

## **Cost Reduction of C/C Composite Pantograph Contact Strips and Evaluation of its Wear Limit**

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C/C (carbon fiber reinforced carbon) composite pantograph contact strips have self-lubricating properties and are excellent in resistance to heat, strength and toughness. Meanwhile, as they contain a large percentage of costly carbon fiber, they are more expensive than conventional carbon contact strips. To meet the cost-cut demands, the authors developed a C/C contact strip with its cost reduced by 20%, by halving the content of the carbon fiber and simplifying the manufacturing process with the “Preformed Yarn” technique for forming a C/C substrate. The wear limit (minimum allowable thickness for use) of the C/C contact strips is also an important factor affecting the maintenance cost, therefore, the authors investigated the bolt-fastening force and the strength of worn contact strips to clarify the wear limit. The results revealed that the wear limit for the C/C contact strips should be more than 6mm at the bolt-fastening position, and 4 mm elsewhere on the strip for the particular pantograph (PS33B).