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# **AFPM Coreless machines for low speed and high torque**

**SEO YOUNG TECH. CO.,LTD.**



R&D Center, Seoyoung Tech. Co., Ltd



# Characteristics advantage of AFPM Coreless Generator

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Recently, issues regarding environment and the diversification of dependence in oil are watched with keen interest. Wind power attracts most interest because of its high-energy efficiency with environment friendly functions.

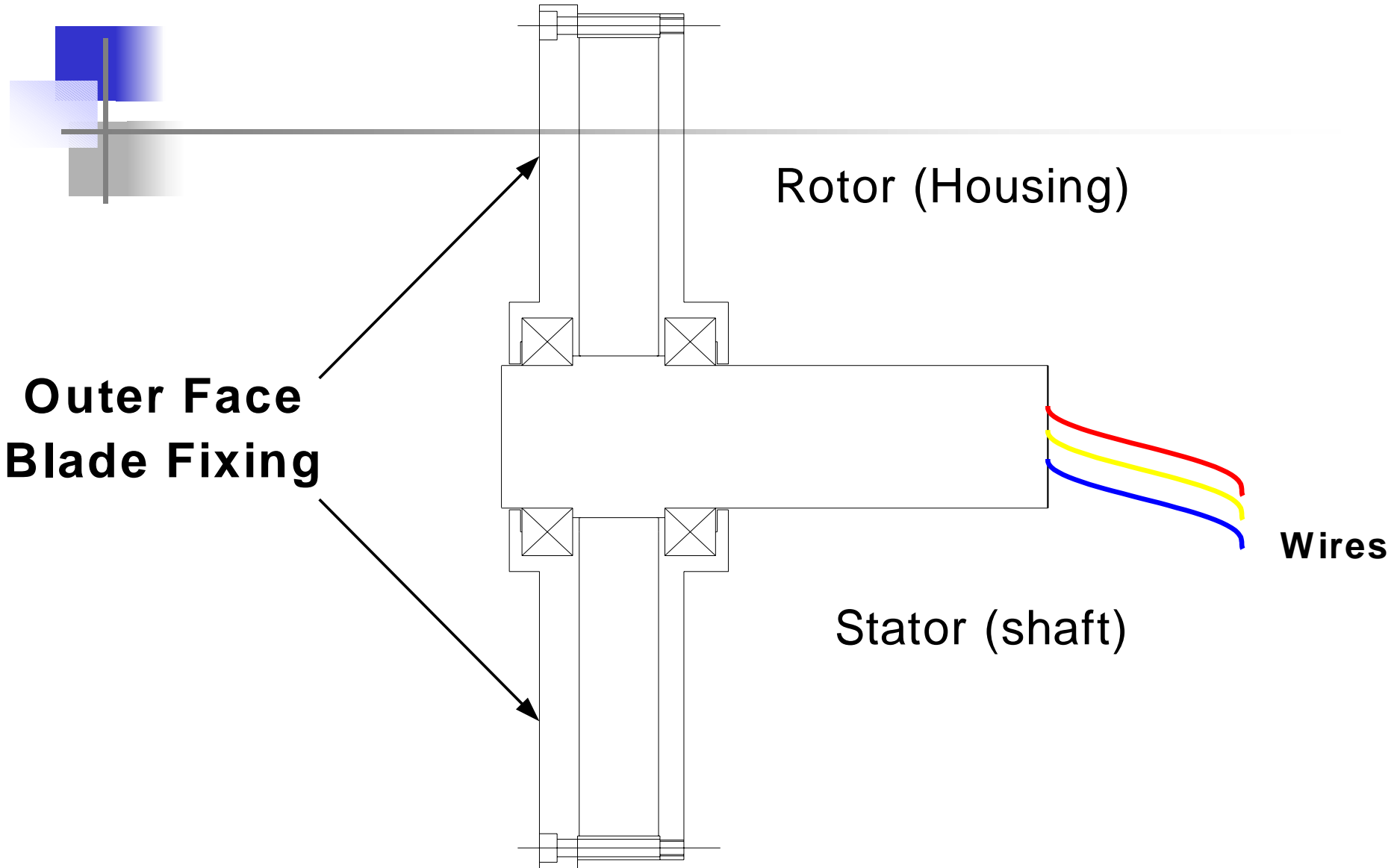
The 3 phase output of stator is rectified and fed to a common dc link. The overall machine structure has high compactness and lightness, because of the lack of the iron core.

Our Generator does not have the gear box, and direct drive type.

Compared with conventional generator, the design has lower weight, lower power loss and improved efficiency.



# Mechanical parameter of the Generator(2)





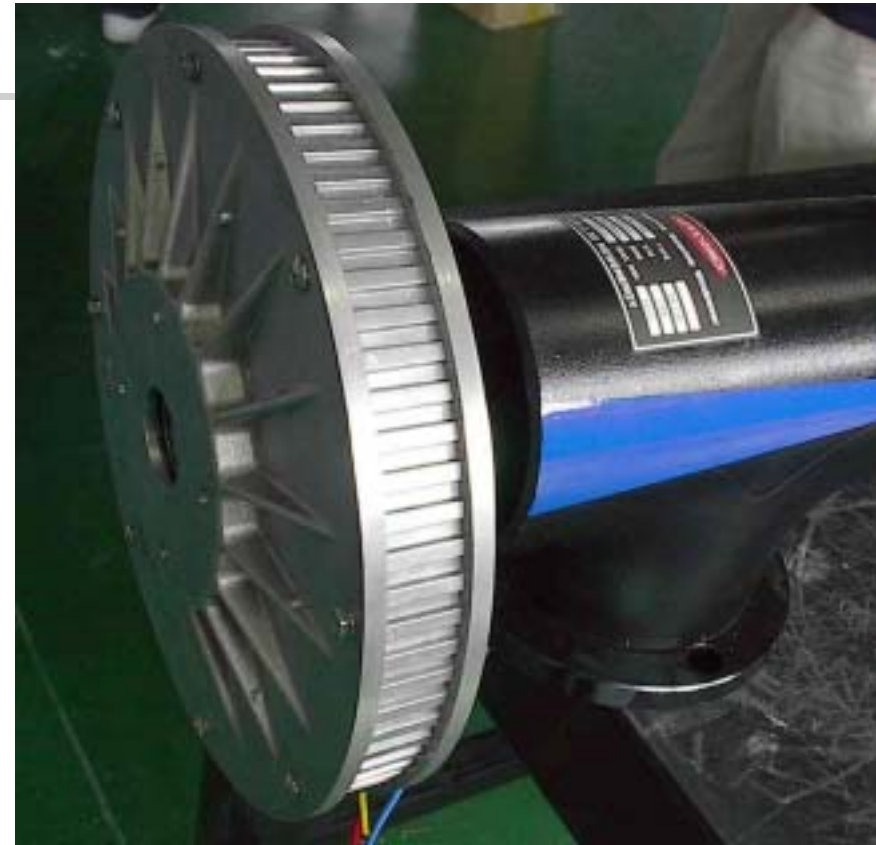
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# Application



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# Wind Power



# Wind Power



Blade use Air - X , Whisper H40 - H80



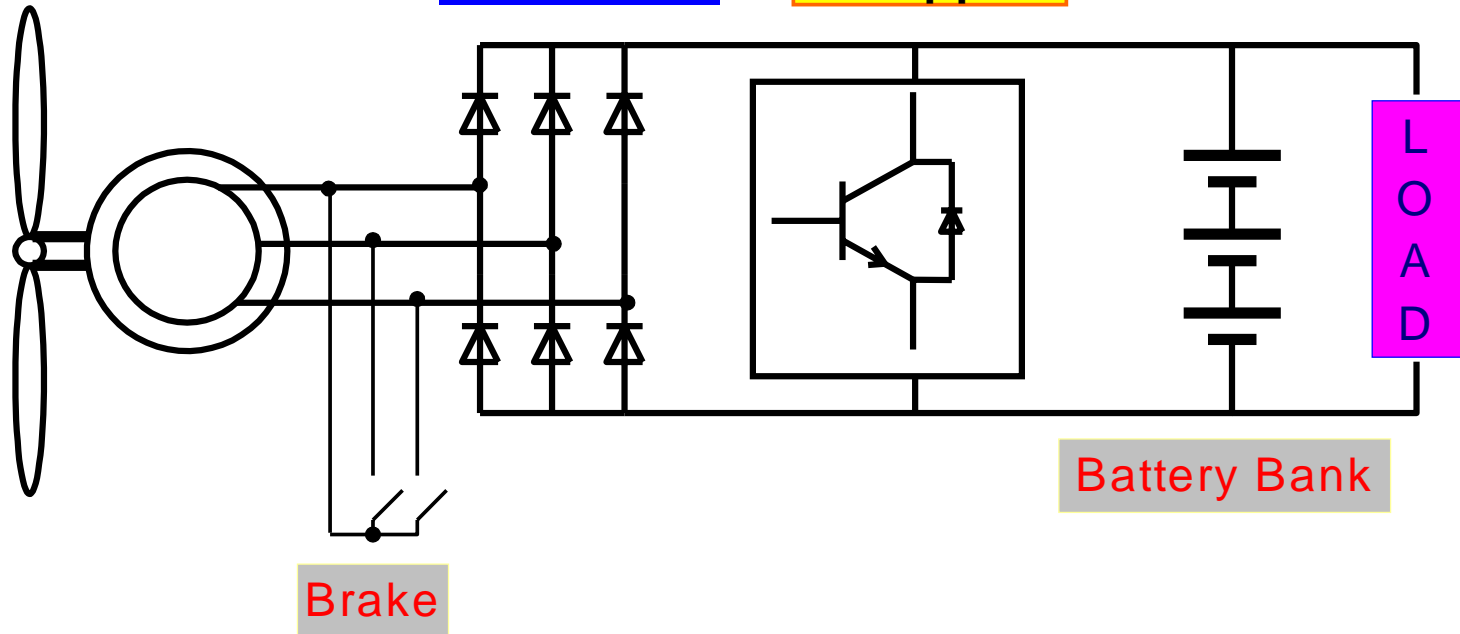
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# Wind Power Converter Stand Alone System

Permanet Magnet Synchronous Generator

rectifier

DC Chopper





# Wind Turbine data (1)

<b>Rotor diameter</b>	<b>2.5 m</b>
<b>Number of blades</b>	<b>3</b>
<b>Blade material</b>	<b>Glass fiber reinforced polyester</b>
<b>Cut in wind speed</b>	<b>3 m/s</b>
<b>Rated in wind speed</b>	<b>10 m/s</b>
<b>Survival wind speed</b>	<b>50 m/s</b>
<b>Gear ratio</b>	<b>direct drive</b>
<b>Turbine brake</b>	<b>short circuit switch on generator</b>



# Wind Turbine data (2)

<b>Generator</b>	<b>3 phase Permanent magnet</b>
<b>Rated power</b>	<b>600 w</b>
<b>Rated speed</b>	<b>720 rpm</b>
<b>Max speed</b>	<b>900 rpm</b>
<b>Load</b>	<b>Diode rectifier Switching dump-load Batteries at 24Vdc</b>







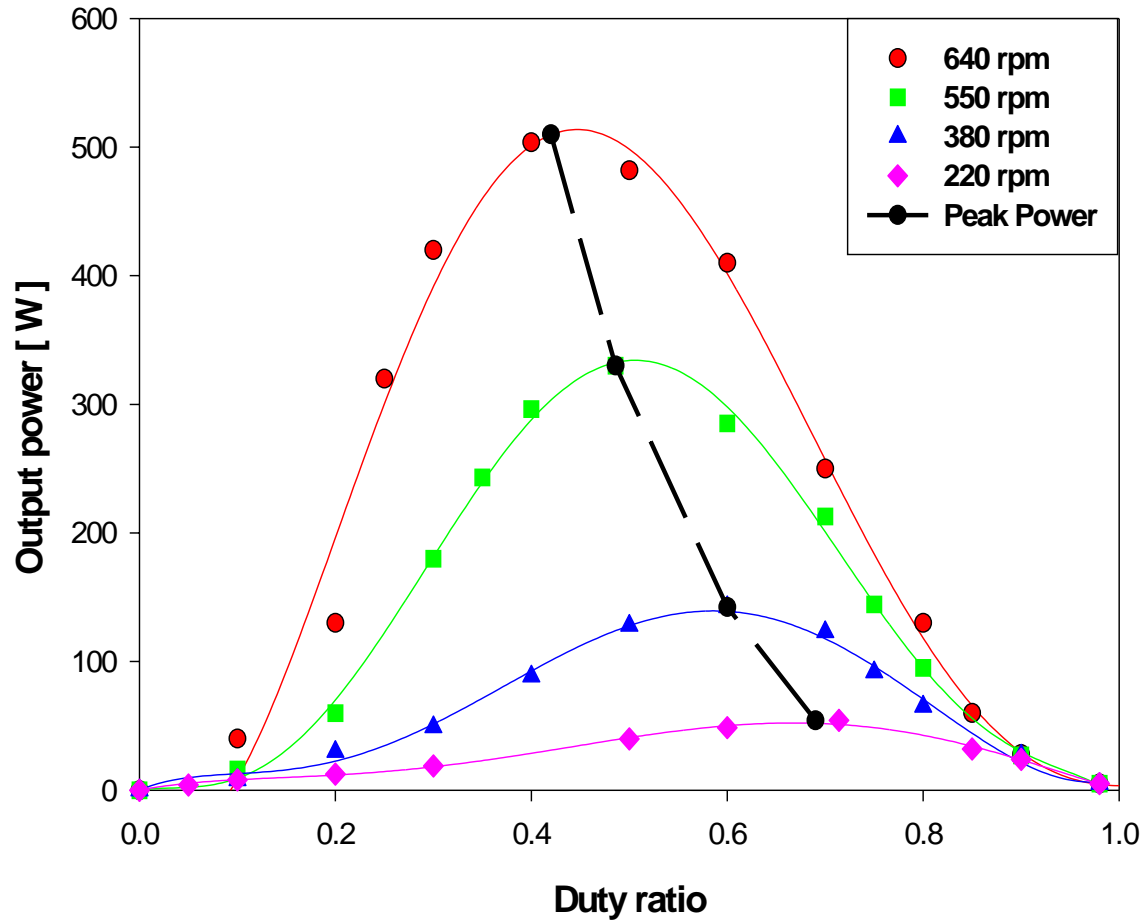
# DC-DC(Buck-Boost) Converter

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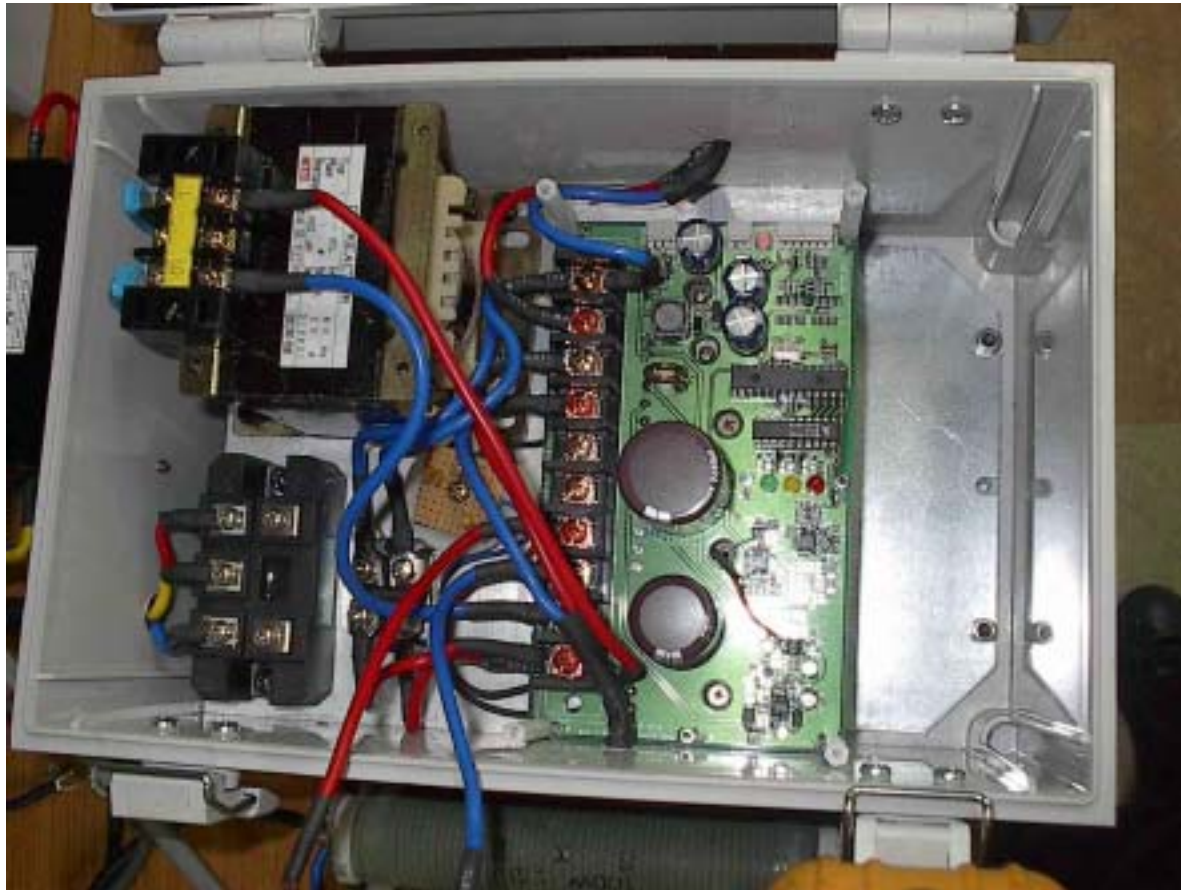
<b>Converter type</b>	<b>Buck/Boost</b>
<b>Output power</b>	<b>1kW</b>
<b>Input Voltage</b>	<b>12 – 50V</b>
<b>Output Voltage</b>	<b>25 – 32</b>
<b>Duty ratio</b>	<b>0.3 - 0.7</b>
<b>Gate drive</b>	<b>PWM</b>
<b>Start-up wind speed</b>	<b>3 m/s</b>
<b>Peak Power</b>	<b>1.5kW</b>



# DC-DC(Buck-Boost) Converter



# DC-DC(Buck-Boost) Converter



# Wind Power (SYG-B208-600W)



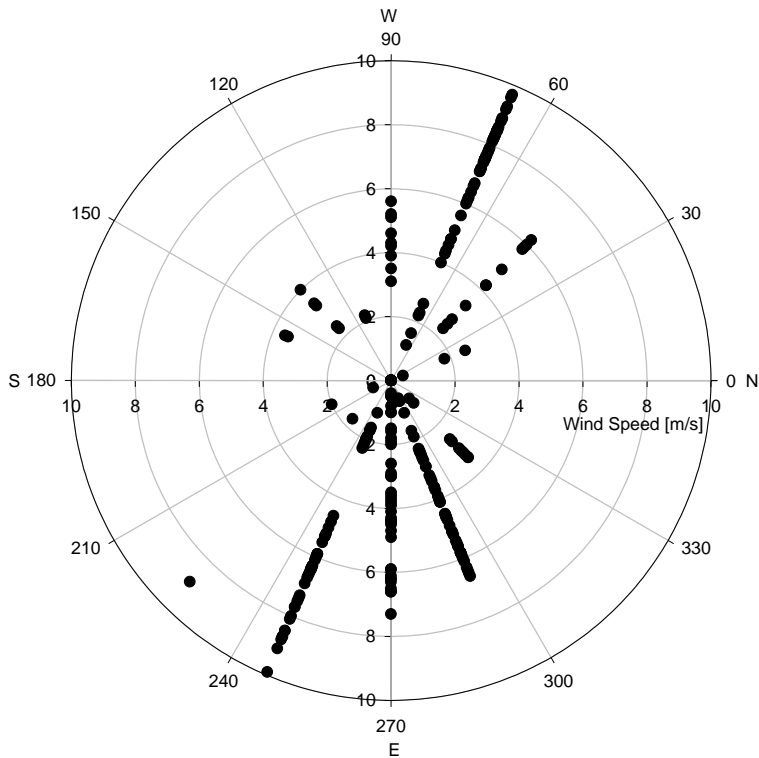
# Wind Power (SYG-B208-600W)





# Test to define system characteristics

(5-July-2004)



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