

In the project we are going to explore the possibilities of using magnetic forces for stabilisation of a pipe, through which a liquid or a gas flows. If the flow velocity becomes too high, vibrations arise. Such a phenomenon can be easily observed when a strong stream of the water starts flowing inside a garden hose – its free end begins a snake-like motion on the grass. This is an example of flutter or – in other words – self-excited vibrations. These are vibrations appearing when the energy supplied to the system in a non-periodic form is somehow transformed by the system into its oscillating motion.

This phenomenon has found a practical application in devices for watering plants like "Crazy Daisy". Generally, however, flutter vibrations are harmful, and may occur in a wide range of various structures and machines. The squeal of brakes in a vehicle, vibrations of slender shafts rotating with a high speed, oscillations of structural elements of planes or gliders – these are only some examples. Positive effects of the project will allow for the construction of contactless electromagnetic actuators whose range of applications could be much broader than actually examined in the project.