



Nimbus E-Power

At Nimbus we regard the E-Power boat as an important part of our environmental work. Building the N-27 E-Power is a first step towards a healthier climate, and opens up a future commercial market. Our ambition is to lead development in environmentally friendly boats without our customers having to forego comfort and performance. We intend to create a new market and shape the environmentally friendly boats of the future. We expect that interest in these craft will increase as performance improves, just as it has in the case of electric cars.

The Nimbus 27 E-Power is part of our 2015 environment vision. We will be launching an E-Power boat onto the market within this time frame. We want to lead development in this technology and show that it works. We have driven the boat in test conditions for many hours and the boat will now be evaluated and put through further tough tests followed by still more trials, including DNV. We are very advanced in this technology. Consequently, we expect to be able to introduce the E-Power boat at some time during the 2011 season.



Our target group comprises boating people who want to look after the environment, while having an active boating life without foregoing comfort and performance just because they choose an environmentally friendly boat. These craft will become a natural complement to diesel powered boats in the future. And we can see a big market generated by the European inland waterways system where there is an enormous boat population and where environmental regulations are strict.

The production of the E-Power boat is a result of the decision taken by the management of the Nimbus Group, which also includes the Paragon, Ryds and Storebro brand names. Initially, this application could come to be used in one or more of these models, as an environmentally friendly alternative.

We are also examining other environment improvements such as hull resistance, environmentally

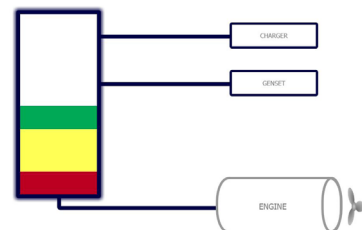


suitable building materials and reduced emissions.

The 27 Nova S is a standard production boat, neither deck nor hull have been specially prepared or lightened in any way. In other words, the electric-powered engine we have installed has been given a really tough job. The power unit and the battery cells come from Electroengine. The transmission is a DPH duoprop drive from Volvo Penta.

This boat has a cruising speed of approximately 23 knots and a top speed of 27 knots. At cruising speed the boat has a range of 20 nautical miles. We will be able to present versions with longer range when the boat is launched onto the market. The craft is charged from a standard 230V/16Ah power-point. Charging takes 28 hours. When using a standard 3-phase 400V/32Ah power-point, full charging takes approximately 4 hours.

A "battery gauge" has replaced the fuel gauge to monitor the battery level. But just in case the power does run out, we have fitted a small diesel generator to get you home. The diesel generator runs at optimum speed to reduce emissions.



FAQ Nimbus E-Power

Why are Nimbus and Electroengine building a purely electrically powered boat?

We regard the electric-power boat as an important part of our environmental work. Building the N-27 E-Power is a first step towards a healthier climate, and opens up a future commercial market. Our ambition is to lead development in environmentally friendly boats without our customers having to forego comfort and performance.

How big is the market, in Sweden and abroad?

What we know now is that we are probably among the first boat builders in the world to build such large electrically powered boats in series. Indications tell us that interest is considerable. But because up until now there have not been any satisfactory alternatives, there's not much data to go on. We are taking a deliberate risk in order to create a new market and shape the environmentally boats of the future. We expect that interest in these craft will increase as performance improves, just as it has in the case of electric cars.

When can we buy one?

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Who do you expect your customers to be?

Like us, boating people want to look after the environment while having an active boating life, without foregoing comfort and performance just because they choose an environmentally friendly boat.

How far will the boat travel before she needs charging up again?

20 nautical miles, i.e. from Stockholm to Sandhamn. Although we expect to be able to present versions with even longer range when the time comes for the launch.

How fast does an electrically powered boat go?

Top speed 27 knots, cruising speed 22 knots (this version).

What about maintenance?

There is less maintenance involved than for a standard diesel engine.

Where can batteries be charged up?

At any accessible power point

How long do the batteries take to charge?

That depends on the power point "size". Using 400 volt/32 ampere it takes about four hours. With a 230 volt/16 ampere point, about 28 hours.

What do I do if the batteries run out when I'm at sea?

There will be a power gauge that provides information in the same way as a fuel gauge. However, if you do run out of power you can start up the little fuel-powered generator and drive home slowly.

Where can batteries be charged?

From any power point. For a fast charge you need a standard 3-phase, 32 A power point.

How long is the working life of the batteries?

It's a little early to say, but probably at least 5000 charges – a good many years of use in other words – around 10-15 years.

What does a new battery cost?

Using the Electroengines TEBS™ system, separate cell modules can be replaced if necessary for 100 – 200 euro.

How many boats do you expect to sell each year?

That depends on demand

When will it be profitable to build and sell electrically powered boats?

We will be charging for whatever it costs, as from boat one.

Where will the boats be built?

At our yards in Mariestad, Storebro and Ryd.

Will you be hiring more personnel to build these electric boats?

Difficult to say, depends on how much interest there is.

Why should I buy an electrically powered Nimbus instead of an "ordinary" Nimbus?

The boat is an "ordinary" Nimbus; the only difference is the power unit.

What do think the electrically powered boat market will look like in five years' time?

We believe using electricity as a power source will appeal as an environmentally friendly alternative for boat-owners who use their boats mostly for short trips between islands, for going out for a swim, fishing etc. In five years we expect the electric engine to be as common within the boat building industry as within the automobile industry.

What is Nimbus' purpose with the electrically powered boat?

To show that the technology works and does not necessitate any reduction in performance and comfort, and also to lead the way in technology development to prepare ourselves for the future demands of the market.

Does the electrically powered boat generate any emissions at all?

No, not while driven under electric power. However, we plan to complement the power source with a fuel-driven generator that can be used in emergencies, both for charging and for driving the boat. This small generator will run at optimum rpm for a minimum amount of emission.

Are electrically driven boats just another away to win "environmental kudos"?

No, this is part of our long-term plan to reduce our environmental impact still more. We have also looked at other facets, such as reducing hull resistance through the water, environmentally suitable choice of building materials and reduction of other emissions. We have made progress within all three of these areas, but not yet announced them.

Will electrically powered boats be available in different models?

Yes, we are not confined to the Nimbus 27. There will probably be several models built by Nimbus, Ryds, Paragon and Storebro. Although this will depend on demand of course.

Do you expect to export these boats?

Yes. Once we have decided to put a boat into production then export is automatic. The entire European inland waterways system will be a big market for this kind of solution.

There are high voltages running around in these boats. Sounds dangerous. How has technology dealt with this?

Technology is carefully checked, the battery cells are very thoroughly encapsulated, and when these boats start to be built in series they will be subjected to extensive trials and tests and incorporate still more safety systems.

What kind of engine program will be available for electrically powered boats?

At present there is only one, but there will be other models available in the future.

