

EPSRC HiFFUT Fellowship Project Meeting Minutes

Date of Meeting: 26 September 2018

Location of Meeting: Department of Physics, University of Warwick

Present: Steve Dixon^{SD} (University of Warwick), Colin Edge^{CE} (DynOptic Systems), Andrew Feeney^{AF} (University of Warwick), Lei Kang^{LK} (University of Warwick), Rob Turner^{RT} (Katronic).

18 October 2018

Dear project partners,

Thank you for your attendance at the meeting, I hope you found it both informative and useful. The key points from the meeting are summarised below.

- AF and LK gave an update presentation on the research which has been completed since the March 2018 meeting. LK outlined the optimisation of high-frequency flexural ultrasonic transducers, operating towards 100 kHz with comparable efficiency to commercially-available 40 kHz flexural ultrasonic transducers. LK also showed research of the WEMDAT, patent applied for, which is an efficient wideband ultrasonic transducer operating through electromagnetic coupling, and demonstrated a 40 kHz and coil-only electromagnetic flexural ultrasonic transducer, removing the need for a piezoelectric ceramic. AF discussed progress with the laser-welded transducers, the investigations into the dynamic nonlinearity of different flexural ultrasonic transducers, both commercial and custom-made.
- Demonstrations of the WEMDAT, optimised high-frequency flexural ultrasonic transducer, and the coil-only flexural ultrasonic transducer were given by LK in the ultrasound laboratory.
- A general discussion followed on the key developments from this work, including feedback from each of the project partners. The project is ahead of schedule, and a number of papers and patent documents are currently in preparation. A new Ph.D. student is beginning work on this project in October 2018, and will hopefully present some research at the next meeting in 2019.
- Commercial opportunities should be investigated for the transducers demonstrated, performance through a pipe wall, and also coupling through a fluid.
- AF and SD proposed the next meeting to be held in February or March 2019.

Actions

1. Publish and promote the results of the WEMDAT, optimised high-frequency flexural ultrasonic transducer, and dynamic nonlinearity research.
2. Conduct high pressure tests with the fabricated specimens.
3. AF to make arrangements for the next meeting at the start of 2019.

As usual, let us know if there are any questions, or if there is something specific or applicable to your work you would like us to address.

Kind regards,

Andrew

Dr Andrew Feeney
Research Fellow, Centre for Industrial Ultrasonics