

Fig. 15. Inner torque mean value for tested failure points

The high oscillations in motor inner torque after the fault cause oscillations in the course of motor speed, and what is more, a drop of the speed to a new steady-state value in connection to the current unbalance and rotating magnetic field change. It can be seen in Fig. 4 for the case of coil-to-ground failure in point 3. A dependence of mean value of speed on the failure point is shown in Fig. 16.

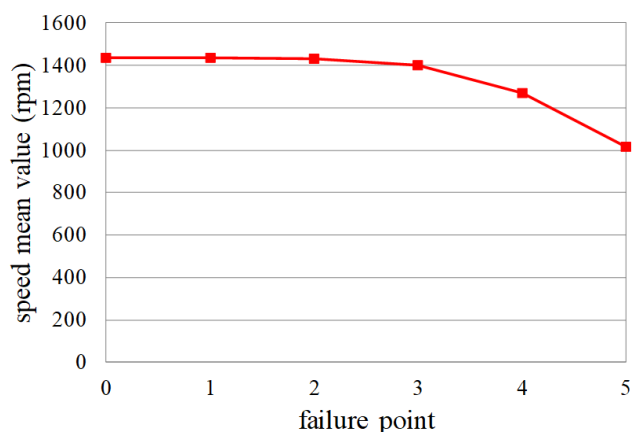


Fig. 16. Speed mean value for tested failure points

5. Conclusion

The simulations of the stator coil-to-ground faults have been carried out for several points of one phase to show the dependence of observed motor parameters on the actual point of failure. As seen from the presented results, the current in the affected phase, magnetic field distribution in motor, waveforms of currents, inner torque and speed are strongly dependent on the failure point. The mechanical load of motor is assumed to be constant and equal to the nominal one. In each tested failure point, the current of affected phase exceeds its nominal value, and it is fast-growing when the failure point shifts towards the terminal with harmful consequences for machine.

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