

**Title: Comparison of Brush Dynamic Operation Characteristics for Turbine Generator Steel Collector Ring**

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**Abstract :**

In large turbine generators for thermal or nuclear power plants, such as 1000MVA power plants, brush & collector ring sliding contact operation characteristics, where more than 5000A field exciting current flows, are one of the most important problem for its reliability.

In case of turbine generator collector ring, ring material is usually made of steel, as a view point of mechanical strength for high speed operation, such as 60m/s, where brush contact characteristics for the steel ring have not been well known or have not been enough disclosed.

Besides collector ring profile distortion which may cause brush seating operation difficulties, has to be allowed to some extent, due to mechanical structure of the turbine generator rotor & machining process feature.

These mean that the suitable carbon brush grades for this purpose are limited, even though hundreds of carbon brush grades are supplied all over the world by brush manufacturers.

In this paper, results of the carbon brush grades comparison test for evaluating dynamic operation characteristics by applying very high sliding speed condition & very high brush current density condition, are presented.

As results of the test, it is clarified that in case of lower apparent density brushes and lower flexural strength brushes among the natural graphite grades, better dynamic operation characteristics are given.