

DPC® – Differential Pressure Control INNOVATIVE AND PATENTED TECHNOLOGY FOR A NEW ELECTROACOUSTIC DEVELOPMENT ENVIRONMENT



DPC® (Differential Pressure Control) is the core technology of IPAL, Integrated Powered Adaptive Loudspeaker, an innovative Powersoft patented technology that will open a new era in the electroacoustic design by providing acoustic designers with tools able to overcome the physical limitations of the currently available components.

This technology integrate, in a single development environment, electroacoustic advanced functionalities possible only with an extremely powerful DSP and with “zero latency” (10 us), able to react in real time to the changes of the “user defined” performance. These performance can be set as desired SPL or equivalent parameters of the transducer as a sort of “virtual transducer” modeling.

This technology will allow the designer the following major benefits:

- Overcome physical limitations of transducers
- Compensate system electromechanical / acoustical nonlinearities by an efficient control method
- Remove degradation of performance due to aging, power compression, component tolerances
- Achieve the highest possible SPL out / Power in ratio
- Achieve the highest SPL for a given transducer

IPAL ,Integrated Powered Adaptive Loudspeaker, is a unique technology combining the patented features as follow:

PC – Differential Pressure Control

DPC® (Differential Pressure Control), is an innovative technology that is the core of IPAL control method.

Full characterization of transducer and acoustical load conditions allows to correct in real time the uncertainties of any acoustical system with state of the art resulting performances.

System linearity is guaranteed by a feedback correction that takes care of removing the limitations of physical transducers.

Building a global feedback method (that works) from electrical domain to acoustic domain has been an aim since the early days of acoustic, DPC® solves the problem in a elegant and, at the same time, extremely effective way.

Virtual Transducer Modeling

DPC®, still allows an amazingly powerful tool to built a so called “Virtual transducer”, giving the real transducer to behave accordingly to an “user defined” transducer , synthesized by the speaker designer, with a dashboard to manage the Thiele – Small or electromechanical parameters of the desired driver.

No alterations are produced by aging, power compression, production uncertainties on a device that relies its behavior on a mathematical model.

“Zero Latency” DSP

In any control method, a processing unit has to carry out calculations for correcting, filtering and generally speaking “processing” the signals received from the various sources.

In the IPAL technology, this process is demanded to a DSP that has not only to be very powerful but as well “very fast”.

Being impossible to correct what is already passed away, a specifically designed DSP core has been developed to minimize the In-Out latency of the system.

An innovative architecture that ensures an astonishing 10uS (microseconds) latency on the critical feedback paths allows “analog type” feedback approach with the flexibility of a DSP core.

Highest Efficiency Amplifier / Transducer Integration

IPAL technology magnifies the native performances of efficiency and the “recycling” capabilities of Switchmode Amplifier Topologies.

Specific design and energy optimized matching of the amplifier output stage and the transducer motor delivers an unprecedented value in terms of Acoustic Output to Mains Input Power Ratio.

Optimization of the transducer has been run to create a device that works efficiently at Large Signals and not at “datasheet” level, where the power demand sets constrains to the system.

These are some of the keys to reach Acoustic Capabilities far above the expectations.

SPL and Distortion achievable from an unity device are something inexperienced before.

Power Factor Corrected Power Supply

In the vision of a worldwide touring application, IPAL technology integrates in the power supply a PFC (Power Factor Corrected) High Efficiency Solution allowing a worldwide mains usage.

Benefits in current consumption and stability against mains variations are a plus in combination to an high voltage mains mismatching withstanding.

A Green approach dominates the whole design to contribute reducing the consumption as much as possible.

IPAL technology is covered by the following patents:

PCT Patent N° WO-2008-018099

PCT Patent N° PCT/IT98/00031

U.S. patent N° US 6,281,767 B1