

PASSION, PRECISION, PERFECTION

Qualtron is proud to represent innovative technologies in the rapidly evolving marine AV market. **Torsten Steinbrecher**, CEO says, “It is with great pleasure we dedicate this space to Innosonix, a pioneer in disruptive AV technology.”



Ideal for superyachts

With a driven passion for audio, Innosonix was founded in 2009 as an engineering office for audio science and research. Their focus on high-class signal processing and audio amplifiers created many projects with high-channel count applications, ideal for superyachts where demand is high. So, the next step was obvious – that technology should come out of R&D and be made available for demanding environments including multiroom and ambisonic applications.

The MAxx multi-channel power amplifiers set an unprecedented standard for high-end audio installations in residential, science, industry and many other applications where



high channel count is required. Paired with an unseen low power consumption per channel, the MAxx series perfectly fits the modern world's requirements to reduce CO2 emissions.

Highest channel density

Rackspace is at a premium in modern super yachts, so why use those square meters on countless amplifiers if up to 32 channels can be packed in only 1 or 2 RU? Besides the rack space, even switch ports, networking and mains cable can be reduced with these highly packed amplifiers.

Ultra-low idle power and pure signal waveforms

This groundbreaking technology is designed to save energy, reduce carbon footprint and offers uncompromising quality. With the custom installation (CI) market in mind, the MAxx² generation is built from scratch based on eGAN (Enhancement-Mode Gallium Nitride) FETs in the power stages of the amplifiers. Thus, the idle loss is reduced by 35% compared to the previous version, resulting in great energy savings for 24/7 installations while reducing carbon footprint.

The low package inductance of those modern transistors gives a clean switching waveform which leads to a nearly perfect switching voltage and, therefore, better linearity. This results in a reduction in harmonic distortion of almost 6dB, so customers enjoy audibly improved audio quality.

Developed and build in-house

Steffen Bätz CEO at Innosonix explains; “To achieve the highest reliability and flexibility when it comes to customer integrations, we develop and build all hard and software

in-house, that allows us to satisfy integration needs. The close loop between development and in house production offers a continuously improved quality standard. All amplifiers use a documented 'RESTful-API' which we also use as the main control entry, so no hidden commands are implemented - we are open for control for everyone.”

Advanced signal processing

Unlike traditional reliance on dedicated DSP processors, Innosonix opted for FPGA (field-programmable gate arrays) to achieve the highest flexibility since the actual DSP engine is created at every bootup in hardware and can be easily exchanged with every firmware update. This guarantees low latency and massive parallel signal processing for those high channel counts.

Acoustic designers and Integrators welcome the flexibility offered by their unique FIR (finite impulse response) solution. Besides all the classical processing elements like EQ, the ability to load FIR-filter with up to 2048 taps per channel allows acoustic designers to fine-tune each room for optimal performance. The FIR filters are convoluted at a sample basis, to achieve low latency if desired and not on a block basis. The total FIR calculation power results in almost 4 Giga MACs/sec and about 202 Gigabit/sec memory bandwidth which can be easily handled by the FPGA DSP core.

In addition to the user-controllable DSP chain, an additional speaker-dsp-chain allows you to load prepared speaker corrections from manufacturers or even build your own library to speed up the deployment and tuning process of hundreds of speakers.



Ease of monitoring and maintenance is vital in a challenging marine environment...

Innosonix also offers a service to create custom speaker presets for any provided speaker type. The goal is to provide integrators with the DSP settings they need to optimize their system performance for speakers that pair with their amplifiers.

A shorter FIR-filter of 512 taps can also be placed inside the speaker-dsp to phase linearize any tweeter and still leave the full room acoustic FIR-filter untouched.

Monitoring and maintenance

Ease of monitoring and maintenance is vital in a challenging marine environment. Innosonix offers a comprehensive set of self-diagnoses in each amplifier to guarantee remote management and predicted maintenance. Each amplifier output sampled back with 24-bit audio grade ADCs to measure the precise output voltage and current of each connected speaker.



The measured voltage is compared to the desired output signal to guarantee its correctness. In combination with inserted pilot tones, the line integrity can continuously be observed. An exciting new feature that will be released in Q3/2022 - impedance monitoring of the connected speaker by calculating the impedance magnitude and phase curves based on any available audio output signal.

Thus, even a broken or altered midrange speaker can be detected by playing music

which isn't normally possible by simple pilot tones.

The values and ethos of the team at Innosonix are shared by Qualtron and our partners. Both companies seek to realize our clients' dreams with meticulous attention to detail at every stage.

For more details

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