

Black Pearl

1 Intro

When it comes to _____ ,

there's often a choice to be made: _____ .

The two _____ .

But now, _____ .

Black Pearl, _____ .

Welcome to the Black Pearl:

a _____ metres

b _____

c _____ draught

d _____ knots

Never before _____ .

Today, this _____ ,

is _____ in Tarragona, Spain.

The world's largest sailing yacht, Black Pearl is _____ .

It's tri-deck design is _____ , a state-of-the-art _____ ,

and can accommodate _____ , all powered _____ by

an innovative _____ equipped with _____ .

2 Tea Clippers

How much does the boat weigh?

What is the boat's sail area?

What type of sailing vessel was the Cutty Sark and what was it used for?

Why was the Cutty Sark so fast?

How does it's speed compare to modern merchant ships?

What was the design of the Cutty Sark?

How much shorter was the voyage to China and back thanks to this type of ship?

What did the Cutty Sark transport in the 1880s?

3 The Black Pearl's Rig

What does the speaker mean by "super sleek"?

Which is taller, the masts of the Cutty Sark or those of the Black Pearl?

On a mast, what are yardarms?

How are the sails unfurled?

How long does it take to set the sails?

How are the sails trimmed?

Why do the cables need careful management?

What is the maximum speed of the vessel?

Why is the dyna-rig so called?

4 The Hull

To maximise speed when racing, what quality is essential in a hull?

What will the divers do and look for?

What problem is discovered with the propeller?

When are the propellers used?

What problem do they cause?

What can be retracted?

5 Feathering

If an aircraft engine were disabled, what problem might its propeller cause?

Who devised the hydromatic propeller?

How does it work and what does it make possible?

As far as propellers are concerned, what is windmilling?

Explain pitch, as well as the feathered position

On the Black Pearl, what happens at zero pitch?

How are controllable pitch and power generation related?

6 The Hull

What is the SS Olympia's claim to fame?

What kind of steel was used to make its hull?

Why does steel seem to be the best choice for the Black Pearl's hull?

What material is used in the super structure?

7 The Bow

What is said about the shape of the bow?

What speed is the crew aiming for?

8 Water

How is water recycled?

What use is the recycled water put to?

9 Solar Cells

What was Telstar?

What did Pearson, Fuller and Chapin discover while developing silicon transistors?

Explain the illustration involving two different layers of silicon and happens when light stimulates them.

Summarise the information about the solar cells on the first Telstar.

What is the solar technology solution for the Black Pearl? What is it called, how is it implemented and what are the advantages?

What is their level of efficiency?

Brief: Wild Oats XI can reputedly sail faster than the wind. Explain how a sailing vessel can sail faster than the wind.

