

Casco Adhesives

The Adhesive Specialist

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AkzoNobel
Tomorrow's Answers Today

MM Systemholz

Swedwood

Haus-Konzept

Editorial



In my previous editorial in mid-2008 I chose to talk about using the strategy you have and focusing on the targets rather than the tools. I believe this is still valid but I made a big mistake. I said it looked like the problems in the American economy would have less of an influence on the rest of the world than expected. That was wrong. Today we know what an enormous influence on the world economy the problems in the US created. The worst thing is that we do not know how or when they will end.

At the end of 2008 we felt forced, for the first time in our 80-year history as a company, to make substantial reductions, -10%, in the workforce. This means that we will be 100 persons fewer than a year ago. However, we do not want to give you less service or fewer new adhesives systems. We will achieve this by reorganizing and thereby better utilise the resources we have.

How can we reduce our costs substantially and keep up the good service that you, our customers, expect from us? It was certainly a major challenge – reducing costs while ensuring that we will not disappoint you.

One simple measure we could take, that

would not have an immediate negative effect on our company, would be to reduce long-term R&D. However, we are in a situation where there is a demand for low emissions from formaldehyde-based products. This means that we, in some cases, are forced to replace old products with new formaldehyde-free ones. New products should preferably be based on renewable raw materials and the costs should not be higher than today. This is a challenge and our reality. Therefore we decided that we could not stop all our interesting R&D programmes. I was very pleased at our last R&D meeting to see that many new systems, which you have been asking for, are now on their way onto the market. I genuinely hope that you soon will benefit from them.

The above was all about us. How about you – I imagine that times are tough for you as well? Unfortunately, as soon as there is a whiff of downturn or recession, most companies rush to cut initiatives on the market side. We all know that wood construction in comparison to other materials has a big potential to grow. Today – this is our opportunity.

But growth will not come by itself – we need

to make sales-efforts. Sales efforts take time before they give results; It is proven, by many research institutes, that increased sales efforts in hard times give a *much higher degree* of outcome when times eventually change.

I am sure that you, together with your sales-force, looks into areas where wood can be the alternative to other materials. If you need assistance, we can give you lots of arguments why wood is the alternative.

Happy reading

Lennart Olsson

SBU Director, Industrial Finishes Adhesives

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FRONT PAGE:
The chair "Twist", of Anna von Schewen, selected as the furniture of the year 2009, by the magazine Sköna Hem.

Photo: Kristian Pohl.

AkzoNobel launches new brand strategy

AkzoNobel has launched its new corporate brand. Symbolising the company's fundamental transformation and determination to lead change, it embodies AkzoNobel's clear ambitions for the future and a passionate commitment to deliver Tomorrow's Answers Today.



As well as a subtle name change and a revitalised, powerful logo, a new brand architecture has also been introduced, along with updated company values and a new brand philosophy. Together it all creates one, distinctive global brand and supports AkzoNobel's highly focused strategic vision.

"This is the new AkzoNobel. We are one company, with a powerful new global brand which will propel us into a new era of competitiveness and opportunity," says CEO Hans Wijers. "Our new brand concept typifies our desire to create new ideas. To stay one step ahead and continually seek out new and better answers for our customers. It means we think about the future, but we act in the present."

Wijers adds that the introduction of Tomorrow's Answers Today is central to the new brand. "It is the heartbeat of the transformed AkzoNobel. It drives our creativity, our product development and lies at the core of all our activities. It will focus our efforts on further strengthening our position as being the world's largest paints and coatings producer and one of the leading global suppliers of specialty chemicals.

"What does that concept mean exactly? It means we believe that what is good for our customers today is not necessarily good enough for them tomorrow. So that constant search for answers is what drives us. It focuses the whole company and inspires us to achieve great things for all our stakeholders, and for ourselves."

The decision to retain AkzoNobel as the com-

pany name was a strategic one – based on extensive research – which indicated that the name commanded too much value, heritage and respect for it to be discarded. Therefore, ICI will be discontinued as a corporate name.

"The new brand is about creating brand equity, not destroying it," explains Wijers. "Our studies confirmed that there is considerable value in the name of AkzoNobel. It is well respected throughout our industries and is synonymous with trust and quality, so there was no reason to change it. Our strategy now is to combine the strong AkzoNobel business-to-business reputation with the former ICI's excellent consumer brands reputation. This will create a powerful brand with significant global reach and incredible potential for growth.

"The logo, however, has changed. It was already a very strong and distinctive asset, but it has been made more relevant for the 21st century and now has a greater sense of power and energy. It is an embodiment of our Tomorrow's Answers Today positioning." The CEO adds that the logo will now be used to endorse all the company's brands. The ICI logo, meanwhile, will continue to appear on relevant products during the forthcoming migration period.

Also central to the whole positioning of the new AkzoNobel are its five new company values, which provide the bedrock on which the new brand is built. They are as follows: focusing on our customers' future first; embracing entrepreneur-

ial thinking; developing the talents of our people; the courage and curiosity to question, and integrity and responsibility in our actions.

"These company values determine how we operate and behave as individuals and as a business," says Wijers. "They will be integrated into all aspects of our operations to ensure that we continue to excel and deliver outstanding service and value to all our stakeholders. They will ensure that we remain a competitive and exciting company committed to delivering Tomorrow's Answers Today."

Launched at a special event held in Amsterdam, the Netherlands, the new AkzoNobel brand will be rolled out globally. A worldwide corporate advertising campaign has also started. ■

MM Systemholz

The starting point for considering manufacture of extensive solid-wood elements in Gaishorn, Austria, in addition to a 150,000 m³/year Laminated beam structure, was the fact "that wood construction can only gain substantial market shares by using a genuine solid construction element. An element with mass, with the advantages of wood – lasting, moisture-regulating, CO₂-neutral – that is simultaneously industrially manufactured and thus permits economic construction," emphasises Adi Aigner, who was Managing Director until the end of June and who founded Systemholz 17 years ago with Heinz Dominici.

Special cutting for further processing

Anyone already creating 150,000 m³/year Laminated beam knows how to handle raw materials – and the owner cuts the latter in accordance with his purpose. There is a central presorting works that feeds the three Laminated beam lines and now the CLT (Cross Laminated Timber) line with raw materials.

The mechanisation of TC Maschinenbau has brought about handling of complete transportation in production. This contribution to the € 20 million investment represents the biggest single order in the 15-year history of this St Veit company.

Further multisensor check

For each Kalmar lifter, production supply feed of sawn timber uses two separate combinable mechanisation processes. This presorted raw material is again examined by a Golden-Eye. The Microtec multisensor scanner delivers information on the current cutting decision, plus information on additional quality characteristics. One concave deformation notification from ATB-Blank is inserted in each instance. It recognises the plank position at up to 240 m/min transverse throughput and if necessary initiates a 'Turn' command.

The subsequent circular cross-cut saw now cuts away unwanted wood markings, and can also turn a longitudinal position into a transverse position, i.e. short-cut wood can be made from long-cut wood.

High-performance finger-jointing

Endless finger-jointing is performed by a unit from SMB, Vöhringen/DE. "With its 15 pieces/min it is the most powerful one ever built," explains Hans Lieble, SMB Maschinenbau, Vöhringen/DE. SMB and TC Maschinen have for years been linked by co-operation regarding construction of powerful laminated timber plants in Central Europe. Scheuch supplies all the state-of-the-art suction, dust-removal and pneumatic materials-handling technology.

In the production flow there follows a generous multilayer warehouse into which longitudinal and transverse layers are buffered – the top lams are stored here for ascertainment of visual quality. This 'central warehouse' in mid-production brings MM Systemholz operational safety, as different previous and subsequent production speeds are compensated for.

Flexible process

The emphasis on making transverse layers out of originally longitudinal ones should guarantee

that each lam will find its technically and optically appropriate place in the Cross laminated timber element. Yield optimisation for MM Systemholz is also important.

Exact lams essential

For MM Systemholz' Cross laminated timber the joints are not glued. This makes four-sided planing even more important – a process performed on two Rotoles lams planers from Ledinek, Maribor/SI. They ensure creation of the usual well-gluable surfaces, and simultaneously calibrate the lams to exact dimensions and angles – four-sided up to 200 m/min.

The core of the plant is its precise stacking of the press cake from longitudinal and transverse layers and the extensive gluing and subsequent pressing of the latter. To take the short and long-cut wood from the two feeders to the preparing table, TC Maschinenbau uses special Schmalz vacuum lifters.

Internally developed gluing

At the preparing table application is then performed in two phases using the internally developed glue applicator from Casco Adhesives. The equipment was built by Casco Adhesives together with Wolfgang Gollenz, who holds commercial power of attorney and who, following the departure of Managing Director Heinz Dominici has borne sole responsibility for production since 1 July. The concept and control are thus entirely attributable to MM Systemholz. What has resulted is unique, precise glue application for varying widths (max. 3 m). Casco Adhesives emphasises that the melamine system is characterised by short pressing times and low formaldehyde values, and that the formaldehyde values in the end product are not higher than with PUR-glued elements.



Spreader



HF pressing using 885 t

Three to seven layers of up to 40 mm lams produce elements up to 278 mm thick, which are pressed in the subsequent Höfer-Duo press using high frequency. The horizontal pressing force of up to 20 ton is also important in this context, ensuring sealing of the joints between the lams – even without gluing. The vertical pressing force is 885 ton. For this purpose Höfer supplied two presses weighing a total of 190 ton.

The HF generators were installed by the Swiss specialist company Plustherm of Wettingen. Using these generators, heating should be sufficient even with the maximum element thickness of 278 mm. The up to 16.5 m long element leaves the press after three pressings.

3 m wide spiral planer

Following conveyance by a large transverse conveyor the elements are then processed in a Ledinek planer. A special spiral shaft is incorporated that processes the elements up to a width

of 3 m. Thus the exact end dimension is achieved, as well as a genuine finish.

“Every element is planed, but the customer decides whether there is also to be bonding on the Maka portal bridge,” explains Bernd Troppmann, who holds commercial power of attorney. The experience after five months is that nearly all orders also require further processing. Windows and doors can be moulded using CNC control. There is also the possibility of any number of mouldings. “Tongue & groove mouldings are all possible,” according to Troppmann. “But we don’t want to make everything. The final detailed work, e.g. provision of sockets, is to be carried out by carpenters using hand tools.”

Further possibilities

In accordance with market development, at the end of production there is also the possibility of incorporating further processing centres. Maka’s big bonding station can already be obviated for a single moulding. The elements are manipulated

and stacked for lorry transportation using Voith indoor cranes. Radio control can be used to stack them optimally for freight and in a manner suitable for the project.

Few staff necessary

The extensive automation of the plant and the direct linkage to work preparation – using five technicians – reduce operating and control measures to a minimum. No more than six staff per shift are necessary. TC Maschinenbau and Oesterle Maschinen are proud not only of being able to meet all Gollenz’s and Dominici’s requirements but also – and especially – of the speed achieved.

The order was placed in January 2007, delivery commenced in July, and trial operation took place in January 2008. The changeover to two-shift operation took place as early as in June 2008. ■

GERD EBNER



Spreader



Operating box / Display



Glue tank

Swede in Beijing



I have just returned back to Sweden after a year plus in Casco Adhesives' Beijing office. Here is an introduction to my Chinese work place.

CEL is short for Casco Evaluation Laboratory. The name gives a hint of the original purpose of the lab, when it first opened its doors around four years ago. Casco Adhesives business in China was growing, and with that the demand for a competent lab in the region that was close to the customer and could provide processing of lab tests. Not only are the results of the lab tests delivered considerably faster when the lab is in the same country, it is also a great advantage to be able to evaluate adhesives aimed for the Chinese market in local conditions and on local wood species. A third benefit with having a lab close to the market is that important information about our customers' production parameters is easily accessible for lab technicians, a condition for making accurate lab evaluations.

In the beginning, samples came in to CEL mainly for routine tests of bonding properties for customers, as a result of trials or for testing after abnormal situations had occurred in factory. Glue-ups were performed to test whether a glue was suitable for a specific customer or not, or to adjust the system to customer needs, perhaps prior to a factory trial. There was also some demand for quality control of products delivered to Casco Beijing's warehouse, as well as from the small scale production we had at that time. Three employees could handle the tasks well.

But that was four years ago! CEL Beijing is now a full grown laboratory with eight full time employees and capability to handle a variety of tasks. Not only does the original objective to be an evaluation lab close to the customers remain, but there has also been a number of new items added to the list as CEL Beijing has continued to grow and develop. One very common task is to evaluate newly developed glue systems that arrive to CEL Beijing from our R&D units. All products are developed as result of a need on the market, existing or expected, so there are a selection of customers whose production parameters, product's performance, etc can be improved. The CEL technicians function as a link between R&D and the field; their job is to take in information from the market and find out which customer is most suitable for testing the new product. After that the lab evaluation begins, in which the factory conditions are copied as much as possible. Many rounds of trial are normally required before the parameters are fine-tuned to perfection, and the system can be tested at a customer.

To be able to perform lab trials with parameters that resemble factory conditions is a key factor for successful factory trials. Fortunately, CEL is one very well-equipped laboratory. Among the inventories you can find different presses, hot and cold and the wood storage with two separate rooms for two different moisture contents in the wood. In addition you had a saw and a planer – of high standard. The lab is also equipped with several testing rooms and is capable of doing the majority of relevant tests on glued wood samples that are required by our customers, including formaldehyde emission tests. We are of course also required to test the quality of the different glues that are supplied within China, as well as all products produced in our production plant. The most valuable resources in the lab is of

course the staff with their never ending curiosity and ambitious attitude to learn more and constantly develop and do a good job. CEL Beijing will continue to grow with the organization and develop as a response to the growing market needs thanks to them!

Now I am back in Sweden and my ordinary job as an RnD engineer in Nacka. I can look back on a happy year in China that will always stay in my memory! ■

REACH

Casco Adhesives and REACH

Casco Adhesives is mainly a downstream user of chemical substances and preparations (in a few cases also a manufacturer or importer), that manufactures adhesive systems. These products are defined as "Preparations" and as such they are exempted from registration under REACH. REACH applies only to the substances that are used for the manufacture of the preparations.

The pre-registration period ended on 1 December 2008 and Casco Adhesives has made sure that all substances subject to REACH in our products have been pre-registered, either by us or by our suppliers. The registration of substances has to be completed by 1 December 2010 for high volume (>1000 t/a) and high concern products, 1 June 2013 for medium volume (100-1000 t/a) products and 1 June 2018 for low volume (1-100 t/a) products.

The process of gathering and following up on detailed REACH compliance information from our suppliers has been ongoing since 2007 and will continue throughout the registration period. We are committed to fulfilling all of our obligations in order to support the products we supply to our customers. As a company, our efforts are in agreement with the European Adhesives and Sealants Manufacturing Association (FEICA) and the European Chemical Industry Council (CEPIC).

Information in the supply chain

Communication along the supply chain is key to efficient implementation. The application and use of each substance have to be identified from the raw material supplier down to the end user (industrial and professional use), in order to evaluate the risk to humans and the environment.

Manufacturers and importers must provide their downstream users with the risk information they need to use the substance safely. The downstream user on the other hand must provide the suppliers with information regarding intended application and use.

Substances of Very High Concern (SVHC)

REACH foresees an authorisation system aiming to ensure that substances of very high concern are adequately controlled, and progressively substituted by safer substances or technologies, or only used where there is an overall benefit to society in using the substance. These substances will be prioritised and over time included in Annex XIV of the legislation. Once they are included, industry will have to submit applications to the Agency for authorisation to continue using these substances.

None of the substances in the raw materials that Casco Adhesives use in Europe are included in the first Candidate List of SVHC for inclusion in Annex XIV, and thus none are currently subject to possible Authorisation and/or Restriction of Use.

Articles glued with bonding systems supplied by Casco Adhesives

A glued Article will only be subject to registration obligations under REACH if:

- The substances contained are intended to be released from the produced or imported article(s) during normal and reasonable foreseeable conditions of use

OR

- After 1 June 2011, glued Articles produced in or imported into the EU contain any substance identified in Annex XIV (substances subject to Authorisation) or the substance is included in the Candidate List for Authorisation (Article 59(1)) and if the following are both true:
 - The substance is present in those Articles above a concentration of 0.1% weight by weight,
 - The substance is present in those Articles in total (annual) quantities exceeding 1 tonne per year.

None of the European products supplied by Casco Adhesives contain any substances that are intended to be released.

None of the European products supplied by Casco Adhesives contain any of the substances in the first Candidate List for inclusion in Annex XIV, and therefore none will have any implications for REACH registration of Articles.

For Casco Adhesives products outside of the European Union, please contact our local Casco Adhesives representative for further information.

Casco Adhesives views REACH not as a threat but as a business opportunity. We are committed to ensuring that Casco Adhesives implements REACH in the most successful manner possible, to the long-term benefit of our company, our customers and our suppliers.

For more information and guidance visit the European Chemicals Agency; www.echa.eu. ■

On 1 June 2007, the Reach regulation 1907/2006 (Registration, Evaluation, Authorisation and Restriction of Chemicals) came into effect. Reach requires every marketable substance to be registered with the new European Chemicals Agency (ECHA). The implementation of Reach will have significant impacts on all players involved in the supply and use chain for chemical products in the European Union.



CHARLOTTA PERSSON

KRISTOFER MODIN

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Hydraulic Press System for Glulam Production

Kommprofi 1000

Type: KP 1000-18/4
18 = max. length of lamella 18,1 m
4 = number of press chambers

Parameters

Length:	12m -24m
Depth of press chamber:	1050 mm
Height of press chamber:	310 mm
Raster of press cylinder:	500 mm
Raster of side pressure:	1000 mm
Max height of beams:	1000 mm
Min height of beams:	80 mm
Lift of press cylinder:	1000 mm
Max width of beams:	300 mm
Min width of beams:	80 mm

- Suitable for contract manufacturing
- Longitudinal grading of beams possible
- Designed for fully automatic handling
- Short assembly times



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New Casco Adhesives systems 3342, 1255/7555

Adhesives 3342

3342 is a formaldehyde-free PVAc system to be used in production lines with radio frequency or hot press. The product is recommended for veneering, board on frame, foliating and edge-glued panels.

3342 will provide a very hard glue joint with low cold creeping and a high degree of heat resistance.

The viscosity of the product makes it suitable for application with roller spreaders as well as nozzle applicators for solid wood.

Adhesives systems 1255/7555

Again Casco Adhesives is first to launch the fastest MUF system available on the market for constructive wood lamination, Melamine System 1255/7555.

In 2005, Casco Adhesives launched the very successful system MUF 1247/2526 with just 65 minutes' pressing time at 20°C. Now, in 2009, Casco Adhesives is proud to launch the next ultra-fast MUF system 1255/7555.

Casco Adhesives has received approval according to EN 301/302 from MPA (Materialprüfungsanstalt), Germany for this new super-fast Melamine system for constructive wood lamination. Applications include laminated beams, duo and trio beams, solid wood lamination, wall elements and cross laminated timber. Due to the wide range of hardener ratios in separate applications, which offers a very flexible system, this system gives a very fast set-up for load bearing construction. For mixed-in application, Casco Adhesives will go for 100/30 approval.

Besides the very fast pressing time of about half an hour at ambient temperature, it also offers a very short after-curing time of 3 hours at 20°C and low formaldehyde emission.

A test at Eco Institute shows very low results

for VOC (Volatile Organic Compounds). Unfortunately the wood itself produced a high value on bi-cyclic Terpenes, which was the only compound that failed the test.

This super-fast system will work excellently in presses like Springer, Rotoflex and Dimter which have high productivity due to short pressing times. Looking ahead, for the new Leisse and HIT press systems, the system will be the perfect match. It also works well in RF presses.

Melamine system 1255/7555 together with, by Casco Adhesives' developed, machine concept "Forward Integration" offers the customer highly cost-efficient production. The machine measures the temperature of the lamella surface and the ambient, and then calculates the shortest pressing time and the lowest glue amount necessary for the acquired assembly time. This ensures optimised production for the customer. It also has great potential in safety issues for recognising low-temperature lamellas. The faster a system becomes, the more important the basic wood temperature is.

The super-fast performance makes the 1255/7555 highly competitive to 1C PUR.

Melamine system 1255/7555 also has a very short pressing time at very low temperatures in most European countries the minimum temperature for producing constructive wood components is 20°C, although some producers still face low temperatures. The pressing time at 5°C is as short as 2 hours 15 minutes compared to one of the biggest PUR glues which is about 2 hours.

Regarding different wood species, Casco Adhesives' MUF 1255/7555 has proven to work very well also on pine, larch and oak as well as beech.

Formaldehyde emission of 1255/7555 100/200, pass F**** according to JAS 235. ■



New System 1255

Casco Adhesives MUF system 1255/7555 Pressing time vs. Temperature

1255 / 7555	5 °C	15 °C	20 °C	25 °C	30 °C	35 °C
PT 100/200	2h 15 min	65 min	40 min	28 min	20 min	15 min
After curing time 100/200		4 h	3 h	2 h	1 h	< 1 h
PT 100/100		80 min	45 min	33 min	28 min	23 min
PT 100/50			90 min	40 min	33 min	28 min

ANDERS ERICSSON

EVA NABSETH

New production technology concept of glued pine panels in Resko

Close co-operation between a producer of an adhesive and equipment for its application and a manufacturer of furniture panels made from solid pine is bringing advantages to both parties. Thanks to the experience of its partner Casco Adhesives, the company is continuing to improve its products, and because it belongs to the Swedwood Group's plant in Resko it can systematically modernise its production technology.

Due to ever-increasing demands on IKEA products, arising in part from the company's penetration into new markets, the Swedwood Group's producers are obliged to eliminate formaldehyde emissions from their products. That is why the Resko plant (West Pomerania), a producer of panels for pine furniture, has been involved in introducing a new technology in the past few months. In co-operation with the adhesives manufacturer – Casco Adhesives – the best possible formaldehyde-free adhesive is being sought, as well as a method for its application and conditions in which the gluing process takes place.

"The panel processing plant uses the traditional urea-formaldehyde resin adhesive," says Pawel Weimann, Casco Adhesives' representative. "This is a universal adhesive, tested and widely used in the timber industry. We have also started general tests on our formaldehyde-free products."

Two products are being 'tested': one component polyvinyl acetate and an EPI (Emulsion Polymer Isocyanate) adhesive. The second one requires the use of an isocyanide hardening agent.

"We are currently pilot testing a number of selected adhesives in production," says Artur Rokicki, Director of the Swedwood plant in Resko. "Over the next few months the site staff, together with Casco Adhesives technicians, will try to select adhesives with a suitable composition and find optimum settings for the equipment which would be best suited to our existing machinery."

Rokicki is satisfied with the test results so far. He can imagine urea-based adhesives being abandoned. The one task remaining to be solved is to adapt formaldehyde-free adhesives to the current technical and technological conditions in the plant, and vice versa. All parameters involved need to be optimised; the adhesive, its application to the material and the actual process of gluing the panels.

Preparation of raw materials will also undergo testing. Pinewood may potentially require different parameters of adhesives technology

than those currently in use. Moreover, finished glued panels might be subject to different miscellaneous factors. In the final phase, one selected adhesive will be used for several days in everyday production.

This is not the first time the Resko plant is acting as a testing ground for new production technology. Two years ago the factory, operating since 1994, was relocated to a new facility as a result of a project, initiated by Swedwood, to integrate the entire production cycle in the smallest possible area. Long technology lines in which successive production phases take place facilitate the correct flow of material.

The current technique of producing glued pine panels was a world innovation. Instead of traditional heating by water or oil, the presses utilise high-frequency waves. The glued wood is heated to the specified temperature and glued joints are fixed in a microwave oven. Such presses

were known in the past but they processed wood in sequence. While presses based on continuous gluing were not new technology, the material was heated in a traditional way or in the 'cold' way. It was the combination of both systems that proved to be the proverbial bull's eye.

"Our plant is the first (and currently the only) one in Poland to use the continuous gluing technology," comments A. Rokicki. "When we started up production in the new plant, all presses were prototypes. The manufacturer was assembling them to suit our technology."

The new fully automated presses were manufactured by Obel-P Automation, Denmark. One distinguishing feature of the equipment is the fact that the material, from entry to exit, is a fully formed product. The presses produce finished panels of specified dimensions which do not have to be trimmed, as is necessary in traditional presses.



W. Chlubek and P. Weimann praise mutual co-operation.

As in the current case, preparation and introduction of the new production cycle would not have been possible without close co-operation with Casco Adhesives. Their specialists were the ones who helped to find innovative solutions when Danish automatic gluing equipment was being introduced.

"In the presses we changed the way adhesives are applied to edges," explains P. Weimann. "Traditionally they are applied using a roller. Our solution was to apply adhesives using special spray nozzles. This method is not only more economical but also faster. The transfer of the material over a roller takes a certain amount of time, whereas spraying is faster."

Because of a different application method to the edges, selection of an adhesive with a suitable consistency proved to be crucial. While the adhesive should not be too viscous, the required quality of joints has to be guaranteed.

Production lines commissioned in 2006 are fully automated. Material is fed into the machines by special feeders. The latest generation of Wood Eye electronic scanners ensure optimisation and sorting of edges.

"The conventional technology meant a certain loss of raw material," explains Wojciech Chlubek, Director of the Swedwood Poland plant. "First the wood had to be trimmed to a specified length, then sliced on a planing machine, and only then could suitable pieces be selected for further processing. Now the entire beam is cut at the beginning and a scanner optimises the planks to the required length and sorts them according to quality."

Since the whole production cycle is continu-

ous, higher material and time productivity is achieved. Production automation has brought considerable gains thanks to lower labour requirements. Instead of operating in four shifts, the plant now works in three. The workplace has also become safer.

The management of Swedwood describes its Resko plant as a 'conceptualistic factory' – and not without reason. It was here that the conventional production system was converted to the latest technology for the first time, implemented in co-operation with Casco Adhesives. Managers of other plants in the Group can gain from the experiences of management and staff in Resko. The know-how is being applied also in the construction and equipment of the latest Group site in Wielbark, in the Warmia-Mazury region of north-east Poland. The Director, Mr. Rokicki, is pleased to see his factory being emulated. The next factory will appear in Russia. ■



Panels with adhesive applied are fed continuously into the press.



An automatic press 'producing' finished panels.



The human eye has been replaced by an automatic scanner.



Swedwood plants are characterised by long production lines.

PIOTR A. POREBIAK

Moisture and cross grain frustrate curved plywood producers

Crack formation and warped products are the scourge of curved plywood producers. The problems often go undetected until the product has reached the customer, by which time considerable claim costs are involved. To counteract this problem Casco Adhesives, along with a number of Swedish companies in curved plywood, has participated in a research project spanning several years at the Department of Forest and Wood Technology, Växjö University.

In recent years Swedish curved plywood producers have seen major changes on the market, and large production series are a mere memory. Production now tends to focus on small series of 100-1,000 details, and the products are becoming increasingly complex in terms of shape and structure. At the same time there are increasing demands for short delivery times, more product versions and a focus on price and quality. As a result of this, demand for high output of the right product in production has come into focus.

The project has identified several factors that contribute to a lack of shape stability in curved plywood products, cross grain and moisture deviations being the most important causes.

Incorrect layering of the veneer, which results in different moisture ratios in a veneer 'batch', proved to cause many of the randomly occurring rejects in seat shells. Veneers with different moisture ratios are glued into a structure, and when the moisture evens out, tensions arise which lead to deformation. This is particularly evident when the veneer has cross grain.

Cross grain, i.e. when the wood fibres do not lay in the same direction as the lengthwise direction of the veneer, causes increased shrinkage and swelling in the finished product, in directions where this is not wanted. The degree of cross grain varies within the same type of wood, although some woods have more tendencies to cross grain than others. The incorrect layering of veneer in a structure can also cause the same negative effect as cross grain. The apparent increase in shape stability problems seems to be due to the increasing use of very 'low quality' veneer in glued structures. These veneers often have a haphazard fibre structure.

Cross grain mainly leads to warping of the product, but in some cases it can also cause cupping. In some circumstances the deformation is so severe that the final product is not fit for use.

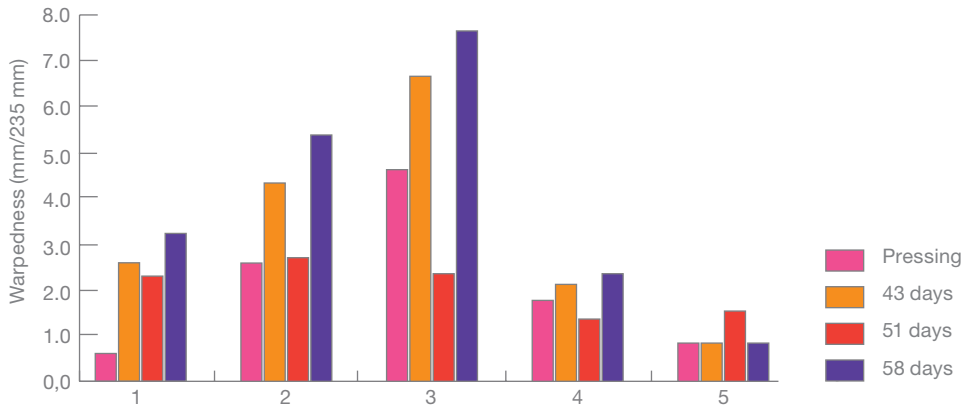
Different glue systems have also been tested, and the perennial question of whether it is better to use a powder or a liquid hardener to achieve shape stability in the product has now been answered (see figures). The practical difference between the hardening systems is marginal and the following conclusions could be made from the tests:

- Increased moisture content in the glue does not necessarily entail increased warping in the products.
- The choice between powder or liquid hardener is not crucial to shape stability.

The collaboration between Casco Adhesives and Växjö University is continuing, even though the project financed by the companies and the Knowledge Foundation has come to an end. For further information, contact Niclas Berg or Micael Manford at Casco. ■



Glue systems no.



Warpedness in seat shells subjected to moisture cycling.

See table for a description of the glue system.

Pressing: measurement at the factory directly after seat shell pressing.

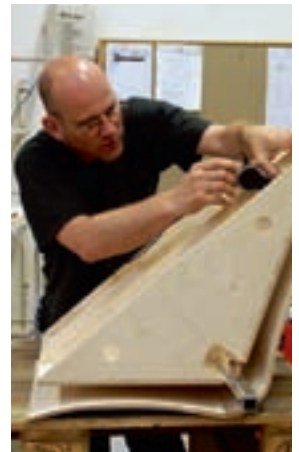
43 days: measurement after the seat shells had been conditioned to 4.9% moisture ratio.

51 days: measurement after conditioning to 16% moisture ratio.

58 days: measurement after conditioning to 6% moisture ratio.

The various urea-formaldehyde resin adhesives (Casco adhesives) used in the tests

Glue system no.	Adhesive	Hardener	Ratio	Comment
1	1274	2581	100:20	Liquid hardener used in standard production
2	1274	2580	100:20	Liquid hardener with lower viscosity, higher pH and longer storage time
3	1274	2746	100:25	Powder hardener
4	1274	2747 + water	100:25:10	Powder hardener with extra water added
5	1274	2580 + filler 2720	100:20:15	Filler to reduce adhesive penetration and increase the adhesive's filling capability



Important measurement:
Here, Lars Blomqvist of Växjö University measures deformations in a seat shell using a specially made measuring rig.



New Symbols

We are in the process of changing all our labels. Reason number one for doing this is that we have to have our new logo on all labels by Nov. 1 2009. The other reason is that we need to have more space on our multi lingual labels, the one with 18 languages, in order to make the text bigger and more readable. This change will take place during Q2 2009.



PINGU:
This symbol replaces the text
"Keep from freezing".
It is an international known and accepted symbol.

THERMO:
This symbol replaces the text
"Have to be stored between x°C and y°C" or "has to be stored above x°C".



The future of Russia depends on the implementation of high technologies

“We have always wished to build houses using technologies of the 21st century. For Russia, a country with a third of all timber reserves on the planet, implementing leading-edge technologies is not only a step forward but also a solution of a politically significant task comprising the export not of raw materials but of ready-made product.” Vladimir Ivanov, General Director of the Sodruzhestvo Group of Companies.

The Sodruzhestvo Group of Companies is a multi-industry construction holding comprising 12 enterprises, three of which are engaged in high-level timber processing:

- Novgorod Timber Company Sodruzhestvo – production of bolt timber according to European standards.
- ZSSK Sodruzhestvo – joinery structures factory: doors, stairways and windows.
- HAUS-KONZEPT Sodruzhestvo – industrial production of pre-fabricated cottage, houses from glulam and long-span glued timber structures.

The enterprises are fitted out with modern high-technology equipment from the German Homag

and Weinig groups, which provides for the maximum automation of all manufacturing processes. Constant improvement of technological processes for production and quality control, along with organised trainings abroad, are the factors that secure the consistently high quality of the manufactured products and the consumers' positive attitude.

HAUS-KONZEPT Sodruzhestvo currently produces:

- pre-fabricated bearing-wall frame houses: 100,000 m² per year
- glulam houses: 25,000 m² per year
- long-span glue-laminated bearing beams: 40,000 m³ per year.

Fig.2.
Timber structures, meridional ribs with chord 60 m for the water park dome section (dome diameter 90 m) in St. Petersburg's 300-Year Anniversary Park.





Fig.1 **Manufacturing of arched long-span laminated beams.**

The HAUS-KONZEPT Sodruzhestvo factory with a floor space of over 20,000 m² is situated in Kolpino, a suburb of St. Petersburg. The manufacturing processes have an environmental focus and are considered to be ecologically clean and fully non-waste. The enterprise continues pursuing the policy of implementing up-to-date low-impact manufacturing technologies, allowing advanced processing of timber for home market consumption and for the export of finished products. This is in line with the general course of the Government of the Russian Federation, directed at attaining the maximum possible level of timber processing on Russian territory.

In March 2007 HAUS-KONZEPT SODRUZHESTVO started up the largest production of long-span laminated beams (LB) in Russia. The factory's equipment allows the manufacture of long-span laminated beams of virtually any size and shape – arch girders, beams and frameworks – any single product being up to 30 metres and with the maximum cross-section of 250 x 2000 mm (Fig. 1) can be produced. In accordance with the project, long-span glued timber structures with the span of up to 150 metres are assembled immediately on the construction site.

Long-span laminated beams (LB) possess enhanced bearing capacity with low unit weight, as well as high durability, chemical and fire endurance and unrivalled aesthetic and ecological characteristics. Reliability, highly aesthetic



Fig. 3 **Roof framing for atrium from lam beams for a trade and exhibition centre in Lahta, span up to 24 m.**

looks and cost effectiveness of construction are additional benefits using modern construction technology from Sodruzhestvo. Implementing adhesives from Casco Adhesives approved for the production of load-bearing structures by the leading European institutes – Otto-Graf-Institut (MPA) in Germany, NTI in Norway, SKH/KOMO in the Netherlands and certified in Russia in the GOST R certification system – secures the quality of glue joints and structures on their basis produced by the HAUS-KONZEPT SODRUZHESTVO factory.'

Close co-operation between specialists at the companies Casco Adhesives and Sodruzhestvo ensured the rapid development and implementation of the advanced technologies of production for long-span structures. The latest generation of adhesives systems and glue application equipment are used. This has become one of the factors in the choice of enterprise for the production of long-span timber structures for the dome section of the water park building in St. Petersburg's 300 Year Anniversary Park with the diameter of 90 metres, meridional ribs with chord 60 metres (Fig. 2).

The quality control system is an integral part of the technological process at the HAUS-KONZEPT SODRUZHESTVO factory. The laboratory is equipped with modern testing equipment which enables regular control of factors as glued joints' strength, material humidity etc.

The HAUS-KONZEPT SODRUZHESTVO



Fig. 5 **Sports complex 36x72 m, span 36 m, St. Petersburg.**

factory was the first in the region to start industrial production of pre-fabricated bearing-wall frame houses, in 2004. These are environmentally friendly, warm and cost-efficient cottages for permanent residence which are essentially new for Russian European-quality housing.

A ready-made house-set is delivered to the construction site making it possible to assemble the house on a pre-prepared foundation within one day. Interior finishing works can be started right away. The company provides a full construction cycle: designing, manufacturing, assembling and finishing, affording the customer a house ready for moving in. The company's architect's bureau has developed over 50 standard house designs while constantly increasing the model line and at the same time being able to fulfil any individual order.

The factory's products can be efficiently used for the implementation of national Russian projects such as "Development of Agro Industrial Complex", "Affordable and Comfortable Housing for Russian Citizens", and "Zdorovye" (Health). Among the projects of the HAUS-KONZEPT SODRUZHESTVO factory are the following own projects: cottage housing developments "Zelyoniye Kholmy" (Green Hills) and "Serebyanyi Bor" (Silver Pine Wood). The factory also fulfils Government orders (boarding school in Repino, canteens for nursery schools) and builds individual houses.

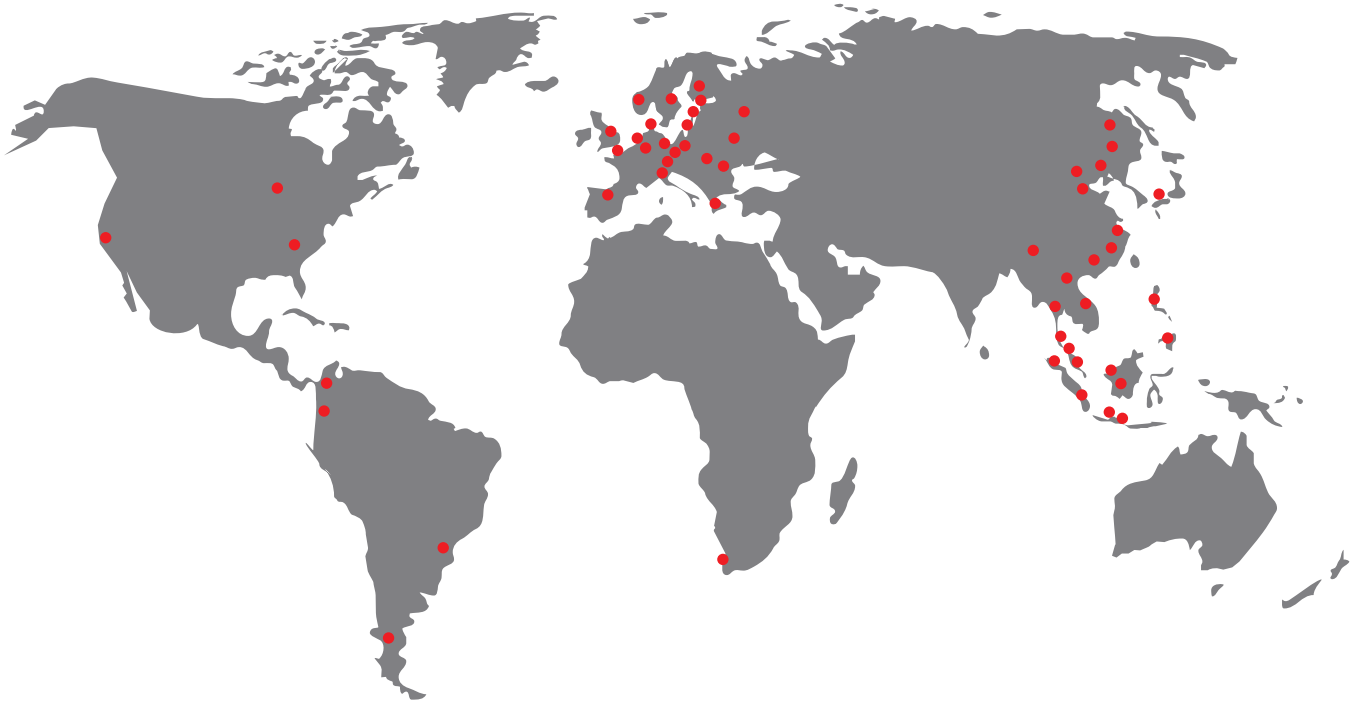
Figures 3-5 show some of the HAUS-KONZEPT SODRUZHESTVO projects, where you can see long-span glued timber structures. In the near future the factory is planning to participate in the construction of large projects such as an indoor tennis complex in Ozerki (span 43 metres, area 2,000 m²) and a swimming pool (span 24 metres, area 820 m²). One should specially note the participation in projects related to the "Gazprom – For Children" programme, realizing the construction of a number of sports complexes in the north-west region of Russia. ■



Fig.4 **Rowing base on Kestovski Isle, span 20 m, area 600 m².**

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