MOTIVATION FOR ACoustic WIRELESS POWER TRANSFER SYSTEM

➢ Wireless power transfer through sealed metal containers: Attractive for applications where feed-through wires are not desirable such as aerospace, pipelines, and nuclear waste storage.

➢ High power density: Piezoelectric transducers have shown high power density as an energy storage element compared to traditional elements like capacitors and inductors.

SYSTEMATIC DESIGN METHOD

➢ Circuit Schematic for full AWPT system

➢ System Optimization

➢ Using Z parameters, design system based on different compensation levels and load resistance combinations for all frequencies in measured range.

PROTOTYPE VERIFICATION

➢ Coil formers for $T_x$ & $R_x$ coils

CONCLUSIONS

➢ Optimized AWPT system for optimal power transfer within a fixed frequency range.

➢ Fabricated the optimal system and verified the model with hardware experiments.

FUTURE WORK

➢ Complete hardware tests at higher input voltages.

➢ Investigate larger frequency range to see if higher resonant modes are feasible operating points.

➢ Design DC/DC converter and rectifier for AWPT system output.