

## ***Bricks and Mortars***

# Two hours with Bent Urup

By Lawrence Reichard | Oct 26, 2018

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On Sept. 25, I awoke in Odense, Denmark, home of famed Danish storyteller Hans Christian Andersen. I walked to the train station and took a half-hour train ride to Fredericia, where I was picked up by a daughter of Bent Urup.

Bent Urup is a gregarious and energetic man, and he loves to talk about his work. He is perhaps the world's foremost expert on Recirculating Aquaculture Systems, which Nordic Aquafarms plans to use for its proposed Belfast industrial fish farm. Urup was the first to develop saltwater RAS, and he invented RAS 2020, which he says is the world's most efficient and cost-effective RAS system.

Urup designed and built Maximus, a Danish smolt farm he owned for eight years before selling it in October 2017 to a group of investors in which Nordic Aquafarms had a 50-percent share. Urup designed and developed Sashimi Royal, a Denmark fish farm he then sold to a group of investors in which Nordic Aquafarms had a 62.5-percent share. And in 2015-2017 Urup was CEO and chief technology officer of Sashimi Royal, which uses his RAS 2020 system.

Urup has designed more than 50 RAS systems, and has built RAS 2020 systems in Switzerland, Australia and Denmark. Time Magazine named Urup's bluefin tuna project the second-best invention of 2009.

Meeting in his Fredericia office, Urup painted a picture of an RAS industry — and a Nordic Aquafarms — in disarray and suffering from poor management.

Urup believes Nordic's Maximus plant is running at only 10-percent capacity. I asked him why. “Because of management,” he said. “You need the right people ... Maximus is complicated to operate.” Urup said Maximus is Sashimi Royal's only source of smolt and that Maximus' production woes are limiting Sashimi's production to half its capacity.

“When you don't really feel you're in control, the typical reaction is ... 'we need to make protocols.' But the thing is if you put 20 tanks up and you did exactly the same trick, they will all behave differently, because of biological factors ... The day you turn into working on a routine, on a fixed protocol, you're lost ... As soon as you see something go wrong, it's too late — you can do nothing. You have to anticipate problems. It's about getting the right qualified people.”

Like a former Maximus worker I interviewed in Denmark Sept. 27, Urup said that Maximus has had problems with fish disease, something Nordic CEO Erik Heim denied to me in his Norway office Sept. 19, and which Nordic Director of Operations Marianne Naess denied in an Oct. 18 Republican Journal op-ed.

Naess's op-ed did not address allegations that a 14-year-old Maximus employee worked with Virkon S, a chemical children that young are not allowed to handle under Danish law. Those allegations appear consistent with Urup's concerns about Maximus management.

“The management (operation) of Maximus is very difficult,” Urup told me, “and if you don't do it right, you will have bacteria growing.” Urup said Maximus has in the past treated its fish disease problem with antibiotics.

But Nordic's problems in Belfast may go far beyond poor management and fish disease.

Bent Urup obtained a patent for his RAS 2020 system, and in 2015 he sold it to Veolia, a French company. But while Urup's RAS 2020 patent was still pending, Inter Aqua, a Danish company, built a fish farm in Australia that infringed on Urup's pending patent. Veolia sued Inter Aqua and won its suit in June 2018. The next month Inter Aqua went bankrupt. *(Editor's note: This paragraph was updated Thursday, Oct. 25, by the columnist and differs slightly from the column printed in The Republican Journal.)*

And now Urup believes Nordic may do in Belfast what Inter Aqua did in Australia.

“They (Nordic Aquafarms) have never built anything. ...They were never involved in the construction (of Sashimi Royal),” Urup said. “They were just investors. They came to board meetings. That's the only involvement they had. But they are building one (in Belfast) and again it's the same story. You see history repeating itself. People have a half-understanding, then they become dangerous, because then they think they know enough. Now they are trying to develop their own system, which is a modification (of RAS 2020), but I don't think they can do it, because it's compromising the patent, as I see it.”

Indeed, Nordic Aquafarms had intended to get its RAS technology from Inter Aqua, and when Inter Aqua went bankrupt, Nordic promptly hired six former Inter Aqua employees.

“What I have been told is that they (Nordic Aquafarms) try to build it longer,” Urup said of Nordic's Belfast design. “It's an oval, and that's the way they try to move around Veolia ... but ... the RAS 2020 patent is not about whether it's oval. It's the flow-setting device, and if you don't have that, you can't make the salmon grow efficiently.”

At this point, Urup launched into a story, as he loves to do. “In 2014 there came an Irish delegation to Danish Salmon, where I for a period of time was CEO. I showed them around ... I explained to them about the new RAS 2020, which was coming up, and they were interested.

“And the guy who was showing these people around was a guy called Ivar Warrer-Hansen, and I didn't know that he was part of Inter Aqua; but the people were very interested and I said, well, go and talk with Veolia, they are the one you need for supplying it.

“But in May he (Warrer-Hansen) put an article in Fish Farmer (magazine), in May 2015, around a new concept they, Inter Aqua, were developing, and that was clearly a copy of what I had showed him. ... so clearly the reason why they came was a kind of sales trip; he was trying to sell a system, a conventional system, but the client he brought was clearly so interested in the RAS 2020, so they want something similar, so they tried to copy it.”

According to Warrer-Hansen's LinkedIn profile, he has been a senior Nordic Aquafarms RAS adviser since September 2018.

Looking ahead to Nordic's Belfast plans, I asked Urup whether Veolia's lawyers were sharpening their pencils, in anticipation of a patent-infringement fight against Nordic. “I believe so, yes,” Urup said.

When we were done talking, we had a big lunch of typical Danish smørrebrød, and Urup's wife took me back to the train station for my four-hour ride to Thisted. And so ended a memorable two hours.

*Lawrence Reichard is a first-place Maine Press Association winner, freelance writer and activist who lives in Belfast.*

## Nordic Aquafarms' response to the article:

### *"Two Hours with Bent Urup"*

*By Lawrence Reichard*

Lawrence Reichard's mission from the day Nordic Aquafarms announced its plans to build a land-based fish farm in Belfast, has been to paint a negative picture of the company. Articles with speculative sources of information, misinterpretations and often factually wrong information have been published regularly in The Republican Journal.

The allegations made in the article "Two Hours with Bent Urup" by Lawrence Reichard are completely preposterous. If he believes himself to be an activist and working for the common interest of the people in Maine, he should at least have the sense of decency to provide those people with facts. Although we would have preferred to overlook the latest article, the accusations are so grave and untrue, that it leaves us no choice but to reply to his article. In order to set the record straight, we would therefore like to correct some of the most spurious allegations.

### **Bent Urup**

*Claim: He is perhaps the world's foremost expert on Recirculating Aquaculture Systems, which Nordic Aquafarms plans to use for its proposed Belfast Industrial fish farm.*

*Urup designed and developed Sashimi Royal, a Denmark fish farm he sold to a group of investors in which Nordic Aquafarms had a 62,5 percent share. And in 2015-2017 Urup was CEO and Chief Technology Officer of Sashimi Royal, which uses his RAS 2020 system.*

Bent Urup is a self-proclaimed world expert in RAS technology who has left a trail of disappointed investors behind him. In fact, we have watched Urup jump from one project to the other, never successfully staying on over time in any of them. The future of this industry is not a one-man show as Urup, but experienced teams working together.

Bent Urup was the early stage designer and entrepreneur behind Nordic Aquafarms' current Danish operation. Nordic Aquafarms was the first, and since then, the majority active owner in the Danish operation. Nordic Aquafarms uncovered so many design deficiencies and non-performance issues from Bent Urup, that he was replaced as a head of the Danish operation two years back.

Design and production models have undergone significant development since his time, without his involvement as our design capacities far surpass his today

*Claim: Urup painted a picture of an RAS industry – and a Nordic Aquafarms – in disarray and suffering from poor management.*

*Urup believes Nordic's Maximus plant is running at only 10 percent capacity. I asked him why. "Because of management," he said. "You need the right people....Maximus is complicated to operate". Urup said. Maximus is Sashimi Royal's only source of smolt and that Maximus' production woes are limiting Sashimi's production to half its capacity.*

The truth is that Bent Urup was replaced as CEO and head of production two years ago. We have not relationship with him. He is correct in his assertions that you need the right people to operate the facility, but he never managed to produce the fish he had promised.

After he left the company many modifications were made to both the Danish facilities.

The Hatchery is dimensioned to support expansion at Sashimi Royal, thus it is for very obvious reasons not at full capacity. Sashimi Royal that receives the fish fry is currently dimensioned at 25 % of its ultimate capacity, and the current 1200 mt capacity at Sashimi is in biomass build-up phase. Today, we have over 50 % biomass stocking at Sashimi Royal and continue to gradually build this biomass step-by-step. The statement of being at 10 percent capacity does not seem to make much sense, and it is unclear what is meant by it. We have very good results compared to other marine fish hatcheries, but also the same challenges related to hatching of marine fish. This is more complicated than smolt production.

#### **Disease at the Danish Facilities**

*Claim: Urup said that Maximus has had problems with fish disease, something Nordic CEO Erik Heim denied to me in his Norway office Sept. 19, and which Nordic Director of Operations Marianne Naess denied in an Oct. 18 Republican Journal op-ed.*

The claims made by Erik Heim and Marianne Naess are correct. There has been no disease at the facility as long as Nordic Aquafarms has been involved.

Fish and larvae have been investigated, macro- and microscopely, monthly since 14. December 2015, and no signs of disease, neither bacterial or parasitic infections has ever been detected., according to our veterinary.

We have an affidavit from our veterinary confirming this. This will be included in our Site Law Permit application that will be submitted in a few months.

### Illegal working conditions for under-age teenagers

*Claim: Naess' op-ed did not address allegations that a 14-year old Maximus Employee worked with Virkon S, a chemical that children that young are not allowed to handle under Danish law.*

There are teenagers employed part-time at the facility in Denmark and they are employed according to the law regulating under-age work and they are always supervised by adults. The main task these teenagers perform is to clean the tanks in the hatchery. As pointed out in the op-ed, Virkon S is not used for this task. Thus, we find it very unlikely that any of the teenagers employed at MaxiMus has worked directly with Virkon S.

We also find it highly unethical that the 14-year old referred to in the article was "interrogated" without his parents' knowledge or permission. His parents are outraged at Lawrence Reichard and his exploitation of their son for his article.

### Lawsuit by Veolia

*Claim: Veolia sued Inter Aqua and won its suit in June 2018. The next month Inter Aqua went bankrupt, throwing 90,000 employees out of work.*

*Urup believes Nordic may do in Belfast what Inter Aqua did in Australia.*

With regards to any law-suits and patent infringement cases between Inter Aqua and Veolia in Australia or anywhere else, Lawrence Reichard's information is again either completely wrong or purposefully construed.

Inter Aqua did not at the time - or in the past - build any systems in Australia. They were in opposition to the RAS2020 patent application in Australia at the time, but not under any law suit anywhere.

The bankruptcy of Inter Aqua Advance came about as a result of insufficient liquid assets to complete the building construction part of a turn-key project undertaken in Norway and not any law-suits or patent infringement cases.

The 90,000 employees losing their jobs due to IAA's bankruptcy is even more ridiculous. Inter Aqua Advance has never exceeded 30 people, and at the time of the bankruptcy, there were 23 people in the company.

Kruger AS (Subsidiary of Veolia Water) is currently working with Nordic Aquafarms in Fredrikstad and has confirmed that they are not suing or planning to sue Nordic Aquafarms for copyright infringements.

## **Nordic Aquafarms' lack of experience in building RAS facilities and copy infringements of RAS 2020**

*Claim: "They (Nordic Aquafarms) have never built anything.... They were never involved in the construction (of Sashimi Royal)" Urup Said. "They were just investors. They came to board meetings. That's the only involvement they had.*

*Now they are trying to develop their own system, which is a modification (of RAS 2020), but I don't think they can do it, because it's compromising the patent, as I see it."*

Nordic Aquafarms has followed the construction of Sashimi Royal from the beginning as the company's first external investor and majority shareholder. Sashimi Royal was built by external contractors and staff company staff, as most facilities are. Along the way Nordic Aquafarms has insourced much of the engineering, design and construction management competence. Our internal engineering and biology team in Norway has done a significant part of the engineering and construction management in Norway. This includes large improvements to the original RAS 2020 sold to us.

Nordic Aquafarms now possesses in-house a full complementary pallet of experienced engineers to undertake the full design and build tasks required. With the addition of former IAA employees, we now have 10 engineers with experience in designing/building large-scale RAS projects. That's more than anyone else in this segment.

Designs that Nordic Aquafarms operate with today, are significantly different from the early stage designs we invested in, also referred to as RAS 2020. Nordic Aquafarms left Urup's RAS 2020 behind in early 2017. Our new designs are developed by our in-house engineers and biologist/production management over the course of 1,5 years. The modes of operation between these systems are significantly different.

In addition, there is nothing new in the principles of Bent Urup's RAS 2020 design. NIRI, a Norwegian supplier of RAS had already a similar design and in fact even built a system in France long before Bent Urup came up with his version (<http://niri.com/fish-farming/ras-technology/>) RAS 2020 uses movable fish screens as a so-called novelty. Movable fish screens have been used in many fish farm applications before, for instance in Inter Aqua Advance supplied raceway RAS systems in the Netherlands and Switzerland for e.g. catfish, tilapia, sturgeon, pike-perch etc. Installing means of increasing the water velocity in a culture tank beyond the normal water exchange rate has been common practice for many years as well in various ways.

The RAS 2020 patent is, to the best of our current knowledge, still pending in both Europe and USA and under "Refusal" in both cases, subject to possible further constraints

*Claim: It's an oval, and that's the way they try to move around Veolia...but...the RAS 2020 patent is not about whether it's oval. It's the flow-setting device, and if you don't have that, you can't make the salmon grow efficiently."*

Claims from Urup clearly show that he has not fully understood the innovations in designs developed by Nordic Aquafarms. The differences between Nordic Aquafarms' new design and the original RAS 2020 that Bent Urup designed are not about the shape of the tank. The flow-setting system is different and currently under patent filing by Nordic Aquafarms. In addition, the process design is very different and optimized in the core of the tanks. Each tank has its own RAS system, isolating it from the other tanks. Compared to traditional RAS systems in which the system is shared by many tanks, the design of the Belfast facility makes the fish farm more robust and less susceptible to biosecurity risks.

*Claim: Urup claims that in May 2015 Inter Aqua published an article about a new concept they were developing that was a copy of what I he had showed them.*

The accusations that Ivar Warrer-Hansen came to Danish Salmon with an Irish delegation and stole Bent Urup's design and tried to copy and sell it later to the Irish delegation is completely unfounded. The Irish delegation decided after their visit to go for Ivar Warrer-Hansen's new compact design for salmon farming consisting of modules of 4 round tanks surrounding the treatment system. Inter Aqua later supplied the Irish group with detailed design and quotations of this.

They were not interested in Bent Urup's RAS 2020.

At the time, Inter Aqua Advance had already considered the concept due to a perceived competitive advantage is large concrete constructions for remote areas and were working hard at the time on a fool-proof concept, but not yet built one. They then invested in their own commercial-scale unit to make a proof-of-concept. As it turns out, the Inter Aqua Advance concept had considered and overcome some very fundamental design flaws in the RAS 2020 that would later be confirmed during subsequent discussions held with Nordic Aquafarms

*Claim: Looking ahead to Nordic's Belfast plans, I asked Urup whether Veolia's lawyers were sharpening their pencils, in anticipation of a patent-infringement fight against Nordic. "I believe so, yes" Urup said.*

Kruger AS (Subsidiary of Veolia Water) works for Nordic Aquafarms today and has confirmed that they are not preparing a lawsuit against the company.

We have conducted "freedom to operate" legal analysis of all our designs, to ensure that there are not any potential patent conflicts out there. We have done our homework and are highly confident in our teams and their work.