

Magnequench

Motor Design - Seat Motor

(Benchmark Ferrite vs MQP)

Seat Motor

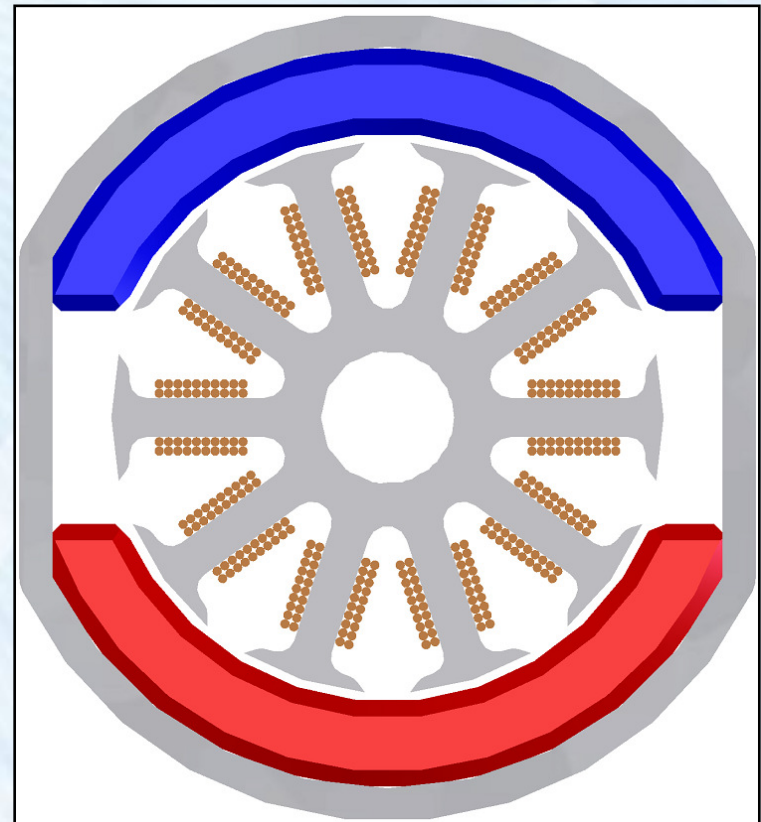
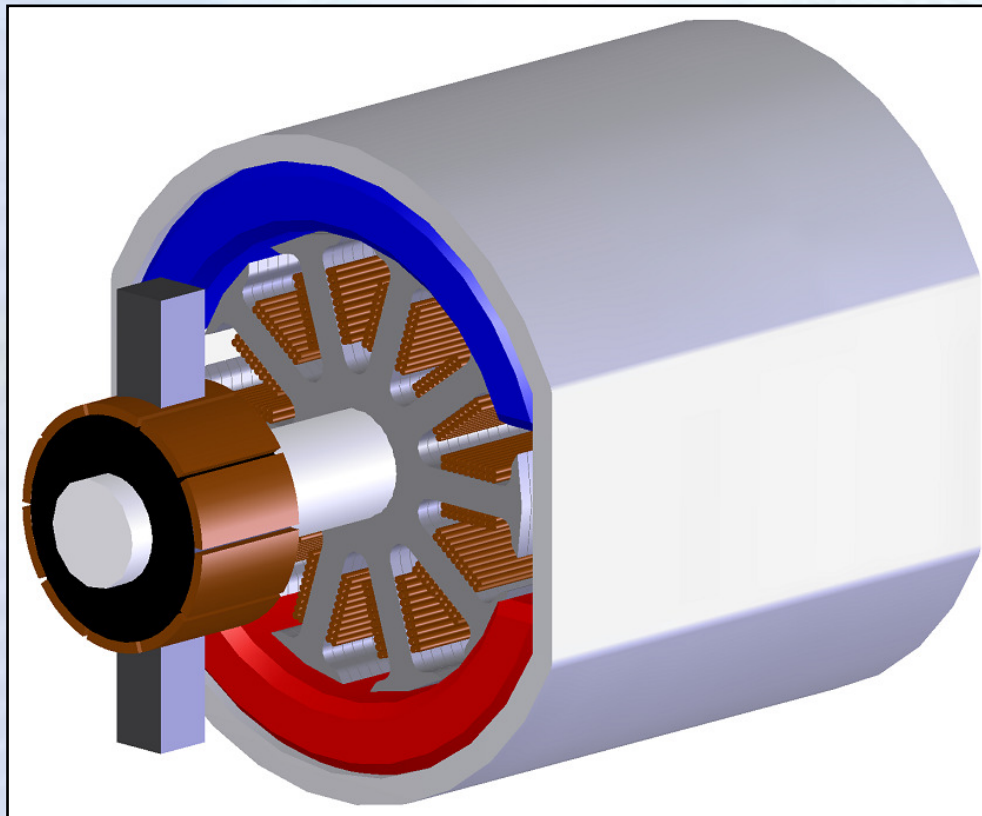
Rationale

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- Reduce the amount of various raw materials
 - Such as copper and steel
- Cost less than heavier and larger ferrite based motors
- Improved fuel efficiency as weight of the car decrease

Benchmark Ferrite Seat Motor

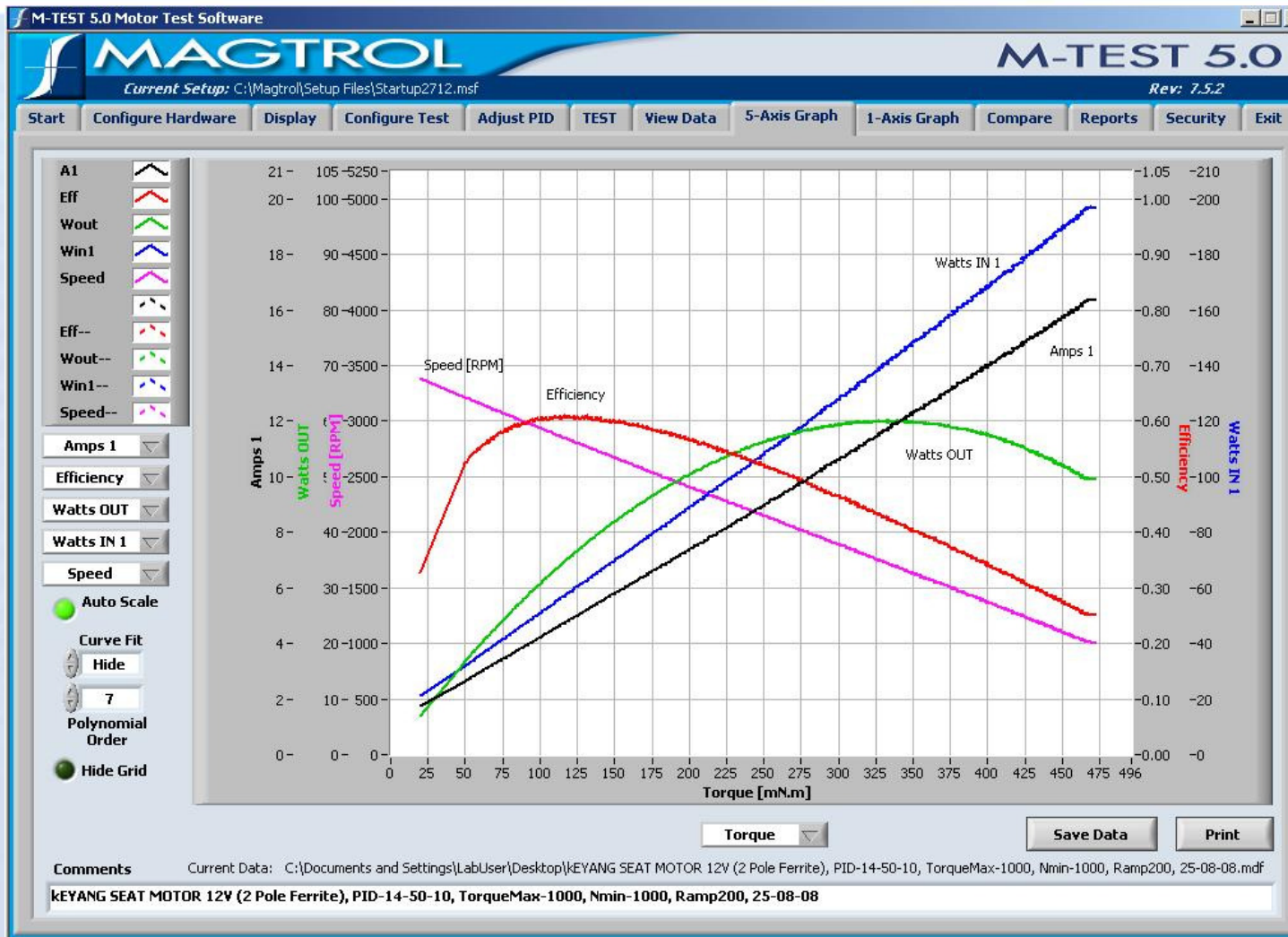
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Benchmark Ferrite Seat Motor

Dyno Test

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Measurement of motor characteristics using the dynamometer

Comparison

Benchmark Ferrite Seat Motor Vs Bonded Neo

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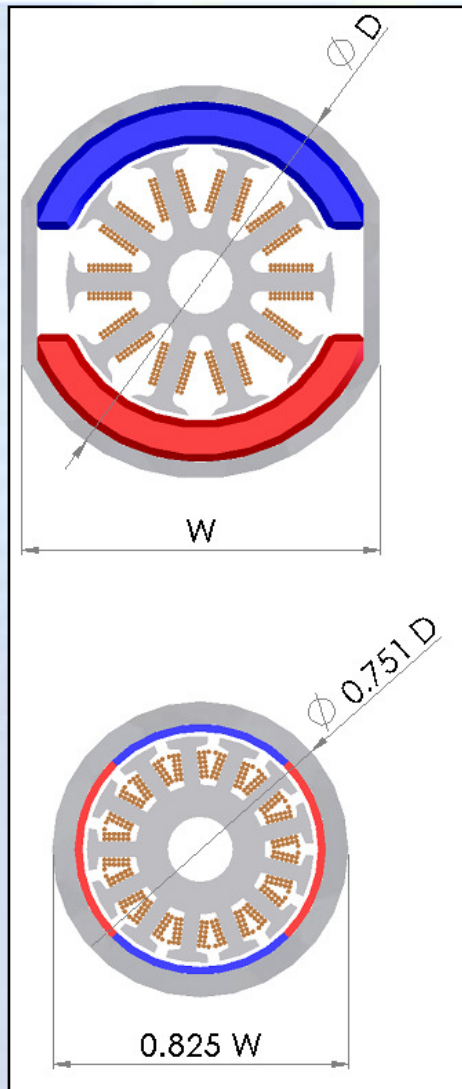
Parameter	Benchmark PMDC Motor (Keyang)	4-Pole PMDC motor with Bonded Neo Magnets
Type of Magnet	Ferrite	Compression Molded (B+-20056-070)
Total motor weight (gm)	368.64	214.84
Length of the motor* (mm)	43.00	33.20
Overall diameter**(mm)	48.60	36.52
Overall Width (mm)	44.25	36.52
Total copper weight (gm)	59.73	34.50
Total magnet weight (gm)	101.86	18.44
Length of Air gap (mm)	0.51	0.51
Current at 150 mN-m (A)	5.78	5.75
Current at 300 mN-m (A)	10.60	10.58
Efficiency at 150 mN-m (%)	60.25	61.82
Efficiency at 300 mN-m (%)	46.50	50.16

Comparison

Benchmark Ferrite Seat Motor Vs Bonded Neo

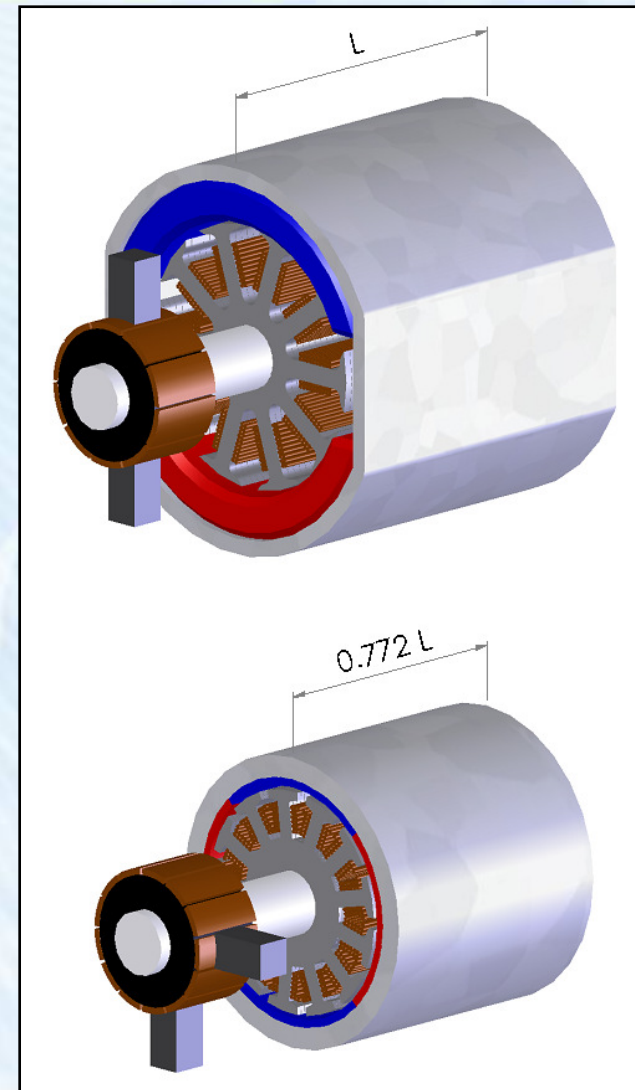
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Benchmarked Motor

Redesigned Motor

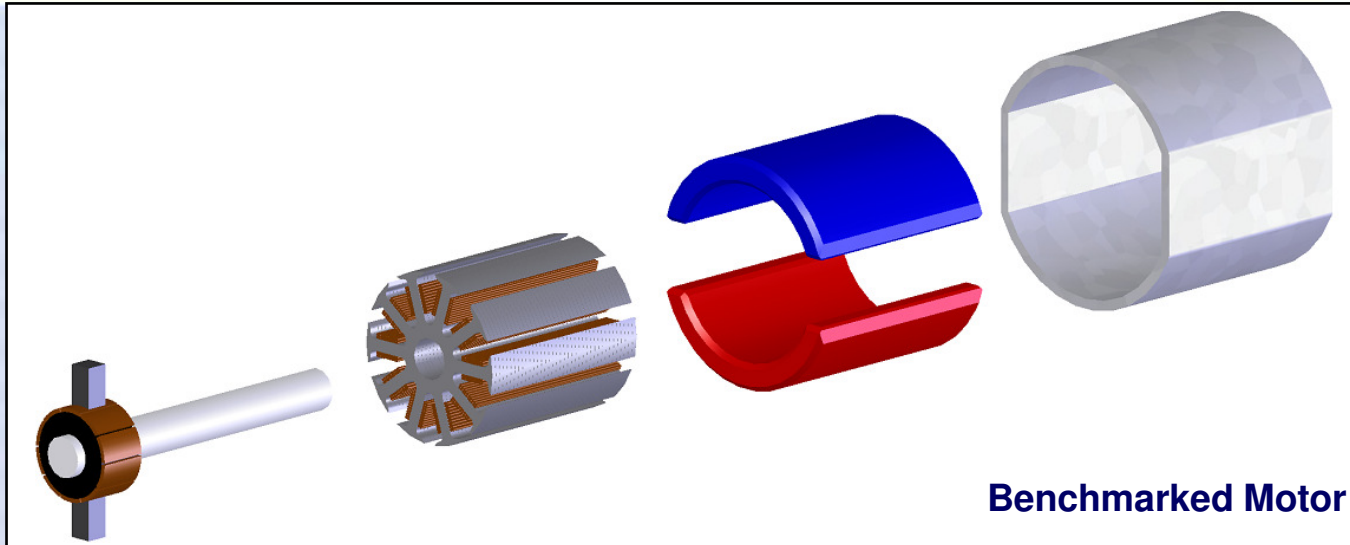


Comparison

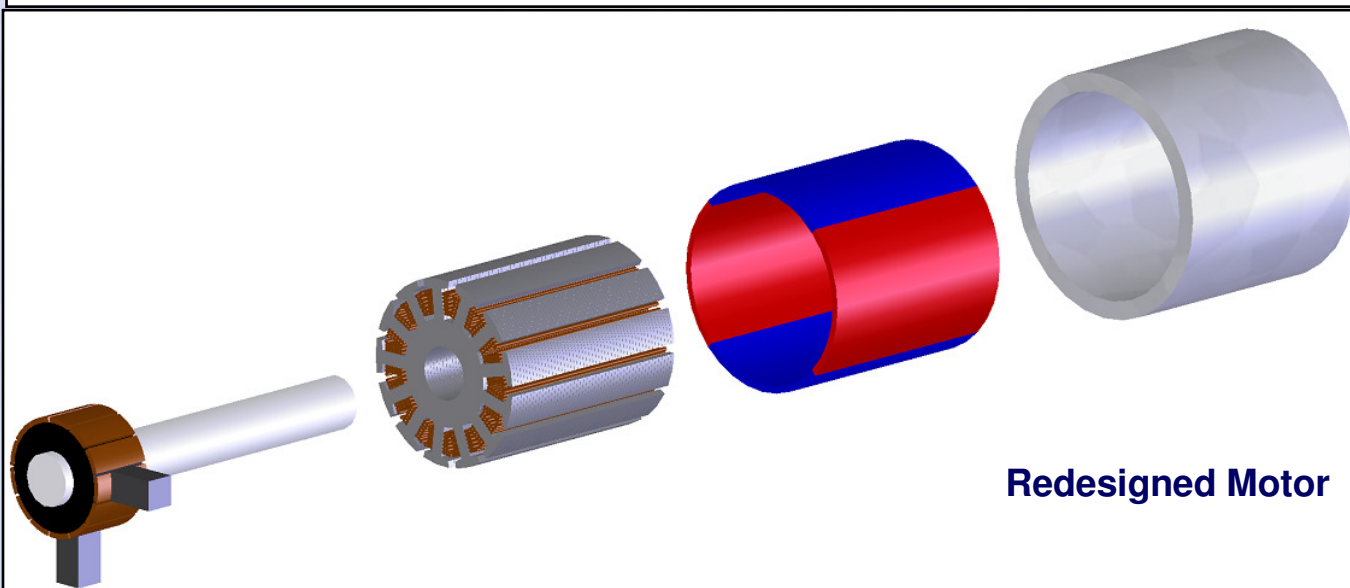
Benchmark Ferrite Seat Motor Vs Bonded Neo

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Benchmarked Motor



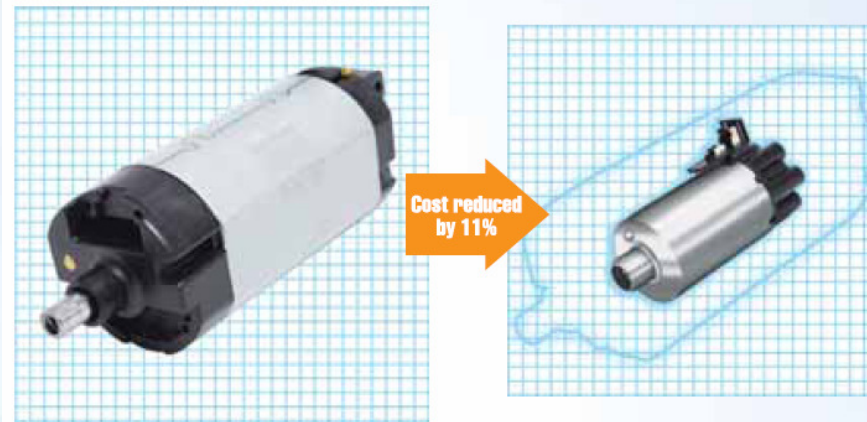
Redesigned Motor

**Exploded View of
the Motor**

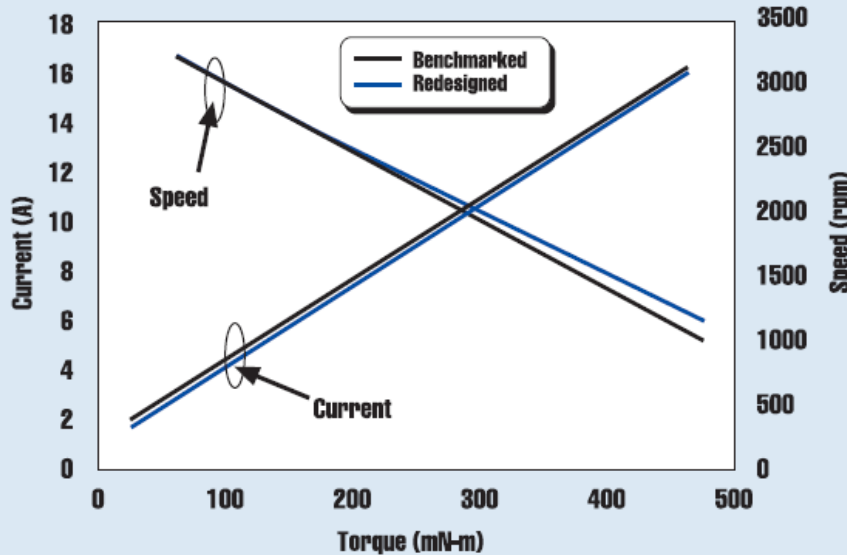
Comparison

Benchmark Ferrite Seat Motor Vs Bonded Neo

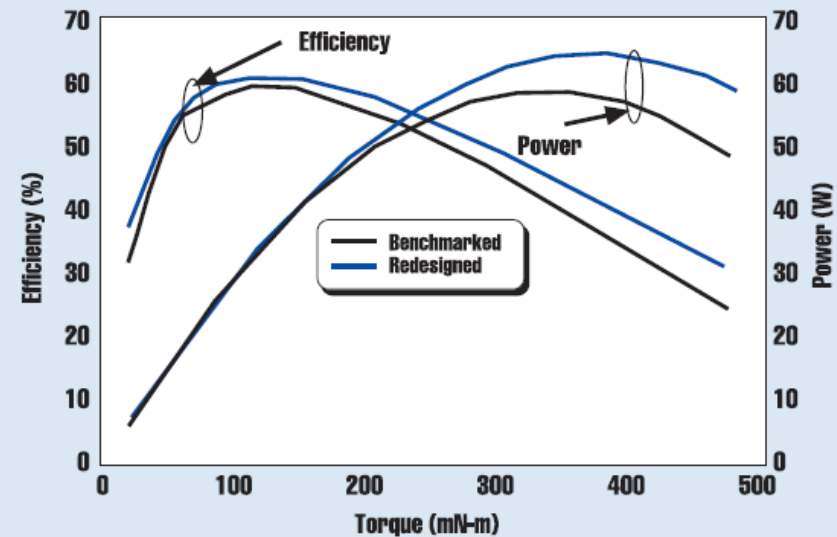
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Torque-Speed and Torque-Current Characteristics



Torque-Efficiency and Torque-Power Characteristics



Cost reduced by more than 10%

Benchmark Ferrite Seat Motor Vs Bonded Neo

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