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# Tall oil-based distillates will succeed - thanks to added value

*Bruno Gerville-Reache (on the left) and Forchems's Sales Office Manager Michel Baumassy*

**"Welcome to the TOFA business!" – That is what Bruno Gerville-Reache says he thought upon hearing that Forchem was established and would be entering the European tall oil products markets in 2002. "There was finally a new player in the field to help maintain healthy competition," recalls Bruno Gerville-Reache, who recently retired from a large French chemicals company, in a meeting in Paris in early November. His long-time business partner Michel Baumassy, Forchem's Sales Office Manager South Europe, was also present. Bruno Gerville-Reache has been involved in this industry since many years. Before his retirement a few months ago, Bruno was purchasing manager of Crey Valley a division of TOTAL company.**

"It's obvious that Forchem was competitive at the time it entered the markets, but the question is whether it can remain competitive in face of the new, radically changed business environment and challenges," Gerville-Reache says pensively.

"Forchem had the know-how, and in production it could also exceed the critical volume, which is vital from the customer's point of view. Forchem could take advantage of its competence and modern tall oil processing technology. I'm not saying that processing crude tall oil is exceptionally difficult in terms of technology, but you do need to have top machinery and equipment to achieve the best possible end result," Gerville-Reache says.

"The buyer must be aware of all variables and open to different options in its operations in order to be able to decide on long-term strategies, pricing and qualitative targets. Openness is required as you can never be sure of what will happen next. You also mustn't put all your eggs in one basket. You have to optimise operations while at the same time trying to identify compromises that support your business."

## Climate change will change economic structures and raw material flows

The global struggle against climate change and the European instruments used, such as emissions trade, increasing the production of bioenergy and, especially, the ambitious targets for the production of biodiesel and their global secondary effects, are no laughing matter for Bruno Gerville-Reache.

These measures are driven by a global concern that, unless governments radically change their policies, the consumption of oil, gas and coal, and along with it the emissions of green house gases, will increase heavily by 2030. In the EU, biodiesel plays a major role in this, as according to the most recent ambitious targets the 10 percent share of biodiesel of all fuels should be achieved by 2020.

According to Gerville-Reache, there was a major change in the vegetable oils market in 2007. "Problems in supply will aggravate due to the shortage of vegetable-oil-based raw materials. This is a commodity, which means that there are plenty of speculators in the market that shake them up."

"In view of the European target for biodiesel, the tall oil fatty acids and tall oil rosin markets will remain turbulent. We are at a major turning point worldwide; will the oil be steered to the food industry, or to energy production to reduce CO2 emissions? In the US, grain is even now being used extensively in ethanol production."

"The problem in tall oil industry, lies in the low number of players . There are only a few suppliers of crude tall oil-based value-added products, while the number of potential vegetable oil producers is much higher. Another complex issue is the association of crude tall oil with the paper industry and utilisation of wood raw material, both of which pose their own difficulties nowadays. Paper demand and consumption present different realities in these mature markets, and the increasing energy price threatens the raw material supply of the paper and pulp industry."

## "It's all about added value"

How the tall oil market and, especially, the vegetable oil market will develop, remains to be seen. The recently published OECD expert report on biofuels has raised the important question of whether the remedy offered in the form of biofuels is actually worse than the disease. According to the report, favouring biofuels will lead to a fight between using cultivable land area for food production and using it for fuel production. There will also be environmental problems. Since the production of biomass is more efficient in tropical areas, original ecosystems will be destroyed and scarce water reserves will be exploited for turning forests and agricultural land into 'fuel fields'. This is a major concern for Gerville-Reache as someone who follows current trends and phenomena, and an expert of his former industry.

"China's role is vital in terms of how heavily the local refiners will invest in the downstream business, as they also need huge volumes of paper, and the paper industry is growing strongly in China. Political decisions are again at the centre here. Keeping track of what the Chinese are doing and how they operate in business life altogether is difficult. They plan for the short term, so you just have to keep a close eye on the proceedings."

"From the western perspective, changes in prices and deliveries seem to be more illogical than logical. This is a problem in the long run. It's difficult for European players to be competitive due to the huge volume of Chinese production, and some are already investing in production in China. We mustn't forget the importance of currencies either. The local currency is excessively weak against the dollar, and something must happen here."

# Innovations in the forest industry present an opportunity to the entire European chemicals industry

**We wanted to find out what kind of challenges and visions the Finnish leader figures of their industries predict for the future. In an interview hosted by Forchem Oy, Anne Brunila, President and CEO of the Finnish Forest Industries Federation; Hannu Vornamo, Director General of the Chemical Industry Federation of Finland and a Member of the Board of the European Chemical Industry Council; and Martti Fredrikson, President and CEO of Forchem, discussed environmental issues as well as the availability of energy and raw materials. An issue of special interest was innovations at the interface of competence areas and sciences.**

The Finnish forest industry's strengths have traditionally included multidisciplinary expertise and co-operation, skilled personnel and first-rate R&D. Co-operating across sectors and integrating different technologies have created radical products, and new business and markets. In this respect, Forchem is one of the many fine examples of where an innovative and open approach and built-in competence have helped create a new internationally substantial chemicals business from the by-products of the forest industry.

"The future forest industry will be more versatile and have a greater impact. The changing climate and decreasing natural resources are major issues right now, but as long as we have a sustainable forest industry and sustainable forests, a natural resource absorbing carbon in the atmosphere, we can fight climate change. Many materials can be replaced by wood, and wood-based products, such as paper, are recyclable. At the end of their life cycle they can be used in the production of bioenergy. The same amount of energy could be produced by burning the wood, but we would lose thirteen times the number of jobs and 8 times the added value," says President and CEO Anne Brunila, of the Finnish Forest Industries Federation.

"The more versatile use of forest, wood and its derivatives requires a more in-depth knowledge of wood and fibre materials, the utilisation of new disciplines, such as information bio- and nanotechonology, and an innovative integration of disciplines. The increasing focus on customer orientation requires that the identification and understanding of consumers' needs must be improved. It's also important to better understand the ways in which products are used and, for example, the role of environmental arguments when choosing products," Brunila says.

## Innovations – new resources

"The chemical industry has a major role as source of innovations in other industries. Additionally, many of the challenges of sustainable development and well being can be solved through chemistry. The chemical industry holds the key to future success," says Director General Hannu Vornamo. "There are many challenges coming up in the future, though. The manufacturing industry and its related operation environment will have to undergo a drastic transformation, but seizing the arising opportunities at national level will require some bold decisions," he adds.

The other two find it easy to concur with the idea of the versatile use of innovations. In fact other decision-makers have realised this, too. Finland is currently drawing up a national innovation strategy, which is due to be finished in the first half of 2008. The project's scope is ambitious even in global terms; there are no similar projects underway anywhere else.

"The rising oil price, the limited availability of non-renewable raw materials, goals for sustainable development and improving the competitiveness of the entire forest cluster call for a more careful and diversified utilisation of wood raw material. The increasing use of wood opens a carbon dioxide neutral path for the chemical industry's development, paved by the hundred-year-old processing of tall oil. Eligible products include polymers, their derivatives and special chemicals," Martti Fredrikson says.

The primary goal is to utilise wood-based biomass as extensively and profitably as possible as a raw material for value-added products. Wood contains derivatives and chemical compounds that are way too valuable to be directly incinerated for energy.

The forest industry, too, has established a strategic centre of excellence together with machinery and chemicals manufacturers, universities and research institutes. Associated research is co-ordinated by Forest Cluster Ltd., a company that initiates projects and channels funding to the centre with the aim of taking the forest industry's competitiveness to a new level. The challenging target is to double the production value of the forest industry by 2030. At first, the centre will focus on intelligent production technologies that save resources and biorefineries, which use wood-based materials in a wide variety of ways. A third area of research will be products and materials to be manufactured from wood and wood derivatives.

## An entirely different forest business

"This industry is capital intensive, and investments are made to a 20- to 30-year plan, which means that rapid changes in direction are difficult to implement. That said, the industry has managed to develop and introduce new products and entire product segments, such as RFID tags and packaging innovations, fairly rapidly. These products have developed into billion-euro businesses," says Brunila, commenting on an entirely

## In five years

### 01 March 01st

Rauma Forest Chemical Oy has decided to build a tall oil distillery in Rauma. They have turned over a new leaf and already started the design works.

The tall oil distillery's foundations were laid on 4th October 2001.

### 02 November 21st

Forchem Oy, the largest modern crude tall oil distillation plant in the world, has started up in Rauma. When it reaches full production speed, the plant will produce 150,000 tonnes of distilled tall oil products per annum. This capacity accounts for some 10 per cent of the processing of crude tall oil in the world.

### 05 January 17th

The company´s three management systems were created and introduced: quality ISO 9001, environmental ISO 14001 and occupational health and safety OHSAS 18001. All three systems were certified simultaneously in December 2004.

different forest business, green chemistry, biorefineries and bioenergy. "Forchem has been successful in its field, and that's great, but it actually shows the limited volume of new business within the forest industry, and that's something we need to focus on. We need to invest more heavily in special markets and special consumers. I realise that there's been some change, but now is about time to put the words of the past few years into action."

"The Finnish forest industry must now redefine its role in a larger and more global context. Companies must invest in applicational innovations and customer relationships – in what's most relevant," says Brunila, with reference to the current situation where traditional industry is going through a radical change. In the process of change that the international field of operations is undergoing, new business areas are being sought to operate alongside production. Challenges in productivity and the changing needs of customers call for new business based on top-class expertise and customer-driven solutions.

## Clusters bring industries together

"Clusters prove how borders between industries are getting blurred. We cannot examine issues by sector anymore; in fact, the best progress is being made at the interfaces. The chemical industry is also taking charge of the functioning of processes. Value chains are being consolidated into fewer hands and competence is growing deeper," adds Vornamo.

"The trend is towards fewer products but higher value added. Consolidating just to increase in size and counting on this to provide market dominance just doesn't work. The forest industry has obviously now realised this fact, just as the chemical industry realised it earlier. The fertilizer and petrochemicals industries aimed to achieve as large units as possible with the result that net sales went up, but profits didn't."

> **"Clusters prove how borders between industries are getting blurred"**

"Today Finland is the technology leader in nearly all paper products. It just so happens that paper production and wood products markets are growing in totally new areas today. Wood and capital flows are changing direction. The slowly decreasing demand in the mature markets has been evident throughout the 21st century, and the forest industry has responded to it by looking into new products for all the markets that are going through change. It's anyway unimaginable that, 15 years from now, products would be the same as they are today," Brunila says.

"So innovations are sought, but knowing when technology will make it possible to commercialise them and when it will be commercially profitable is another issue. In terms of applications, there's huge demand for information biotechnology, nanotechnology and all deep-probing technologies. I don't think that the Finnish forest industry could have woken up to these much earlier. We definitely haven't been slow to respond here. Yet these are difficult times until the imbalance between supply and demand is corrected and the industry made profitable in such a way that it's capable of investing in its future. It may now appear as if there is no future, but without the current measures there really wouldn't be," Brunila adds.

## Combating climate change a major challenge for the forest industry

"As a refiner of tall oil, Forchem operates at the interface of the forest and chemical industries, where the only way to survive is to be able to adapt to market conditions. This can only be accomplished by innovations, investments and new business concepts as Forchem has shown. The challenges that we face, such as the emissions trade, come from outside the business. These are burdens that major competitors operating outside Europe don't have," says Forchem's President and CEO Martti Fredrikson, elaborating on the discussion on the modernization of the industry.

"For Forchem, the emissions trading caused the price of the main raw material to increase, which felt harsh and unfair. Now this development seems to threaten the entire paper industry. By definition of emissions directive, the paper industry is concerned party while the chemical industry is not included, as the Commission lined out that the international competitiveness of the European chemical industry must be considered."

"This was the forest industry's aim too, but the central European forest companies are not large and global enough compared to the chemical industry. It's in fact a small industry in relation to practically any industry in Europe. The voice of the Nordic dimension is not strong enough to bring about the desired results in EU decision making," says Brunila with concern.

"The structural change continues, but once it comes to an end, we have a good chance of remaining what we are right now. Whether it will be within the forest industry or the biomass industry, only time will tell. Advances are made and new innovations combining fibre and smart properties will be introduced in packaging, paper and the by-product flows of the forest industry."

"There are numerous applications areas as long as we're aware of changes in the consumer trends at the right time, or – to be precise – early enough. Now all we have to do is make sufficient investments and have a truly open mind. There's no time to waste, and we have to take chances. Without risk-taking no novelties will be found," Brunila sums up.

**06 May 15th**

Forchem was able to secure a leading position as a tall oil rosin supplier in Europe last year – despite the labour dispute in the paper and pulp industry. The company's financial result was positive, and the annual production capacity rose to 175,000 tonnes.

**07 January 09th**

Forchem´s entire share capital was sold a a private Finnish equity compeny MB Funds and key personnel of Forchem.

**07 April 24th**

"We have worked without an accident 3,2 years and distilled 409 000 tonnes of tall oil in 1210 days an 20 hours. Tha last accident, which was a burn, occured on 18th Decenmber 2003 at 17:50." The classification is awarded to the member workplace of the Zero-Accident Forum whose level of safety ranks in the word´s forefront of occupational safety.

# Accuracy and reliability – the core of Forchem's logistics

**Forchem's logistics safely deliver around 12,000 loads to Forchem and its customers each year. Functioning logistics is not merely handling transport orders but it requires thorough planning and reliable partners to operate sufficiently. In meeting these demands Forchem has succeeded exceptionally well.**

More than 1,000 loads of rosin leave Forchem's plant in Rauma each year. Logistics costs account for about 12–15% of the company's net sales, which makes it a major factor. Determining the best transport methods and routes has taken countless man-hours, but the work is now paying off.

Long co-operation with their logistics partner Hoyer has resulted in the decision to opt for oil-heated containers in the transport of rosin. This type of container ensures that the demanding material is delivered to customers on time and at the right temperature. Since the initial trials, Hoyer has started to use the oil-heated container more widely now. The number of containers will further increase in 2008, making rosin transports even more efficient.

## Oil-heated rosin container a source of pride

When leaving the Rauma plant, the temperature of the rosin is 200-220°C, and when it reaches the customer it should still be at 180 degrees. This naturally requires special transport arrangements. The high temperature requirement makes rosin very challenging to transport.

"Co-operation with Hoyer has been very close, and as a result we have developed a container type that takes the special challenges of rosin transport into account. The latest container version also allows some 4,000 litres more rosin to be transported than the 'conventional' type," says Forchem's Logistics Manager Jussi Salonen with satisfaction. "The exterior jacket of the container is heated with thermal oil to keep the rosin at a high temperature. Using electrically-heated containers may cause damage to the product. Discolouring of very light-coloured rosin is caused by the high spot temperature caused the electrical heating system. The light colour of Forchem's rosin allows it to be used as raw material for lighter-coloured paints than previously."

"Rosin is a very challenging product in terms of transporting, but these challenges are faced by all logistics companies. We've made good progress here," says Hoyer's Matti Toivanen, who is charge of Hoyer Finland's sales and operative management.

## Common goal of the partners: a satisfied end customer

Hoyer is one of the major transporters of Forchem's rosin and handles about half of the transport of Forchem's finished products within Europe, not including transports in Scandinavia and Finland. Accuracy and reliability are the most important factors and cornerstones of Hoyer's co-operations, too. A satisfied customer is the most important aim for both Hoyer and Forchem. "Matti has paid a visit to nearly all our rosin customers," says Salonen, describing Hoyer's commitment to its customers. "He also knows Forchem's production and personnel like the back of his hand."

"We deliver up to 10 containers a week to some customers. Each delivery is a customer contact and Forchem's 'calling card' to the customer, in spite of the fact that it says 'Hoyer' on the side of the truck," Toivanen says.

## In the Far North, but close to the customer

"In a perfect world the tall oil would be processed to as high degree as possible prior to transportation," Salonen says, when asked about the challenges of long transport distances and whether it would be better to transport the raw materials over the long distance to plants located near the customers. "Thanks to the new containers, transport distances are not as significant," he continues.

On the map the distances seem huge, but thanks to well-planned logistics we actually operate close to the customers," Salonen elaborates. "Considering our location, I think we've handled everything perfectly," he says, and Toivanen agrees with him.

## Container capacity to be doubled

In 2008, the number of containers used by Forchem will be doubled. This is a major investment for Forchem as well as for Hoyer, who leases the containers. "The investment will make logistics more flexible, and we'll be able to react swiftly to customers' new or changing orders. Additionally, the extra capacity will allow us to manufacture rosin for intermediate storages and potentially transport it to ports of destination to wait for orders," says Salonen, reflecting on the new opportunities.


## New www-site and e-mail addresses

We have had new www-site and e-mail addresses in use since the beginning of September. fchem.com ending has been replaced by forchem.com. Which means our e-mail addresses are in format firstname.lastname@forchem.com and our www-site is located at www.forchem.com.

## Appointments

### Anu Valtonen - new Head of Quality and Environmental Department

In order to strengthen the total quality management Forchem centralizes product quality, process quality and external quality services into the new unit. Quality manager Ari Koivisto and quality engineer Jaana Varjonen report to Anu Valtonen and she reports to the production director.

### Anne Salmi - new Assistant to the Directors

Ms. Anne Salmi will work as Assistant to the Directors from 03.12.2007 when Mrs. Outi Toivola goes on maternity leave.

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Our future grows up with Nature.

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