



## **S82 - 1.5 MW TECHNICAL OVERVIEW**

**SUZLON**  
POWERING A GREENER TOMORROW

[www.suzlon.com](http://www.suzlon.com)

# S82 - 1.5 MW

## TECHNICAL OVERVIEW



S82 - 1.5 MW is designed for generating the optimal power output even at sites with a modest wind speed regime. The wind turbine concept is based on robust design with pitch regulated blade operation, a 3-stage gearbox with 1,650 kW rating and flexible coupling to the asynchronous induction generator. The Suzlon Flexi-slip System provides efficient control of the load and power control. The turbine operation is efficiently controlled by the Suzlon controller. These technologies are all well-known in the wind power industry and have proven themselves. The S82 - 1.5 MW is designed to withstand extreme conditions and operate effectively with low maintenance cost.

## BLADES

As all other Suzlon blades, the AE40 blade is a fully integrated design. The blade manufacturing system from mould engineering to state-of-art Resin Infusion Moulding (RIM) is done in close co-operation between the Dutch design team and the manufacturing plants in India.

## PITCH SYSTEM

The full-span blade pitching system is based on electrical motors with individual power backup which allows fast and efficient pitching of the blades. With a resolution of 0.1° and a special fast-pitching mode, the S82 - 1.5 MW allows optimal power output as well as fast and safe braking of the rotor.

## GEARBOX

The design of the gearbox has always been given special attention in Suzlon. The design philosophy is based on years of experience with wind turbines in harsh environments and the internal design standard well exceeds the industry standards. The power rating of the gearbox for the S82 - 1.5 MW is actually 1.65 MW. Suzlon will continue to secure development of superior gearbox technology for the customer's benefit.

## SERVICE AND MAINTENANCE

Suzlon has teams of trained wind farm technicians around the globe who focus on excellence in service, maintenance and monitoring. Our service technicians aim to maximise energy production from the wind, and ensure the turbines operate reliably and with minimal maintenance costs during their life span. The key emphasis is on maximizing availability and efficiency in operation thus providing ease of mind for our clients. Suzlon provides intensive and continuous training programs for its wind farm technicians, both in and out of field and complement our own training resources by using highly respected and reputable industry training consultants to tutor and train our technicians and technical support engineers.

## MANUFACTURING

Suzlon's manufacturing facilities for wind turbine generator components and rotor blades are currently located in India, Brazil and the USA. As part of Suzlon's strategic growth plans to significantly increase manufacturing capacity of all key turbine components, a number of new facilities are currently planned or under construction. This meets our objective to vertically integrate the entire supply chain, ensuring that Suzlon brings to the market the most cost efficient and reliable technology. It also enables us to control the supply chain to secure quality, volume and growth, as well as deliver long term service support.

## END-TO-END SOLUTIONS SINCE 1995

The end-to-end solution pattern is built on Suzlon's expertise in technology, processes and thorough understanding of the wind energy market. It is a unique combination of proven technology and a bundle of value added services. Under this successful and proven business model, Suzlon undertakes the complete turn-key responsibility - from arranging land; to equipment supply & EPC; to nodal agency clearances; to life-cycle operations & maintenance of projects. Customers therefore do not have to engage extra manpower for their wind projects. Suzlon brought about a paradigm shift in the wind energy market with the End-to-end solutions. It made setting up wind energy projects simple, hassle-free and enabled hundreds of customers including small / medium / big enterprises, Indian and multinational corporates, public sector companies and even individuals set-up their own wind energy projects with confidence and ease.

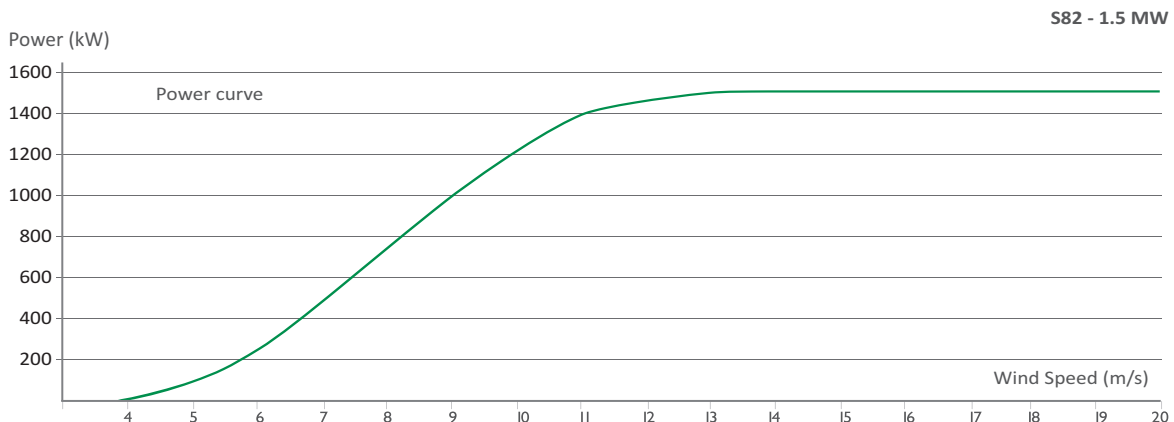
World's fifth largest\* wind turbine manufacturer with an installed capacity over 21 GW | Presence in 33 countries across six continents | Manufacturing units in four continents | R&D facilities in Denmark, Germany, India and The Netherlands

Source: \*BTM Consult ApS – A part of Navigant Consulting – World Market Update 2012



## S82 - 1.5 MW - POWER CURVE AND TECHNICAL SPECIFICATIONS

<b>OPERATING DATA</b>	Rated power	1,500 kW
	Cut-in wind speed	4 m/s
	Rated wind speed	12m/s
	Cut-off wind speed	20m/s
	Survival wind speed	52.5m/sec
<b>ROTOR</b>	Type	3 Blades, Upwind / Horizontal axis
	Diameter	82m
	Rotational speed at rated power	15.6 to 16.3 rpm
	Rotor blade material	Epoxy bonded fiber glass
	Swept area	5,281 m <sup>2</sup>
	Power regulation	Active pitch regulation
<b>GEARBOX</b>	Type	One planetary stage and two helical stages
	Ratio	1:95.24 (Hansen) & 1:95:1601 (Winergy)
	Nominal load	1,650 kW
	Type of cooling	Forced oil cooling lubrication system
<b>GENERATOR</b>	Type	Induction generator with slip rings, variable rotor resistances via Suzlon Flexi Slip System
	Speed at rated power	1,511 rpm (with rotor short circuited)
	Rated power	1,500 kW
	Rated voltage	690 V AC (phase to phase)
	Frequency	50 Hz
	Insulation	Class H
	Enclosure	IP 54 / IP 23 (slip ring unit)
	Cooling system	Air cooled (IC 616)
<b>TOWER</b>	Type	Tubular tower with welded steel plates
	Tower height	76.1m
	Hub height (including foundation)	76.8m
<b>BRAKING SYSTEM</b>	Aerodynamic braking	3 Independent systems with blade pitching
	Mechanical braking	Hydraulic disc brake activated by hydraulic pressure
<b>YAW SYSTEM</b>	Type	Electric asynchronous motor, electric motor brake (spring applied); 5 - stage planetary gear box with output pinion
	Bearing	Polyamide slide bearing with gear ring & automatic greasing system
	Protection	Cable twist sensor, proximity sensor
<b>PITCH SYSTEM</b>	Type	3 independent blade pitch control with battery backup for each blade
	Operating range	0° to 90°
	Resolution	0.1° to 8 ° per sec
<b>CONTROLLER</b>	Suzlon Control System with following salient features:	
	- Park slave	- Power output control / limitation
	- Reactive power control	- Grid measurement
	- Weather measurement	- Time synchronization
	- Statistics	
	Wind Class	III a
	Certification & standards	TC-GL-003B-2010, Rev. 1
	Quality system	ISO 9001:2008



Under given set of parameter and condions.

Subject to change without noce due to difference in parameters, condions and/or change in equipment or technological requirements.

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