

## **Multi-Domain Transducer Measurement**

By Kent Peterson Warkwyn Associates

Electro-acoustic transducers used in loudspeaker systems typically translate an electrical signal into acoustic sound by mechanically actuating a diaphragm or cone with an electro-magnetic motor. Comprehensive transducer testing therefore requires a multi-domain approach with measurements in all relevant domains: electric, mechanic, acoustic, and magnetic.

A broad range of measurements and methods will be shown including single point measurements, distributed measurements (laser scanning) and measurement methods based on model fitting for linear as well as non-linear behavior. The multi-domain measurement approach provides a wealth of relevant data, enables a much deeper understanding of the transducer, its behavior and its defects, and enables symptoms to be linked to their actual root causes. The presented measurement methods are in most cases faster than traditional measurements and only require normal semi-reverberant rooms with minimal acoustic treatment. This enables savings in time and resources both in the short and long run by reducing measurement time, eliminating the need for special facilities like anechoic rooms and, cutting down research time and the amount of necessary prototype iterations.

This presentation discusses important electrical, mechanical, and acoustical measurement performed on the KLIPPEL Multi-Scanning Workbench according to IEC 60268-21 and 22. Kent Peterson will be joined by Dr. Stefan Irrgang of Klippel GmbH.



**Kent Peterson** is Warkwyn's Sales and Marketing Manager. In his over 25-year career in the audio manufacturing, sales, marketing and acoustical consulting fields, Kent has worked with Electro-Voice, SEH Engineering, HDR Engineering, and Williams Sound. Kent attended the University of Minnesota Duluth where he studied Music, Communications and Acoustics. He is an expert EASE programmer and a musician and producer with three Minnesota Music Awards to his credit.