

The Journal of the Electric Boat Association
Volume 25 Number 1 Spring 2012

www.electric-boats.org.uk

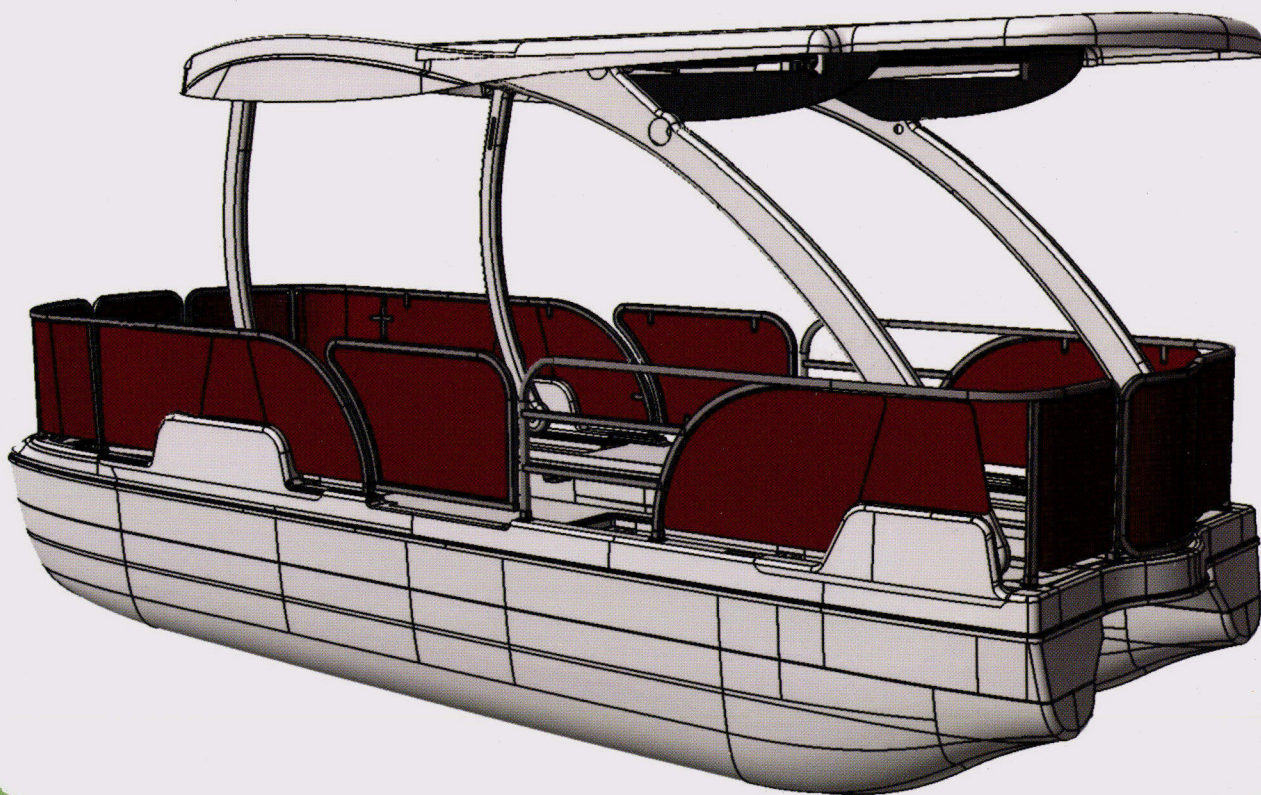
Electric Boat **NEWS**



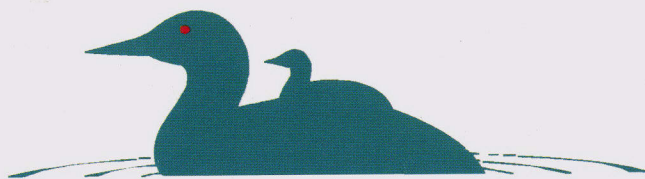
**Launch of the Loon • Green Theme in Norfolk
Hybrids in Hamburg • First Ferries in Norway**



Ride a Solar Wave!



This is the much-anticipated, solar-powered, 8-passenger Loon, the new-millennium boat which says good-bye to petrol and extension leads. We are very proud of it and believe that it speaks to the times. We look forward to introducing you to its many benefits. Product launch spring 2012, dealership, purchase and investor enquiries welcome.



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EBA Calendar 2012

April

28th – 29th	EBA represented	Welsh Waterways Festival Pontymoile, Torfaen, Monmouthshire
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May

19th – 20th	EBA Event	AGM and Cruising Weekend River Nene, Lincolnshire
20th	EBA interest	Green Boat Show Salhouse Broad, Norfolk
26th – 27th	EBA represented	Open Weekend at Hartford Marina near Huntingdon, Cambridgeshire

June

2nd – 4th	EBA represented	IWA National Trailboat Festival, Stroud, Gloucestershire
2nd – 5th	EBA represented	Crick Boat Show Crick Marina, Northamptonshire
3rd	EBA interest	The Queen's Diamond Jubilee River Pageant River Thames, London
8th – 10th	EBA represented	Beale Park Boat Show Lower Basildon, Berkshire
10th – 12th	EBA interest	Regatta Coniston Water, Cumbria
30th – 1st July	Special EBA Event	EBA 30th Anniversary Abingdon, Oxfordshire

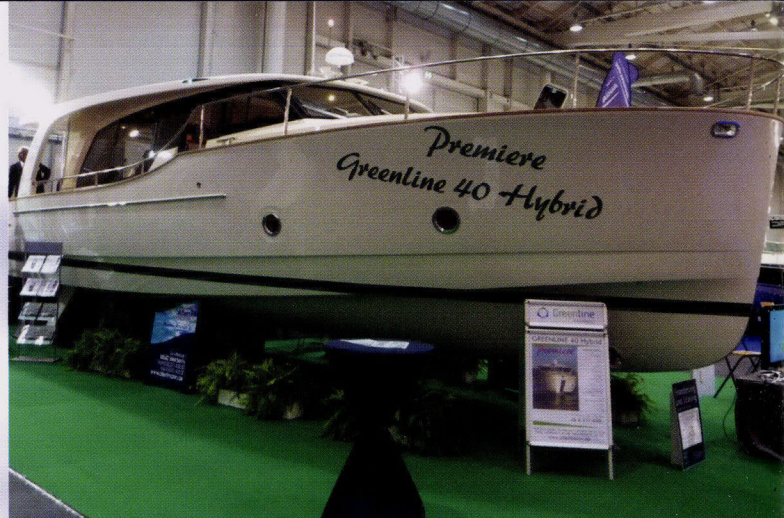
July

6th – 8th	EBA interest	River Festival Evesham, Worcestershire
7th – 8th	EBA interest	Pool Quay Canal Festival Crowther Hall, Welshpool, Powys
14th – 15th	EBA represented	Thames Traditional Boat Rally Henley-on-Thames

August

25th – 26th	EBA interest	IWA Campaign Festival Preston, Lancashire
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More information about these events is on page 15. Please note that events and dates may change, while some are still being planned, so for more details, or notice of other events, check the websites or contact the EBA Secretary.



Hybrid boats in Hamburg

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Hydrogen boat in Turkey

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Green boats in Norfolk

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Cover Picture: Sea trials of the new 'Loon' solar boat
See report on page 8

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Copy Deadlines

Material to be considered for inclusion in Electric Boat News should be sent to the Editor (preferably by email) by the following dates:

Spring 31st January
Summer 31st May
Autumn 30th September

For more information about the EBA contact
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Details of the other EBA Committee Members are on page 24

From the Editor



Our Calendar opposite shows that this summer will be a particularly busy one for boating enthusiasts with shows and events all over England and Wales. The 60th anniversary of the Queen's accession is a special cause for celebration but for electric boaters this year also marks the 30th anniversary of the founding of the EBA. An association which began

in 1982 with a few people keen to promote clean, green electric boating now has hundreds of members all over the world and we hope to see many of them on 30th June for our birthday lunch at Abingdon on the River Thames. Invitations have already been sent out to members so if you haven't received yours yet, get in touch with EBA Secretary Barbara Penniall. And if you plan to attend, please let Barbara know as soon as possible so she can co-ordinate arrangements.

For a few years now the EBA AGM has moved to a different location each year as part of a cruising weekend, giving members the chance to explore different waterways. This year, thanks to the offer of launching and mooring facilities from EBA business member Jim Coulam, we will be cruising the River Nene in Lincolnshire in May, with the AGM at the Haycock Hotel in the picturesque village of Wansford. Members bringing boats for the weekend may then wish to stay in the area and take advantage of the offer of a mooring with EBA business members at Hartford Marina before joining in their Open Weekend on 26th and 27th May.

These events, along with many others over the spring and summer, will be a chance to raise the profile of the EBA and promote our environmentally friendly form of boating. This will be a special year for the EBA and I'm looking forward to joining other members at festivals, shows and cruises as we celebrate our anniversary.

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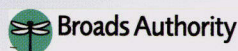
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Electric Boat News welcomes contributions from members and readers, although we cannot be held responsible for any damage or loss which may occur to this material. Items of interest include letters, reports of rallies, events, trips and cruises, articles and advice on building and running electric boats and on items of equipment. We also welcome manufacturers' reports on new equipment and boats.

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We are grateful to the Broads Authority for their support for the Electric Boat Association

Boat Shows in Hamburg, Paris and London

During the winter some interesting electric and hybrid-electric boats were on display in exhibition halls all over Europe. Pat and Paul Wagstaffe describe some of the exhibits in Hamburg, Kevin Desmond has news from Paris and Sylvia and Ian Rutter report on the London Boat Show at ExCel.

The 2011 Hamburg Boat Show was held between 29th October and 6th November in nine new and modernised display halls. The show had 700 exhibitors and was attended by 95,000 people. Among the significant number of exhibits of interest to EBA members, the main emphasis seemed to be on hybrid power systems and solar power.

The GRP Suncamper 30 from Germany is a modern inland waterways 'Houseboat' cruiser with internal steering position, spacious main saloon and large covered cockpit and up to six berths. The boat on display was fitted with a powerful Kräutler inboard electric motor and a neatly installed diesel generator but there are also inboard diesel direct drive options. The designers had made very good use of the internal and external space with toilet, shower and extensive galley area while still giving plenty of outside space. The basic Suncamper 30 starts at 119,900 Euros.

The Nautiner 40ac was part of an impressive Polish Group display. A brand new wheelhouse cruiser with raised aft deck and steering position, it is 12.70 metres long, suitable for lakes, rivers and coastal waters, and has a big saloon and two double cabins. It is



Nautiner 40ac

an improved version of the previous 38 Classic and was offered with an optional new hybrid power system. Charter versions are available in the Mansuria Lake District in Poland.

Also from Poland, Kaper Yachts were showing 'sloop style' GRP simulated clinker open and cabin launches from 4.71 to 11 metres in length. There

was an inboard electric open launch on display and electric options for the larger craft. The quality of fit out and finish looked very impressive.

The SunCat GRP 23 from Germany is a 7 metre solar driven catamaran for 10 to 12 passengers. Special permission had been granted for an example to be afloat on the fantastic fresh water Alster Lake near the centre of Hamburg which we photographed when we took a tourist boat ride on the lake. The SunCat is powered by a 2.8kW electric outboard motor. There are 4 gel batteries and 4 high quality Solon solar modules with an overall performance of 860 watts. Its sister ship the SunCat GRP 46 is a 14 metre catamaran with a stunning design also using solar power and available as a



Kräutler motor



Suncamper 30



SunCat

very high quality private motor yacht, or as a passenger ship with catering and a disabled accessible WC. It has two Kräutler sail drives of 8kW each and up to 6kW of Solon solar modules.

The German Variant 606HT is a traditional styled GRP inland/coastal cruiser with attractive mahogany cabin and trim which would look very much at home on UK waterways. It has a covered wheelhouse with wood-trimmed cockpit and wheel. Large outboards up to 100hp provide speeds of up to 20 knots, but it is equally suited to smaller petrol or electric outboards for slower speed cruising. Prices start at 23,300 Euros.

The Greenline 40 Hybrid from Slovakia (shown on the inside front cover) is a larger version of the Greenline 33, which was pictured at last year's London Boat Show in the Spring 2011 EB

News. The new boat in Hamburg was designed as a larger yacht with the same philosophy: a low drag energy-saving 'Superdisplacement' hull coupled with hybrid (diesel/electric) and solar technology. It is similar in design and layout but with a lot more space. The electric drive provides cruising at up to 6 knots and a range of 20 nautical miles. The top speed under diesel is 22 knots. There are two double cabins and a spacious day saloon with settee and galley. Prices start at 217,650 Euros for the basic diesel and 315,100 Euros for the hybrid.

Grove Boats were promoting their range of electric and solar powered recreational GRP boats from 8.5m to 10.5 metres and passenger carrying vessels between 14 and 17 metres long. The consultant Claus Müller had information on Grove Boats and also the French Aequus 7.0 solar powered family day boat (which was pictured in the Summer 2010 EB News).

There were a number of exhibitors



Variant

with electric power systems. Austrian company Kräutler were offering a large range of motors and drive systems including Elektro Sail Drives with AC motors from 3.1kW up to 28.4kW and voltage systems from 24 to 96 volts. Electric inboard systems can be DC or AC: DC power 23-129kW and AC 2.5 to 28.4kW.

Oz Marine of Sweden were showing their OZecoDrive – a range of single and twin electric motor drive systems which have been installed in open motor launches and in sailing yachts up to 10 metres.

German company KPM Krahwinkel had the elsail Hybrid, a complete hybrid system with power connections, controller available to connect to a diesel engine and shaft or to a sail drive with ratings from 2.5 to 7.22kW and voltages from 24 to 72 volts DC. Fischer Panda were showing their Whisperprop Hybrid – updated hybrid systems with power from 10 to 50 kilowatts. The company can provide a full range of control, management and support systems. And Torqeedo had a range of outboards on display, including the Ultralight 403 which weighs only 7.3 kilos including the battery, as well as their Power 26-104 lithium battery.

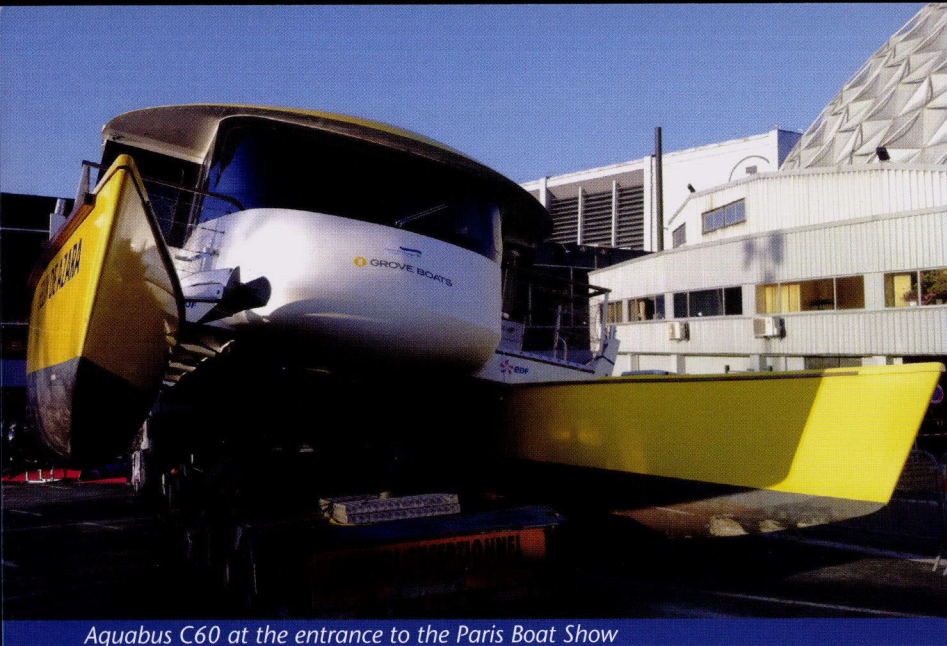
A visit to Hamburg is a delight with a mixture of old and new designs of buildings and shops. A trip on the Alster Lake is a must, together with a boat tour of the Hamburg docks which are being redeveloped with a mixture of ultra-modern and traditional buildings.

There are good bus and underground services including an airport link. All in all a very good boat show in a lovely city.

In December the Salon Nautique de Paris at the Porte de Versailles saw an impressive fifteen electric boats on show, some of them already described in previous issues of EB News: the Greenline 33, of which 220 have been sold around the world; the Costo sail-training boat, pictured in the last issue, and the Aequus 7.0 which

received the French Marine Industries Federation Blue Award. At the entrance to the Salon the Aquabus C60 from EBA business members Grove Boats was on display. The company was planning to take their new Aquabus 1050 Aquarel to the Dubai Boat Show in March to operate as a VIP ferry for show visitors.

Also on display in Paris was Bénéteau's Le Boat Vision 1500 hybrid cabin cruiser. As of this year holidaymakers in France will be able to hire the Vision3 which sleeps six adults comfortably in three cabins, or the



Aquabus C60 at the entrance to the Paris Boat Show

Vision4 for eight adults with room for one extra in the convertible saloon area. Both are joy-stick controlled for 360° manoeuvrability. Valance solar panels recharge the boat's batteries for electric cruising and onboard equipment such as the fridge-freezer. You can also use the Volkswagen diesel engines.

There were no hybrid sailing yachts on show, perhaps because of the failure of the Lagoon 420, a cruising catamaran launched some years ago. Out of the 100 boats sold, only 30 remain electric, the builder having to retrofit the others with conventional internal combustion units. However Bénéteau's R&D director, Bruno Belmont explains that "efficient hybrid motorisation is 95% technologically ready. The remaining 5% involves bringing the battery prices down to a price within the range of the public."

At the London Boat Show in January there was an interesting new Dutch boat on its first visit to the UK. The Cooper745 is a GRP open 'sloop-style' launch with an integrated spray hood and large sun bed. A range of optional extras are available such as a swimming platform, audio system and a shower on the aft deck. CooperYacht introduced the 7.45 metre launch at the HISWA boat show in Holland in 2009 and sold 15 in two weeks. Although the boat on display in London had a diesel engine, the fully electric version was developed in 2011 with a 3.5kW direct drive motor giving

6 to 8 hours cruising on one charge. The ECooper will be available in the UK this Spring from Bates Wharf Marine Sales at the price of £33,000 including VAT.

Of the EBA business members at ExCel, Fischer Panda were celebrating their 35th year of continuous production at their headquarters in Paderborn. The company is moving from sub contracting to bringing more work back to Germany, giving them more control of production and quality. Torqeedo were showing their prototype new Cruise T electric outboard motor, due to go into full production in February. A modified tiller-control version of the Cruise R, the Cruise 2.0T weighs only 17.8 kg with the more powerful 4.0 model only 300 g more. Both are fully salt-water protected to IP 67 standard. And Navigators & General, who run the EBA Insurance Scheme, said they were very happy with the operation of the scheme and with the electric boat owners they dealt with who took good care of their boats.

On the Thursday of the show there was a talk on the Hymar Project

(featured in EB News in Spring 2010) by the project manager Ken Whittamore. EBA member Jack Edwards, Chairman of the Trustees of the Mansura Trophy for hybrid boats, reports that, given the non-specialist audience, Ken very sensibly began by explaining the basics of series and parallel hybrid systems, and went on to the percentage efficiencies achievable by conventional diesel power trains and the hybrid alternatives. Having then explained why a hybrid system capable of 17% efficiency was better than a conventional diesel power train at 21% (because the conventional system seldom works at optimum) he described some of the many installations that have been tried in Nigel Calder's long-suffering yacht while comparing series and parallel systems and perfecting the integrated electronic management system essential to any hybrid craft,



Cooper745

particularly one with heavy domestic demand. Ken ended on a high note by telling the audience that the definitive system developed by the project is now to be installed in his own Moody 37.

Jack adds that it is fundamental to this EU-funded project for the results to be available throughout the Union and there had previously been very substantial interest at a symposium on the project at the Marine Equipment Trade Show in Amsterdam in November, so it was disappointing that a worthwhile technical discussion was not generated at ExCel. In fact the only question, following a clear and layman-friendly talk was "What level of acceptance of hybrid propulsion can be expected from the industry?" at which Ken hedged his bets!



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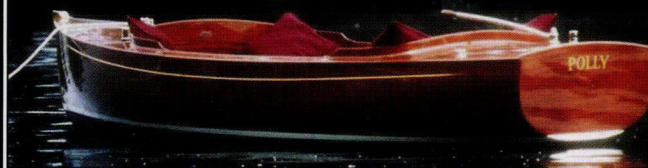
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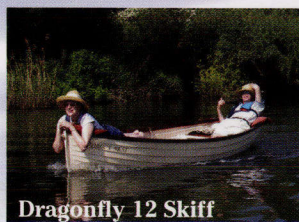


The Thames Electric Launch Company

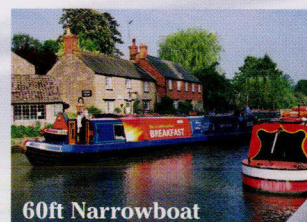
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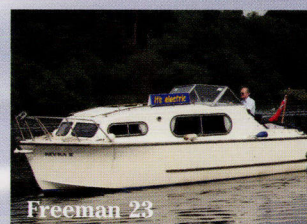
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First Hydrogen Boat in Turkey



Marti with the Design and Production Team

Turkey has unveiled its first hydrogen fuel cell boat, pictured on the inside front cover. The 8.13 metre catamaran *Marti* (which means 'seagull') was built by a team from Istanbul Technical University and launched on the university's lake. Combining hydrogen and oxygen from the air, its PEM fuel cell generates 8.5kW of electricity to power the two 3.5kW DC motors, providing 10 hours cruising at 6.5 knots. The boat can store 5.5kg of hydrogen at 150 bar in two high pressure tanks.

The Turkish Prime Minister has been invited to perform the opening ceremony, after which the boat will move to the sea, taking visitors on excursions round the Golden Horn.

PlanetSolar at World Future Energy Summit

TURANOR PlanetSolar, the biggest solar powered boat ever built, was guest of honour at the World Future Energy Summit which took place at Abu Dhabi from 16th to 19th January. While docked at Adnec Marina it was also preparing for the dangerous crossing of the Gulf of Aden under the supervision of Christophe Keckeis, former chief of the Swiss armed forces.

In December PlanetSolar stopped in Mumbai, having achieved the record for the first crossing of the Strait of Malacca and the Bay of Bengal under solar power. The journey then continued via Doha, the capital of Qatar, to Abu Dhabi.

The solar catamaran has now completed around four fifths of its round the world journey. Its course continues across the Red Sea to Egypt and then through the Suez Canal to the Mediterranean, with journey's end in Monaco scheduled for May 4th.



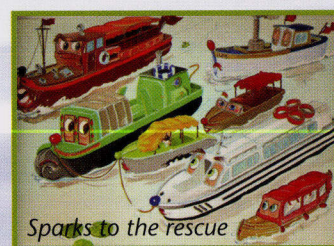
PlanetSolar leaving Mumbai

Rivertime Rescue

'Rivertime Rescue' is a new book written by Dan Clacher and illustrated by Stephen Preedy which should appeal to children of all ages. Electric boaters will be pleased to learn that it describes how the electric launch *Sparks* 'saves the day' by donating spare batteries to a damaged boat so it can lead the regatta parade.

The book has been published to mark five years of the Rivertime Boat Trust, founded by EBA members Simon and Pat Davis to build and operate a boat on the Thames for disabled and disadvantaged children and adults. The purpose-built 42ft launch *Rivertime*, which has a ramp, lift and disabled toilet, has already taken over 6,000 passengers on cruises between Windsor and Oxford.

The book is available at £5.00 plus postage and packing from the Rivertime Boat Trust, Swan Upping, Fishery Road, Bray, Berkshire, SL6 1UP, Tel. 01628 780700 or can be ordered on line via www.rivertimeboattrust.org.uk/rivertimerescue



Sparks to the rescue

Win £100 and a Life Jacket in Broads Survey

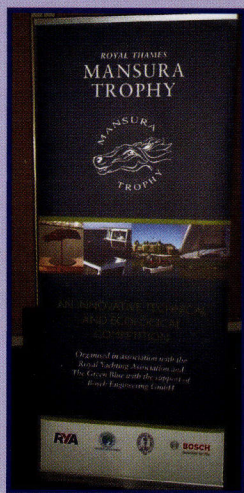
Boat owners on the Broads have the chance to win £100 towards their licence fees as well as a new life jacket by completing the 2012 boat owners' survey on line. This is the third time the Authority has canvassed boat owners' opinions and previous surveys have provided valuable information about owners' priorities to help the Authority with its planning.

The survey is being run by an independent company and will close at the end of April. The winner will be selected at random by the survey company and the survey results will be published on the Authority's website.

Go to <https://survey.shinefeedback.biz/surveylogin.asp?k=132570064728> to complete the survey.



Mansura Trophy Launch



The 2012 competition for the Royal Thames Mansura Trophy was launched in Amsterdam on 14th November last year. The trophy, named after a 1912 petrol-electric cabin cruiser, is awarded every two years for new developments in hybrid power. Thanks to support from Bosch Engineering, representatives from the Royal Thames Yacht Club and the Green Blue (the joint environmental initiative of the Royal Yachting Association and the British Marine Federation) attended the first conference on hybrid marine systems organised by the International Council of Marine Industry Associations to promote the competition. The day-long conference discussed new data from the EU-funded HYMAR project on the design of marine hybrids and their advantages and disadvantages and included contributions from Mastervolt, Enersys, J&J Marine and Steyr Motors.

Since the inauguration of the Mansura competition in 2007 a number of EBA members have received awards. Last year the new solar powered 'Loon' from Canadian members Tamarack Lake (featured in this issue) was the winner of the Ocean and Coastal Award and runner-up for the trophy. Winner in 2009 was EnviroBoat Developments for the conversion to solar assisted propulsion of the passenger launches on Coniston Water, with runner up Birmingham University's hydrogen hybrid canal boat the *Ross Barlow*. Mansura medals were presented to the Thames Electric Launch Company for the diesel-electric canal boat *Catspaw II*, Mike Manisty for his solar voyage up the Thames from Westminster to Lechlade and to the

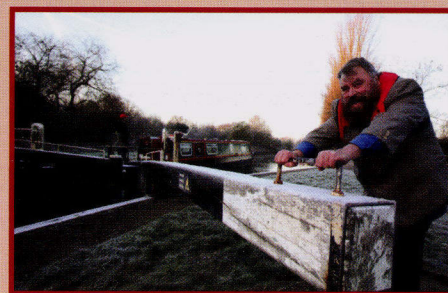
EBA itself as the organisation judged to have done most to promote electric and hybrid-electric power over the year. At the first awards presentation, EBA members Ian Rutter, Graeme Hawksley and MW-Line received Mansura medals from the Duke of Edinburgh.

For more details see the website www.mansuratrophy.com

Lock Volunteers Wanted

Both the new Canal & River Trust, the successor to British Waterways, and the Environment Agency are appealing for people to get involved in their local waterways by helping boaters through locks. Actor Brian Blessed has been backing the campaign, saying "Ever since I was a child I've loved our canals and rivers, going off exploring on my bike and looking for wildlife. They're unique places so I would urge people with a real passion for their local waterway to get involved as a volunteer lock keeper or take advantage of one of the many opportunities to support the Canal & River Trust." Volunteering will be very important to the success of the Trust, which will become one of the biggest charities in the UK. A full list of locations for volunteer lock keepers is available at www.waterscape.com, by emailing volunteer@britishwaterways.co.uk or telephoning 01827 252097.

After the success of last year's volunteer lock assistant campaign on the Thames, the Environment Agency is again looking for people to work alongside professional lock keepers to keep Britain's busiest river running smoothly. The EA is expecting a particularly busy year with the Queen's Jubilee Pageant and the Olympic rowing at Dorney Lake near Windsor so the knowledge and enthusiasm of local volunteers will be invaluable. For more information or an application pack email thames.volunteers@environment-agency.gov.uk or telephone 01491 828360.



Brian Blessed manning a lock

New French Ferry Service

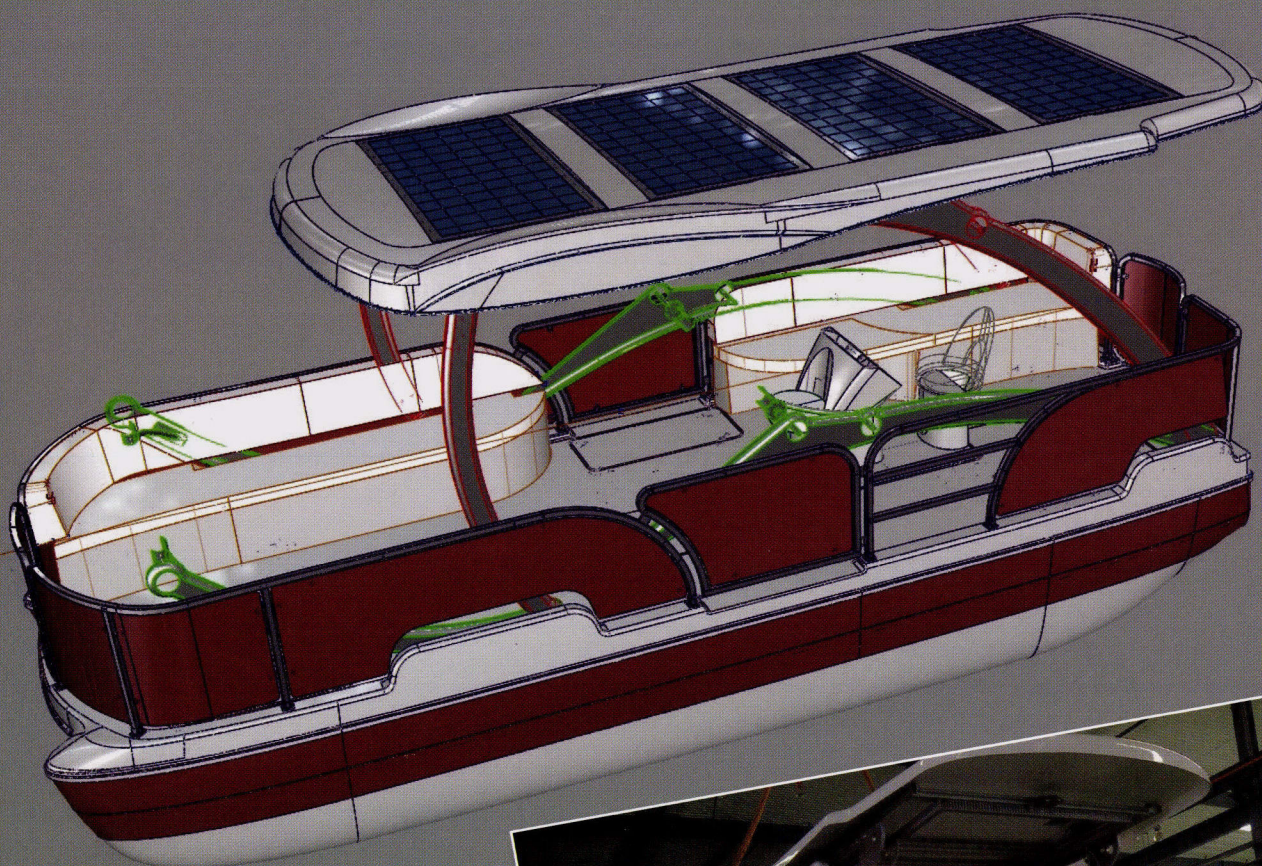


Two diesel-electric ferries will be running a shuttle service over the Garonne river at Bordeaux from early next year. Operated by Keolis, France's largest private sector transport group, the service is expected to carry around 200,000 passengers and their bicycles annually.

Each ferry will have a 140kWh Saft lithium-ion battery system supplying power both for its electric propulsion motor and for auxiliary loads such as lighting and communications. The batteries will be charged overnight from the local grid and during the diesel propulsion phase, providing six hours of fully-electric operation in the two busiest periods of the day.

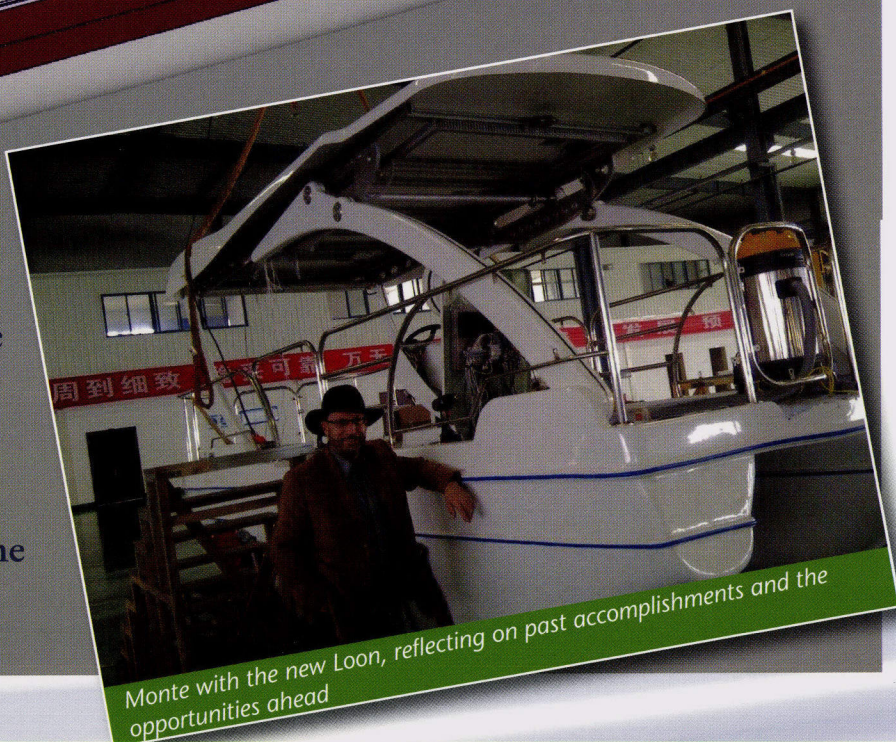
The ferries are scheduled to be tested by November/December this year and should start operating before Spring 2013.

A New Loon Rising



The new Loon was engineered using state-of-the-art CAD software

Canadian business member Monte Gisborne has sent this report from China where he is supervising production of his new solar boat the 'Loon', named after the North American bird which is very like the EBA's grebe.



Monte with the new Loon, reflecting on past accomplishments and the opportunities ahead

Building on the successful and highly enjoyable long-distance canal voyages completed in North America in our earlier breed of 'Loon' solar-powered pontoon-style recreational boats, a bold new direction was taken in 2008 to develop the solar-powered twin-hull concept to its fullest potential. The new water craft, which we decided should bravely carry the same name and DNA forward, was to be everything its predecessor proved

to be and more; the previous canalway experiences and valued customer feedback were to serve as the primary motive force in bringing the best Loon we could build to series production. The events that led up to realizing that objective are the subject of this article, as I am very pleased to announce that our future has become our present.

The new Loon's story begins exactly where the previous one left off. Having

just completed a 12-day voyage along the historic and scenic New York State Erie Canal (featured in EB News in Spring 2008) I took stock of the pros and cons of the vessel's attributes and determined many areas which could be improved to enhance performance, functionality and aesthetics. A 'wish list' was drawn up and I immediately began the hard work of finding someone who was as crazy as I was to take on this



The first new Loon starts to show its form

venture. Fortunately my match was found in Ray Hirani, a native of nearby Kitchener, Ontario. I recognized that the path to production might be a steep one and these journeys are often more enjoyable when there's someone beside you to listen to your griping and complaining. He was less of a boating enthusiast than I was, financial and legal concerns being his forte, but a short trip on Lake Simcoe convinced him that this was a worthy venture to add his equal momentum. I probably never imagined the value of this logic at the time, especially since the world economy was about to hit some dark days and boat-building operations were disappearing faster than my supply of Sominex. Perhaps the reason that we held together when others didn't see their way through is due to the 'yin and yang' nature of our partnership, made obvious by our complete lack of overlapping skill sets as I couldn't balance my own cheque book and Ray couldn't balance a force vector diagram.

We were fortunate to find some good talent to push the project along and genuinely benefitted from the talented stylings of Jason Hill, a product designer who had just finished the (later to be ill-fated) Aptera project, an innovative three-wheeled electric car to be built in California. Jason's sense of balance and proportion could not have been put to better use as he helped us to give the new Loon what the old one lacked – panache. Working with such talent proved to be the easy part, the

difficult part was to extract funding in a world which was reluctant to invest or finance the future, especially in the future of boating, when the present looked so bleak. Ray and I had our challenges placed squarely before us but we persevered and, with strong belief in our product and its potential, we sallied forth and found the required capital to bring the project to full viability. The new Loon got its wings! There are too many people to list who had a hand in moving this forward, but I would be remiss if EBA member Tony Rymell's name were omitted.

Along the way we were successful in achieving our American patents, a process which took almost three years, so the delayed launch of our new

Loon had some tangible benefit. We were also very fortunate in having a steady stream of interest in our uber-ecological offering and genuine market demand; customers stepped forward and we were off and running with orders in the hopper - always a good way to start a business. Buoyed by the enthusiastic response from all over this great world, we look forward to reporting specific fleet applications, as well as the antics of our venerable solar-boating enthusiasts, pertaining to our innovative products.

Design and engineering work on the new Loon was completed in October 2011 and preliminary moulds and production tooling finished in November. What a delight to see the concept leap from the page! The first new Loon prototype, shown here, was launched later that same month in Xiaogan, China. At the time of writing, sea trial testing is nearly finished and production moulds and tooling are being completed for a Spring 2012 product launch. This boat sports a retractable roof, 760-watt solar array with MPPT charge control, on-board shore-power charging, four-way entry, comfortable seating and a host of other features and options. Motive power is supplied by Torqeedo.

For more information about this boat or the company, please contact me at monte@tamarackelectricboats.com or visit our website at www.tamarackelectricboats.com.



Launching the first Loon

New Electric Drives from Motech



EBA business members Motech describe the development of their new range of marine electric drives which they will be launching this summer.

Motech have been manufacturing industrial electric drives for almost 20 years and have supplied some of the UK's largest companies. With this experience the company designed and manufactured electric drives which were fitted into two manned rescue submarines. This project gave Motech's Managing Director, Bill Eunson the idea of developing electric drives for the leisure boating marketplace.

As Bill explains: "Learning from our previous work we had no doubt that electric propulsion was superior to conventional diesel but we had to find a way for it to be feasible, in terms of boat range and cost. So we explored a number of different options before choosing to develop an electric drive that could power a boat on its own or in conjunction with a diesel generator to extend the range. Of course the generator can then be used to supply all the on-board electricity, making the total system very cost effective."

Prototype trials have been ongoing since March 2011 with *Worcester*, a 38ft narrow boat. *Worcester* is moored

in Oxford and is owned by Edwin Osborn. Edwin had previously converted the boat to electric propulsion and very generously replaced his electric motor and controller with Motech's new 10kW electric drive.

The Motech drive consists of a brushless permanent magnetic electric motor with reduction belt gearing and an electronic controller all contained in a single robust enclosure, making the unit compact and easy to install. The drive is powered by a 72V battery bank that is charged by an on-board 6kW Fischer Panda diesel generator.

As well as extending the boat's range the diesel generator also provides an abundant supply of electricity. There is round-the-clock power for all home comforts, such as a fridge, kettle, hairdryer or television. The generator is exceptionally quiet and charges the battery bank faster and more efficiently than is possible with a standard alternator. If shore power is available, charging the batteries using this supply can cut the consumption of diesel and dramatically reduce the overall cost of running the boat.

As well as plentiful electricity, the hybrid electric drive offers quiet power and relaxed, reassured boating. With delicate controls and instant acceleration the electric drive makes the boat easy to manoeuvre, especially when docking or negotiating locks.

Worcester's owner Edwin Osborn is

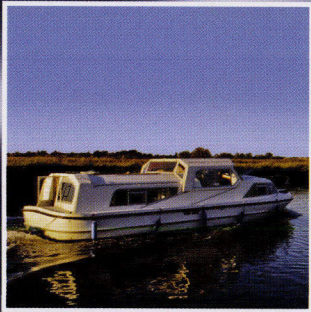
very pleased with his boat conversion. "When we decided to convert *Worcester* to hybrid electric drive, our principle aim was to have a boat that could be used in exactly the same way

as a conventional diesel craft. The system more than satisfied our hopes; top power cruising is more effective than the previous 1.8 litre BMC unit, showing that headline power numbers can be misleading. In fact a smaller electric drive can often provide as much usable power as a larger diesel engine. Furthermore the rapid thrust available for acceleration and control is vastly greater. It is all so quiet and free of vibration."

The Motech 10kW electric drive will be the first of the range available, followed by 2.5kW and 5kW units. Finally an 18kW water-cooled drive is planned for larger boats. Motech provide all the add-on items needed to complete the installation such as batteries, battery chargers, 230V inverters and solar panels, together with expert advice.

"All the products we supply have been tested by us and we know they work together efficiently and properly" says Bill. "Our main aim has been to develop a quality system that is well engineered, is simple to install and is financially attractive."

To find out more about the new Motech electric drives and how they can let you enjoy life on your boat quietly and economically while reducing your carbon footprint, please contact Bill Eunson on +44 (0) 1293 440710 or via email at sales@motech.co.uk



electric drive for boats

Motech electric drive - clean, green and quiet

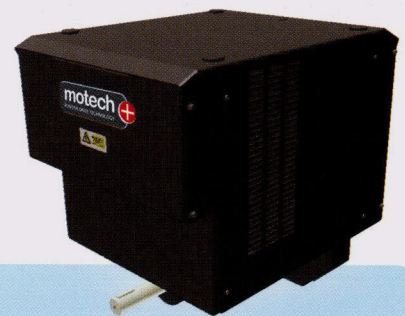
While silently cruising on the open water you will feel relaxed and reassured. At ease knowing that Motech's electric drive will deliver immediate throttle response for precise manoeuvrability of your boat.

A Motech electric drive can easily be combined with a range-extender, such as an on-board diesel generator. Then you will really feel at home, with enough electricity for all your needs, day and night.

Benefits of the Motech electric drive:

- Smooth and quiet operation
- Precise throttle control at all speeds
- Compact and lightweight for easy installation
- Low running and maintenance costs

Call us to find out how we can enhance your boating experience and help reduce your carbon footprint.



Electric drive

Power output (at shaft)	10 kW
Maximum torque	87 Nm
Maximum speed	1,100 rpm
Supply voltage	72 V
Supply current, maximum	200 A
Mass	50 kg
Dimensions	510(L) x 390(W) x 550mm(H)

For further information contact us:
T: +44 (0) 1293 440 710 E: sales@motech.co.uk

The Broads Green Boat

The 6th Broads Green Boat Show, incorporating the 16th Silent Sensation, was held on Sunday 25th September at Salhouse Broad. Tobi Baker, Head Ranger on Salhouse Broad and a member of the organising committee, has sent this report with pictures by Grace Turner.

After a couple of years of dismal weather, we struck lucky in 2011 with a glorious day, perfect for our show. There was just enough wind for the sailing boats without too much to cause a nuisance to the canoeists. This time we were trying to focus on the roots of the show with a variety of 'green' boats for people to view and to take trips on. In total there were about a dozen craft ranging from Hunter's Yard's *Lustre* and *Rebel Reveller* to the *Fair Princess*, a hybrid diesel electric hire cruiser from Norfolk Broads Direct. David Williams was again present with his *Mock Turtle* and pedal boat (I finally managed to have a go in this after 5 years and it was great fun!), as well as privately owned electric converted sailing boats: *George Thetford*, *Blue Marlin* and *Demoiselle*. The Broads Authority's *Charles Collier*, an electric-diesel Navigation Ranger's launch, was demonstrating her fine engine while the electric launch *Damselfly*, courtesy of



Damselfly with *Lustre* and *Rebel Reveller* in the background

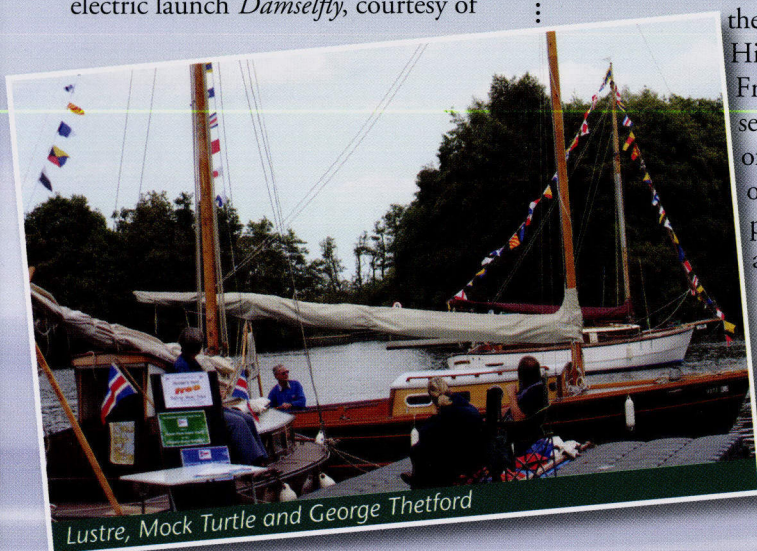
the Norfolk Wildlife Trust, was busy all day running trips around Salhouse Broad. (*Damselfly*, an AquaXplore 26 from Goodchild Marine, powered by a Torqeedo outboard, is pictured on the inside front cover).

In addition to these boats, there was a variety of canoes on display: beautifully crafted classic wooden canoes, modern canoes for sale from Bank Boats and canoes for hire with the Broads Canoe Hire Association.

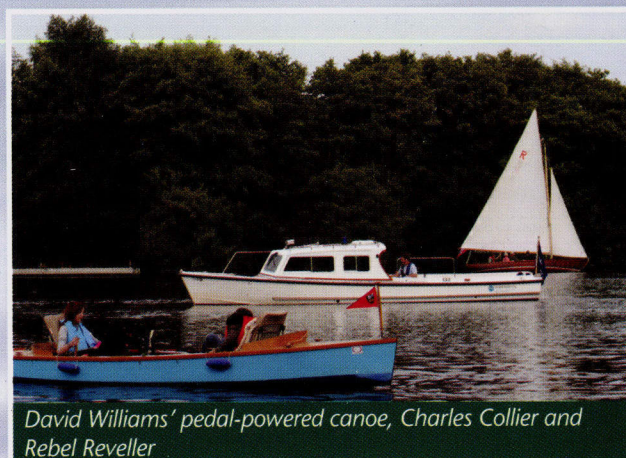
Free canoeing sessions were offered, with over 90 people taking advantage of this. At least one kingfisher was spotted down the Old Wherry Cut by canoeists,

proving that this silent pastime is one of the best ways of exploring the nooks and crannies of the Norfolk Broads. Sailing trips with Hunter's Yard were also popular, with over 70 people booking on the *Rebel Reveller* throughout the course of the day. At 2.15pm all the boats took to the water for a Green Boat Procession, completing several laps of the Broad before returning to the quay heading.

With marquee and gazebos erected on Saturday afternoon, we had our first



Lustre, *Mock Turtle* and *George Thetford*



David Williams' pedal-powered canoe, *Charles Collier* and *Rebel Reveller*

Show



exhibiting arrivals appearing on site at 7.30 a.m., getting ready for the gates to open at 10 a.m. We encouraged visitors to think about how they arrived at Salhouse Broad for the show. Discounts on the entrance fee were offered for those walking and arriving by bus, train or bike. Those arriving by car were asked to pay £2.50 each (compared to the £1 fee for arrival by other forms of transport) as well as a £2 car park charge. In this way, overall entrance was cheaper if more people arrived in one car, promoting car sharing. Entrance for children under 12 remained free, with lots on offer for them to do. Once again the Electric Water Taxi with electric day boats from Broads Tours, manned by volunteers from the Broads Authority, shuttled back and forth carrying passengers for £7 – a great value way of seeing a lovely stretch of the river Bure and gaining entrance to a wonderful show. Thirty people used the Taxi Service to get to the show. The visitor moorings were full all day with

over one hundred people arriving by private or hire boat and in total there were over 500 visitors to the show.

Despite the focus on boats, there was a whole lot more to this show than water based exhibitors: Robert Paul (Boathouse, Ludham) was selling a variety of boating accessories as well as electric outboards, Starfish Installations were exhibiting solar PV systems, Ecover and Delphis Eco were providing deals and samples of ecological cleaning products (perfect for boaters whose effluent from sinks runs straight into the rivers); also present were Pb Batteries with their industrial marine batteries and chargers. In addition there were a variety of local companies and charities: Pat Southwood of Cossey Ceramics, whose pottery workshop is adjacent to the Salhouse Broad car park and who uses local reed in her glazes, North Walsham and Dilham Canal Trust, Broadland District Council's Local Food Directory, Three Rivers Way, Broadland Cycle Hire, the Broads Society, RSPB, RNLI, Green Blue and, new for this year, our 'Green Tourist' Information stand, supported by Salhouse Broad and Hoveton Tourist Information Centre (Broads Authority).

Refreshments were provided by the Salhouse Bell: fine burgers and chunky vegetable soup, Ole Slewfoot Brewery with a selection of real ales and Express Coffee Cars supplying fair-trade drinks from their Smart coffee car. The Vendablenda bike-powered smoothie maker created over 40 smoothies for willing pedalling enthusiasts.

We recognise that a show like ours can quite easily become a technical show, purely exhibiting companies with solar panels, electric engines etc. However, our aim is to promote 'green thinking' in all areas, for all ages. With this in mind, we have expanded the show in the last few years to include families in our target audience. This year we had the Nutmeg Puppets presenting

their show 'Apple Pip', followed by a workshop using rustic materials. BeWILDerwood provided a trail competition and the Broads Authority were constantly entertaining youngsters making boats out of recycled materials and racing them in a paddling pool. The Norfolk Broads Concert Band entertained us with a mix of tunes during the day, including a particular welcome favourite, a rendition of the Indiana Jones theme tune which sounded wonderful, wafting its way across the water.

The day itself passed with a buzz of people around the stalls, taking part in the extensive range of free trips on offer and finding out more on the subject of greener boating and tips on how to lead a greener life.

All money raised from the show goes back into the running costs and into promoting greener boating and environmentally friendly practices. Many thanks to Peter Howe, for leading the organisational team for the show, and Alex Howe with her support. Thanks to Mr. H. G. Cator and Salhouse Broad for hosting the show and to the Broads Authority for their guidance and assistance with publicity. Thank you to all those who exhibited and to those who attended.

This year's show will be on Sunday 20th May from 10 a.m. to 5 p.m. as part of the new Broads Outdoor Festival. See www.broadsgreenboatshow.co.uk or www.salhousebroad.org.uk for more details or contact Tobi Baker: tbaker@salhousebroad.org.uk Tel.01603 722775.



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Ships, Shows and Celebrations



With the Queen's Diamond Jubilee and the EBA's 30th birthday only two of several anniversaries in 2012, the boating calendar is busier than ever this year. This is a round-up of some of the events taking place over the summer.

To celebrate the 200th anniversary of the joining of their two original canals, the Monmouth, Abergavenny and Brecon Trust are organising a **Welsh Waterways Festival** at Pontymoile Basin on 28th and 29th April. EBA members Tony Rymell and Adrian Dalziel hope to be there with at least one electric boat. For more information see www.canalrivertrust.org.uk/monandbrec200

19th – 20th May is the date for the **EBA's AGM and Cruising Weekend** on the River Nene, a chance to cruise in company on an attractive Lincolnshire waterway. EBA members should have received details via email but if you haven't, please check with Secretary Barbara Penniall that she has your correct email address. Bookings should be made with Events Co-ordinator Veronica Selby.

The following weekend (26th – 27th May) the EBA will be at **Hartford Marina** for two days of shore and water-based activities. As this is not far from the Nene, moorings for EBA members will be available at the marina for the intervening week, but please let Barbara know if you would like to take advantage of this offer.

The **Green Boat Show** at Salhouse Broad in Norfolk has moved this year from its usual Autumn date to form part of the new Broads Outdoor Festival on 20th May. For a flavour of the event, see the report on last September's show on pages 12 and 13 where there are contact details for more information.

Stroud on Water is the title of this year's Inland Waterways Association **National Trailboat Festival** on the Stroudwater Canal in Gloucestershire over the weekend of 2nd to 4th June. The event will be celebrating the restoration of part of the canal as well

as the 40th anniversary of the Cotswold Canal Trust. For more information see www.stroudonwater.org.uk

Meanwhile the largest flotilla on the Thames for at least 350 years will be assembling for the **Queen's Diamond Jubilee Pageant** from Putney to Tower Bridge on June 3rd. EBA members' electric boats taking part include 1899 cabin launch *Pike*, Freebody canoe *Melodie* and hybrid Bates cruiser *Lady Bea*. And apparently the replica royal rowbarge *Gloriana* will also have electric power to supplement the efforts of its eighteen oarsmen.

In Northamptonshire, special celebrations for the Diamond Jubilee will be included in the **Crick Boat Show** from 2nd to 5th June. See www.crickboatshow.com for more details.

The following weekend (8th – 10th June) is the date of the **Beale Park Boat Show**. The EBA stand will be there, along with EBA private and business members with their boats, and to celebrate the Jubilee the organisers are planning a display of boats and classic cars to represent each decade from the 1950s to the present day. Following the success of the first ever Cordless Canoe Challenge at last year's show, boats under 5 metres long and powered by one or more cordless electric tools are invited to apply for this year's Challenge by sending a picture and details of the boat by 16th April to Water Craft Makita Cordless Canoe Challenge 2012, Bridge Shop, Gweek TR12 6UD or by emailing ccc@watercraft-magazine.com. Prizes of over £1000 worth of power tools have been donated by sponsors Makita.

EBA members have been invited to join steamboats, motor boats and sailing boats at a **Regatta on Coniston Water** in the Lake District on 10th to 12th June. This event is still in the early planning stages so if you would like to take part contact Greg Simpson on 015394 41962 or email gt40_greg@yahoo.com

On 30th June the EBA will be hosting the celebrations for our **EBA 30th Anniversary** with lunch and a cruise at Abingdon followed by dinner, and the opportunity for another Thames cruise the next day. Invitations have already gone out to EBA members. Please let Barbara know as soon as possible if you would like to join this event.

Last year the electric boat *Buttercup* won the prize for 'Best Boat Overall' at the **Evesham River Festival**, now in its 26th year. This year's event on the River Avon will be held from 6th to 8th July and more details can be found on www.eveshamriverfestival.co.uk

The Friends of the Montgomery Canal have invited EBA members with trailable boats to join them for the **Pool Quay Canal Festival** at Crowther Hall Lock from 7th to 8th July. Boats can use the slipway at Welshpool's Town Wharf with free parking for cars and trailers four miles away at Crowther Hall. For more information contact Maggie Ellis on crowtherhall@aol.com or telephone 01938 590543.

A regular date in the EBA summer calendar is the **Thames Traditional Boat Rally** which takes place this year on 14th and 15th July at Henley. For more information see the website www.tradboatrally.com. The cut-off date for boat entries is 1st June 2012.

And finally (so far at least) this year's IWA Campaign Festival will form part of the **Preston Guild Canal Festival**, celebrating the 10th Anniversary of the Ribble Link. It will be held at Haslam Park, Preston on 25th and 26th August.



BARBARA PENNIAL

The Story of Free Phase

EBA member Derek Wright describes his major project to design and build a 60 ft electric narrowboat.

Free Phase – which at one stage I nearly called *Never Ready* – was finally launched on 1st September last year after 12 years and 2 months in the making. I designed my own motor drive electronics down to the individual transistors and coded the firmware for it. I fitted out the bare steel shell from Graham Reeves and got a local joinery to make the ash doors for the galley cupboards and wardrobe. The two inverters that make 230V AC for the galley come from Studer and the

generator is an Ultra 8 from Mastervolt. Everything else was made and installed by me.

With charging points further apart than our daily cruising range, it was imperative that we had an on-board generator. By adding two sets of 48V x 200 Ah batteries with inverter-chargers we can have 230V AC available 24/7 for domestic needs and yet run the generator for just a few hours each day to top up the batteries. By connecting the two sets of batteries in series to produce 96V and designing my own power electronics to run an industrial grade induction motor, direct coupled to a 20 in propeller, we have the capability to cruise a 16.7 ton narrowboat in total silence for more

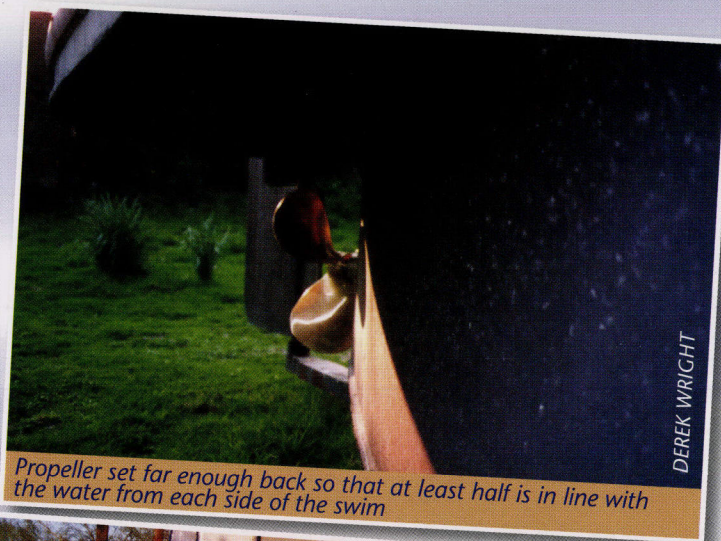
than half of the time.

For relaxed canal cruising our propeller drive load is 2.2 kW (at 320 rpm) or up to 3.6 kW when trying to rush (at 430 rpm), possibly more when working against the flow on rivers. The charging system supplies up to 50 amps at 100 volts so with the generator running we could cruise all day at an average of 5 kW (7 HP) without depleting the batteries.

Except for the diesel fired heating and generator, everything is electric. The galley includes a four-ring induction hob, double oven, microwave, kettle, toaster and fridge, all running from 230V AC. There are ten 16-watt tri-phosphor fluorescent strip lights – it's pretty bright in there – and 230V



Loosely assembled drive train showing swim tapering to a chisel point



Propeller set far enough back so that at least half is in line with the water from each side of the swim

macerator toilets at each end adjacent to the sleeping areas. A ring main provides ample sockets to plug in power tools, vacuum cleaner, hairdryer, computer, phone chargers, TV, satellite receiver, hi-fi, table lamps, clock radio etc.

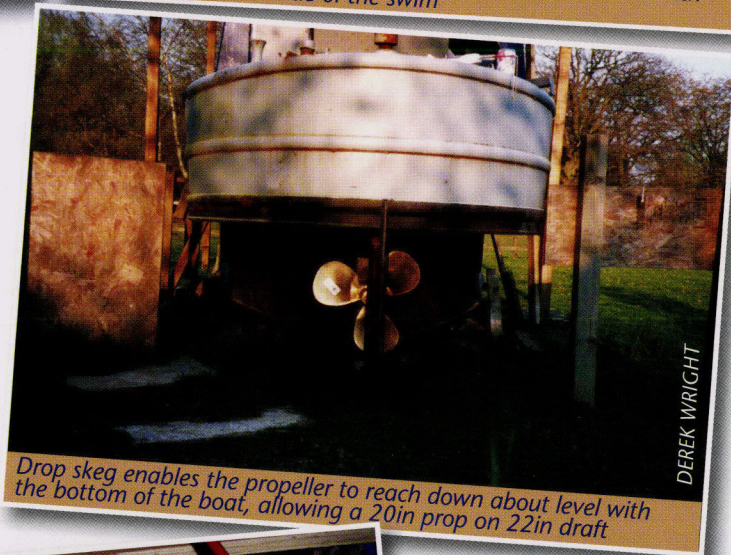
The only things that run on 12V DC (from the generator start battery) are the diesel heating boiler, the bilge, waste and water pumps, the horn and the headlamps. There is a Halfords automatic battery charger that keeps the 12V battery topped up from the 230V AC ring main.

The ring main runs on a 4 kW Studer Xtender inverter/charger that can add its 4 kW either to the 8 kW generator, or to the second more conventional 3.5 kW inverter-charger, or to a limited power shore line. The oven and hob normally connect to the inverter supply but there are switches above the hob that operate relays to transfer them direct to the generator when it is running. This makes it possible to cook dinner on batteries alone using up to 7.5 kW or with the generator running using up to 12 kW. Cooking a typical evening meal uses about 15% of one battery bank. For breakfast or a light lunch there is no need to start the generator for a few minutes of cooking – the batteries will hardly notice.

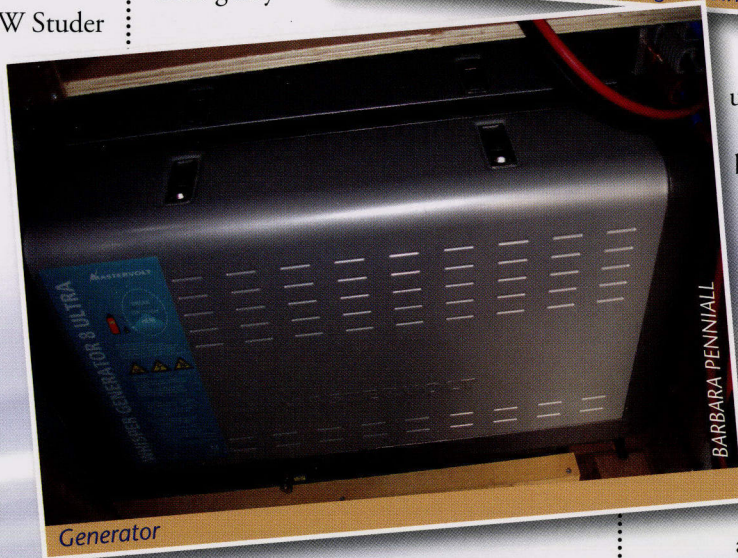
The two banks of four batteries are 12V 200 Ah AGM sealed lead acid connected in series. The fact that the batteries are sealed considerably eases the boat safety requirements in terms of both ventilation and spillage prevention. They are also maintenance free. A

disadvantage is that they need more precise control of their charging.

The eight batteries sit in pairs on the baseplate, in the 540 mm gaps between the floor bearers, under three galley



Drop skeg enables the propeller to reach down about level with the bottom of the boat, allowing a 20in prop on 22in draft



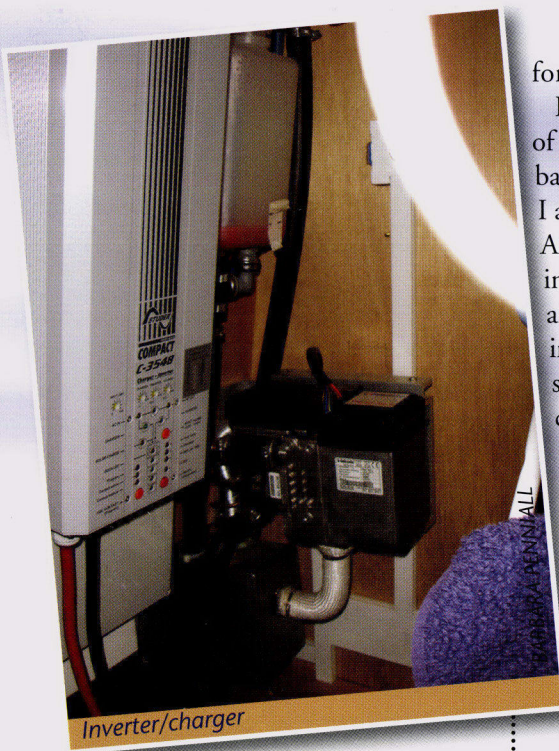
Generator

cupboards and under the built in oven. The baseplate is 125 mm below the floor and the battery space reaches up behind the plinth to the underside of the units, 150 mm above the floor. This gives a total available height of 275 mm, including the terminals. To access the batteries, the floor panel in front of the galley units is lifted and then the plinth is removed so that the batteries can be slid out across the baseplate into the space from where the floor was taken up. And then the boat lists to starboard

until we put them back!

With the present lead acid batteries, a typical daily routine is to cruise for about five hours, of which two hours might be in a flight of locks, and then start the generator about an hour before beginning to cook the evening meal. Charging two battery banks at 50A keeps the generator quite well loaded. Then, as the charge rate starts to fall off, the

addition of the cooking load keeps the generator happy for another hour. By this time, the meal has been eaten and the generator has become lightly loaded. This is the time (at less than 6A AC from the generator) to stop the generator and plug into the (limited power) shoreline – when there is one available. The shoreline will then bring the batteries up to 100% overnight. Without a shoreline it is a compromise between making do with 80% - 90% charge or leaving the generator running lightly loaded all night. With only 80% charge, the next day's cruising will need



an earlier generator start.

The present set of lead acid batteries have a predicted life of 350 cycles to 50% DOD and so, based upon two cycles per cruising day, they will need replacing after a couple of seasons. The battery degradation cost works out at about £10 per cruising day. The ambition is that the next set of batteries will be lithium iron phosphate (LiFePO₄). These are capable of rapid charge all the way to 100% every time the generator is run. The much higher cost will only be justified by a long warranty.

It is important to use the biggest propeller size that you can fit to the hull; a large propeller at low speed is far more efficient than a small one at high speed. By fitting a drop skeg on the 22 in draught my hull builder enabled me to use a 20 in prop with the recommended 2 in minimum clearance all round.

With an electric drive, the prop speed has no lower limit so we can use a larger pitch and this will in turn require less rpm for normal cruising speeds. I eventually settled on a 15 in pitch. The design maximum prop speed is 1080 rpm and it should take 21 kW (equivalent to 30 HP) to achieve this. To produce 21kW at 1080 rpm the torque would be 186 N-m, which is about 30% above the rated torque for the motor. But I would only be using this power level

for starting and stopping.

For a narrowboat, the size and weight of the motor is not important as some ballast can be left out to compensate. I am a big fan of the three-phase AC induction motor. Ubiquitous in industry, they are relatively inexpensive and very reliable. I chose a 4-pole induction motor in the industry standard D180L frame size. This size code derives from the fact that the shaft centre is 180 mm above the mounting feet. It weighs in at 126 kg. At its nominal speed of 1470 rpm on a 50 Hz supply, the rated power output is 22 kW. The torque when providing 22 kW at 1470 rpm is 143 Newton-metres – roughly the same as a naturally aspirated

1500 cc diesel engine through a 2:1 reduction gearbox. This is a continuous rating and, with precision power electronics, the torque can be increased to two or even three times the rated value on a short-term basis, whereas the diesel engine would simply stall. But at such elevated torque levels the rotor of the motor will heat up rapidly and so we should not plan to do this for more time than it would take to stop the boat from full speed in an emergency – hopefully not more than 10 seconds.

The shaft diameter is a massive 48 mm and the bearings in the motor will withstand a thrust of 310 Kgf. This is more than adequate to take the full thrust of the propeller thus obviating the need for any pillow block bearing. After careful alignment, we can simply couple the motor shaft directly to the propeller with an R&D coupling. The precise shaft alignment and lack of vibration results in negligible leakage at the stern gland.

To achieve smooth control and get maximum torque out of an induction motor, the frequency of the three-phase voltage has to be kept ahead of what we call the synchronous frequency by a very precisely metered amount. This is known as **vector control**. We call this frequency difference (by which the supply frequency exceeds the synchronous frequency) the **slip frequency** and the torque the motor produces is directly proportional to the slip frequency that is set by

a conventional looking single lever control.

On a motor running through an inverter, the maximum speed is proportional to the available DC input voltage. So 1080 rpm could be achieved from a DC supply of about 230V. The theoretical maximum speed on an unboosted battery voltage of around 100V would be 465 rpm. Before launch, the unanswered question was how fast the boat might go at 465 rpm or, to put it another way, for how much of the time would we need a boosted DC link voltage?

When we got the boat in the water we were thrilled to find that it would cruise at adequate canal speed on just 350 rpm. So, for the time being, implementing the voltage booster has gone on the back burner in favour of dealing with more mundane matters. But a bit of cruising on fast flowing rivers might alter this.

I decided to control the torque of the motor rather than the speed. On a typical DC motor you would do this by controlling the current to the motor rather than the voltage applied to it. If you control the torque, this translates through the angle of the blades to a direct control of forward thrust. During proving trials this method of control has shown some interesting benefits. With the torque control set to a chosen position, when the propeller gets fouled by leaves as it does on canals in the autumn, the prop speed drops and it soon becomes obvious that a burst of reverse is required to shake the leaves off. In a similar way, the prop speed will decrease in shallow water and increase in deep water as the boat gathers speed giving a really good feel as to what is going on under the hull. Having controlled torque also limits the damage that can be caused by a complete propeller jam from something like a log getting between a blade and the counter.

Free Phase is now based at Welton Haven on the Leicester section of the Grand Union Canal but I'm hoping to be able to join other EBA members on the River Nene in May and perhaps to visit the Thames later in the year.

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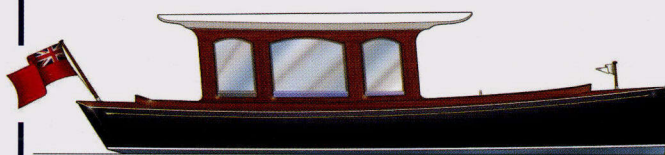
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1/2 PAGE	120	130
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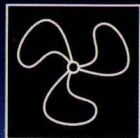


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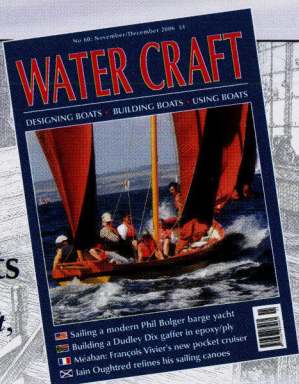
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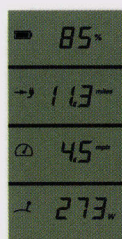
Stronger, faster, better! The next generation of tiller control electric outboards from Torqeedo offers all-round improvements: more efficient, more robust and more propulsion. Perfect for tenders, dinghies, motorboats and sailboats up to 4 tons.



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The First Electric Ferries



The world's first regular passenger service using electric boats began in Norway in 1894. Kevin Desmond has found details in an article published in the French magazine 'l'Electricien' dated 8th June 1895.

From the 1850s, increased industrial trade led to a growing population in Bergen. In 1894, an engineer called Jacob Trumphy saw the need for a ferry across the harbour. Inspired by an electric ferry he saw during his stay in Westphalia in Germany, he introduced the idea of electric propulsion to the Bergen government. On May 15th 1894 Bergen's Elektriske Faergeselskab (Bergen Electric Ferry Company) was formed.

Despite protests from politicians that the electric ferries would destroy ferryman's livelihoods, two boats started operating in August 1894. By the end of that year an additional six ferries were employed on different

routes linking the six districts which surrounded the port. The ferries were not given names, simply numbers.

By 1895, 1,600 passengers were commuting across the harbour on the new ferries. Each boat was 8 metres long by 2 metres wide, with a draft of 0.8 metres. Their weight was 6 tonnes and they could transport 18 passengers (including crew). They were open at the front and back with only a canvas roof, which gave passengers little protection against the rainy Bergen weather.

In the Norwegian tradition of double-enders, they were constructed symmetrically, with a propeller at each end, so that when leaving a station they did not have to turn round. The two propellers were mounted on a common shaft which was coupled directly to a 3 horsepower electric motor with a weight of 300 kg placed in the centre under the planking. The Hagen batteries were distributed under the seats and weighed 1400 kg. Their capacity was 20,000 watt-hours and the speed obtained with an output of 2300 watts was 10 kilometres an hour, enough speed for a crowded port

like Bergen.

"One of these eight boats leaves every 5 minutes from 7 o'clock in the morning until 9.30 pm in the evening, carrying out a daily course of 40 sea miles and transporting an average of 1800 passengers."

During the night, placed in a special station at Bradbenken in Vaagen, the ferries did their main battery recharge with the aid of a 30 horsepower dynamo. They could also receive a 4-minute 'topping up' between trips.

During 1896, the electric fleet transported a total of 486,000 passengers, or 40,500 per month. This service went on for thirty years.

Then in the late 1920s, the electric ferries were rebuilt and fitted with petrol engines. During the 1950s, all the ferries were retrofitted with Sabb diesel engines. At the time of the ferry company's 75th anniversary in 1969, 38 million passengers had been transported.

At present Bergen's only ferryboat is the diesel-engined *White Lady*. But it would be nice to think that one day the Norwegian port will go back to electric, or perhaps hybrid-electric, propulsion.

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For Sale

British Anzani Electric Outboard Motor
36 volts 700 watts

This motor was given to the EBA for trials and has been little used. It is very quiet and powerful in operation. It is now for sale with proceeds going to the EBA. The motor has variable speed control and a built in battery state indicator. The original cost was £600 + VAT and it is sold as seen, but is complete and working ok. The best offer will secure a sale.



Offers to the Editor please.

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Featured above – 30ft slipper stern launch “Oui Oui Too”
the latest in our range of new build electric launches.

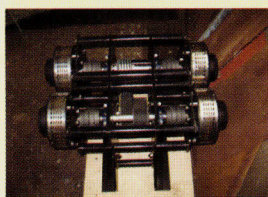
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(see article in summer 09 issue).

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Noticeboard

Welcome to New Members

Private Members	Location	Boat where notified
Tim Barrett	Lowestoft, Suffolk	
Daniel Bullen	St Ives, Cambridgeshire	Sparky, Stelco Sunny 17ft launch
Ned Farinholt	Winchester, Virginia, USA	Erged On, 15ft Starcraft with Torqeedo outboard
Maurice Gallet	Montreal, Canada	
Kerry Jamieson	Gig Harbour, Washington, USA	Hammer P 1966 Owens Flagship
Simon & Maria Loring	London	Black Isis, Isis 14
Derek Morley	Meols, Cheshire	Paddlewheel powered canoe
Alan & Alison Titchmarsh	Alton, Hampshire	Melodie, electric canoe

Business Members

H & R Marine	Bristol	Electric outboards and small water craft
Oz Marine (Welcome back!)	Gothenburg, Sweden	Electric propulsion systems



Awards for EBA Members

Congratulations to EBA business members Grove Boats who were honoured at the Zurich Climate Awards on 15th November last year. Zurich, parent company of Navigators & General who run the EBA insurance scheme, redistributes the proceeds of the carbon tax by making awards to sustainable and environmentally friendly projects. 38 projects were entered and Grove Boats received a 'Special Prize' for their solar and hybrid electric boats.

Also congratulations to EBA member Pete Greenfield, Editor of Water Craft magazine, for the 2011 Desmond Werrern Lifetime Achievement Award for Journalism from the Maritime Foundation.



Boatique

EBA business members Henley Sales & Charter are opening a shop in Henley on Thames on 25th March. Boatique will sell clothing, furniture, toys, photographs and ornaments as well as vouchers for river trips. The company is also offering a competition prize of a cruise on *New Venture* to join the Jubilee Pageant in June. Entrants should post their favourite boaty story on the Henley Sales & Charter Facebook page. The best stories win a place and will be published on the HSC website.



Betty Asijee

We are very sad to report the death of EBA member Betty Asijee on December 19th. Betty and her husband Hans were pioneers of electric boating in Holland and it was always good to see them on their visits to the UK. We send our condolences to Hans and their family.



Hans and Betty Asijee at the Hartford Marina Electric Boat Event in 2003



Autumn Breeze

EBA member John Bridge reports that last September saw successful trials on Coniston of his traditional launch *Autumn Breeze* using an electric motor and gear box from a heavy duty wheelchair to drive both paddle wheels on a common shaft. The original Lister 'D' engine was still installed but disconnected and riding as a passenger. Power was supplied by four 35Ah semi traction lead acid batteries wired in parallel and the motor drew only 18 amps at 24 volts which gave a very lively performance.

John had planned to spend the winter making a permanent conversion to electric power with two motor gear box units, each driving one paddle wheel, when he had an offer to buy the boat as it was. However, his electric boating will continue with his solar powered canoe which he plans to take to Henley for the Traditional Boat Rally in July.



John Bridge in Autumn Breeze

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Pretty 12ft electric day launch with simulated clinker GRP hull, varnished iroko decks, seats, floorboards and oak rubbing strakes. Rewired and completely restored. Complete with road trailer, new cover and BSS certificate. Excellent condition. £5,750. Tel: 07881 955950 or 07775563030.

Simmonds 1960s 15ft restored aluminium motor launch, converted from its original inboard petrol engine to LMC 48volt inboard electric drive. Detailed description and pictures on the Simmonds Motor Launch Society website www.simmonds-motorlaunches.co.uk/boatsale04_pond. Reason for sale is lack of storage space. Total cost of restoration and upgrade has been around £7,000 but asking price is for offers over £3,800. Contact Richard Pond on 01453 832632 or email pondeep@aol.com

Peace 26ft Sea Otter aluminium narrow boat in excellent condition. Launched 2001, converted to electric 2007. 2 + 2 berths, fridge, radio, upholstery and curtains. 6 solar panels, 3KVA Fischer Panda diesel generator as new (169 hrs), LED lights. Up-rated trailer included. Moored Thames near Reading. Boating in near silence at minimum cost is fantastic but we need more accommodation. £35,000 ono Contact Ward on 01252 625067 or ward@canalia.com. See picture on page 9 of Summer 2011 issue.

Piano Frolic 18 electric day boat built by Creative Marine 1996. Lovingly maintained with four new batteries in 2009 together with new cushions and two Iroko table tops makes this an ideal low maintenance boat for pottering on the river. £8250 includes trailer, covers etc. Tel. Brian Couser on 01672 540987 (Marlborough, Wilts.) or email browncou@btinternet.com

Shardeloe Professionally built 18ft river launch converted to electric by Thames Electric Launch Co. New batteries and Boat Safety Certificate 2010. Comfortable two berth cabin, galley, character features, space for Porta Potti. Ideal for leisurely cruising, picnics etc. A much loved boat admired wherever she goes. Price: £12,000. Contact: helenbest97@googlemail.com

Wanted

Frolic 21 or similar. Must have GRP hull in good condition with just enough timber trim to look the part. Electric drive, of course, with decent batteries and charger. Road trailer would help but not essential. Sensible price would ensure a quick sale. Contact Tim Barrett 07860 821023 or email tim-barrett@half-acre.co.uk

Pictures and details of all the boats for sale are on the EBA website www.electric-boats.org.uk under 'Free Ads'.

Members wanting to buy or sell electric boats, motors, fittings or associated equipment are invited to submit a 50-word entry direct to the Editor (no agents or brokers). The information contained in members' private advertisements is provided by the advertiser and the Editor is unable to vouch for its accuracy. It is the responsibility of prospective purchasers to satisfy themselves as to the accuracy of the information given and of the condition of goods advertised.

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