

Company perspective

Interview with Eric Wildeboer Managing Director of Berghof Filtrations- und Anlagentechnik



Eric Wildeboer is the Managing Director for Sales and Marketing at Berghof Filtrations- und Anlagentechnik. He joined the company in 2003 and has been active in membrane technology since 1990.

Ernst & Young: Where does your company focus in water technologies?

Eric Wildeboer: Berghof has been a producer of tubular membranes for many years. Professor Zundel, who founded the company, recognized very early that membrane technology offered great potential. In 1973, Berghof started with the development of membranes for kidney dialysis. After some years of development, we started our own production of tubular membranes and modules. In the early stage, Berghof offered turnkey solutions for the wastewater market. In cooperation with Wehrle Werk, we developed our first plants for membrane bioreactor (MBR) technology for leachate treatment from landfills. Berghof delivered the ultrafiltration (UF) technology.

Today, Berghof has a clear OEM strategy and has moved away from supplying turnkey systems to end-users. We can now focus on developing high-quality membrane products and energy optimized technologies like the Berghof BioPulse™

and BioAir™. Through our international network of distributors, sales agents and OEM Partners our revenues are growing quickly.

Ernst & Young: What is your USP?

Eric Wildeboer: I believe that Berghof has a number of USPs. As mentioned, Berghof has a 100% clear OEM strategy. It means that we avoid any competition with our OEM Partners. We only sell through our OEM Partners. This strategy is the basis for the long-term Partnership we have with our customers. Most of the membrane suppliers do both: they sell to OEMs as well as sell turnkey systems to end-users. This always leads to conflicts with their OEM Partners. We have over 30 years' experience in plant design, construction, installation and other services. We built up an extensive range of application know-how over the years. With this technical background, we are able to support our global partners on the highest professional level.

Furthermore, we focus on our membrane products and new innovative energy-optimized technologies. In 2008, we introduced the new 10-inch XL membrane module which has a membrane surface area of 54m², a factor of 2x improvement over existing tubular products. The 10-inch product was just recently applied in a project in the Netherlands for a company that treats 3.500m³ of dairy wastewater per day.

Two years ago, we developed a new 8mm backwashable membrane I8LE what is the engine for the new Berghof energy optimized BioPulse™ and BioAir™ system which treats wastewater much more energy efficiently. This new BioPulse™ and BioAir™ concepts are an energy-optimized process for reliable and efficient treatment of less complex and medium strength wastewater.



This allows us also to step into the market for tertiary wastewater treatment. The new BioPulse™ will be utilized for a land development project in 2009.

Ernst & Young: How do you see the water market emerging? Where do you see the future development of water technologies?

Eric Wildeboer: Berghof focuses on wastewater treatment. However, what you see today is that the industry is prompted to deal with recycling of water due to increasing water scarcity and rising water prices. In China, we see large investments in industrial water treatment. Relevant regulations have existed there for some time, but they are now being enforced more strictly.

Today Berghof has a good position in China for the treatment of complex wastewater industries like coal industrial, leachate and oily wastewater. There are also installations which clarify tea along with other beverage applications.

With the new energy-optimized Berghof technologies the number of applications will increase. Decentralized wastewater treatment through small sewage plants will be an issue in the future. There are many places that are not connected to the sewage system. Small standardized UF plants can offer solutions here, and we believe that this is a huge market. Many areas increasingly refrain from building traditional water pipes and instead move to decentralized drinking water treatment and sewage plants. The costs for sewer systems are high and membrane technology has proven cost effective.

Ernst & Young: Where do you see the area of highest demand in the water sector - municipal wastewater, industrial

wastewater or drinking water? Where do you anticipate the highest growth?

Eric Wildeboer: Studies on the basis of the number of projects show that 75% of the plants are industrial. This is exactly the field of business in which we have grown over the last few years. Here we have delivered our membrane products and services for a variety of larger MBR applications in the food, dairy and beverage sectors. Other industrial applications like the treatment of laundry, leachate and pharmaceutical wastewater have successfully been treated with our products.

Another growing market is the treatment of effluent from anaerobic digesters. New regulation standards and improved economics for biogas are the drivers for this market. Today, Berghof is one of the leading companies in this market. In 2005, Berghof was awarded a contract for the first effluent treatment plant in Denmark. In the anaerobic digester manure from pigs is digested to produce biogas. The effluent from the digester is treated in a large-scale UF and reverse osmosis plant.

In terms of turnover and volume, the municipal wastewater treatment market is the largest, and this is where the highest growth for membrane filtration will take place in the coming years. Berghof will focus on smaller decentralized projects only.

Ernst & Young: How would you describe your need for international expansion, and where do you plan to expand?

Eric Wildeboer: Today, most of our business is through our international partners. In 2004, we started an exclusive partnership with TriHigh in China. In 2007, 25% of our annual turnover was being generated with

TriHigh in China. A local representative is required to offer a fast and professional OEM service. That's the strength of Berghof. In the last few years, we have extended our sales network in several countries like Italy, Spain, Portugal, and the USA. Other countries will follow soon. Currently, we have 170 references in MBR. I believe with this list of references, we will be able to ramp up our revenues in new markets like India. In the upcoming years, India will develop strongly. Furthermore, we will look for new partners in South America, Eastern Europe and the Middle East. A strong international network will be the basis for further growth. The market is there!

Ernst & Young: Where do you see Berghof in five years?

Eric Wildeboer: I hope in five years we will be an internationally well-known supplier of high value membrane products and technologies for a wide range of niche applications. We want to be a global player in the industrial and decentralised MBR technology. Furthermore we want to play a key role in the beverage market.

I believe that in five years, we will have built up a strong international network to serve our global OEM partners with the highest quality products and technologies.

Membrane bioreactors

MBRs are used to clean sewage and industrial waste fluids. MBRs activate the biological processes by injecting air and allowing bacteria to decompose organic compounds. In a second step, ultrafiltration membranes filter all particles greater than $0.01\mu\text{m}$, including bacteria and viruses. MBRs have a higher cleaning and filtering capacity than conventional sewage plants. Effluent from MBR plants can be used for irrigation, clothes washing, swimming pools or aquifer recharge.

MBRs are also used in many industrial processes to filter or recycle water, fluids and oils. Industries that employ MBRs include food and beverage, electronics, pharmaceuticals, textiles, oil and gas, landfills and biogas digesters. Past industrial adoption of MBRs has been concentrated in economies where water is more expensive or legislation governing effluents is tighter. As the cost of MBRs comes down, they are proving economical for companies in more and more geographies.

MBRs are now being implemented for municipal water reuse applications. One prominent example is Orange County, California, just south of Los Angeles. In 2007, the Orange County Water District (OCWD) completed a groundwater replenishment system using effluent treated by an MBR plant. At later stages, groundwater is extracted and mixed with surface water for use as potable water. This reduces the need to import water from Northern California or the Colorado river.

Recharging groundwater also prevents salt water intrusion from the Pacific and reuse has the added advantage that it requires less energy than current desalination technology. Importantly, the OCWD has effectively communicated the advantages of the system to its customers and created public acceptance.

Another prominent example of water reuse, though not by utilizing MBRs, is Singapore's NEWater system. As a densely inhabited city state, Singapore only has water resources per capita comparable to those of the Middle East. It has adopted a multi-pronged approach which uses local catchment, NEWater and desalination to reduce the need for water imports. NEWater uses a four-step process: 1) traditional sewage treatment, 2) microfiltration, 3) reverse osmosis using membranes and 4) ultraviolet treatment. NEWater is accepted and is highly sought after by electronics manufacturers in Singapore for its purity.

In the dry climates of Australia and Dubai, MBR plants are used to directly reclaim water from the sewage system for irrigating golf courses. This practice creates additional water resources for which golf courses would otherwise compete with other consumers. The disadvantage of direct wastewater reclamation is that it can require building a water distribution infrastructure which is separate from the potable water system.



