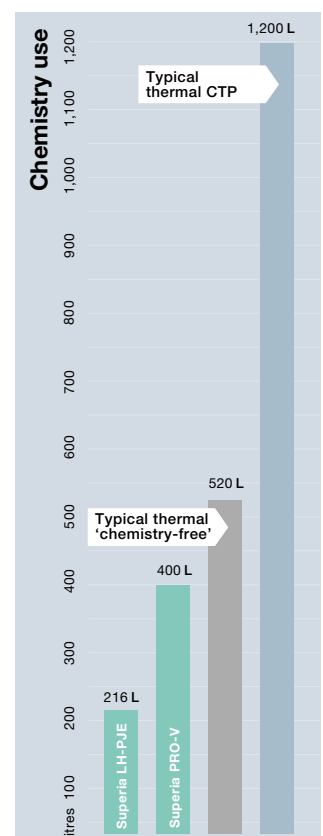


Plate manufacturing in Tilburg

The production site in Tilburg manufactures a number of Fujifilm products, including photo paper for the consumer imaging market, but for a number of years the primary product manufactured at the site has been printing plates. The first production line designed for the manufacture of printing plates (PS-6) was opened in 1991, the second (PS-8) in 2006, and with the completion of the latest plate line (PS-10) in 2011, the facility is now one of the largest plate production sites in the world.

- 1982** Fujifilm Tilburg opened
- 1991** Opening of research labs, first plate line, PS-6 and distribution centre
- 1993** ISO 9002 Certificate awarded, Quality; now ISO 9001
- 1993** First plate line (PS-6) expanded
- 1997** ISO 14001 Certificate awarded (Environmental Management System)
- 2004** First plate line (PS-6) expanded again
- 2006** Opening of second CTP plate line, PS-8
- 2011** Opening of third CTP plate line, PS-10

Number of employees 800
Year of creation 1982
Surface area 63 hectares

Facilities

- ▶ Production line for photo paper
- ▶ Three production lines for offset plates
- ▶ Tilburg Research Laboratory
- ▶ Testing facility in former film roll factory
- ▶ Large distribution centre

Market coverage

- ▶ Europe
- ▶ Africa
- ▶ Middle East



Plate manufacturing in Tilburg

- 1 Distribution centre, 1991
- 4 Tilburg research laboratory
- 7 PS-6, 1991
- 2 P1 Colour paper, 1984
- 5 Offices
- 8 PS-8, 2006
- 3 Utilities
- 6 Test facility
- 9 PS-10, 2011

Consistent high quality plates delivered day-in, day-out

High quality printing plates are an essential component of offset print production. However, quality means nothing if it is not achieved consistently. Fujifilm achieves consistent high quality plate production thanks to the meticulous attention to detail and level of automation throughout production, in conjunction with a rigorous quality and inspection process.

Manufacturing is so advanced on all three plate lines that every stage up until the final process of packing is automated (even the delivery to and from the warehouse of each 7 tonne coil of aluminium is automated). Ultimately, each plate that is manufactured is scanned for defects, with any plate exhibiting a defect immediately scrapped.

New PS-10 plate line

The new PS-10 plate line opened in December 2011 is the most sophisticated plate manufacturing line in the world. It is designed not only to manufacture processed and low chemistry plates, but also Fujifilm's most advanced printing plate ever, Superia ZP.



Construction of the PS-10 plate line during 2011

Automated manufacturing process

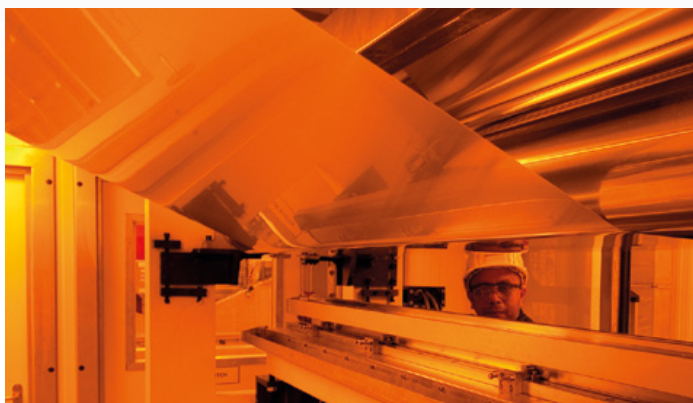
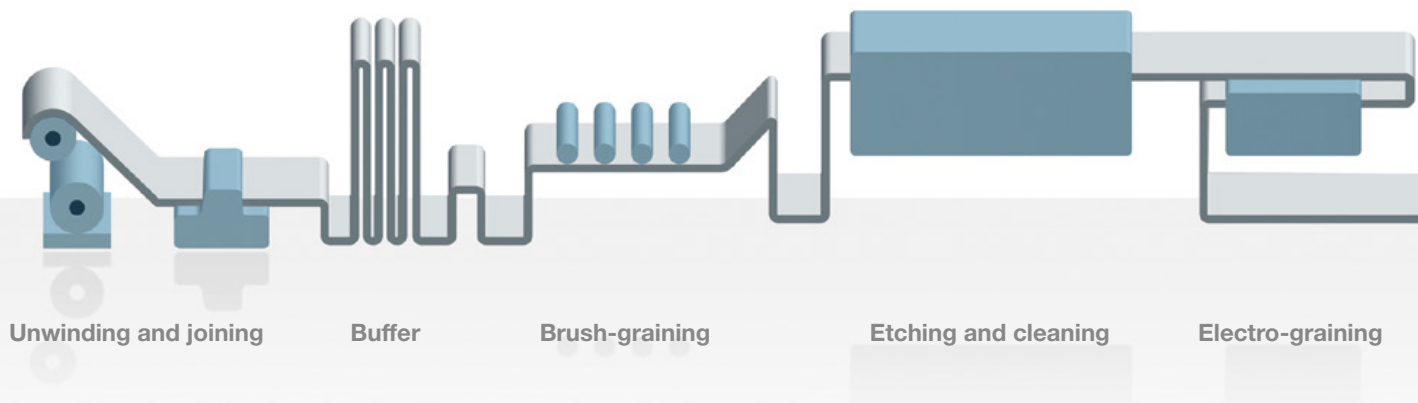
The manufacture of printing plates at Tilburg is an automated, 24/7 process which involves a number of complex stages. The entire process is continuous, with the diagram below highlighting the key stages.



Aluminium coil store holds over 400 coils of premium grade aluminium at any one time



Unwinding and joining process ensures consistent 24/7 operation



A multi-layer light sensitive coating is applied to the grained aluminium



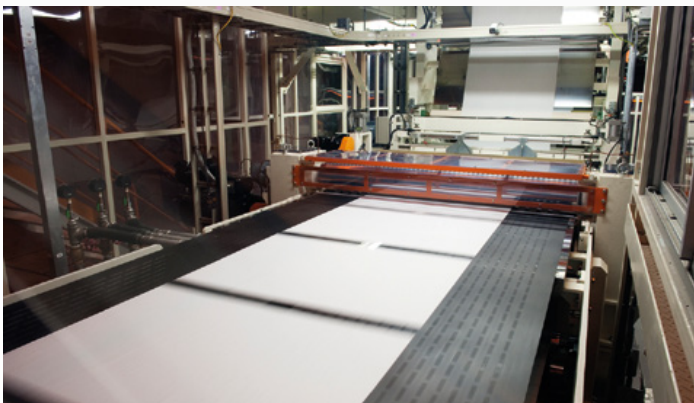
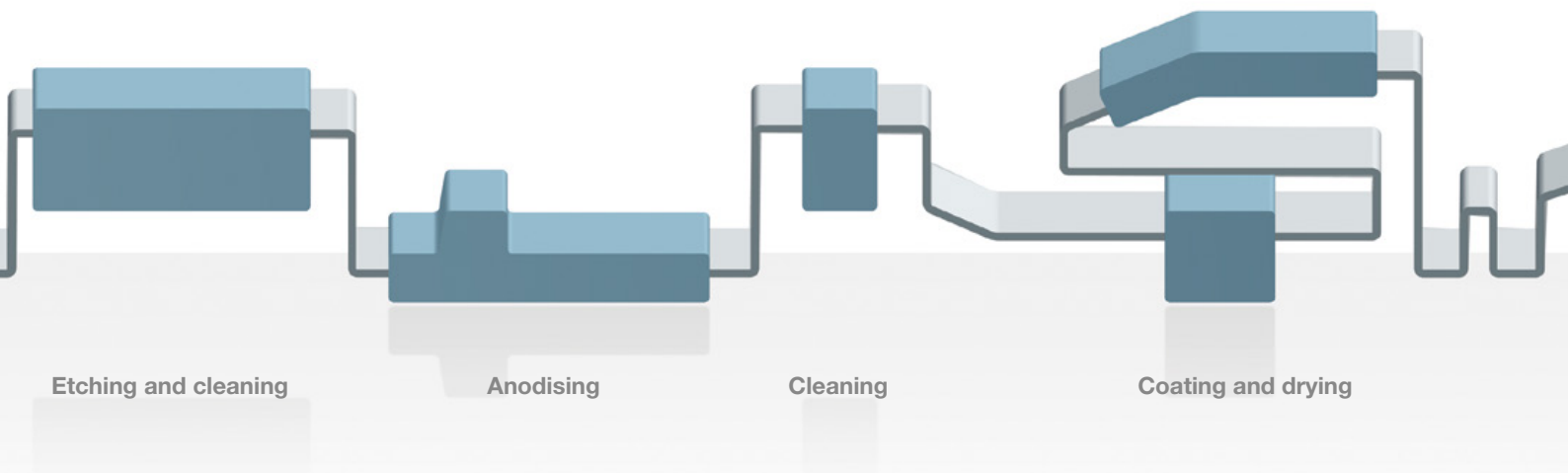
The coated layers are dried prior to automated laser inspection



Buffer used to ensure continuous operation during joining process



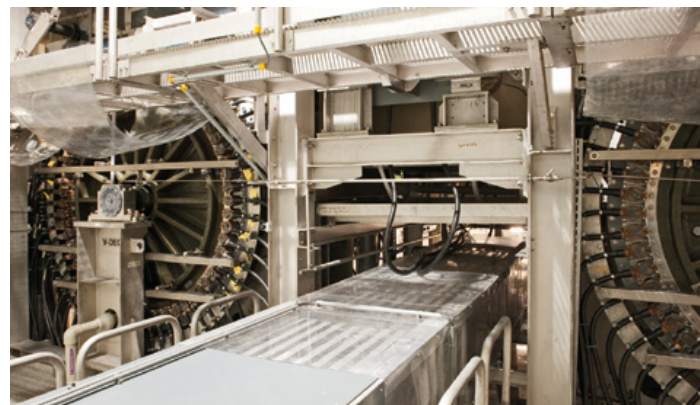
Brush-graining is the first stage of the micro-graining process



Interleaf paper is placed on top of the coated aluminium web just prior to cutting, protecting the plates before being packed



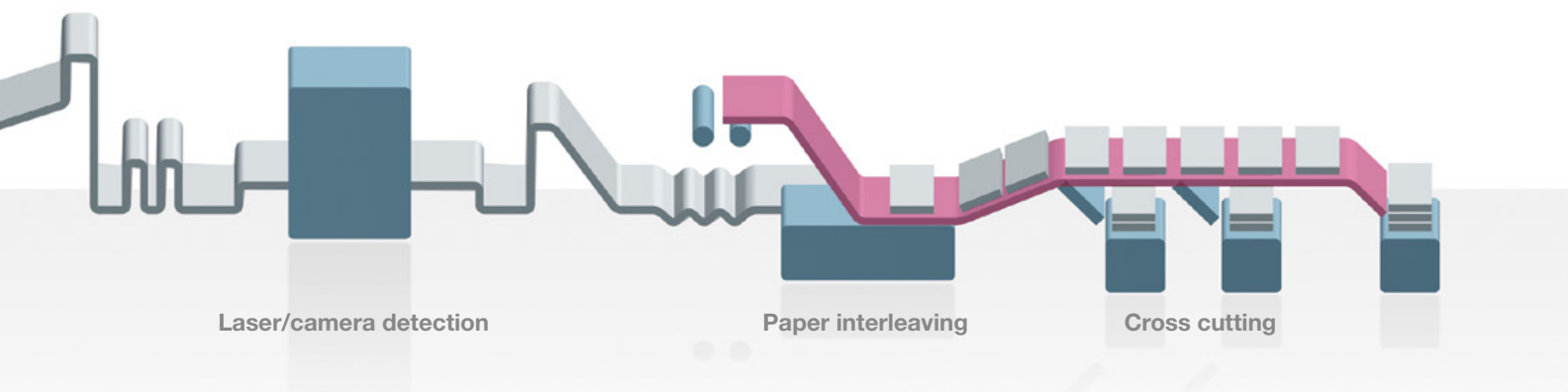
Process inspection represents the final check after the individual plates are cut



Electro-graining, the second stage, roughens the surface of the aluminium to improve water receptivity



Anodising is the third stage of the micro-graining process



The plates are packed ready for shipping



Once packed, plates are transferred to the distribution centre



PS-10 plate line, opened in December 2011

Sustainable production



Fujifilm prides itself on its investment in sustainability, and the Tilburg manufacturing site is a prime example. The ability to manufacture plates locally in itself helps to reduce the carbon footprint of plate production, as it reduces the energy consumed in the transportation process. This is one of the reasons why Fujifilm has invested heavily in the expansion of the Tilburg production site. The site itself achieved ISO 14001 certification in 1997, and has been implementing sustainability improvements every year. The ultimate aim of the site is to be 100% CO₂ neutral in everything it does, and this objective has resulted in a number of significant recent investments.

New wind farm

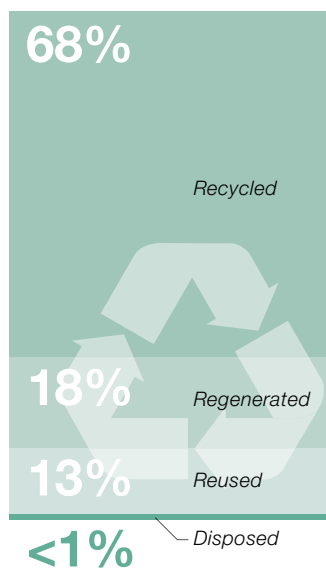
In October 2011, the installation of five wind turbines was completed. The five turbines, developed in partnership with ENECO and having a combined capacity of 10MW, are capable of producing the equivalent amount of energy that 6,000 households use in one year, and are set to supply approximately 20% of the total energy used by the 63 hectare Tilburg site as a whole. This represents a 12,000 tonne reduction in CO₂ emissions per year.

Three of the turbines are 95 metres high, with the maximum tip height (tower plus blade) of 140 metres. The other two wind turbines are 15 metres lower, in connection with the approach path to the local Gilze-Rijen airport. Partner company ENECO feeds the electricity generated by the wind turbines directly into the Fujifilm Tilburg electricity supply.



Co-generative Thermal Oxidiser

Over 99% of waste produced at Tilburg is recycled, regenerated or reused.



Co-generative Thermal Oxidiser (CTO)

Other investments include a co-generative thermal oxidiser which has been built in conjunction with the new PS-10 plate line. This is essentially a large afterburner, which uses gases and waste solvents produced as a by-product of the plate manufacturing process for fuel. The steam which is generated by the CTO is converted into electricity and hot water in a Combined Heat Power Plant. Low pressure steam can be used in summer to make chilled water. The yield of these processes is >92%, and will help to reduce CO₂ emissions by a further 5,500 tonnes per year.

Water recycling facility

The company has also installed a water recycling facility, consisting of two large water purification units, on site. However, Fujifilm is also investigating the possibility of cleaning some of the waste water the site generates for reuse within the production process, as well as the option of constructing a complete waste water treatment system on site, in collaboration with three neighbouring companies.

Waste dumping

With these and other sustainability measures in place, Fujifilm Tilburg estimates that it currently reuses 13% of the waste it produces, recycles 68%, regenerates 18% and so is left with less than 1% of the total site waste to dispose of.



Waste water treatment



Co-generative Thermal Oxidiser



Logistics and support

The other elements critical to the continued supply of high quality printing plates are the logistics and support infrastructures. After all, an offset press is entirely dependent on being fed with plates. Fujifilm has created an infrastructure that is the envy of the industry, with supply hubs all around Europe and technical support that is based on years of experience run by people who come from printing backgrounds.

The logistics infrastructure in Tilburg is immense, as the facility also manages the distribution of colour paper for the consumer imaging market. The table (right) highlights the facts and figures about this facility.

This centralised distribution centre is supplemented by logistics facilities and plate stocks in local countries, with the entire infrastructure focussed on meeting the day-to-day requirements of printers across Europe, Africa and the Middle East.

Supply infrastructure at Tilburg

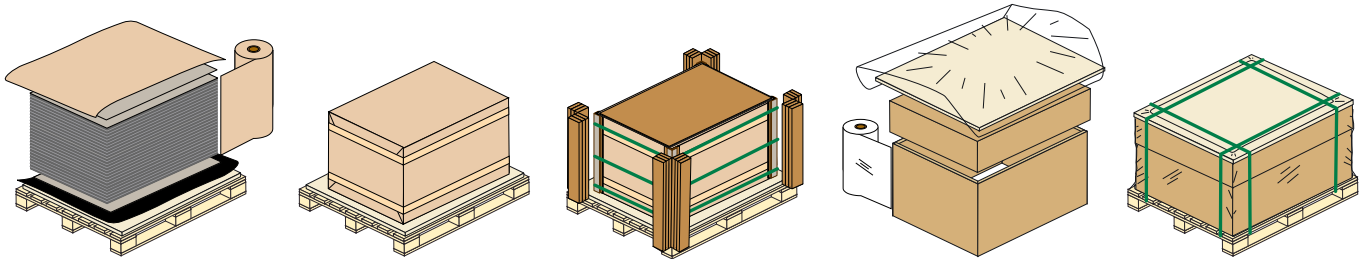
- ▶ 115 full time employees (and +/- 30 temp)
- ▶ 47,800m² of floor space (59,490 pallet positions)
- ▶ +/-100 in and out bound trucks a day

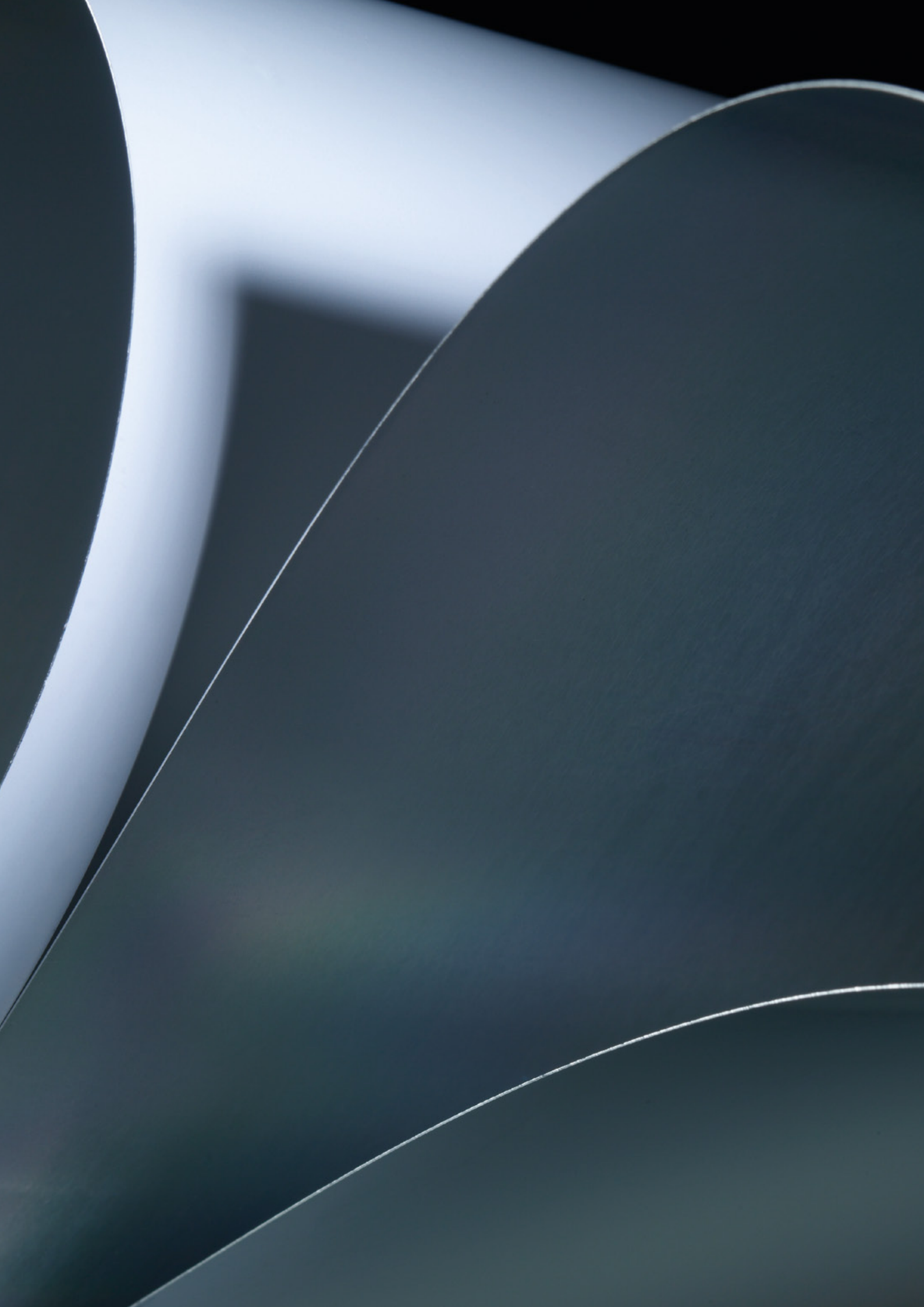
World-class technical support

In addition to building a supply network that's second to none, Fujifilm also prides itself on the quality of its technical support. Fujifilm has built up a comprehensive network of highly skilled plate technicians, many of which are ex-printers. This means that not only do they understand all aspects of plate production, they also understand print applications and the demands of modern-day presses giving them the ability to deal with any issue that may arise.

Customised packaging

Fujifilm is also able to offer bespoke packaging to meet the needs of specific customer requirements, in particular to reduce the amount of material used in the packaging and transportation of plates. This has the benefit of reducing the amount of waste packaging created as a by-product of the plate supply chain, and importantly the burden on the printer to dispose of it.





World-wide plate manufacturing infrastructure

“Wherever you operate in the world and whatever you need, Fujifilm won’t let you down.”

Fujifilm’s plate manufacturing facility in Tilburg, The Netherlands is one of four global production centres all dedicated to delivering world-class printing plates. Advanced automation and state-of-the-art quality control at each facility results in the highest standards of production, so wherever you operate in the world and whatever you need, Fujifilm won’t let you down.



1 Tilburg Netherlands

- ▶ Serves the European, African and Middle Eastern markets
- ▶ €96M investment in third PS-10 plate line in December 2011
- ▶ New wind farm and other sustainable projects completed in 2011

2 Greenwood USA

- ▶ Serves the North and South American markets
- ▶ \$100M investment in the new plate line in 2005
- ▶ Uses local landfill methane to reduce greenhouse emissions, with the aim of producing 40% of its energy through methane

4 Yoshida-Minami Japan

- ▶ Large Graphic Arts R&D facility in Japan, employing 500 people
- ▶ Serves the Japanese and Asian markets
- ▶ Initial source of production for all Fujifilm plates

3 Suzhou China

- ▶ Serves the Chinese and Asian markets
- ▶ New plate manufacturing plant completed in March 2007



Process plant photography: Chris Veen and Frans Jan Fortunati

Please contact your local Fujifilm partner for further information

FUJIFILM Manufacturing Europe B.V.
Oudenstaart 1
5047 TK Tilburg
Netherlands
T +31 13 579 19 11
info@fujifilmtilburg.nl

FUJIFILM