



neo

*Magnequench*

## Motor Design Case Study: Seat Motor (MQP-B+-20056)

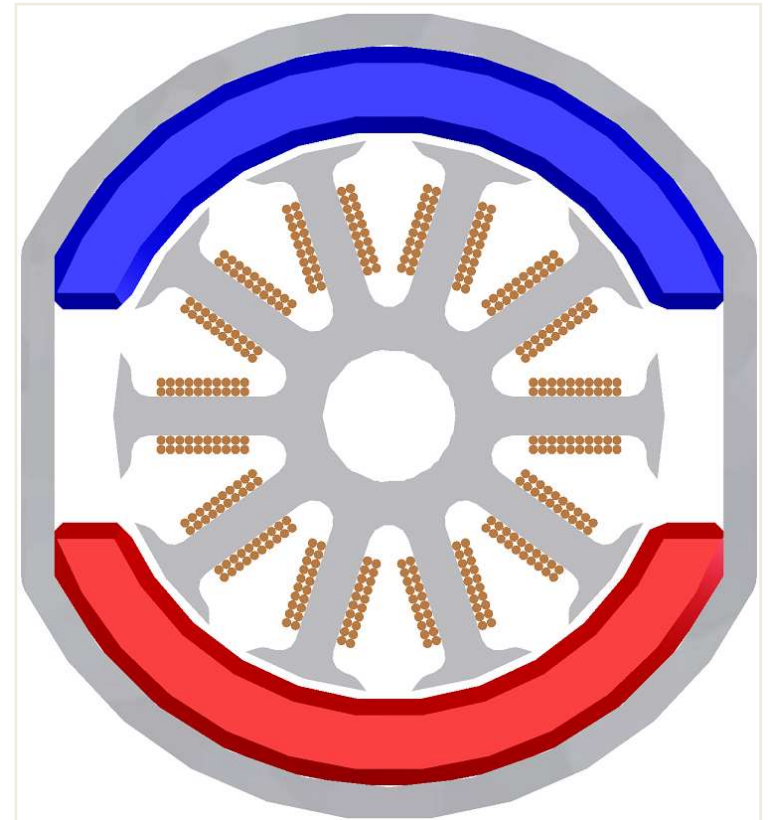
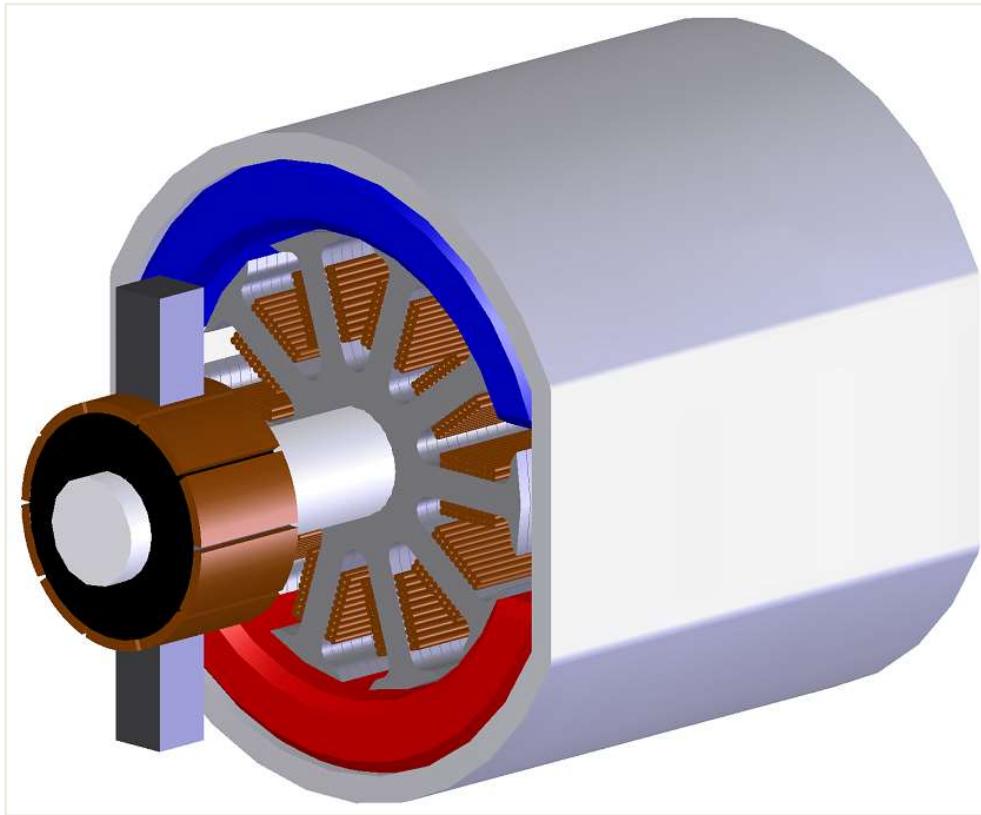


# Seat Motor Rationale

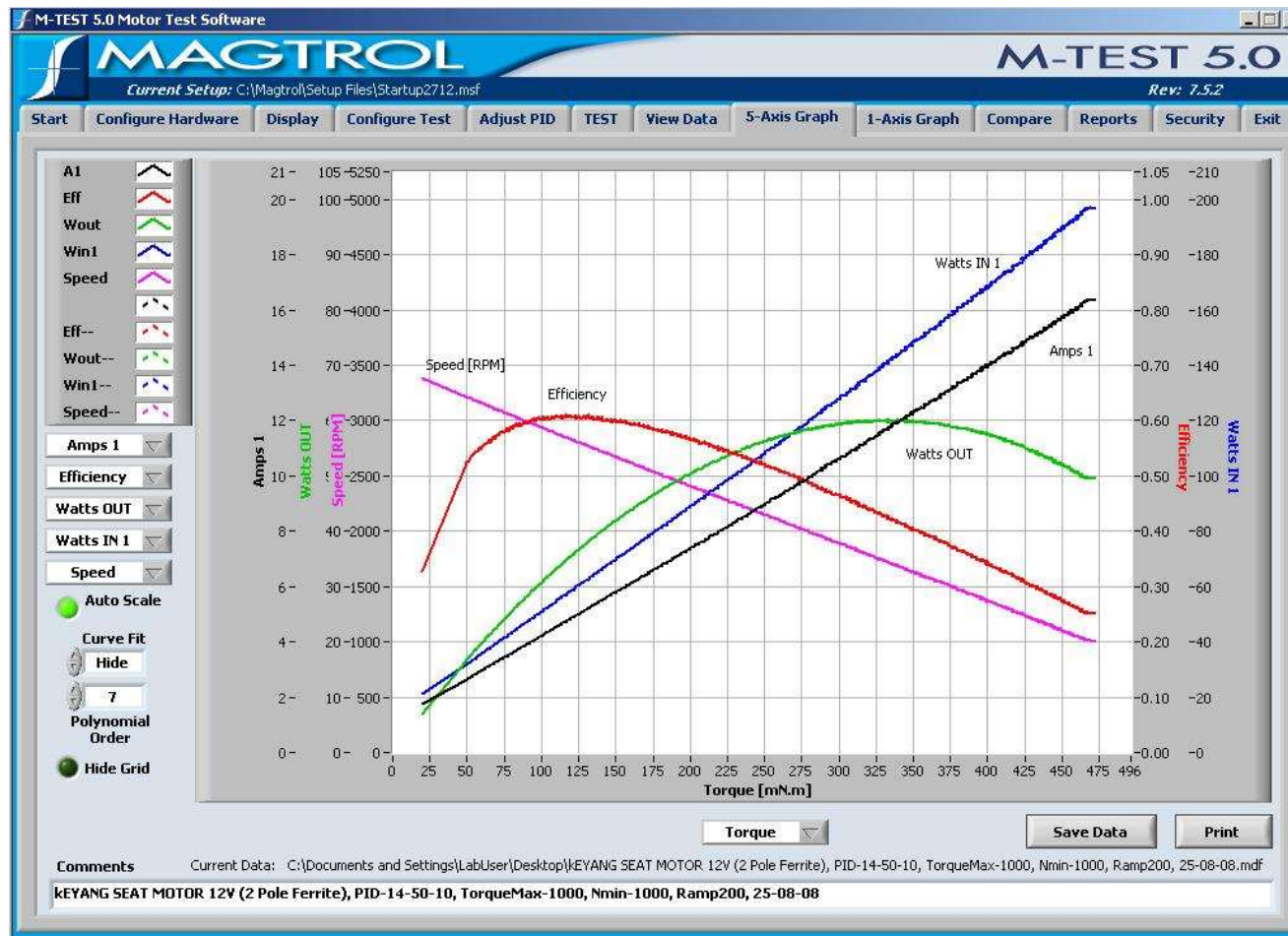


- Reduce the amount of various raw materials
  - Such as copper and steel
- Cost less than heavier and larger ferrite based motors
- Improved fuel efficiency as weight of the car decrease

# Benchmark Ferrite Seat Motor



# Benchmark Ferrite Seat Motor Dynamometer Test



Measurement of motor characteristics

# Comparison

## Benchmark Ferrite Seat Motor Vs Bonded Neo

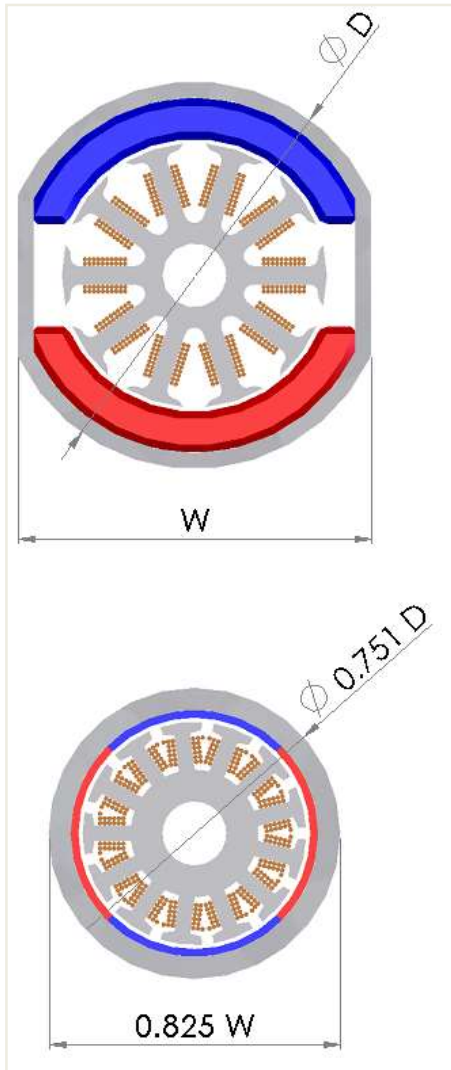


Parameter	Benchmark PMDC Motor	4-Pole PMDC motor with Bonded Neo Magnets
Type of Magnet	Ferrite	Compression Molded MQ1™
Total motor weight (gm)	368.64	214.84
Length of the motor* (mm)	43.00	33.20
Overall diameter**(mm)	48.60	36.52
Overall Width (mm)	44.25	36.52
Total copper weight (gm)	59.73	34.50
Total 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

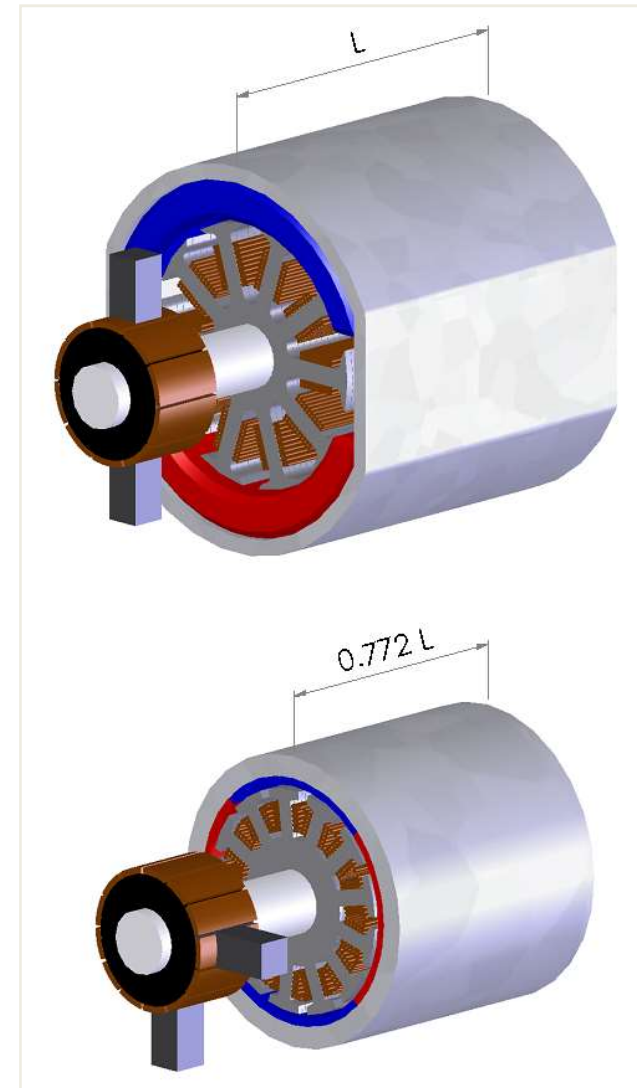


# Comparison

## Benchmark Ferrite Seat Motor Vs Bonded Neo



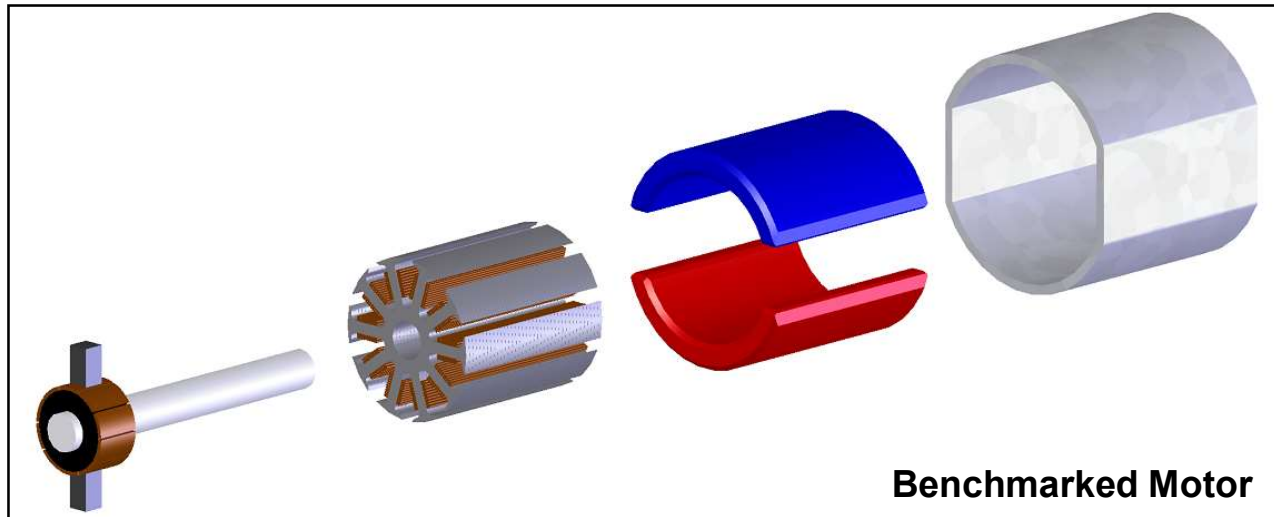
Benchmarked Motor



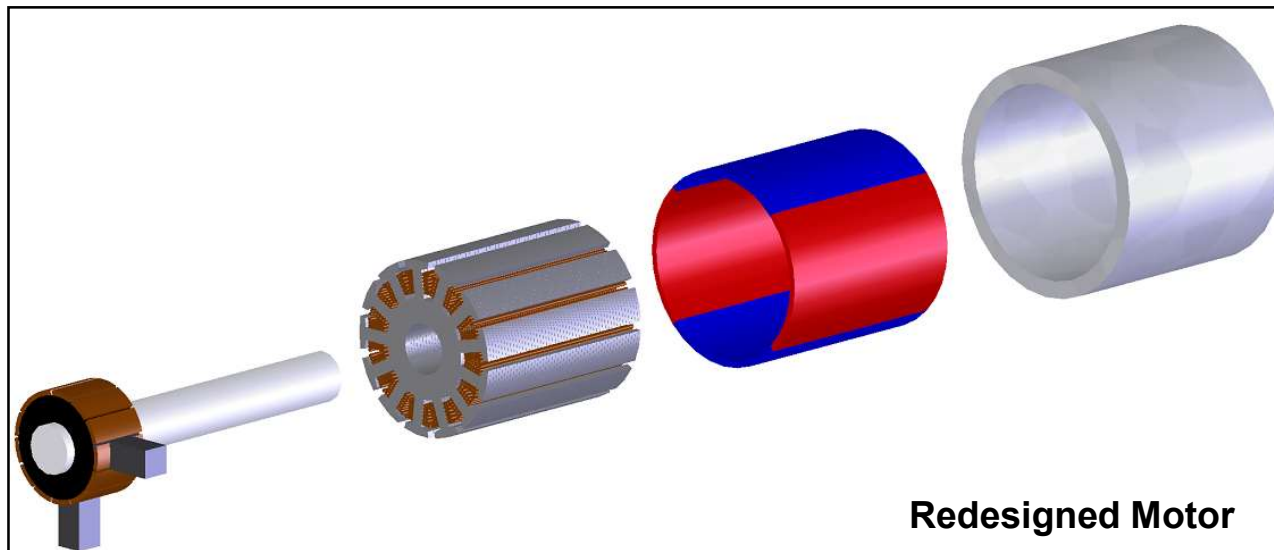
Redesigned Motor

# Comparison

## Benchmark Ferrite Seat Motor Vs Bonded Neo

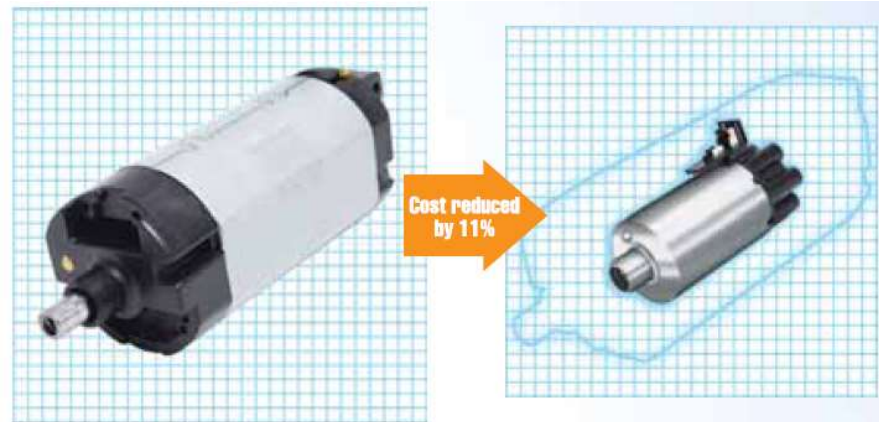


**Exploded View of  
the Motor**

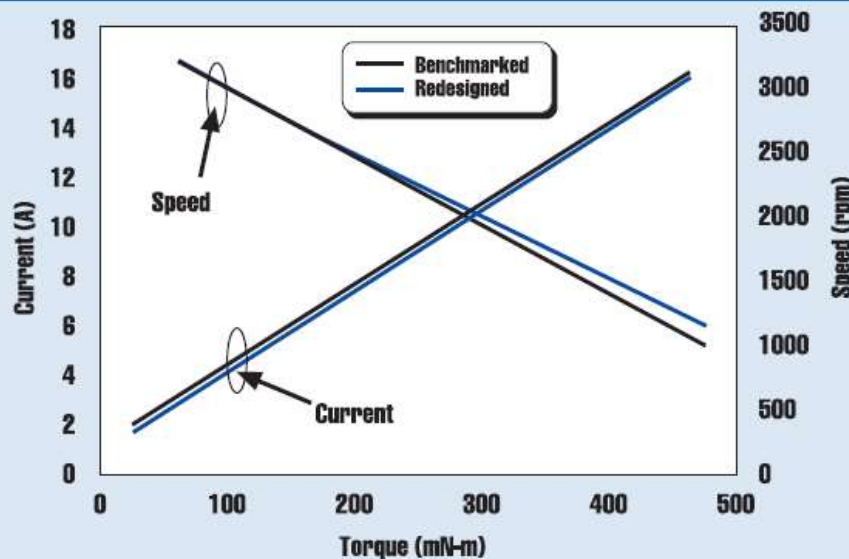


# Comparison

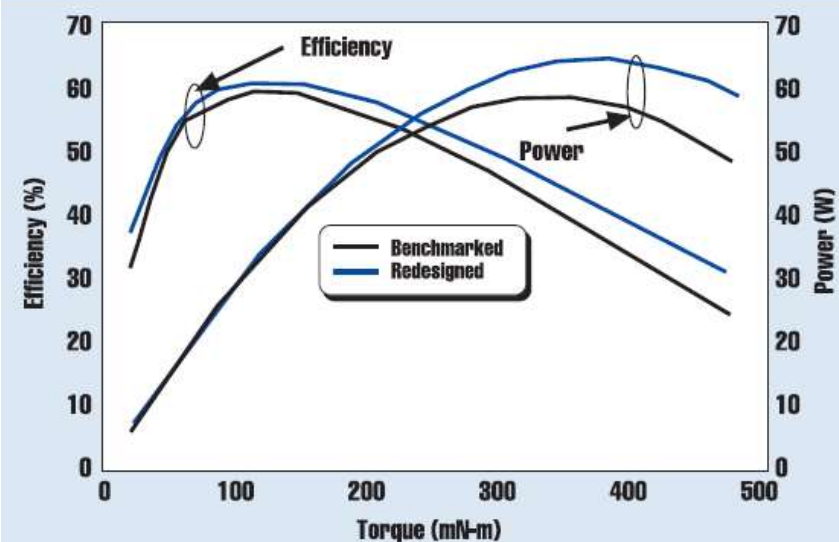
## Benchmark Ferrite Seat Motor Vs Bonded Neo



### Torque-Speed and Torque-Current Characteristics



### Torque-Efficiency and Torque-Power Characteristics





# Comparison

## Benchmark Ferrite Seat Motor Vs Bonded Neo

