Beckers Magazine

Frontpage:

***Advice House, Lysholt Park**,*
Vejle, Denmark
Architects CF Møller, 3A Composites is the coater and producer of the ALUCOBOND® composite panels used.

The coating is a Beckry®Fluor/ Beckry®Flon system with pearlescent pigments, designed to catch the light, creating a striking colour effect. Depending on the viewing angle and the angle of the sun the colour effects changes.

(Photograph front page courtesy of Julian Weyer and 3A Composites; used with permission)

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Layout: www.reklambryggan.se
Editorial service: Translingua AB

Contents

Welcome to Beckers Magazine 2013

Effective strategy The demanding market environment faced by our customers and the effect of rising raw material prices on the paint industry posed a number of challenges during the year. Nevertheless, the decision to continue to invest in our West European core markets, to grow in targeted emerging regions and to strengthen our innovation focus has proved a success. The Beckers Group started 2013 with a satisfyingly solid performance.

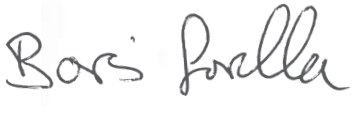
We have fostered our leading position in the coil coatings business throughout the world and advanced another step towards becoming the global leader in our strategically selected coating segments.

To realize this vision, we have further expanded our manufacturing network by opening sites in two of the regions we have identified as the most promising "white spots". The latest additions to the Group are in Southern Asia (Bangladesh) and Africa (Nigeria), increasing proximity to customers and our ability to meet expanding local demand. We constantly review the potential of new regions, with a view to meeting customer demand for local support and to furthering future expansion.

Company vision points the way The core of our vision is "to be where our customers are", today and in the years ahead. By further honing our strategic approach, we anticipate a significant increase in business by 2022, while ensuring attractive shareholder returns. We are dedicated to growing with our customers and determined to strengthen our position as a coatings innovator with industry-leading R&D.

Our focus on innovation, the environment and sustainability all contribute to this. The publication of our first Group Sustainability Report and the development of breakthrough products such as our thermo-reflective and weather-resistant coatings, both covered in this issue, are just some examples that justify this claim.

Good corporate citizen Our achievements are driven by a values-based corporate culture funded on a sincere belief that we can make a difference to the future. This informs our business dealings and our decision-making, providing a competitive edge to ensure our and our customers´ long-term success. We are committed to being a good corporate citizen and to providing a solid "home" for our employees – now and in the future.



Dr. Boris Gorella
CEO
Beckers Group

ArcelorMittal's combi-line plant in Lesaka, Spain, showing the new coating line to the left and the galvanizing line to the right.

A key to success for European precoated steel

New Southern Europe combined coil coating lines points the way ahead. Precoated steel sheet has gained steadily in popularity over the past few decades, becoming a huge success story. Highly prized as a cladding and roofing material in the construction sector, it has become indispensable in the manufacture of a broad range of industrial products, from domestic appliances, light fittings and roller-shutters to garage doors.

Jean-Pierre GENEVAY

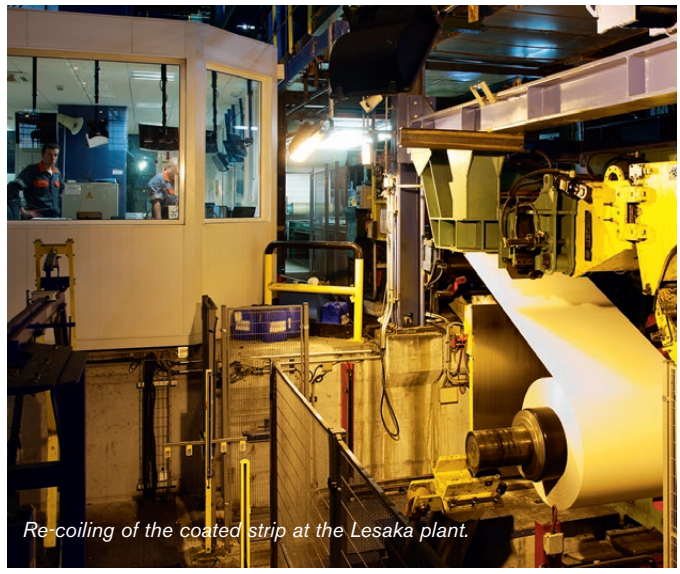
Coil coatings have matured into a technology that offers optimum corrosion resistance and secure warranties for a host of applications. Whether subjected to the relentless demands of an extreme marine environment or the merciless effects of solar radiation in the hotter parts of the world, the latest advanced coatings combine high UV and corrosion resistance, ensuring excellent colour retention and durability. Architects and property developers can be confident that their projects will weather well.

The technical maturity of the European coatings industry also means that all its actors on the precoated steel market comply fully with the European Union's REACH (Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals) legislation. This particularly concerns the undertaking to supply materials free of hexavalant chromium and heavy metals, a key aspect of the European coatings suppliers' commitment to sustainability.

Threat from sub-standard imports

The 2008/2009 European financial crisis placed severe pressure on the global supply chain of precoated steel, particularly so in parts of southern Europe, such as Italy and Spain. Consequently, an increasing volume of low-cost organic coated coil entered the European market, coil that was not always suitable for exterior building applications and that did not comply with European (EN) and national standards' requirements. The fact that these imports contained hexavalant chromium and heavy metals, and lacked long-term warranties, had a seriously negative impact on the image of precoated materials in general. In purely practical terms, the extremely poor durability of these imports further undermined confidence in coil coatings.

This situation was obviously unacceptable. Determined to combat the insidious invasion of its market by cheap and sub-standard materials, the European coil coating community rose to the challenge, identifying two key areas for improvement: better marketing and more cost-efficient production processes. Marketing communication would focus on the high performances and multiple potential applications of European precoated steel materials, while also highlighting the benefits of sustainability and related certification – such as the ECCA (European Coil Coating Association) label. Marketing would also target the end-user market, stressing the vital importance of thorough performance-analyses when specifying precoated materials, as a way to avoid subsequent disappointment.



Re-coiling of the coated strip at the Lesaka plant.

The second key area identified – the need to introduce more cost-efficient production processes – has led an improvement and optimization of coil coating processes, without compromising on performance or durability.

Combined galvanizing and coil coating lines

Two European companies have led in taking up this challenge to invest in process optimization, designed to cut costs while maintaining product quality, durability and the provision of a flexible service to their customers.

ArcelorMittal Lesaka, in Spain, and Marcegaglia Ravenna, in Italy, have implemented efficiency measures that streamline their product offering, improve service levels and sharpen their competitive edge. Both companies have subsequently met their targeted objectives, introducing new technology to cut production times and boost productivity, while observing all environmental considerations.

The companies have come up with a genial approach, combining the galvanizing process with the painting section. This eliminates the downtime previously incurred when changing from one process to another, to enable uninterrupted coating with no reduction in speed, irrespective of product, strip thickness, width or colour.

At R&D centres throughout Europe, paint suppliers and coil coaters are making significant advances in UV and electron-beam curing technologies, as well as waterborne primers for direct metal pretreatment, simplifying the ▶

coating process and enabling higher line speeds. Some of these pioneering products and processes have yet to be introduced on the market, as testers wait to accumulate more data on outdoor exposure results, as well as completing performance and chemical analyses on a range of substrates. Furthermore, costing and price-setting of these experimental formulations cannot be determined before scaling up to full industrial production levels, necessitating further delay in their market introduction.

Both ArcelorMittal and Marcegaglia adopted a very pragmatic approach in seeking greater efficiencies, focusing on the performance of the best polyester topcoats, slashing space requirements (by as much as 50% in their vertical coating sections), minimizing investment costs and implementing significant cost efficiencies. Sharing the same objectives, they came up with the same solution – very high-speed curing – but applying different technologies. ArcelorMittal went for induction curing (where heat is generated by inducing an electric current in the steel substrate) while Marcegaglia preferred to install NIR ovens (which employ infra-red microwaves to generate heat by agitating organic molecules). In terms of size, the two investments differed considerably. ArcelorMittal has installed a painting section on its existing galvanizing line in Lesaka, while Marcegaglia has invested in a brand new and fully integrated galvanizing/painting line in Ravenna.

The accumulator at the exit of Marcegaglia's line in Ravenna.

This article does not seek to compare or contrast the relative merits or drawbacks of induction curing versus NIR curing. What is clear is that both processes bring similar benefits. Start-stop operation, for example, with instantaneous start up, in stark contrast to the time-consuming operational characteristics of convection ovens. This saves considerable time and energy, compared to conventional preparation/start-up procedures. Another benefit is the elimination of stand-by requirements for process adaptation with dynamic operations (flexible process acceleration/deceleration), as well as the elimination of the scrap previously associated with process adaptation.

Other benefits include clearly defined and reproducible process operation parameters, the elimination of a starter strip (further increasing line uptime) and, finally, no reduction in the speed of the galvanizing process because of constraints imposed by the organic coating process. Of course, it is here worth noting that, in both cases, the painting section may easily be "bypassed", where only galvanized coils are required.

In both projects, the companies have been scrupulous in addressing environmental concerns and energy conservation, which have been high on the agenda when fine-tuning their investments. In the paint application sections, surplus solvents are extracted for recycling, while solvent emissions generated in the curing zones are processed using RTO (Regenerative Thermal Oxidizer) technology to heat the air injected in the curing zone, preventing condensation on inductors and NIR tubes. This reduces gas emissions that would otherwise contribute to global warming.

Our laboratories are concentrating on the development of ever-more energy efficient solutions

Beckers' role

Beckers has been intimately involved in these projects from the start investing heavily in R&D and numerous studies to develop answers to the challenges posed by ArcelorMittal Lesaka and Marcegaglia Ravenna.

Beckers has worked with ArcelorMittal Lesaka for some time, acquiring considerable experience of induction curing on pilot as well as fully operational lines (including lines at ArcelorMittal Construction and Tata Steel that have already been combined). The work has concentrated primarily on optimization, with particular reference to the specifics of the Lesaka project. This has involved formulating different solvent blends

with specific catalysts to achieve the required reactivity and full polymerization (six-second curing), while retaining the performance characteristics of the Beckers polyester range for buildings (Beckry®Pol 1000, Beckry®Tech 2001 and others).

In the case of NIR curing technology, we have employed our own NIR equipment at the Beckers Italia laboratory. The work has involved close cooperation with our upstream resin partners. In polyester chemistry, developing extremely rapid NIR curing when different types of coloured pigments (with different IR absorbing properties) are involved is about more than the interaction between solvent and catalyst.

Due to the very short curing times targeted (4-5 seconds), our work has focused on developing a specific resin that will react and fully polymerize at a lower energy inside the film. While requiring the provision of extremely short curing times, the specification allowed no compromise in terms of other performance criteria, especially with respect to flexibility and UV resistance. The challenge was to obtain the same accelerated curing time and performance from a black or dark toned coating as from a less absorbent highly pigmented white film. This was finally achieved, on the production line, in the form of our new Beckry®Pol NIR coating.

Even better, these advances have been achieved without having to compromise on environmental considerations. All pigments used in the Beckers paints formulated for these two projects are lead, chrome and heavy-metals free.

Innovation and flexibility

Both new coating lines have started production in the past two years: in January 2011 at the ArcelorMittal Lesaka facility, and January 2012 at Marcegaglia Ravenna.

At a time when the global economy is under severe strain and many companies have to make some very tough decisions, it is encouraging to note that the most dynamic industrial entrepreneurs are putting up a real fight and are prepared to invest – to ensure survival by sharpening their competitive edge, thereby consolidating leadership in their fields. It is especially pleasing to see this entrepreneurial dynamism in Italy and Spain, both of which have been seriously impacted by the economic crisis.

As a result clever engineering has achieved important savings in precoated steel conversion costs (up to € 80-100 /ton), as well as significant energy savings, cutting CO_2 emissions by up to 30%.

The two companies have decided to optimize their existing 'conventional' lines through full coordination with the new 'combined' lines. Two distinctly different technologies now enable the companies to supply every type of customer with all types of precoated product – from big orders for major customers to more sporadic and highly individual orders involving specific colours or products.

Neatly complementing each other, the companies' different technologies offer a number of competitive benefits, generating new opportunities every day, such as multilayer systems or the potential recoating of obsolete coils.

Coated coils on the Ravenna line

A work in progress

At Beckers, the work goes on. Our laboratories are concentrating on the development of ever-more energy efficient solutions, speedier and more environmentally attractive curing techniques and the potential of other chemistries, such as polyurethane or textured finishes (Beckry®Tex).

At the same time, we are refining our distribution and logistics routines, processes and capabilities, to ensure exceptional service in today's world of 'just-in-time' (JIT) deliveries. In short: we're doing (and will continue to do) whatever it takes, in close collaboration with our customers, to address and resolve our common challenges! ■

MAIN CHARACTERISTICS OF THE TWO COMBINED LINES

	ArcelorMittal Lesaka	Marcegaglia Ravenna
Max capacity	150 000 tons/year painted	150 000 tons/year painted
Strip thickness	0,17 – 1,5 mm	0,25 – 1,4 mm
Coil width	600 – 1250 mm	900 – 1550 mm
Max speed	150 m/min	180 m/min

Predicting durability – tricky as predicting the weather

Determining the durability of coatings is a process that can arouse surprisingly macho emotions. Whenever the professionals of the weathering community get together, a heated discussion about the relative merits of different sites is almost inevitable.

Chris LOWE

Everyone has a favourite site which, due to a particular quality, will of course feature the most aggressive characteristics: more sun, higher temperatures, greater humidity and even greater diurnal variation. This controversy will pale into insignificance, however, should you suggest that accelerated weathering (as observed during exposure in a cabinet, where the UV dosage and humidity are controlled) is comparable to natural weathering, at whatever site you might care to name.

Accelerated tests have a place

Manufacturers of the equipment with which all coatings scientists are familiar have studied this area with painstaking deliberation in the past: they know the benefits and pitfalls of an accelerated test. They do not try to persuade coating scientists to avoid using exterior exposure – they encourage it – but they do extol the virtues of accelerated tests because, unlike the weather, they are reproducible. This controversy highlights the serious business of trying to determine how long a particular coating will last in a specific environment, so that accurate warrantees can be given. Twenty-five years ago, the only exterior weather-

ing sites with any global track record were in Florida. It was common for Europeans to have their paints exposed on racks positioned on these sites and to try to relate the rate of degradation in Florida to the rate of degradation in Europe, by applying an acceleration factor. It soon became apparent that different places in Europe performed differently and different paints did not all behave in the same way[1].

The chemistry of weathering in polyester melamine systems

To understand why differences in performance can occur, one must try to understand the chemistry behind why coatings start to degrade. It was only a few short years ago that Martin, Nguyen et al[2] declared that they had finally isolated four different mechanistic pathways affecting the degradation of melamine cross-linked coatings under the influence of the local environment or weather. Most people will be aware of thermal oxidation. The other three possible mechanistic pathways are photo-degradation, dark hydrolysis and moisture enhanced photo-oxidation ***(see figure 1)***. Clearly, different mechanisms predominate, depending on the conditions. The end result is different routes to the ultimate products of CO_2, water and nitrates. This means degradation can occur at different rates, creating differences between sites, especially those exposed to various extreme weather conditions; very hot, very wet or very high UV intensity.

Pigments can also play a part in the erosion of the coating. It has long been known that titanium dioxide can generate free radicals in the presence of light, moisture and oxygen[3]. These can attack sensitive sites such as alpha hydrogen atoms resulting in bond cleavage ***(see figure 2)***. This type of attack is often prevented by encapsulating the pigment particles in silica or alumina, but the process is never 100% efficient. Furthermore, under conditions of low pH, lead chromates can be oxidizing, which is another way the resin can be degraded[4]. ▶

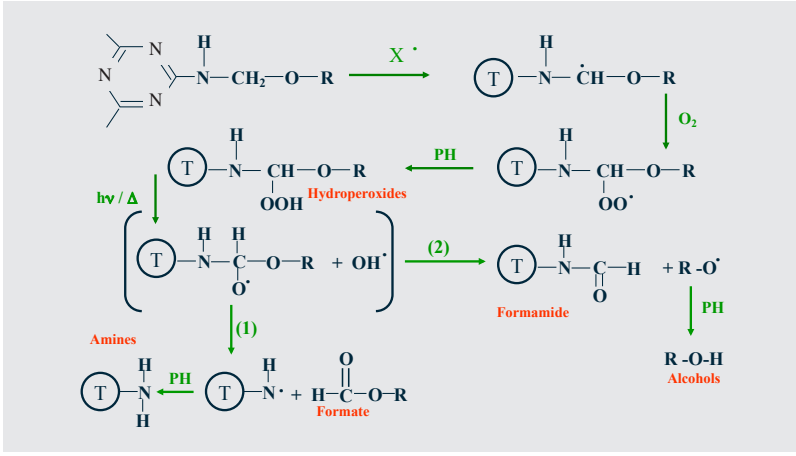


Figure 1a *Mechanisms of degradation by photo-oxidation of melamine linkages*

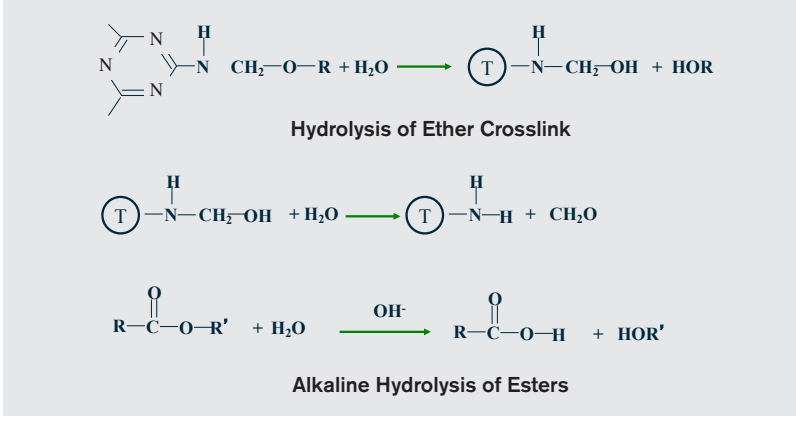


Figure 1 b *Hydrolysis of melamine and ester linkages*

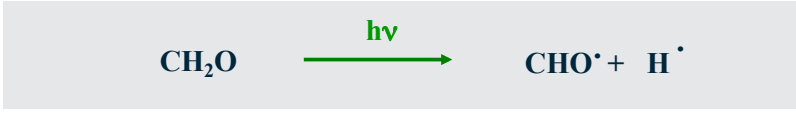


Figure 1c *Generation of Radicals from Formaldehyde*

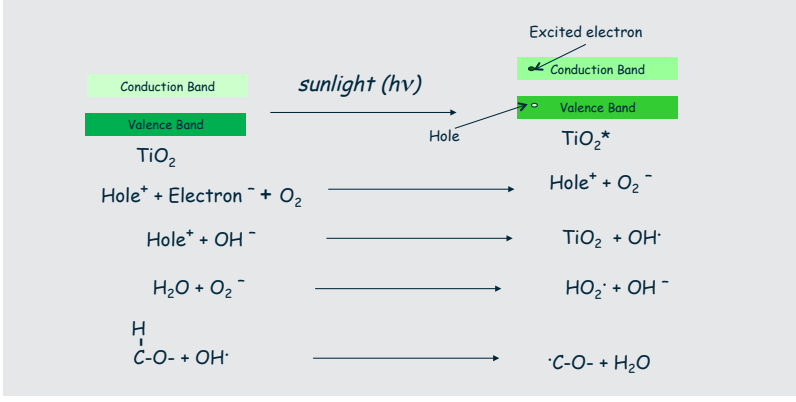


Figure 2 *Attack of TiO_2 generated radical on alpha hydrogen*

Photo-degradation explained

In the 1990s, Lemaire and Gardett worked with polyester melamine[5] and polyester isocyanate[6] systems. Their careful work resulted in the elucidation of the mechanisms of degradation, those that dominate in polyester melamine coatings being photo-oxidation of the polyester backbone and more importantly the photo-degradation of the melamine crosslinks. This occurs initially through photo-cleavage, then through oxidation. In the presence of moisture, aldehydes are formed which absorb UV light and initiate degradation mechanisms of their own. This is the moisture enhanced photo-degradation mentioned above.

The rates of degradation are often quantified in terms of gloss and colour retention. The gloss level of the surface deteriorates as the different parts of the surface are eroded at different rates, resulting in increasing unevenness. Colour will change as pigments are changed, either chemically or photochemically. Alternatively, chalking of the resin will result in a whitening effect. However, as Lemaire and Gardette[5+6] have shown, IR Spectroscopy can be used to quantify the degradation. This can be expressed in terms of the rate of disappearance of the melamine linkage, or the rate of appearance of the oxidation bands. The generation of amines through the degradation of the melamine linkage is yet another phenomenon that can be employed to study the subject. Work done by Zhang et al[7] has demonstrated that, during QUV-A exposure, the rate at which the melamine linkages disappear is relatively fast over the first 500 hours, after which it slows logarithmically. Interestingly, the loss of melamine occurs mainly in the top 7–8 microns during the first 1500 to 2000 hours, with degradation only occurring below this depth, as the coating is starting to fall apart.

Colour will change as pigments are changed, either chemically or photo-chemically

Photo-degradation of organic polymer coatings occurs principally through free radical mechanisms. This refers to the absorption of light by a chromophore in the coating, which results in an electron occupying an excited state. This can then result in cleavage of bonds in the surrounding area of the same molecule, or in hydrogen abstraction from a neighbouring molecule. The results are active radicals, which can capture oxygen or initiate reactions themselves. The consequent cascade of reactions leads to oxidation and a break-up of the polymer, ultimately leading to CO_2, H_2O and NO_X. There are two common ways to inhibit this degradation. The first involves absorbing the light, using materials that can shed the absorbed energy via thermal processes that do not involve bond cleavage. These UV absorbers are commonly used in clear coats[8], because pigments are efficient UV absorbers themselves, and often render the additive redundant. Other commonly used stabilisers are Hindered Amine Light Stabilisers, which scavenge radicals and convert them into less active species. These materials can be added to both clear and pigmented films. The ultimate stabilising strategy is to make the backbone as resistant to degradation as possible, which is only possible with extensive knowledge of the chemistry of degradation.

Comparability of weathering sites

Determining a coating's useful service life is important, not least when it comes to warranties. The key tests have long involved placing examples of the coatings on exposure racks in areas of aggressive weather. The Swedish west coast and the coast around Brest have long been used as aggressive corrosion sites[9], and Florida was for a long time the main reference site for photo-degradation and its associated reactions[10]. Even though these sites are very aggressive, panels still need to be exposed there for two years or more, to gain any real idea of their durability in these environments[11]. More accelerated tests were developed in the middle of the last century, featuring salt spray tests for corrosion resistance and UV cabinets for photo-degradation resistance. In addition, a test was developed in the USA which used equatorial mirrors to track the sun and concentrate its rays on mounted panels, to ensure they received the maximum dose possible. Often, the panels on these racks can be sprayed with water

to try and simulate the moisture they would encounter in places like Florida. It is known as the EMMAQUA test (Equatorial Mount with Mirrors for Acceleration with Water[12]).

Correlation worries

More recently, sites have been opened in Portugal, Hainan Island (China), Singapore and Allunga (Australia). Correlating the performance of panels exposed in these places with each other and with the accelerated tests is a challenge. There is plenty of literature comparing natural to accelerated testing but, after years of experience, the only reasonable conclusion is that the correlations that do exist are unreliable. A good correlation may be found for one particular type of paint, but does not apply to all systems. Consequently, accelerated testing may be used as a first indicator of durability. To gain truly solid information on performance, however, out-door exposure is really a necessity. The IR spectroscopic graphs in ***figure 3*** illustrate how the same paint is degraded in different environments.

One way to try to obtain an acceleration factor is to compare the number of hours it takes to reach a certain gloss level in an accelerated cabinet with the number of months it takes to achieve the same level outdoors in Florida. However, this tries to correlate just one point on the gloss retention/time curve, which is of limited use. Correlations between EMMAQUA and Florida are somewhat more robust, since a panel would receive a UV dose of around 280MJ/m^2 within an average year in Florida. The UV dose is measured in EMMAQUA, and panels are often exposed in time intervals that equate to the same dose. Due to the dryness of the test, however, in spite of the water spray, it is more of a heat stability test than a true (though accelerated) test of Florida. ***Figure 4*** compares performance graphically and ***table 1*** provides correlation coefficients for panels of a polyester melamine system, exposed in different places around the world, after three years exposure and 2000 hours in a QUV A cabinet. Clearly, in most cases, the correlation is limited, ▶

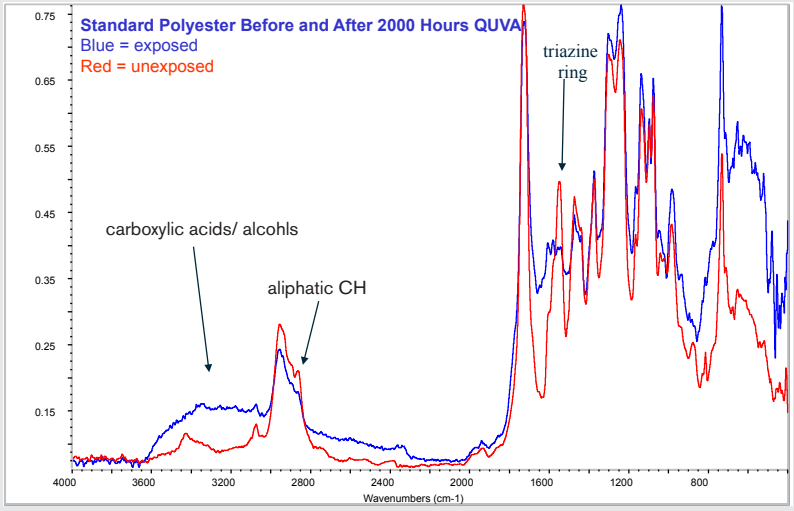
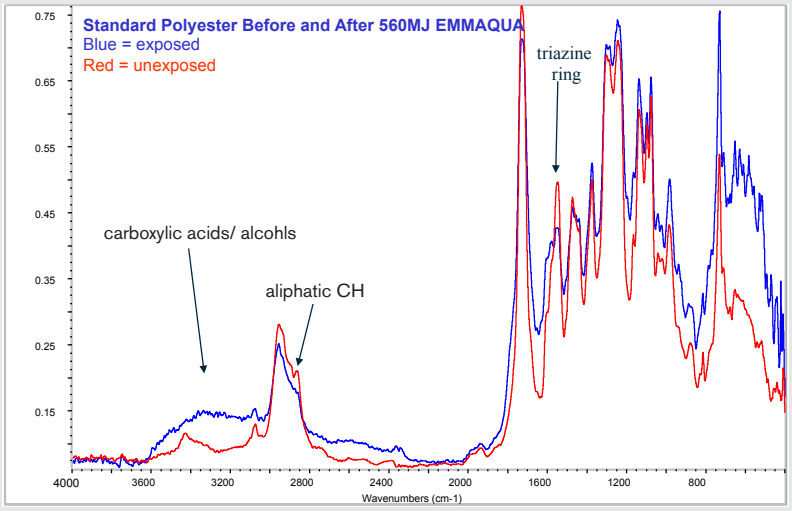
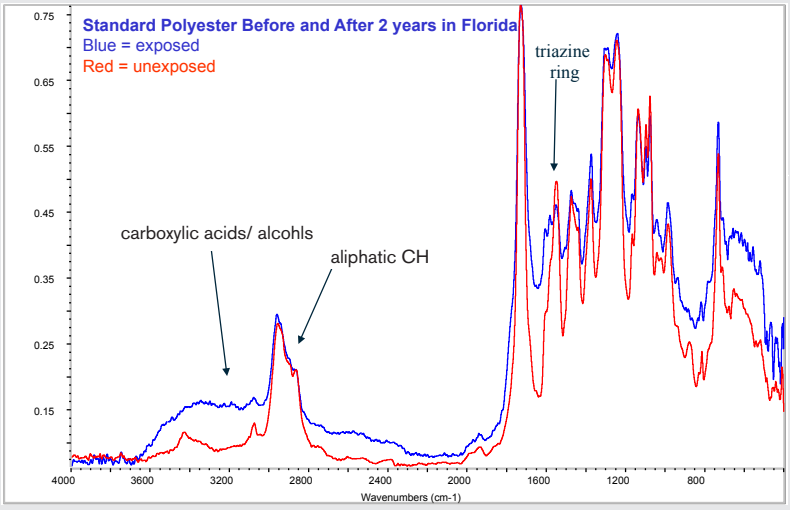


Figure 3 *IR spectra of polyester melamine system in different environments*





although many statisticians argue that anything better than 20% indicates a measurable effect.

It is becoming increasingly necessary to compare different exposure sites around the world. ***Table 2*** shows how exposures over the same period in different parts of the world correlate to each other and to accelerated tests. Box whisker plots can be used to measure the performance of different systems in different places over similar periods. ***Figure 5*** shows that the poor performers in Allunga Australia perform poorly in Kuala Lumpur too. This said, the more durable systems do give rise to a certain amount of variation.

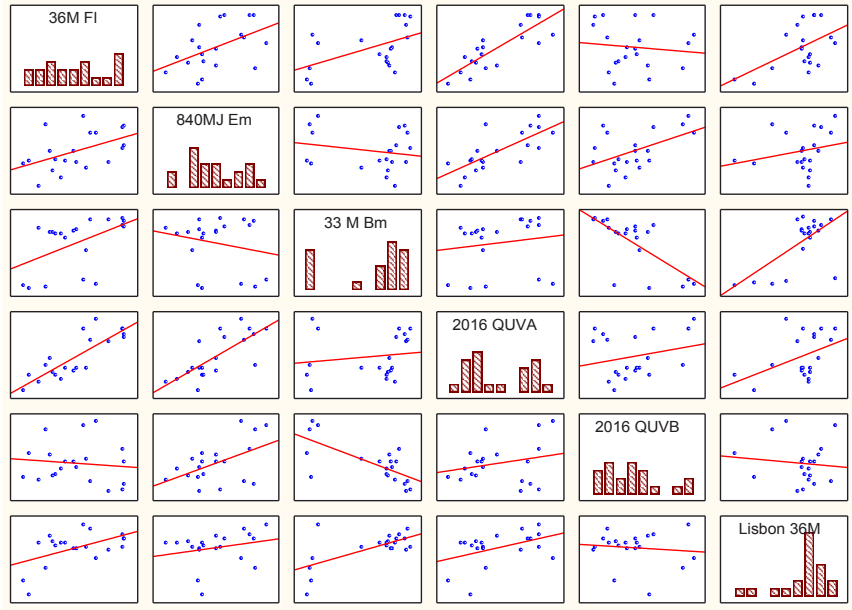


Figure 4 *Correlation of EMMAQUA with Florida, Bohus Malmön and Lisbon.*

Still some way to go

Coating durability is a complicated subject that must take into account the differences in chemistry initiated by different environments. A recent study definitively demonstrated that accelerated techniques do not provide a reliable prediction of performance in external environments. In fact, Cocuzzi and Pilcher went as far as to say that paint must be exposed in an outdoor environment such as Florida for seven years to provide a credible prediction of performance for a period of ten years and more. Correlation between sites may be possible if conditions are similar, of course. Florida and Allunga, for example, appear to correlate well for the polyester melamine system described in the text, but other sites reveal poor correlation. Beckers is trying to build up a picture of how humidity, temperature and UV dosage – as well as the changes experienced daily by coatings that are exposed at different sites – impact on performance. The ultimate aim is to be able to key in a specific set of conditions and coating chemistry parameters that, after processing, would generate an accurate durability factor which could then be used to determine warranties. ■

	36M Florida	840 MJ/ m² E'A	33 M Bohus M	2016 hrs QUVA	2016 hrs QUVB	36 M Lisboa
36 Months Florida	1.00	0.49	0.50	0.84	-0.11	0.52
840 MJ/m² EMMAQUA	0.49	1.00	-0.21	0.74	0.50	0.24
33 Months Bohus M'n	0.50	-0.21	1.00	0.15	-0.70	0.65
2016 hrs QUV-A-340	0.84	0.74	0.15	1.00	0.24	0.44
2016 hrs QUV-B-313	-0.11	0.50	-0.70	0.24	1.00	-0.11
36 Months Lisboa	0.52	0.24	0.65	0.44	-0.11	1.00

Table 1 *Correlation coefficients for gloss retentions of different colours of one polyester melamine system exposed for three years in different environments.*

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	Allun	FI	Sing	KL	Hn	Goa	SA	3.5kh QuvA	2.8kh Hot QuvA	128ML EMM
Allun	1.00	0.93	0.68	0.88	0.84	0.72	0.63	0.36	0.35	0.84
FI	0.93	1.00	0.80	0.96	0.80	0.84	0.74	0.45	0.34	0.75
Sing	0.68	0.80	1.00	0.86	0.52	0.92	0.85	0.63	0.32	0.49
KL	0.88	0.96	0.86	1.00	0.79	0.87	0.74	0.58	0.42	0.72
Hn	0.84	0.80	0.52	0.79	1.00	0.57	0.36	0.30	0.26	0.73
Goa	0.72	0.84	0.92	0.87	0.57	1.00	0.86	0.61	0.35	0.55
SA	0.63	0.74	0.85	0.74	0.36	0.86	1.00	0.52	0.28	0.50
3.5kh QuvA	0.36	0.45	0.63	0.58	0.30	0.61	0.52	1.00	0.33	0.24
2.8kh Hot QuvA	0.35	0.34	0.32	0.42	0.26	0.35	0.28	0.33	1.00	0.38
1280MJ EMM	0.84	0.75	0.49	0.72	0.73	0.55	0.50	0.24	0.38	1.00

- Long Term QUV A testing has relatively poor correlation with real world data after 2 years exposure.
- The UK does not correlate with any other site.
- Florida correlates very well with Allunga
- Florida, Allunga, Kuala Lumpur and Hainan correlate well together

Table 2 *Correlation coefficients for different polyester melamine systems exposed for two years in different environments.*

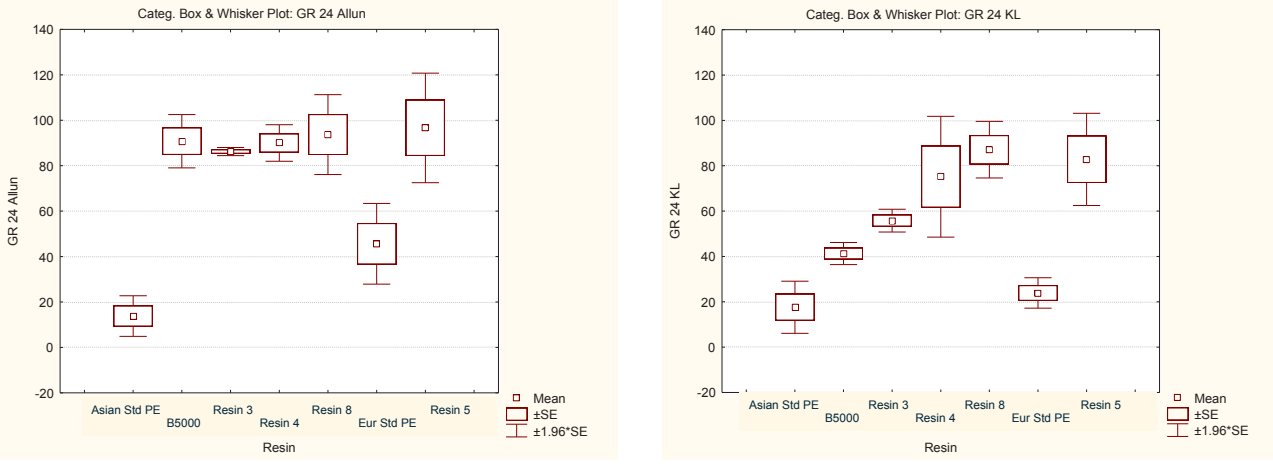

Figure 5 *Box whisker plot of performances of different systems in different places.*

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Sustainability – all about survival

In a world of finite resources – and that includes the air we breathe and the water we drink – sustainable production is more than a good idea: it is crucial to our long-term survival on this planet. By definition, it is also crucial to commercial survival.

Ingela NORDIN

Beckers has long demonstrated consistent concern for the environment through a profound commitment to sustainable solutions.

As early as the 1960s, our research chemists were addressing ways to reduce the VOC (Volatile Organic Compounds) emitted during the coating process. During the 1970s, the Beckers R&D team followed up with the launch of waterborne coatings, cadmium-free coatings and chromate-free anti-corrosion coatings. With the 1980s came the introduction of alternatives and replacements for a whole range of harmful substances. In addition to cadmium and chromates, these included lead pigment, zinc phosphate, tin and phthalates, as well as further reductions in solvent use through the introduction of high-solid paint systems. The 1990s saw further paint production process innovations, including direct mixing into delivery packaging and incineration of VOC emissions, as well as the introduction of chromate-free primers.

Since the start of the new millennium, the product range has expanded dramatically, with the development of zinc-phosphate, tin- and phthalate-free alternatives, as well as the launch of very-high-solid special coatings and waterborne basecoats for the automotive industry.

This commitment to sustainability has recently been formalized with the adoption of the internationally recognized *Framework for Strategic Sustainable Development*, establishing a robust structure for strategic planning founded on a science-based definition of sustainability. Beckers has, in both senses, taken the Natural Step to sustainability.

Innovative market leader

Our message is clear: the implementation of sustainable production is not just desirable – it is essential to long-term commercial viability, both ours and that of our customers. Determined to be an innovative market leader in this industrial sector, Beckers is committed to championing the most sustainable practices, processes and products – and to annually reducing its environmental footprint, without compromising the quality or viability of its customized coating solutions.

Beckers' first sustainability report, based on the Global Reporting Initiative's international guideline and framework and published in May 2013, may be accessed on our website. It features highlights from 2012 and some of our breakthrough products. Our performance is shown using GRI (Global Reporting Initiative) indicators based on the international standard. The intention is to publish annual reports.

Sustainable vision

Commitment to sustainability, in its broadest sense, permeates every aspect of Beckers Group activities.

The coil coating process – applying and curing surface coatings efficiently and continuously on metal strip – is in itself essentially sustainable, reducing environmental impact by applying paint with little waste, usually burning any released solvents to provide energy for the curing ovens.

In the case of special coatings, a key element of sustainability is about extending the useful life of customers' ▶

products by providing protective, durable coatings. This involves close cooperation across the globe, to develop tough new coatings and innovative, lean processes that minimize the use of persistent chemicals, energy and natural resources. Design also plays an important role in promoting the broader aims of sustainability. By providing support to customers at every stage of the value chain, from trend analysis and product engineering to final application of the surface finishing solution, Beckers' Consumer Design Finishes (CDF) creates sustainable value by providing cost and process-efficient products of minimal environmental impact.

A **necessary aspect** of sustainability is having a product that the market wants, offering sustainable performance at the right price and with the appropriate environmental pedigree. At Beckers' R&D labs, this has led to the adoption of a whole-systems perspective, where all areas are addressed: health and safety, product-protective properties, corrosion resistance, durability, low-VOC emitting materials, energy efficiency, heat absorption, solar-reflective properties and production waste-stream reduction. Or, in the words of Dr Chris Lowe, who heads Beckers' UK Long Term Development (LTD) Lab: "We are working on coatings that shed dirt, reflect heat, absorb heat, reduce noise, and even rid the atmosphere of pollutants."

We have come a long way since Wilhelm Becker first opened his paint shop in Stockholm in 1865. Clearly, his vision has proved sustainable – and we mean to maintain it. As the world changes, our vision must expand to accommodate new challenges and opportunities. The search for innovative solutions is never ending – and endlessly exciting. We look forward to sharing this excitement with our customers! ■

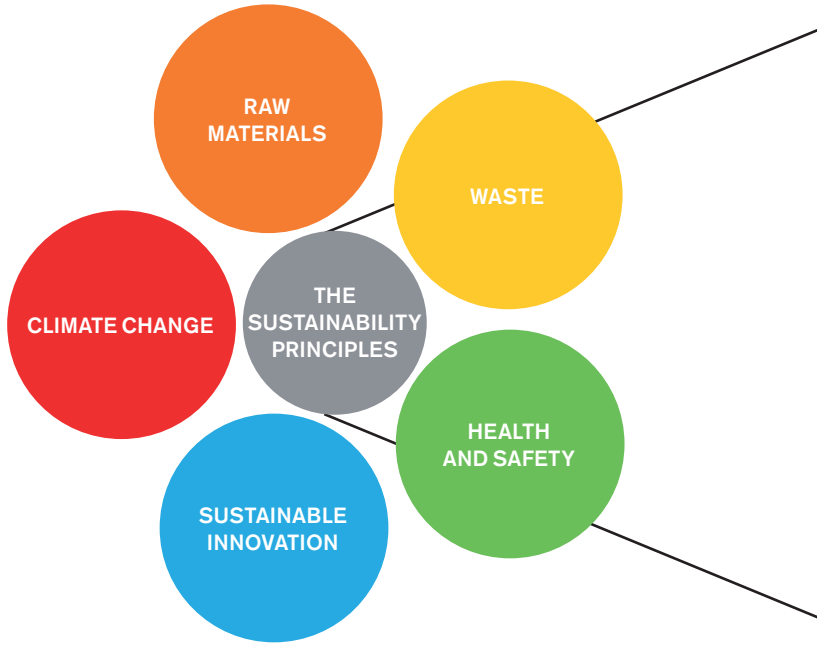
Beckers Sustainability Vision

TO DEVELOP SUSTAINABLE COATINGS THAT

- do not contain mined materials that are scarce in nature, that are free from persistent substances and use renewable raw materials
- are manufactured and transported using renewable energy, and that production and packaging are based on recycling and without emissions
- cause no environmental or health hazards and improve standard of living for their users.

OUR FIVE GLOBAL SUSTAINABILITY FOCUS AREAS

Our business is about aesthetic and durable coatings, striving for a palette of colours that serves society in multiple functions. For the environment, we have developed our global sustainability palette – our focus areas to help ensure survival of the planet and of society:



THE FIVE FOCUS AREAS
We have identified five focus areas, to guide us and help prioritize our activities. The five focus areas cover our biggest environmental impacts.

OUR CURRENT TARGETS
Environmental Key Performance Indicators
From our assessments, we have set a number of Environmental Key Performance Indicators. For three of them we have set targets for improvement.

EKPI: VOC
The target is to reduce emissions by 5% per ton produced, based on 2012 results.

EKPI: ENERGY
The target is to reduce consumption by 5% per ton produced, based on 2012 results.

EKPI: WASTE
The target is to reduce by 10% per ton produced, based on 2012 results.

THE NATURAL STEP´S FOUR SUSTAINABILITY PRINCIPLES
In a sustainable society, nature is not subject to systematically increasing...

... concentrations of substances extracted from the Earth's crust

... concentrations of substances produced by society

... degradation by physical means

And, in that society...
... people are not subject to conditions that systematically undermine their capacity to meet their needs.

To all our readers

Last year's edition of Beckers Magazine highlighted several areas where the Beckers Group benefited from its developments in R&D, sustainability and operations. This year's edition is no different.

You will again note how these areas are interdependent. To improve our environmental key performance indicators, we must improve our operations. This means globally, including the new sites in Bangladesh and Nigeria featured in this edition. At the same time, we continue to invest in upgrades of our existing sites – such as the Shanghai site – to improve EHS standards.

A lot of our research is focused on more sustainable products but, to achieve success, we must understand the fundamental factors that determine how a coating performs. This starts with the relationship between resin composition and coating properties. To understand this better, we established a resin lab at our UK facility last year. In the end coating performance is demonstrated by resistance to weathering over several decades. The coatings industry has yet to develop an entirely reliable way of predicting natural weathering performance, so Beckers employs scientific means to provide better guidance on the durability of its coatings.

And finally, improving our business operations is about close cooperation: between the above-mentioned functions, between coil coatings, special coatings and consumer design finishes and, of course, between our experts and you – the customer.

I hope the articles will provide an insight into how Beckers operates and how we try to improve not only our products, but the way we produce them too.

Dr. Karsten Eller
COO, Beckers Group

Opening of the Resin Laboratory by Dr Karsten Eller Chief Operating Officer. From left: Susan Willis, James Maxted, John Strachan and Chris Lowe.

New resin lab accelerates formulation process

"Designed by resin chemists for resin chemists." The new laboratory at the Speke site of Beckers' Long Term Development (LTD) Group boasts a host of modern features.

Susan WILLIS

These include walk-in fume cupboards to aid access to the reaction vessels, an automatically initiated extinguisher system (in the unlikely event of a fire), chiller-cooled condensers to minimize waste water and a heating system dimensioned for the increased air throughput demanded by the new fume cupboards.

Systematic evaluation for optimal performance

The laboratory will focus on investigating how different monomers affect the final properties of polyester resins. This systematic evaluation of raw materials will enable resins to be optimized for specific performance parameters, either in terms of mechanical properties or weathering resistance. Currently, the laboratory is equipped to produce four polyester resins simultaneously, in batch sizes from 3 to 5 kilograms. Taking some three days to produce, batches are monitored for water loss, hydroxyl value, acid value, viscosity and molecular weight. The base resin can then be diluted in an appropriate solvent blend.

Accelerated formulation process

The laboratory is staffed by two resin chemists, who formulate and run the resin syntheses. A dedicated paint chemist minimises the time needed for full resin evaluation in a coating, giving formulating chemists elsewhere in the company a head start when evaluating a new resin.

Fully commissioned in November 2012, the Resin Laboratory started off by preparing some batches of polyester resins of known composition and performance. The new facilities offer increased flexibility, enabling trials with new monomers and the investigation of alternative processing techniques. Modifying polyesters with other chemistries, including silicone and acrylic, is now also possible.

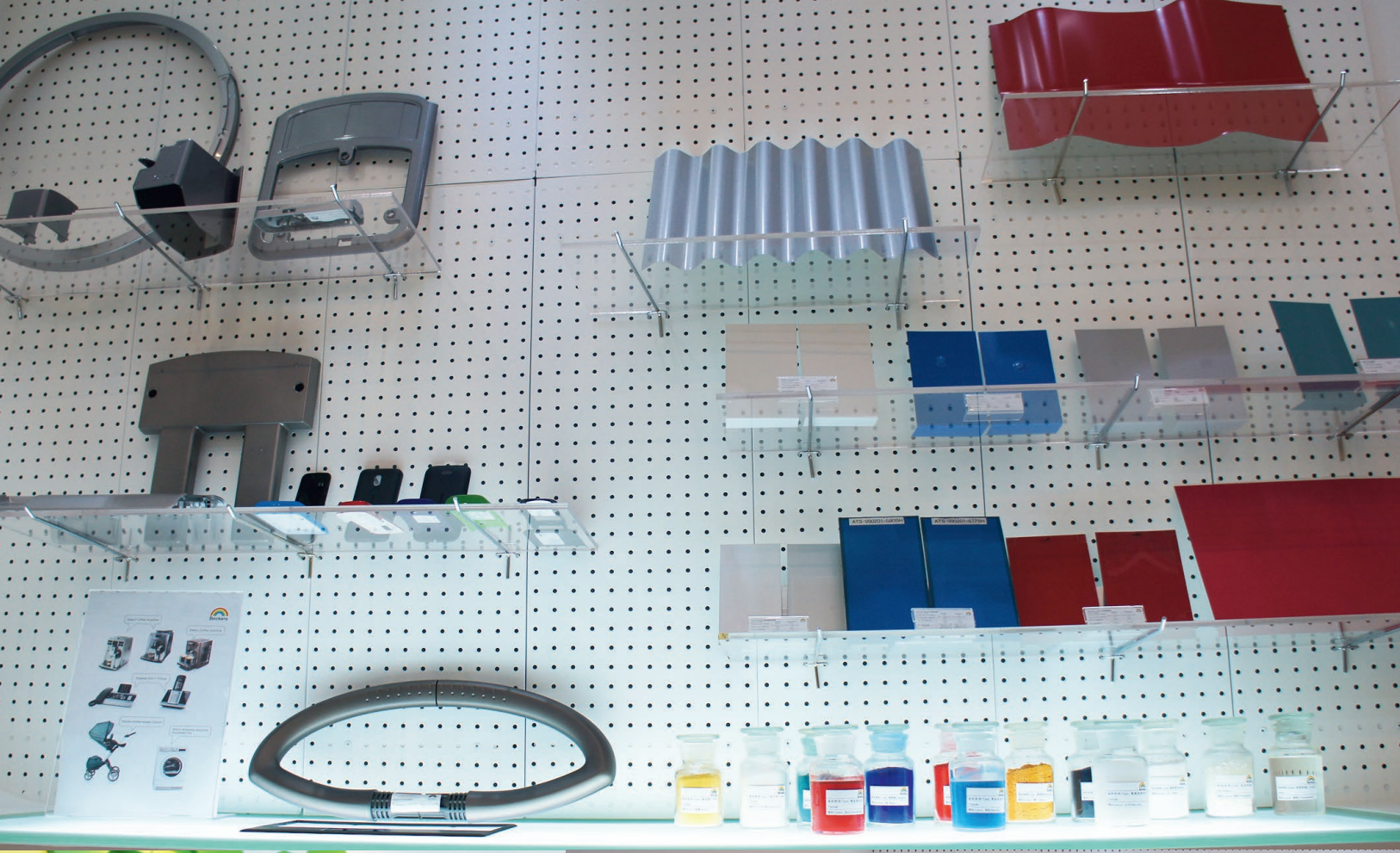
Potential for more sustainable applications

Current projects include studies to determine which monomer combinations will promote higher yield products, which bio-sustainable raw materials can be used (and their impact on performance) and parameters to be considered in determining the performance of near infra-red curing systems.

Looking ahead, the Resin Laboratory is considering further extending its capabilities by investing in additional technology for the preparation of acrylic resins. ■

Detail: reaction vessel

Fume cupboard with reaction vessels



From left: President Greater China Dr. Christian Kober, and CEO Dr. Boris Gorella Beckers Group together with CEO Lindéngruppen Erik Urnes (Lindéngruppen is a private company with sole ownership of Beckers)

Showcased in Shanghai

Coatings are about so much more than colour difference, gloss retention and QUV (Accelerated Weathering Tests). Coatings are first and foremost about the endless and subtle possibilities of colour and texture, about beauty – and about emotion. Seeing is believing. Touching is experiencing.

Emily WU

The new Beckers Shanghai showroom presents customers, architects, product and interior designers and other key decision makers, as well as employees, with the chance to see and touch a selection of Beckers' latest products. The displays provide a highly representative selection of the company's functional and attractive products as applied to coil and metal sheet, as well as a range of innovative applications pioneered by the CDF (Consumer Design Finishes) unit.

Beckers products are shown in a modern setting, applied on the actual substrates employed by customers. The showroom's design is highly flexible, to facilitate the on-going incorporation of new products and applications into the existing displays.

A hands-on experience

Sample panels featuring different coatings are attached to the wall magnetically. This means they can be handled by customers, for closer inspection, and can also be easily exchanged for the latest innovations. To give an idea of the huge variety of coatings available and their many industrial applications, actual product samples range from an excavator bucket and a washing machine frame to mobile phone and tablet shells, featuring textured and special-effect plastic coatings.

We test the difference

Visually, the difference between a good and bad coating is not always that obvious, however. The showroom emphasizes this point by displaying samples that have been exposed to various weathering and salt spray tests, to demonstrate the dramatic performance differences between high and low quality coatings.

Bright and colourful, the showroom underlines Beckers' conviction that modern technology should be attractive as well as functional. On one wall, a spectacular panel of hexagonal shapes reflects Beckers' corporate colours, the shape itself being reminiscent of the Benzene ring – an allusion to a core component of highly durable PE paints. A wall-mounted TV (with a Beckers-coated rear panel) displays a continuous video, highlighting the company's long history and showcasing many product references that have benefited from our coatings.

Friendly forum

Determined to provide a lively and stimulating forum, where customers and others can come for inspiration (and perhaps share new ideas), the showroom's displays and samples will be updated regularly with new products and information on our latest applications. Your visit should be the first of many. Come see us soon! ■

Veranda roof in a slate grey colour. Advantop selected Beckry® Therm from Beckers for this Thermotop panel.

Market leaders cooperate to accelerate innovation

The rapid growth in the popularity of products made from coil coated sheet may be attributed largely to equally rapid advances in coating technology.

Perrine PRÉVEL, Marketing Manager Alcoa Architectural Products

Working together, the Beckers Group and Alcoa Architectural Products, both market leaders in the field, lie behind much of the innovation that drives this growth. Both companies devote themselves daily to the development of new colours and inspirational aesthetic effects. But this innovation goes far beyond mere looks. Efforts also focus on consistent improvements in terms of the composition, service life, functionality, environmental impact, weather resistance and cleanability of coatings, to meet and preferably exceed customers' needs and expectations.

Detail: panel formed to look like slate roofing tiles

The architect's friend

Surface texture and colour are among the strongest tools available for architectural expression. They state the identity and individuality of the owner. When structure and colour are used creatively on aluminium building materials, they can contribute dramatically to the aesthetic impact of modern structures. Flexible, decorative and functional, coloured aluminium perfectly meets the requirements of the construction industry for roofing and exterior cladding for facades, balconies and tunnels, as well as interior design elements in formed aluminium.

For attractive weather protection and for insulation, Reynolux® aluminium panels from Alcoa Architectural Products are an excellent choice. Finished in innovative coatings that combine low weight with high stability and long life, the outstanding processing characteristics of aluminium products guarantee architects and planners great value and exceptional design freedom.

More than good looks

To meet market requirements, coating systems must satisfy three critical performance criteria concerning deformability, weather resistance

and resistant to variations in temperature. Headquartered in Merxheim in Alsace, France, Alcoa Architectural Products works closely with Beckers on research in this area.

As coil-coating specialists, the two companies are constantly engaged in the development of new products, alloys and coating systems designed for a broad range of applications. Regular and intensive material and surface testing is employed to confirm the quality of the many different combinations in terms of tint, gloss, film thickness, surface hardness, adhesion and deformability.

Semi-gloss 'wood grain' coating

One particularly innovative product was recently developed for Société Innovation du Bâtiment (SIB). The Société designs, manufactures and distributes gates, fences, door shutters, garage doors, railings, visual barriers and automated gates for professional applications. Specially developed, the product is a folding shutter, made of aluminium, finished in a coating designed to match the powder-coated wood grain of the frame.

The shutter is of sandwich design, featuring two Reynolux® panels with an insulating core of blue polyurethane foam. Entitled 'Chêne miel', the coating comprises four layers: primer, paint, tint for the wood grain effect and a clear lacquer. The latter provides outstanding UV protection, similar to DURAGLOSS® 5000, a high-tech coating developed in-house by Alcoa Architectural Products. The 35% gloss adds a high-quality semi-gloss effect, making the finish indistinguishable from the frame.

Thermo-reflective coating for cool roofing

Another innovative product tailored to a specific market requirement is a sandwich panel that comprises a white-lacquered Reynolux® panel, an insulating layer of hard polystyrene foam and a second Reynolux® panel, featuring a heat-reflective coating. This coating offers two key features – reduced thermal expansion and thermal conduction – in compliance with the French RT 2012 thermal insulation standard and rating systems such as the US LEED (Leadership in Energy and Environmental Design) scheme. This offers both economic and ecological benefits.

The Beckry®Therm coating, developed by Beckers, was specially requested by Advantop, a veranda roofing company. The first obvious effect of this thermal coating is a decrease in external surface temperature. The reduction in the amount of heat absorbed by the veranda roof lowers the temperature inside the conservatory by 5-10°C. This thermo-reflective coating also helps reduce energy consumption for air conditioning and cuts CO_2 emissions.

The coating features high durability binders and organic/inorganic pigments. These have been selected to deliver the best balance between durability, stability and thermal control performance, while offering a wide range of attractive colours. As well as reducing the surface temperature of the paint, the coating offers excellent flexibility, gloss retention and hardness, with superior resistance to abrasion, UV radiation, corrosion and chemicals.

Partners in quality

As specialists in coil coating technology, Alcoa Architectural Products and the Beckers Group not only develop highly durable products with outstanding workability, but adopt the most cost-effective, efficient, high-quality and environmentally-friendly methods in applying coatings to aluminium panels.

Based in Merxheim, France, Alcoa Architectural Products is a subsidiary of Alcoa, the market leader in aluminium. Alcoa employs 61000 people in 30 different countries, manufacturing and marketing products ranging from composite panels to consumer electronics. ■

Detail: door made of wood grain printed coil coated aluminium

The coil coatings plant

Coil coatings production launched in Bangladesh

Umesh VISHWAKARMA & Subrat BARPANDA

Some twenty years ago, the first coil coating line in the Bangladeshi capital of Dhaka, under the name Galco Steel Ltd, was established by the Chandaria Group. Since then, demand for coil coated sheet has grown steadily, together with a demand for improved availability, more comprehensive service and ever higher quality.

Beckers and its partners have wasted no time in responding to the growing demand for industrial coatings in the South-Central Asian market. In 1998, the company launched a joint venture with Berger Paint India in Goa, under the name Berger Becker Coatings Pvt Ltd, focused on serving customers in India, Nepal and Bangladesh. By 2001, the company was supplying Galco Steel in Dhaka, and had embarked on marketing Beckers coil coatings to major steel producers across the subcontinent.

Demand for coil coated sheet

Over the first decade of the new millennium, a number of Bangladesh's major industrial players, such as Jalalabad Steel and the Buildtrade and Abul Khair Groups, have invested heavily in coil coating capacity. As production volumes of coiled sheet have risen, so has the demand for indigenous production of high-quality coil coatings.

Need for local production

The establishment of the new joint venture – Berger Becker Bangladesh Limited (BBBL) – provides the on-site capacity that Bangladesh's steel and construction industry has long sought. BBBL is the first coil coatings production facility ever established in Bangladesh. By assuring access to the global resources and innovative coil coating technology of Europe's leading developer and supplier of advanced coil coatings, the joint venture agreement with Beckers allows BBBL to provide a unique on-site service to its industrial customers in Bangladesh, slashing lead times and offering advanced local technical support and service. As recognized by every unit of the Beckers Group, proximity to the customer (personal as well as geographical) is crucial.

Full-service facility

The BBBL facility handles all aspects of the production process, from shade development to product development, carried out by the R&D and Quality Assurance laboratories. The plant's assembling tanks and advanced pre-mixing, grinding and mixing equipment is dimensioned for quantities ranging anywhere from 100 to 10 000 litres of paint. Installed capacity is capable of serving Bangladesh's entire current market for coil coil coatings, while allowing the option for future expansion.

Backed by the comprehensive global expertise of the Beckers Group, with the invaluable support of its sister company in India, BBBL is confident it not only will meet, but exceed, customer expectations. ■

SIGNING OF JOINT VENTURE: October 11th 2011
ESTABLISHED: September 2012
FIRST DELIVERY: October 2012
PRODUCTION CAPACITY: 3 600 metric tonnes/year
PLANT AREA: 6000 sq. ft.
PRODUCTION START-UP: Less than a year after JV signing

As demand for coil rises, Beckers gears up for expansion on the African continent, establishing a local production facility in Nigeria.

Dániel van DEVENTER

West Africa is hungry for coil

Beckers has been active in Nigeria since the start of the new millennium, at which time it operated out of South Africa. Initially, the market was limited to a few coil lines, commissioned during the 1990s by a few major companies originally established some 60 years ago, traditionally involved in other products. This soon changed, however, as smaller and more entrepreneurial businesses started to build new and secondary lines.

Having already established its credentials in South Africa, Beckers seemed a natural choice for many of these forward-looking companies, and was instrumental in commissioning and improving production on a number of these lines. Nigeria now boasts more than ten coil coating lines.

Replacing traditional materials

Due to the challenging climatic conditions, the galvanised sheeting traditionally used in Africa is subject to rapid corrosion. This has resulted in a shift towards aluminium coil, which now dominates the market, although hot-dip galvanised steel and aluzinc sheet are also becoming popular.

A number of companies are convinced of the growing market for galvanised substrate, and two new coil coating lines are under construction to cater for this market segment. The market at large has seen rapid growth in the past ten years and, although there has been a recent slump, the market is expected to recover soon. Currently, annual paint consumption for this segment is more than 2 000 tons.

Time for local production

Beckers initially pioneered a presence in Nigeria by exporting its products and expertise from South Africa, as well as servicing a broad range of customer needs, from online trouble shooting to market development. As business boomed, the need for a local manufacturing facility steadily increased and a site was selected near Lagos for a Nigerian production unit. The decision to invest in a domestic production facility has been warmly welcomed by local coil coaters, who have been keen to see Beckers establish a more permanent presence in the country.

As coil coating gains popularity in West Africa, this new production unit offers the additional flexibility needed to meet growing demand from neighbouring countries. Broader market needs will continue to be supported by the Beckers network, operating out of South Africa, ensuring access to all the latest formulation and application technology.

Following production trials conducted by a modest number of local staff towards the end of 2012, commercial production was initiated under the supervision of the South African unit during April 2013. Training of local personnel is a key priority and a strong team from the South African facility has been assigned for this vital role. Some of the local Nigerian personnel have already started their training in South Africa.

One thing leads to another

As a Swedish company itself, Beckers naturally likes to stay in touch with what other Swedish companies are doing elsewhere on the African continent. Through its network of contacts, it located a Nigerian coil line that had originated in Sweden and had been in operation between 1968 and 1978. It is now up and running again at one of the major coil coaters. ■

Turning ‘soft’ values into hard currency

In a world where ‘lifestyle’ and ‘fashion’ are almost synonymous, consumers’ tastes reveal constant and rapid change. No more so than in the fiercely competitive consumer electronics industry, where style and image have become as critical to commercial success as technical excellence.

Cornelia GREKO

CDF is meeting this challenge by developing attractive and functional coatings that can transform a mobile phone or espresso machine from device to fashion statement. This interview with a Senior Material Designer at Microsoft that recently acquired Nokia’s Devices business unit offers some insights into how CDF’s design-intense customers think.

CDF: What are your predictions regarding design trends for mobile devices? What functional coating qualities would be integrated for future designs?

Designer: Nowadays tablet, smartphone or so called mobile devices are no longer just communicators but are also a feat of engineering and a work of art. The product design keeps changing. We design with the intention of providing a special experience for our customers. Social

“Beckers is, for us, one of the most innovative suppliers”

media has also affected our interaction as humans. In countries featuring high use of mobile devices, much of the physical wear and tear relates to the screens of phone, computer and tablet displays. The way consumers interact with mobile devices has changed compared to the past. We are now looking for super durable coatings that offer tough resistance to scratches, oil and water, to ensure the products always provide top performance, even when subjected to the inevitable demands of work and play.

CDF: Where does the inspiration for your designs come from?
Designer: Engineers and designers adopt a meticulous approach to the selection of materials for the consumer electronic market. This involves everything from structural design and mechanical analysis to complex computer simulation and experimental materials, which is a rational way to seek the best product design solution. In term of surface design, we gain quite a lot of inspiration from the luxury watch industry. Even though the luxury watch market has smaller batch production volumes than the mobile device market, both markets share several similarities. They both have high aesthetic requirements, needing to seduce consumers into purchasing their products, instead of from competitors. Blending luxurious aestheticism and innovation, the fashionable and unusual fabric-like texture of PVD metal finishes is a good example of the way design is going.

CDF: What are the specific implications of the inspiration provided by luxury watch finishes? What are the benefits in terms of design and function?
Designer: We will continue to look at luxury watch materials such as silicone, PVD and ceramic finishes. Beckers has developed a silicone-like soft-touch coating that offers very robust mechanical performance, which is best-of-class on the market. We have been trying to focus on the integrity of the materials. Sometimes, however, there are certain limitations when it comes to actual production. For instance, metal alloys are used because they are ultra-light and highly durable. Sometimes the authentic look of the original is hard to keep, though. These materials have to be finished in an ultra-thin highly durable coating, to provide a high-quality look and authentic feel.

CDF: Besides the tactile and functional aspects, are there any other key factors that will affect consumer electronics?
Designer: The selection criteria are not only mechanical performance, cost implications and the product-yield rate of the materials used. Designers must often reckon how the materials trigger the user’s emotional and sensory experience.

CDF: How did you experience Beckers during your design development process?
Designer: Beckers is, for us, one of the most innovative suppliers. You have a collaborative spirit like no other. Beckers provides the best and most robust products in sensory terms, with highly consistent quality throughout the production phase. Great consistency is one of the keys to satisfying customer expectations about the quality of deliverables and is a crucial element in ensuring delivery of the right user experience.

As indicated by the above comments, attractive colours and special visual effects are no longer enough to satisfy the needs of the consumer electronics market. A lot of new and different materials, such as glass, metal alloys, flexible polymers and carbon glass fibre, are being used for consumer electronics today.

For CDF, the challenge goes far beyond the manufacture of paint. The finish must look good, feel good and be highly functional. A soft-touch topcoat can add a lush smoothness that not only feels good in the hand but also provides enough resistance to prevent it from sliding around. An easy-to-clean high gloss topcoat enables the removal of smudges from oily or sticky fingers in a single wipe.

Combining creativity and flexibility with rigorous research and stringent quality control, the CDF team listens carefully to customers. We help customers like Microsoft compete more effectively, speeding time to market, cutting production costs and ensuring that performance parameters consistently satisfy or exceed expectations.

We help customers turn ‘soft’ values into hard currency. ■

IMPOL

Impol Seval's aluminium rolling mill at Sevojno, in Serbia, has more than 25 years' experience in the production and coating of aluminium coil. To enhance its ability to stay abreast of (and in some cases exceed) customers' increasingly stringent demands, Impol Seval has invested heavily in the latest technology. The ultra-modern coil coating line boasts an annual production capacity of 25 000 tons of precoated aluminium.

Wim HOOYMANS

Cutting-edge coating line installed at Serbian rolling mill

THIS COATING LINE CAN PROCESS BOTH ALUMINIUM AND STEEL COILS

	ALUMINIUM		STEEL
Quality	Tension levelled	/	Skin -passed
Alloys	1xxx;3xxx;5xxx;8xxx series of alloys	/	DX51D; DX53D
Standard	EN 573-4	/	EN 10346
Temper	H 0/42/44/46/48 (after painting)	/	H 44/46/48
Thickness	0.15 – 1.5 mm	/	0.15 – 1.0 mm
Width	Max 1500 mm	/	Max 1500 mm

Combining the experience gained from the “old” coil coating line, originally commissioned in 1974, with the latest technological advances featured by the new line, the Sevojno rolling mill is able to offer customers precoated coil of exceptional quality. Introducing a high degree of automation, the new line features automatic thickness control of the mill-finished coil, and of the final finish (primer and topcoat), performed by two measuring devices.

The new trimming, degreasing and tension-levelling line is a key factor in securing the consistent and superior quality of the end product. By tensioning the strip to eliminate any tendency to wave formation, the new line ensures it remains exceptionally flat, a prerequisite when fabricating precoated coil for the most demanding applications (such as composite panels) and industrial sectors (automotive, shipbuilding and aerospace industries).

Equipped for hot lamination of PET and PVC films, the new line can provide a broad range of special-effect finishes, from wood grain, marble and granite effects to patinated copper and more.

Throughout the design and construction process, particular attention has been paid to environmental issues, to ensure that the new coil coating line complies fully with the most stringent international environmental standards.

Quality control of precoated coil is conducted in strict conformity with ECCA norms, both on the production line and in a highly-equipped laboratory, which is located next to it. Impol Seval renewed its membership of ECCA at the end of last year. ■

ECHOCHROME

Ecochrome™ a shining success – inside and out!

Throughout the world, automotive OEMs rely on Beckers’ advanced coatings technologies to enhance the functional and aesthetic performance of painted plastic autoparts and trim.

Beckers introduced Ecochrome™ a few years ago to meet the industry’s growing demand for sprayable shiny metallic effects for auto interiors. Following further development of the system, Ecochrome™ is now also available for exterior applications, offering a range of exciting metallic effects with superior resistance to abrasion, weathering and harmful chemicals.

Comprising three layers of paint, the coating cycle is suitable for normal automatic painting lines that provide precise control of painting process parameters. The Beckers Ecochrome™ system offers an attractive complement to conventional vacuum metallizing or chrome plating of plastic components.

Mirror caps, emblems, grills, custom trims, wheel covers and skid plates are just some of the products that can be radically enhanced by an Ecochrome™ coating. ■

Peter FRAS

The 2013 Beckers Global Coil Marketing Meeting, Ras Al Khaimah, UAE

Global Coil Marketing Meeting 2013

Cornelia HUBER & Umesh VISHWAKARMA

In his opening address, CEO Dr. Boris Gorella stated that the objectives of the meeting were to develop ways of better understanding and serving customers, as well as establishing more effective routines and channels for sharing and disseminating the full range of Beckers Group's technical expertise. With some 50 participants from Beckers sites around the world (Europe, Russia, China, Vietnam, Malaysia, Africa, India, the US and the UAE), the meeting brought together the cream of Beckers' coil coatings expertise.

Two days were dedicated to product presentations and group discussions that addressed a broad range of topics, from chromate-free primer, PVDF, LEED and green building, the Long Term Development (LTD) laboratories, Beckry®Therm and sustainability.

LEED (Leadership in Energy & Environmental Design) is transforming the way we think about how our buildings and communities are designed, constructed, maintained and operated across the globe. Comprehensive and flexible, LEED is a green building tool that addresses the entire building lifecycle, recognizing best-in-class building strategies.

At its core, LEED is a program that provides third-party verification of green buildings. Building projects satisfy prerequisites and earn points to achieve different levels of certification. Prerequisites and credits differ for each rating system, and teams choose the best fit for the project.

Sustainability is central to Beckers Group's strategy and an integral part of the company's vision. So it came as no surprise that sustainability formed a recurrent and essential element of many presentations.

The event proved a stimulating and thought-provoking experience for all participants, one that neatly defines a Beckers culture that combines a unified vision with a healthy appetite for open debate. ■

Beckers prepares for China market recovery

Although China's growth rates of the past few years have been the envy of the world, this has not been true of every sector. Recent negative impact on Chinese coil of the anti-dumping duties imposed by Europe and Russia, as well as a slowdown in domestic demand has put a damper on the industry development. Nevertheless, with coil consumption per head only a fraction of European levels, there is clearly room for growth. ▸

Emily WU

The new Class A warehouse.

In preparation for this market, and also in order to have a separate venue to produce for high – end customers, Beckers Shanghai has opened a second workshop and invested in the construction of a 'Class A' warehouse. In a recent interview for Beckers Magazine, Roger Xu, Vice President Operations for Greater China, shared some insights into the challenges involved in constructing the new facilities, as well as operating in China in general.


The Workshop holding the 5S pilot area

BM: We all know legal compliance is the key to a reliable and sustainable enterprise – especially when the production process involves chemicals. So: how do you ensure compliance?
RX: We monitor the legal environment continuously and, as soon as changes in the regulations are introduced, we establish a plan to satisfy them. After management approval, we maintain regular communication with the relevant authorities regarding our overall plan, as well as progress on each step, ensuring their support and active input.

By investing in a 'Class A' warehouse, we ensure our facilities continue to meet the legal requirements even after increasing production.

Our second workshop is also designed in compliance with ROHS requirements. This is important for all applications where the consumer may come into direct contact with coated coil.

BM: What were the key challenges during construction?
RX: The Shanghai site is already very crowded. This made major construction difficult while maintaining orderly production. Additionally, the new workshop had to be fitted into an existing building, further limiting our possibilities. The need to build within an existing infrastructure, which had been established in compliance with a different set of regulations, naturally also posed an increased challenge in meeting the latest legal requirements.

BM: Ensuring that buildings are compliant deals with the 'hard' operational values – but what about 'soft' values? How do you ensure your personnel behave appropriately, in a manner that conforms to globally recognized EHS (Environment, Health and Safety) norms?
RX: Our guiding concept is to establish and maintain a comprehensive EHS culture. This involves everyone, from the shop floor to top management.

To achieve this, we recruited an EHS manager to oversee our Chinese operations, with a view to leveraging experience and best practice from all three sites in China.

Our team has organized a safety committee that features representatives from different departments. All committee members are trained as EHS auditors. The committee is required to conduct monthly EHS audits.

We also provide regular training to shop-floor staff on a monthly basis, focused on EHS knowledge and skills. Supervisors and managers are also involved in this training programme, making EHS a natural part of their day-to-day activities.

BM: What measures or action have you taken – or are you taking – to further improve the EHS situation?
RX: EHS is not a static issue. We need to continuously improve, learn and also constantly remind ourselves to maintain high standards. For these reasons, in addition to the training sessions mentioned above, our safety committee has been subdivided into five audit teams, which will perform monthly reviews on respective section.

We also encourage all employees to find and report any potential hazards (as well as examples of superior safety practices) at least twice every three months. Last year, we received more than 200 reports and suggestions. This has proved a great help

in improving overall safety and our broader EHS culture.

We hold a 'Suggestions & Ideas' event every year, in which our personnel are encouraged to share their ideas for solving current problems.

We have also noted the relevance of the '5S' (Sort, Set, Standardize, Shine and Sustain) system as an excellent tool for improving EHS and overall efficiency. We have subsequently initiated a 5S pilot area in the workshop, setting a zero target for spills and leakages.

BM: As operations manager for Beckers' coil coatings in China, how do you analyse and project production capacity, to ensure that you can match market demand?
RX: Our team noticed imbalances at various stages in our production process and asked experienced colleagues from Europe to provide input. The team also analysed throughput capacity at each stage of the production process to locate the bottlenecks. We are now working on step-by-step improvements to our production process.

Our team also analysed waste in our production processes. This resulted in the decision to focus on reducing or eliminating improper flow of materials and tanks causing unnecessary delay and instead improve speed flows and minimize downtime.

Based on these findings, action has been agreed to address bottlenecks and the elimination of waste, including a reallocation of equipment to achieve a balanced throughput and an intermediate bulk-tank project to reduce material handling and improve material flow. We are currently in the process of introducing the 'Cell' production concept, enabling a still faster response to customers' orders. The cell concept is the latest in LEAN manufacturing technology, meaning that a small multi skilled team with dedicated equipment will work on the completion of all production steps of a certain product. This will ensure high flexibility for small quantities as well as the ability to manufacture many various products.

BM: In line with Beckers' development strategy, you must be planning further expansion. Can you give us some idea of what's in the pipeline?
RX: Currently key target is further debottlenecking in our Shanghai plant. Due to the drop in demand in 2012, this expansion will ensure that Beckers can meet the demand over the next years from its Shanghai plant. Nevertheless we need to prepare for the future and therefore, are also working on our production footprint. Recognizing the growth potential in North China, we have reserved space for coil production facilities at our Tianjin site to cover that potential market.

BM: Did sustainability play a role during construction?
RX: In China, we are naturally committed to the Group's sustainability targets. But we have also tried to incorporate some 'Chinese' sustainability elements in our new facilities. For example, the hot water for staff washrooms is heated purely by solar energy. Also, our bike shed has been equipped with charging stations for the electric motorcycles that many of our personnel use to get to work.

BM: Now a more personal question. You have to travel constantly between Guangzhou, Shanghai and Tianjin. What do you do to relax and maintain your energy levels?
RX: True to Chinese tradition, I drink a lot of tea and cycle whenever I have some free time. Whatever problems may have to be dealt with, I try to stay even-tempered and good-humoured. Last but not least, the tremendous support I receive from my teams in Shanghai, Tianjin and Guangzhou is essential. ■

> "This involves everyone, from the shop floor to top management"

ROGER IN BRIEF

Roger Xu is a native of Suzhou in East China. On joining Beckers in 2008, he moved with his wife and daughter to Guangzhou in South China. He holds a degree in chemistry from Nanjing University. In 2012, he was appointed Vice President Operations for Greater China, responsible for Coil, CDF and Special Coatings.

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