Thesis's

1 The amplitude of the forced vibration might be decreased by the square signal driven electromagnetic actuators while the conventional supports are being kept. The method combines the stability of the traditional sliding or ball bearing with the high speed operation of the electromagnetic actuators. The effective place for mounting the electromagnetic actuator is around the maximum amplitude of the first order mode shape. (Chapter 4, and 5.2.1)

2 There was shown by the bases of the experimental investigation and simulation that in case of one side mounted electromagnetic actuator the value of the k, so called "fill factor" is 0.5. ($k = 2 \cdot \tau / T$, where T is the time period of the forced vibration and 2τ is the operation time of the electromagnetic actuator.) (Chapter 4)

The utilization of the input power of the electromagnetic is different:

2/a Modifying the fill factor from the optimum (k=0.5) value towards the k=1 more and more increasing part of the input power is set on the higher order amplitudes.

2/b Modifying the fill factor from the optimum (k=0.5) value towards the k=0 the input power is set on the increasing of the amplitude of the first order mode shape.

3 The deformation forces acting on the shaft and the power of the vibration might be minimized even at closely in the resonance revolution by the properly operated electromagnetic actuators. (Chapter 5.2.2)

4 There was shown by the bases of the experimental investigation and simulation that the limits/boundaries of the quasi periodical state are indicated by the increasing of the higher order harmonic components. (Chapter 5.2.1)