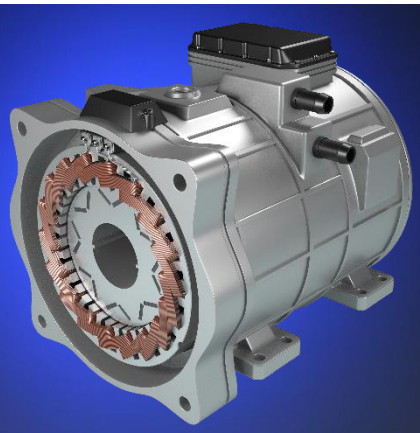
PROTERIAL

应用于电机的非晶合金
Amorphous alloy for motor

通过将非晶合金应用于电机铁芯，
可以实现适应于高转数需求的高效电机设计

By using an amorphous alloy for the motor core,
A high-efficiency motor suitable for high rotation can be realized.



电 机

概 要

通过降低电机铁心的铁耗，实现以下效果
Motor core iron loss reduction achieved the following effects.

电机高效节能的解决方案
Energy saving by improving motor efficiency

有效降低电机的发热
Reduction of motor thermal generation

用 途

低负载・高转数电机
Low Load・High rotation speed Motor

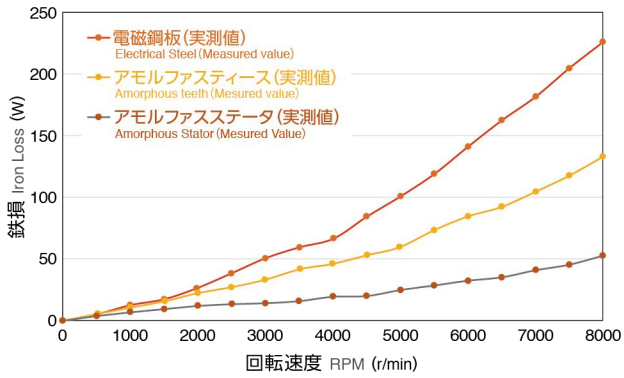
特 点

非晶定子铁芯的优势如下
Confirmed the following with an amorphous stator core.

- **铁耗降低至 1/5**
・Iron loss reduced to about 1/5
- **高转数区域的效率改善为 3% 以上**
・Efficiency improvement of 3% or more in the high rpm range
- **同区域的发热量减少一半**
・Motor thermal generation can be reduced by half

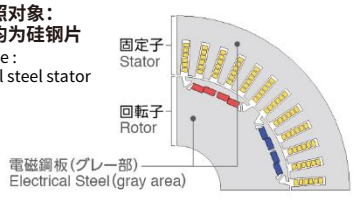
注：使用Φ215mm×50mm的永磁同步电机评测损耗
Note: evaluated loss of IPM motor （Φ215mm × 50mm stator core）

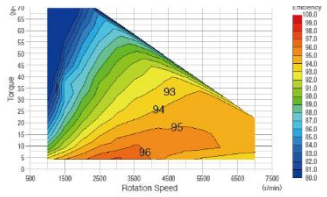
测试用样机的铁耗测试结果
Iron loss evaluation result of prototype motor



测试用样机的效率对比
Efficiency Comparison of prototype motor

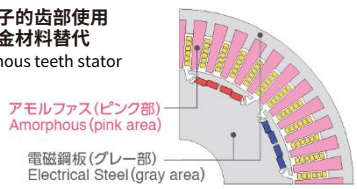
对比参照对象：
定转子均为硅钢片
Reference :
Electrical steel stator

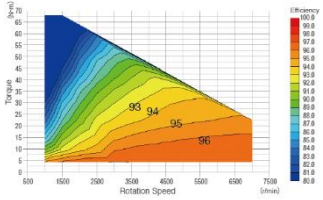




对比电机：定转子均为硅钢片
Reference : Electrical steel stator

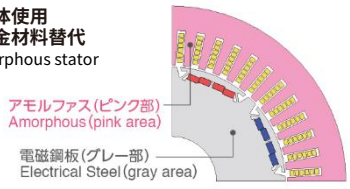
只在定子的齿部使用
非晶合金材料替代
Amorphous teeth stator

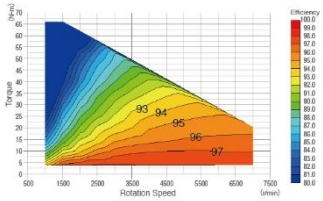




定子齿部使用非晶
Amorphous teeth stator

定子整体使用
非晶合金材料替代
All amorphous stator





定子整体使用非晶
All amorphous stator

参考文献：榎本 裕治、木村 守、丸川 泰弘、佐野 博久 「定子铁芯整体采用非晶金属的分布式绕组IPM电机」2021年电气学会产业应用部门大会演讲论文集，3-4，ppIII-133-138(2021)

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