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APPLIED BIOMIMETIC

## Applied Biomimetic is making a more Products and more Energy Efficient Membrane then currently on the market for Water Purification Applications



**Steen Nissen**  
 Chief Executive Officer

**Applied Biomimetic**  
[www.AppliedBiomimetic.com](http://www.AppliedBiomimetic.com)

**Contact:**  
**Steen Nissen**  
**240 292-1129**  
[ssn@appliedbiomimetic.com](mailto:ssn@appliedbiomimetic.com)

**Interview conducted by:**  
**Lynn Fosse, Senior Editor**  
**CEOCFO Magazine**

**"Our value proposition is targeted both on operating costs for the customer, but certainly also on capital expenditure costs." - Steen Nissen**

**CEOCFO: *Mr. Nissen, what is the vision behind Applied Biomimetic?***

**Mr. Nissen:** The vision of the company is to be able to make membranes that are more productive and more energy efficient than what we currently see on the market. We initially wanted to make desalination membranes to make drinking water, but we expanded that and are looking at a whole scope of filtration applications. This same ambition basically applies in terms of better performance, more productivity and less energy use relative to the same types of filtration needs.

**CEOCFO: *What is the problem with membranes today?***

**Mr. Nissen:** I do not think there is a particular problem, but typically membrane processes uses a lot of energy and if you can reduce the energy, or increase throughput, in a particular process by having a more efficient membrane, you are basically making the whole process for the customer better. Therefore, in essence, it is creating a better mousetrap, so to speak.

**CEOCFO: *What is your approach to a better membrane?***

**Mr. Nissen:** We have got some patented and proprietary technology that we use for it, but in essence we have two approaches. One is doing a more traditional polymeric membrane, where we simply get more throughput in per unit area. That means that you can simply filter more.

The other approach that we have, which is kind of a unique thing, is that we take a natural protein that you have animals, you have it in plants, as well as in humans. However, this protein regulates water transport across cell membranes and that is a highly efficient process.

We can take this protein, isolate it and then imbed it into an artificial polymeric material, which allows us to retain the functionality of this protein and make highly efficient membranes; not just highly efficient membranes, but also highly selective membranes. That means that you can, in certain processes, only let a particular compound through, because this protein is designed to exclusively let this compound through.

**CEO CFO: *How do you put the protein into the membrane?***

**Mr. Nissen:** It is a long story and it is kind of proprietary. The key point is that we are working with a protein called Aquaporin, which is a water transporting protein, but we are also working with others as well. However, it is really starting with making the protein itself. That is a traditional biotechnology process, where we ferment an organism, we feed it some sugar and this organism over expresses this protein.

We can then isolate the protein, and as I said, we can imbed it into a polymer matrix that mimics the natural environment where this protein sits in nature. By doing so, we can retain the functionality. As I said, as many other things in nature, they are highly efficient. They are engineered by nature to do one specific thing very efficiently and we can retain that functionality and make use of it industrially.

**CEO CFO: *Do potential customers understand? Does it seem odd that you are taking a protein and using it this way?***

**Mr. Nissen:** It is not straightforward, I'll give you that. We take a two-tiered approach here, because we have a traditional group of products that are more, you can call it, business as usual, "This is what is out there." However, we can simply just make those better than what is out there at this point in time. By doing so, we strive to create a name, to create some credibility in the marketplace and when we then introduce these next generation types of proteins membrane into the market, we have credibility and leverage in the market.

In the end, what customers are after is a more efficient membrane; either a membrane that can give them increased productivity, decreased use of energy or make their harvesting of a particular compound more targeted, more selective. The other thing it translates into for our customers if we look at productivity is that if they are looking to invest in a new plant by having a more efficient membrane where you get more flow through, you can literally scale down your plant size. That of course, translates directly into less investment in equipment. Therefore, our value proposition is targeted both on operating costs for the customer, but certainly also on capital expenditure costs if they are looking to invest in new equipment.

**CEO CFO: *Win-win is good!***

**Mr. Nissen:** It always is, yes!

**CEO CFO: *Would you tell us about your new facility?***

**Mr. Nissen:** We have been a development company for a while and developing these new membrane products. We got to a point where we had to take the jump, meaning that we were ready to take these products to market. We have been doing it for a while on pilot scale units, being able to put small volumes out in the market for field testing

and limited volume applications. However, we decided to invest in a full-scale manufacturing line for making membranes and making membrane elements. That is the purpose of the new facility and that is what we are doing right now. Therefore, we kind of came full circle, in the sense that we developed the product and we took it to the market and we since, are saying that there is a big interest in the market field for what we are putting out there.

**CEOCFO: *How do you reach out to potential customers? As you have widened your area of focus, how do you look at different applications without getting lost in too many things at one time?***

**Mr. Nissen:** That is a very good question and that is the real risk to wanting to do too much at the same time. Being a startup company, one of the main things that we need to focus on is to start generating cash flow, basically, and start being self-sufficient and not having to rely on investors anymore. Therefore, we decided to go with a fairly narrow focused approach in terms of market segments.

We started with a few in the sense of dairies, breweries and the like, industrial biotech. We are going after these segments because the customer bases are fairly consolidated, meaning that we do not have to go to as many places. Their volumes are very big, both in terms of the volumes that the customers are processing and that translates into the size of the plants they have and thus the number of membrane elements that they are going to buy. After we gain a foothold there, the plan is to expand into other market segments as well. However, this is where we start.

**CEOCFO: *What are you working on today? Are they looking at pilot programs? What is the day to day?***

**Mr. Nissen:** We are actually working with some of the biggest dairy customers in the US and other places in the world. We actually expanded our presence and are active here in the US, in Europe, Australia and New Zealand. Some of our customers are still in pilot mode, but we actually have a number of customers that have installed our products in their production facilities and are running them on a daily basis.

The challenge with food customers is that they are fairly conservative in the sense that they have a validated process; they have consumers on the other end. Therefore, there is a hurdle and you need to gain the customers trust that you can actually deliver, that you are here to stay and so on and that your products live up to what they are used to, plus giving them the added benefit of increased productivity. That is the daily challenge for us, basically. However, we are getting there. Our main focus, right now, is literally to grow our customer base and get our products installed in more and more facilities.

**CEOCFO: *Is the manufacturing pretty straightforward? Are there challenges in the manufacturing process?***

**Mr. Nissen:** That is a good question. I think that manufacturing, as simple as it can be sometimes, is always challenging. That is because you really need to focus on what you are doing. You need to have a focus on quality, on throughput, and cost as well. Therefore, we are learning as we go, but we have got a good beginning and is optimizing

from there. As I said, we can make product, process orders, and deliver our product to the customer. Internally, there is a lot we need to get better at, a lot we need to optimize, but that comes as we increase volume.

**CEO CFO: *Do you find there are certain geographic areas that maybe pay more attention to energy or are more open to new ideas?***

**Mr. Nissen:** There is definitely more focus on energy savings in Europe than there is here in the US. That said, I think you come across customers, both here in the US and in Europe that are more conservative than others and you have more progressive customers in both places as well. Therefore, in the end, it probably balances out.

**CEO CFO: *Are you seeking investment, funding or partnerships as you move forward?***

**Mr. Nissen:** We are not seeking funding at this point in time. Partnerships, either as customers or development partnerships, are always of interest for us; whether it is in the food field or others. One of the new things that you are probably aware of is all of these plant-based proteins that you see in burgers and other meats. That is, of course, something that we are looking at to expand into, because this is definitely interesting and partnerships in that area could be interesting. However certainly, also in other fields, more established food markets and more established industrial biotech markets where it could be enzymes, it could be vitamins and things like that, where you see big scale production of bio molecules.

**CEO CFO: *Why look at Applied Biomimetic?***

**Mr. Nissen:** Because we have a unique approach to making membrane products. As I said, we have one family of products out there in the market right now and we are working on the next one, that is very unique and very promising, in order to really boost either productivity or selectivity in the fields that our potential customers might be interested in.

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