市場動向解説

Lithosheet : View of Market Trends from Bridgnorth Aluminium

Simon MacVicker

Abstract : The investment by FSA to purchase 25% of the equity of Bridgnorth Aluminium was completed in late March 2009. This article aims to inform the reader about the trends in litho sheet.
Bridgnorth Aluminium is strongly focused on lithosheet, with approximately 80% of its sales volumes dedicated to this market. The graphic arts market is changing constantly as innovation in digital technology allows Bridgnorth Aluminium's customers to constantly improve their products and processes, all with the ambition to give all of us as consumers, in what we read, ever higher quality, lower cost, and a good environmental performance. Bridgnorth Aluminium's strategy is to be the world leader for quality, and the company is supporting its customers in the way it manages, develops and invests in its business.

1. BACKGROUND

Offset lithography is the dominant printing technology and accounts for around 45% of all printing worldwide. The image is transferred to the press by means of the pre-sensitised offset plate, or PS plate. PS plates are manufactured by BAL's customers, the imaging companies, from litho grade aluminium.

Bridgnorth Aluminium has been making litho grade aluminium since the early 1980's when the first coil lines in Europe were built by the PS customers. By the late 1980's it was clear that the technology demands of this sector would be critical, and the company's then owners, Alusuisse, invested in the "Litho Centre", which comprised of an Achenbach cold rolling mill, a BWG tension levelling line with degreasing section supplied by Eisenmann, together with annealing furnaces, and an automated WIP storage and coil handling system supplied by DURR. The design capacity was 25 kt, and the litho centre was commissioned in 1990.

During the 1990's litho sheet sales increased rapidly to around 30 kt per year, but were constrained in terms of volume, product range, and product quality because of the old hot rolling assets.

In the meantime, Alusuisse was seeking partners in aluminium, and when Alcan and Alusuisse merged in 2000, the European Union competition authorities made the divestment of Bridgnorth's litho facilities including the hot rolling mill and casthouse a condition of acceptance of the merger.

Bridgnorth Aluminium Ltd.

This led to Elval purchasing the business from Alusuisse in July 2001 (Alusuisse by this date was fully merged into Alcan), and establishing the company as Bridgnorth Aluminium Ltd.

Elval was keen to make an immediate impact to the business, and within three months agreed a major investment programme in the hot rolling mill, and casthouse, with the objectives of enabling world best quality and product

range capabilities. A new Achenbach hot reversing mill was purchased along with a new pre-heating pusher furnace. A scalper was transferred from Greece, fully modified, and the tandem cold rolling mill was fully modified.

The hot rolling investment project was completed in June 2003, and since then BAL's litho sales have witnessed a new strong growth curve, achieving sales of just under 55 kt in 2008.

To come fully up to date, the JV was agreed with FSA and concluded in March 2009.

FSA capital participation to BAL.

From the left, Managing Director Lambros D. Varouchas of Elval, Former Vice President Isao Iwabuchi of Furukawa-Sky Aluminum and Managing Director Simon MacVicker of Bridgnorth (2009) .

So, currently, BAL is a focused supplier of surface critical soft alloys. Around 80% of sales volumes are dedicated to the lithosheet customers, with the remainder going to foil rollers mainly in Europe. The company has an integrated supply chain all on the same site, run by one management team, and this allows the company to translate the market needs of the graphic arts sector back into the company in order to make the appropriate product and process developments in order to support the downstream supply chain.

2. THE ROLE OF THE LITHOSHEET SUPPLIERS IS TO CONTINUALLY SUPPORT THE PRODUCT AND PROCESS NEEDS OF OUR GRAPHIC ARTS CUSTOMERS

The lithosheet market is a fantastic example of technological progress in action. In the last decade or so the industry has witnessed concentration at the customer level, the full adoption of digital technology, growth in demand for plates, and constant evolution and some revolution of product and process improvements at the plate makers which in turn demands product and process improvements in the aluminium supply chain. All this can be summed up into 2 main trends: the digitisation of printing plates and the whole pre-press workflow, and secondly industry concentration in graphic arts.

The digital revolution has led to important opportunities for printing and in turn for the lithosheet market. The current trends in print: more colour, "distribute then print", higher quality, shorter run lengths, lower cost, shorter leadtimes, lower environmental impact have all been enabled by technology at different stages of the supply chain. Thanks to this technology, the barriers to entry in publishing have come down, which in turn has led to new market opportunities for the whole supply chain.

The reduced cost has allowed more colour to be offered to publishers, and once this is incorporated into a company's brand positioning, it tends to stay. The newspaper industry in Europe has seen very strong investment in the last few years, mainly to upgrade the facilities for digital workflow, and full colour printing. This is a great opportunity for the lithosheet/PS plate supply chain: monochrome printing only requires one PS plate, colour requires a minimum of 4, and for higher quality publications 7 or even more. For every page changed up to colour, there is a minimum 300% growth opportunity.

Digital technology allows "distribute then print". Gone are the days when, during a business trip abroad, we would buy yesterday's copy of the newspaper at the airport or hotel. Now many newspapers are printed in many locations around the world. The Financial Times is printed in 28 locations around the world, each print centre giving opportunities for regional editions and local advertising which appeals to local readership. The paper is published from London, it is distributed to the regional print centres electronically, and then printed and distributed locally. This not only allows a fresh, targeted edition to be available in time for the reader around the world, but also cuts down on the distribution costs of the paper, and very importantly because the final physical distribution is more local, it cuts the CO_2 emissions. So in just one nice example we see 28 sets of plates required now, compared to one or two before.

The new quality levels which we all experience and demand as consumers is transferred back up the printing supply chain to the aluminium suppliers. As we strive for better quality screens and image on our television, the human eye also wants to enjoy increasingly high quality of print. In terms of printing plates this has led to increased requirements in terms of a

sharper defect free image. This means that the surface of the lithosheet must be blemish free: the tolerance for any type of inverse roll scratch or other physical defect has reduced significantly, to the extent that even a 2.5 micron scratch may now become rejectable. In addition other surface effects are now less tolerated. This surface quality trend places a new responsibility on the aluminium supplier, and BAL is dealing with this new requirement by improving its roll grinding practices in conjunction with FSA, by improving inspection and sampling regimes, including the purchase in 2010 of a new surface inspection system supplied by Parsytec.

Another area of requirement for higher quality is to address both sharpness of image and to avoid any jamming in the various automatic plate handling devices on the plate setter and the printing press itself, and this manifests itself as flatness for the lithosheet producer. As the PS plates are now imaged by laser on drum scanners, any deviation of flatness will create a different focal length for the laser, and a sub optimal development of the coating, leading to loss of focus or a smudge type effect in the print. Secondly, coming back to the needs to increase productivity, automation of the pre-press workflow, and to a certain extent plate loading requires very fine flatness tolerances for the automatic feeding devices on the various machines, as often a cassette of plates is loaded, and the operator leaves the machine to take care of the work, expecting that the plates will not jam as they are fed through tight slots to the next part of the process.

One of the key projections for printing is that run lengths (or number of impressions printed in a single job) will continue to decrease. As the barriers to the technology have decreased, print runs are shorter, and this is the point in the market where offset clashes with both high speed photocopiers, and industrial inkjet printing. The ongoing challenge for offset is to be competitive, and with important innovations made by the major press suppliers such as Heidelberger Druckmaschinen, it is claimed that offset is now competitive at 150 copies and above. This in turn requires more from the plates, faster processing in the pre-press area and so on. A direct response to this is for lighter coating weights to be applied to the aluminium substrate which reduced the imaging time on the platesetter. This also reduces coatings cost, and environmental impact. This in turn puts greater quality demands on the aluminium, mainly also for the cosmetic issues cited in the paragraph above.

The quest for a reduced environmental impact leads the plate makers to a change in how the plates are used on press, the so called chemistry free, or low chemistry solution. Not only do the imaging companies want to achieve a reduced use of chemicals, but also eliminate the use of solvents. As this trend becomes more prevalent, there is a move to aqueous coating technology, which in turn creates a new set of requirements at the micro scale for the aluminium. For example, the influence of micro-structural phase particles, which until now have not adversely affected the material's performance, is now becoming much more important. BAL together with FSA are already active in further understanding this subject. Of course the environmental profile of aluminium is excellent, with its ability to be recycled time after time, with no loss of properties, and saving up to 95% of energy cost of primary aluminium every time. All aluminium PS plates can be recycled. Aside from recyclability, BAL has made, and will continue to make energy savings and invest further in energy saving projects. The UK Government was fast to implement the agreements made in the Kyoto Protocol, and was one of the first jurisdictions in the world to introduce a Climate Change Levy, which is a tax on CO_2 emissions, both at BAL and at the upstream power generator. BAL is a member of the UK Climate Change Agreement, and the UK Aluminium industry has succeeded in reducing its CO_2 emissions by 39% compared to 1990 levels. BAL will not stop there, as the pressures of the forthcoming European Union Emissions Trading Scheme require a constantly reducing carbon footprint.

3. INDUSTRY CONCENTRATION IN GRAPHIC ARTS

The other key trend of the last decade or so has been the industry concentration. A little over a decade ago the current "Big 3" global leaders in Graphic Arts: Agfa-Gevaert, Fujifilm, Kodak were not nearly so dominant in PS plates. As the digital revolution has forced the decline of 35 mm colour negative photo film, PS plates have become a major cash generator for the graphic arts leaders.

The story of the concentration of our customer base goes back to 1996 when Agfa acquired the printing plates business of Hoechst, followed the next year by their acquisition of the graphic arts facilities of DuPont. So it was that the Belgian headquartered company created a group of plate products and facilities that took the heritage from the pioneering Hoechst Kalle in Wiesbaden, with the rich history of Howson Algraphy in Leeds, UK, and formed a group with plate plants in Germany, UK, USA, Brazil, Republic of Korea, and since 2002 in China.

In 1997, Kodak and Sun Chemical formed their joint venture Kodak Polychrome Graphics, and subsequently acquired the plate assets of International Paper. This produced a group with plants in USA, UK, Germany, Netherlands, Bulgaria, Japan, and since 2007 in China.

Meanwhile in 2003 Creo acquired the assets of First Graphics in South Africa and Imation in the USA, and then were acquired by Kodak Polychrome Graphics in 2005. Kodak subsequently bought out the interests of Sun Chemical.

Meanwhile the other "Big 3" customer, Fujifilm, preferred organic growth to acquisition, and made investments in its 4 plants in Japan, Netherlands USA and China.

For the aluminium suppliers, 6 customers became 3, but the story did not end there. In 2002 Italian family owned company Lastra acquired Mitsubishi's Western Lithotec facility to become #4 in the market, and then in 2004 sold to Agfa.

So in summary, what started as the group of 9 customers in 1996 became 3 customers by 2005.

So now in early 2010, after the concentration has taken effect, the world market is dominated by the "Big 3" customers: Agfa, Fujifilm, Kodak. BAL is proud to have very good and well established relationships with these companies.

Besides the "Big 3" global customers, there are another 7 or so smaller companies who operate on a mainly regional scale, most of whom have developed their CTP technology and who offer products which in their respective region may challenge the leadership of the "Big 3". These customers are also very important for BAL, as we believe they have the capability to succeed in the future, alongside the "Big 3".

Together, 8-10 customers satisfy approximately 90% of World demand for PS Plates, and these will continue to be the winners in future years.

4. TECHNOLOGY IS THE DRIVER … FOR OPPORTUNITIES AND THREATS

The technology in graphic arts in never standing still, and must not. The sign of a vibrant industry is new technology. As soon as technology becomes mature, substitute technologies will be attracted.

At the PS plate level, it is vital that the needs of printers continue to be addressed: higher quality, lower cost, lower environmental impact, faster change times. The extent to which each PS platemaker can offer innovative solutions in these areas will define their success and the size of their future role in the industry.

And in a very similar way, the successful strategies of PS platemakers will in turn demand new innovative solutions from the lithosheet aluminium suppliers, which only some companies will be able to offer.

Bridgnorth Aluminium, with its very strong and ongoing record of dedication to the graphic arts industry, with its track record of targeted investments to support the sector, and very importantly with its new shareholding by FSA together with the technology assistance agreement , is not only very well placed, but more importantly also fully committed to playing a key role in the future of the industry.

Simon MacVicker
Managing Director,
Bridgnorth Aluminium Ltd.