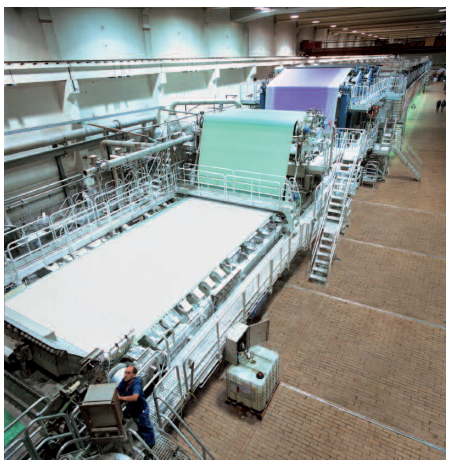
"It's Schoeller inside!"

Welcome to the first report of a regular series, called 'Converter of the month', where C2 examines an innovative paper, film or foil converter. Last October C2 visited the factory of Felix Schoeller in Eastern Germany. Schoeller may not be a household name but has an enviable market share in the speciality market for imaging papers. We look behind the success story.

Fifteen years ago Helmut Kohl, Chancellor of a newly reunified Germany, promised the East German Länder, or states, a prosperous future. Today's reality often looks quite different there with unemployment rates well beyond 20%. The mood is generally downbeat and many people live in and look ahead to an uncertain future. Nevertheless, there are noteworthy exceptions and genuine success stories in Eastern Germany, one of them being Germany's well-known producer of speciality papers Felix Schoeller.

In the tiny village of Weissenborn, in the heartland of the state of Saxony, no more than 20km from the Czech border, Felix Schoeller realised what some people consider to be a miracle. He established the most productive and efficient, fully integrated manufacturing site for traditional photographic as well as state-of-the-art imaging papers. The plant is home to the already famous *Coater 6*, which is claimed to be the most modern speciality paper coating line in the world. C2 was there to witness the official opening of the facility last December.



Paper converting line in Weissenborn

Photographic paper history

Founded more than 100 years ago in the city of Osnabrück, in the region of lower Saxony, Felix Schoeller specialised its business in photographic paper production from the very beginning. As a well-established family enterprise, the company developed a liking for speciality markets very early on. It followed and anticipated the existing customer trends from 'old' black and white photography (the once famous baryta papers) through papers for colour photography into what is nowadays referred to as digital imaging papers for ink jet printing. Within the global manufacturing market, representing 1.2bnm² of photographic papers annually, Felix Schoeller has traditionally occupied the role of a strong market leader.

As Dr Bernhard Klofat, recently designated president of the board of directors, elaborated during his speech at the 'Day of Innovation' at the Weissenborn site: "Just imagine, two out of three photographs world-wide are printed on papers produced by Felix Schoeller!" And he added: "On average, every day we manufacture and sell papers for 427 million photographs. That's a lot of snaps!"

Speciality paper portfolio

Nevertheless, when we refer to Felix Schoeller, there is so much more to write about than just photographic paper. Early in the 90s,

Dr. Bernhard Klofat

the company started developing activities in another field – decorative paper liners for wood laminating for use in furniture or flooring applications.

Concentrated in the Technocell division of the group, today Schoeller produces paper for laminating 7.2Mm² of furniture or flooring surface per day. That is the equivalent of one in 4m² worldwide being covered with Schoeller technical papers.

The digital revolution

Back to photographic paper. With the advent of digital photography some self-appointed trend gurus proclaimed the inevitable decline of print photography. They were wrong, but not completely so. Print photography is still in existence but the market has changed. What used to be classic print photography is nowadays being increasingly substituted by digital,

Weissenborn factory

such as inkjet-printed images or digital imaging.

The converted material is still sheeted paper, although this time with rather different properties. Hence, the world market leader in photographic paper was presented with the obvious challenge of being able to provide paper quality able to meet the new requirements. These are indeed demanding.

End users employing such paper sheets to print out photographs expect what market experts call 'instant dry', meaning 10-20 seconds maximum drying time in order to avoid blurring of colours caused by the following sheet leaving the printer and then dropping on top of the previous one.

Felix Schoeller met this requirement in such a way that today, when photographic paper for inkjet printing is sold somewhere in the world and a well-known brand is written on the packaging, "the paper inside has been produced by us – it's Schoeller inside!" so boasted Bernhard Klofat.

The Weissenborn plant

Soon after German re-unification in 1990, Felix Schoeller acquired the historical paper production facility in Weissenborn, Saxony. The company immediately started a huge investment, thus transforming the site over the next one and a half decades into what today is claimed to be the most modern, fully integrated speciality paper production site world-wide.

'Focus on integrated quality' – the company slogan means starting from scratch with genuine papermaking, followed by double-sided extrusion with polyethylene film to the paper web in order to provide mechanical strength and a suitable base layer. Finally, a multi-layer coating is applied onto the PE surface in order to create the required conditions for the controlled absorption of printing ink from the inkjet printer. Consequently, in a well-tailored converting step, the coated paper web is cut down from jumbo size formats using slitter rewinder operations.

After cross cutting, the converted paper sheets are packed according to individual customer requirements, a procedure still performed manually, and hence this is the most labour intensive operation within the whole job. Core equipment of the extrusion operations is the ET 9, a tandem extruder for laminating both paper sides within one go. Maximum speed is 300m/min with a web width of 1.75m.

The annual production capacity of 110Mm² on this machine will be drastically enhanced when the new extruder ET 10 comes on stream this spring with an ultimate speed of 600m/min. Striving for the ambitious goal of creating a fully integrated value chain requires an absolutely huge commitment.

Close to €300M since 1990 amounts to an investment that seems to have paid off, both in terms of performance as well as employment. In this period the work force at Schoeller´s Weissenborn plant has increased from just 200 people 15 years ago to now close on 700. This is certainly a

Felix Schoeller factory, Weissenborn, Germany

Equipment	Supplier
Extrusion lines	Davis-Standard
Coating lines	Polytype
Coating heads	TSE
Dryers	Spooner
Corona treaters	AFS
UV station	IST Metz
Drives & automation	Siemens
Web inspection	Cognex
Web guidance	Fife
Cross cutter	E.C.H. Will
Slitter rewinders	WT Wickeltechnik

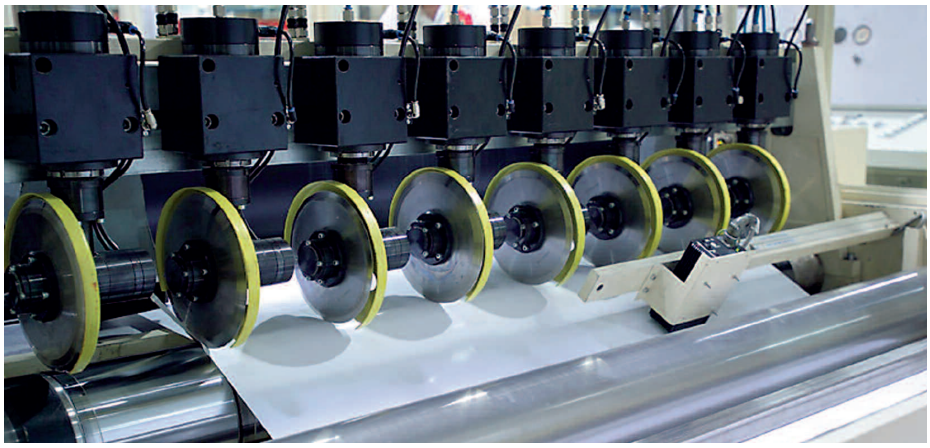
remarkable achievement and means a lot to the Schoeller management.

Innovation through partnership

The most recent investment to come on stream is called the *COATER 6*. The 'Great Machine', the heart of the integrated production line, complements the three other coaters already installed. Delving somewhat deeper into the details of digital imaging paper production, one has to envisage the very step where the ink jet absorbent layer is applied onto the polyethylene coated paper.

This particular layer consists of three separate single layers. The first, starting from the PE surface, is dedicated to absorbing the ink carrier liquid. The second, the so-called developer layer, is used for the fixation of the various ink colours and, hence, for the proper development of a high quality image. This nano disperse material is a high-tech product in itself. Finally, the third (top) layer provides the necessary scratch resistance to the sheet surface. All layer materials are applied using water-based emulsions.

Preliminary tests date back to 2001 so, after careful evaluation of all the pros and cons, Schoeller´s technical management team decided to use the curtain coating process as their chosen method for creating this three-layer arrangement. There are many details to be taken into consideration when evaluating the diverse coating procedure types and the equipment required (*see the special feature about curtain coating on page 23*).



Precise slitting operations

What might have tipped the scales is the ability to apply all three layers during one run and to ultimately end up with a finished product. Schoeller achieved equipment set-up within a comparatively short installation period due to employing a number of adequate partner companies on the machine manufacturing side, headed by Swiss coating supplier Polytype. As a result, *Coater 6* accomplished its virgin run in May 2006. In the meantime it has already set records by reaching production speeds of 360m/min. The ultimate goal of 600m/min is hoped to be reached by the end of 2007.

COATER 6 in the first step will produce 100Mm² of speciality papers per year, although it has been designed for a maximum capacity of 150Mm².

In the words of Volker Barth, plant manager and Schoeller´s front man in Weissenborn: "All this could only be achieved by highly motivated people through the constant enthusiasm of each and every worker in their utmost dedication to the task at hand." ■