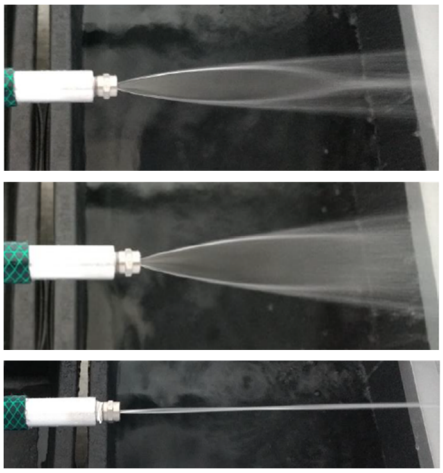
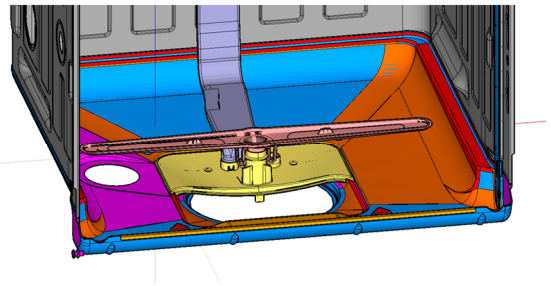
TECHNISCHE UNIVERSITÄT DRESDEN

Fakultät Elektrotechnik und Informationstechnik, Lehrstuhl für Akustik und Haptik

Diplomarbeit/Studienarbeit

Topic: Investigating the water flow parameters on noise generation mechanisms in dishwashers





In a dishwasher, pump transfers the water into different spray arms and the spray arm rotation is passively obtained by the momentum created by pumped water. Generated water jet hits the inner surface of the dishwasher, generating the well-known sound of a dishwasher. This water splash noise becomes the most dominant noise source in dishwashers when the other well-known noise control measures are taken.

The noise generated by this impact of water droplets depends on the type of the flow created, drop formation, flow rate and velocity of the water flow. Detailed investigation of these parameters on noise generation is crucial to decrease the noise levels in dishwashers.

The topic includes the vibro-acoustical measurements of a sample dishwasher by using the different nozzle designs on a lower spray arm under the different conditions of water pressure, mass flow rate, and nozzle angle and water velocity.

Following points can be defined as the milestones of the topic:

- Restructuring the sample dishwasher so that the single nozzle measurements are possible
- Obtaining a database of dishwasher noise under different conditions of nozzle type, water pressure, and water flow velocity and impact angle. Database should include the overall noise / vibrations levels as well as the calculated psychoacoustical quantities.
- Evaluating the advantages and disadvantages of using different working conditions, nozzle types etc.
- Conducting listening tests to investigate the perceptual differences on the generated noise

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