

Re: Solar boats and rickshaws a big hit

Source: <http://sci.tech-archive.net/Archive/sci.energy/2005-02/0251.html>

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Date: 02/07/05

Date: Mon, 07 Feb 2005 00:08:26 GMT

Type in solar rickshaw in google in images and you can see it

About the expedition

James Moss and his team are travelling across India in a solar powered rickshaw. Watch his adventure and see his progress from his start point in Delhi to his final destination in Udipaur.

In the early hours of the morning the family got up and went to see some of the amazing sites of Delhi. They were incredible. We first went to see a Jane temple. This was very interesting. To enter the temple you had to remove your shoes and clean your hands. When we were inside the temple most of it was not inside. It was open with an enormous statue on the roof. The statue was of the God Jain Dharma, which is one of their Gods.

After this we visited the tallest tower in Delhi. It was amazing. Because of its size a lot of the tower had to be knocked down for the aeroplanes because of its closeness to Delhi airport.

Next we returned to the hotel where we met Gulshan Capur who has helped massively on the Indian side of the whole thing. He took us to his workshop where the vehicle was after being taken out of the IIT because it was shut on the holiday.

high view of rickshaw

We drove it up and down out side the road of the industrial estate. We were all very excited about the idea of seeing the vehicle as we have not seen it since it left England 2 months ago. We arrived and were not disappointed when we saw the vehicle. It was going a lot faster than we had expected and was great fun to drive. We have decided that we will leave from Delhi on the early morning of the 5th. We will then travel by truck to Jipur then put the buggy on the road and travel to Udaipur via Kumblegar

for further information please contact:

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Raymundo came to the Big Green Gathering armed with an array of twelve 115 Watt solar panels (Solar Fabrik), effectively providing just over 1300 Watt (1.3 kiloWatt) of power during full sunlight. This amount of power at 12 volts needs very careful handling and regulation. All the cables and connections used need to be adequately rated, as at 12 volts 1kiloWatt equates to a current of just over 100 Amperes. Also mounted on a 4 metre pole above the Raymundo vehicle an Air 403 wind generator was rigged. This wind generator is capable of providing 400 Watts in strong wind and features an internal regulator and protection against wind speeds which are too excessive. The wind generator required guy wire stays fixed in four directions for safety.

The solar current thus generated was fed via a regulator into a bank of 22 deep cycle 110 AmpereHour batteries. By rough calculation, this bank of batteries when fully charged could power the 200 Watts of our core network for around 77 hours continuously. This situation would only occur if there was no wind or Sun for nearly 4 days, which was highly unlikely where we were, high on the Mendip hills; although it did rain an awful lot, which wasn't too helpful. Just in case, they had another backup bank of batteries half the size, all charged on wind and solar energy.

Running off the battery bank Raymundo have a 2.6 kiloWatt Trace inverter (SW2612E), installed into the vehicle, which converts the 12 Volts dc (direct current) into 240 Volts ac (alternating current) for powering ordinary UK household equipment. The 240 Volts ac was then distributed to us and those around us needing power.

Once we have consulted the Raymundo crew, we will post circuit diagrams here. Refer here for Air 403 wind generator wiring.

Earthing

Before turning on the inverter, the negative terminal of the batteries, the earth outlet on the inverter and the chassis of the vehicle are all connected together and then connected to a good copper earth spike hammered deep into the ground. This ensures that they are all at the same potential. The neutral outlet on the inverter is then connected to the earth at the outlet of the inverter. The 240 Volts ac is then fed through an RCD (Residual Current Device) rated at 30ms, and an MCB (Miniature Circuit Breaker) rated at 15 Amps. This makes it safe for use in a field.

The results

The iTrike worked very well indeed and we were able to provide mobile Internet access over a large area of the festival site. We rarely lost the connexion between the base-stations, and when we did, this was largely due to passing too close behind a large obstruction, such as a truck or marquee. So long as we stayed a safe distance of around 10 meters from anything large in between the wireless devices, we had a

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good connexion. Mostly we were able to achieve the maximum speed for 802.11b networks of 11Mb/s , dropping to 5Mb/s on occasion. This was no cause for concern