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AALBORG FACTORY TOUR

Aalborg. For industry observers, the Børresen name will ring an earlier bell than the eponymous more recently founded hifi brand. That's because Michael Børresen first sharpened his audio spurs at Raidho and in fact, Nordost before. For some history on Raidho, Roy Gregory's [overview \(http://www.theaudiobeat.com/visits/raidho_tour.htm\)](http://www.theaudiobeat.com/visits/raidho_tour.htm) for *The Audio Beat* serves well as does this interview with Michael.



In preparation for a series of planned reviews, I'd been invited to spend two days in Denmark's city of Aalborg to visit the associated premises. Here I'd be shown a systemic end-to-end design approach which includes Aavik Acoustics for electronics, Ansuz Acoustics for cables, power delivery products plus equipment supports and finally, Børresen for loudspeakers.

A short direct flight from Dublin via Great Dane Airlines brought me to the old viking settlement of Aalborg. Today it's Denmark's fourth largest city situated on the Limfjord which cuts through northern Jutland's tip ending in the famous city of Skagen. Even though I was born just south of the border in Flensburg, Germany's northernmost city on the Baltic Sea, I'd never before set foot on Danish soil. As my contact Morten Thyrrstrup had laid out in an email, "Lars Kristensen will pick you up at the airport and take you to your hotel. On Wednesday we'll go to our showroom in Aarhus and listen to the different levels of Ansuz and also Aavik and Børresen. Thursday we'll be at our factory in Aalborg. There you'll see our production and much more about our speakers. Friday we'll be at the factory again with time for final questions with Michael before you fly back."

Aarhus demo facility which shortly after my visit would move to the main Aalborg building. On top of the Primare chassis, we see the four levels of Darkz footers, left to right from entry level to most advanced.

This story really begins at Nordost. There Lars Kristian Kristensen, today's CEO, owner and chief manager of these three Danish brands, had been responsible for taking a cable firm active in the hi-tech medical and military sectors and shepherding it to pre-eminent recognition and success amongst the high-end audio cable cognoscenti. His dad had owned a hifi shoppe in Aalborg. Upon retirement, he offered it to his 18-year old son. Lars was thus born as a carrier of the most infectious hifi virus. Whilst still on the sales floor, a young Michael Børresen had become his customer. Lars would come to regard him as the by far smartest audio designer he'd ever met. He thus brought him into the Nordost fold of engineers when the time came.

Second demo room at the Aarhus facility.

Whilst at Nordost, Lars developed then perfected his now famous up-sell demos. Without fail, he would demonstrate how stepping up within their consistently developed cable and later power and grounding product ranges, performance improved in clear steps. When Lars discovered the efficacy of Bill Stierhout's **QRT (<https://add-powr.com/about>)** aka quantum resonance technology, he licensed it for Nordost. Later he and Michael launched Raidho the

loudspeaker company to exploit Michael's engineering skills well beyond just cables. Raidho subsequently sold to the Danish holding company Dantax. Today the Ansuz Acoustics brand (Ansuz was the Nordic rune for wisdom hence associated with Odin) and Aavik Acoustics ('vik' means bay, hence this is a contraction of *Bay of Eels* aka Aalborg bay) are again fully in-house owned to now operate jointly under the UpperLevel ApS umbrella company.

The factory is just 15 minutes from Aalborg airport.

As sales director Frits Dalmose's Wednesday demo in Aarhus proved beyond doubt, a flagship Nordost Odin II power cord was soundly trounced by an €1'800 Ansuz A2 mains cord. That meant just the second power cord from the bottom of the present Ansuz range. There were still two above it which I got to hear. Between wall outlet and power delivery box, Odin II had behaved clearly duller, more sluggish and slow. This suggested that just like the Børresen speakers were very obvious next-gen Raidho developments, the Ansuz catalogue from years ago began where Nordost were at when Lars and Michael departed. If the Americans hadn't continued to invent and push forward since, they should have been well left behind now because Ansuz haven't stood still.

A Supreme Powerbox with Tesla coil and dither technology in a steel and high-density fiberboard chassis to avoid the hysteresis effects of aluminium. The insert shows how the circuit board rests on Darkz footers.

The demo of my first day stretched out over many stages. I heard four tiers of Darkz resonance control footers, multiple PowerBox levels, multiple mains cables, even brand-new network switches in a very simple system of affordable Primare CDP and integrated amp driving €1'000/pr Audio Vector monitors. At first the lot hid behind a curtain. Without fail, moving up a level regardless of component category improved the sound. Neither electronics nor speakers were changed. The point of the demo was obvious. Ansuz products are *foundational*. By addressing power delivery, mechanical and electrical grounding, your system's electrical and mechanical noise floor is reduced. Subtract noise and the performance of your existing hardware improves. There's less gunk, grit and haze overlaying it. There's less dynamic reluctance, less dullness, less energetic laziness. With a generous trade-in policy, Ansuz customers can build out the foundation of their systems over time until it equates to the proverbial bed rock. "Hear the full potential of what you already own before worrying about upgrading your existing speakers or electronics" is the subtext.

Entry-level PowerBox with Tesla coils. Ethernet cables and raw USB cables in the background.

Given the prior QRT project at Nordost, it should be no surprise that Michael has since pushed scalar field technology further. It shows up in Ansuz power products, Aavik electronics, even Børresen series crossovers. Now they call it dither tech because it modulates the noise floor like the most advanced marine sonar does. To illustrate its operational principle, Michael put a hand over his cell phone, fingers barely apart. "You can't really see the telephone." Next he simply moved his hand a little to move the little slits between his fingers back and forth. This exposed more of what was underneath. In similar fashion, dither tech allows our ear/brain to make out micro detail which would otherwise remain hidden beneath the noise floor.

With a solid background in mechanical engineering—his first company built competition-level bicycles before he returned to university for analog design—Michael is heavily into material sciences. And there are Olympic sailors in his family who always investigate ways to make their boats lighter, stiffer and faster. In conjunction with the science team of the particle accelerator at Aarhus University, team Ansuz have developed different treatments for their aluminium and titanium tri-layer Darkz footers with ball bearings. Bombarding aluminium with carbon particles in an argon environment leads to a micron layer of diamond whose hardness accelerates the transfer of vibrations. The top Darkz model uses a titanium body whose ball-bearing race surfaces undergo an even more advanced hardening treatment.

The resonant switching power supply lives on the lower tier obscured by the upper boards.

For non-class-D Aavik power electronics, bipolar output transistors mount to copper stock to break the hysteresis loops which ubiquitous aluminium would cause. In fact the entire inside chassis gets a layer of bonded copper that's again applied at the Aarhus university lab.

The thickest conductor in Ansuz cables is the ground leg at 10mm². The following interview explains the rationale behind it.



Complex winding geometries use wires of many dissimilar lengths to minimize mechanical standing waves. In effect, now the cable doesn't know how long it is. It's made up of all different lengths and no longer will act as an aerial to pick up ultrasonic noise to be easier on the connected electronics. With his mechanical engineering experience, Michael always thinks of how to minimize resonances and exploit favorable ratios. This affects his choices of conductor diameters, even the footprints of circuit boards and chassis.

The new Børresen dynamic driver—all current speaker models use the same small mid/woofer whilst the 05 flagship adds four bigger woofers—use what is described as the world's first iron-less motor to avoid the non-linear effects which iron has on voice-coil behavior. The latest N52 super-neodymium magnets which also show up in the new Børresen ribbon create very powerful flux to increase efficiency and driver control.

The material makeup of the shallow mid/woofer and woofer cones is based on the latest wings of Formula 1 race cars. They use the same composite structure of a hexa-core Nomex center bonded to which are two layers of extremely thin extremely stiff non-woven carbon fiber skins. A maximally open basket structure increases airflow to reduce compression, turbulence and reflections whilst...

... carefully patterned perforated discs behind the mid/woofers control the acoustic impedance and air flow behind the cones before their rear emissions vent into a second chamber then port through special anti-turbulence ports.

Even though Børresen didn't begin first speaker shipments until November 2018, they'd already sold more than 100 pairs when I visited. For a range which then kicked off at €25'500/pr for a Model 01 in Walnut with Darkz C2t resonance control, that was enviably steep transient performance.

1 2 ([https://6moons.com/industry_articles/visit-to-](https://6moons.com/industry_articles/visit-to-aalborg/2/)

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