FUJIKURA COMPOSITES

CFRP for high-speed rotor

CFRP is the best material for the cover to prevent from deforming of high revolution parts like a motor or a vacuum pump.

Comparison with metal

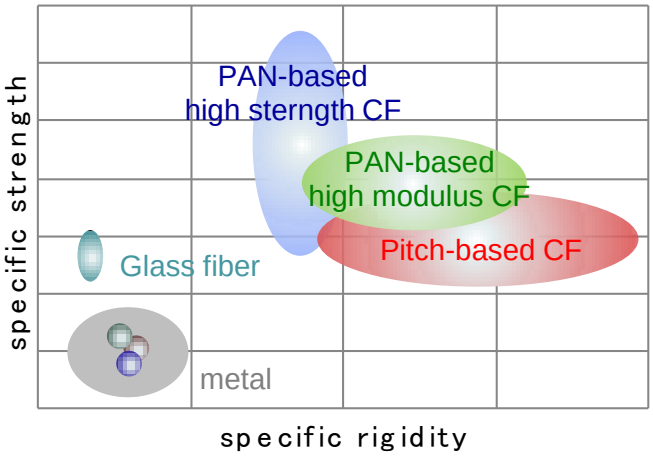


Fig.1 Specific rigidity and specific strength

Table.1 specific gravity and coefficient thermal expansion

materials	specific gravity	CTE(/K)
steel	7.9	12×10^{-6}
aluminum	2.7	23×10^{-6}
titanium	4.5	8.4×10^{-6}
CFRP (fiber direction)	1.5~1.7	$0 \sim 0.3 \times 10^{-6}$
CFRP (transverse direction)	〃	$45 \sim 65 \times 10^{-6}$

Deformation analysis

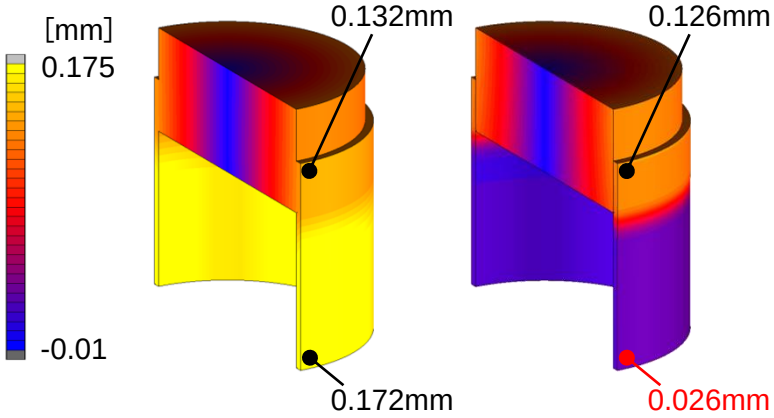
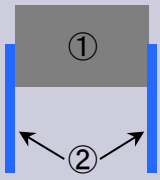


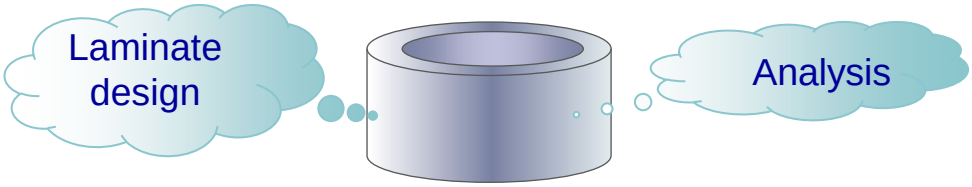
Fig.2 The results of deformation analysis on diameter direction :
A2017 (left) and CFRP (right)

Table.2 Analysis conditions

analysis conditions	
temperature conditions	25℃→125℃
speed	30,000rpm
materials	①solid shaft ・A2017 ②cylinder ・A2017 ・CFRP



Our appropriate laminate design enables the suppression of deformation of centrifugal load and thermal expansion.



FUJIKURA COMPOSITES Inc.
6-12-8 Ueno, Iwatsuki-ku, Saitama-shi,
Saitama 339-8510, Japan
TEL +81-48-794-2940
E-mail kaihatsu@fc.fujikura.co.jp

RDTR07-0032 20140902