



RCEA
(SUSSEX)

An Association for Retired Professional Engineers

NEWSLETTER

April 2010

PROGRAMME OF EVENTS April – Aug 2010

Tuesday	13 April	Talk, Bermondsey Waste Incinerator, Field Place
Thursday	15 April	Coffee Morning, at Spotted Cow, Angmering
Wednesday	21 April	14.00. Outing to Arundel Wildlife and Wetlands Centre
Thursday	29 April	Coffee Morning, Beach Hotel. Worthing
Tuesday	4 May	14.00. Outing to Leonardslee Lakes, Gardens and ‘beyond the Doll’s House
Thursday	20 May	Coffee Morning, at Spotted Cow, Angmering
Friday	21 May	14.00, Outing to Herstmonceux Castle and Gardens
Thursday	29 May	Coffee Morning, Beach Hotel. Worthing
Thursday	17 June	Coffee Morning, at Spotted Cow, Angmering
Wednesday	23 June	14.00. Outing to Amberley Working Museum
Thursday	24 June	Coffee Morning - Swallows Return, Worthing.
Tuesday	6 July	14.00 Visit to Hardham Water Treatment Plant
Thursday	15 July	Coffee Morning, at Spotted Cow, Angmering
Wednesday	28 July	14.00, Outing to Guilford Cathedral
Thursday	29 July	Coffee Morning - Swallows Return, Worthing.

Thursday 19 August Coffee Morning, at Spotted Cow, Angmering

Thursday 26 August Coffee Morning, Beach Hotel.

All Talks and Meetings will commence at 2.30 pm and be held in the Chichester Room, Field Place, Worthing, unless another venue or time is indicated.

Timings for visits and outings will be as printed in the detailed description of the activity.

Coffee mornings commence at 10.30 a.m., except at The Beach, which is from 10.45 a.m

Website for the RCEA

For latest information and photographs, log into www.rceasussex.org.uk

Membership

New Members

We welcome 4 new members to the Association this quarter. New members should check the information published below for accuracy. This is the data, which will be published in the next Member's Handbook.

A. H. Wood C.Eng, MIEE, MBIM, DipEE, DMS

4 Falmer Avenue, Goring by Sea, Worthing BN12 4SZ

Tony & Janet 01903 241164 jtwood@ntlworld.com

EMI guided weapons apprentice, R&D engineer, test equipment design/manufacture, Configuration management, Production/works management

Interests Theatre, reading, walking, golf

G.F. Hennings C.Eng, BSc(Eng), MSc, MIMechE, MBIM

12 Eaton Court, Gorse Avenue, Worthing, BN14 9PQ Gerald

& Pat 01903 690645

ghennings@btinternet.com

1949-1959 Royal Artillery, 1959-1985 REME, time spent at Royal Arsenal, MVEE at Chobham, HQ Andover, MVEE Christchurch

Interests Motor Racing, Archaeology, Castles, U3A

K. W. Parsons B.Sc, MIMechE, APM

22 Smalls Mead, West Green, Crawley, RH11 7DN

Keith & Diane 01293 514729 keith.parsons@btinternet.com

1961-1986 Maintenance manager, BR Southern Region, 1986-2004 Project manager

Bournemouth/Weymouth electrification, Channel Tunnel, Ticket GATIS scheme *Interests*

Railway modelling, walking, gardening

C. F. Brackstone BA (Open), MSc

16 Peregrine Road, Littlehampton, West Sussex, BN17 6DT

Chris & Joan 01903714663 chris@brackstone.me.uk

Marine engineer in Royal Navy, production engineer for NHS and private industry, 1980 IT and telecommunications support and training, independent consultant, IT testing and strategy for local government *Interests* Computers,

computer art, photography, guitar, picture framing, walking

Existing members should also check that their particulars and especially their email addresses as published in the handbook are correct. Please let the membership Secretary (Malcolm Hinds) know of any discrepancies.

Coffee Mornings at the Beach Hotel

Just to remind members that we meet with (or without) partners on the last Thursday of each month in the elegant surroundings of the Beach Hotel for coffee and biscuits.

The morning lasts from around 10.45 to 12.00 and it is of course possible to stay for lunch if you so wish.

Brief Detail – Talks, Outings and other activities Jan – Apr 2010

Talk:

Tuesday 13 April 14:30. Bermondsey Waste Incinerator, by Paul Stephenson C.Eng.

Chichester Room, Field Place, The Boulevard, Worthing, BN13 1NP

Paul was Project Director for the power generating waste incinerator constructed on a redundant greyhound racing track in urban South London where environmental issues had high precedence. He will describe the construction and discuss the economics of Waste-to-Energy plants, concluding with a video made by David Bellamy dealing with the environmental credentials of the plant.

Visit:

Wednesday 21 April 14.00. Arundel Wildlife and Wetlands Centre

Contact: Glyn Mathias 01903 859191, or email glyn.mathias@btinternet.com

Arundel Wetland Centre is set in ancient woodlands in the middle of the South Downs; adjacent to the River Arun; overlooked by the historic Arundel Castle skyline, the Centre also attracts many wild birds to the lakes, reed beds and woodland areas on the site. There are 26 hectares of naturalised landscapes and wetland habitats holding many hundreds of exotic wildfowl from around the world. The Centre offers beautiful walks around the reserve, a visitor centre with restaurant, gift shop and viewing gallery with panoramic windows and bird hides which offer plenty of opportunities to observe the wildlife.

Arundel Wetland Centre is a beautiful place to visit all year round with the landscape and wildlife changing constantly with the seasons. Spring is perfect for wild flowers and songbirds.

Free Safaris on quiet electric boats are offered every day, weather permitting. Gliding along the waterways of the new Wetlands Discovery area you can discover the joys of seeing wild flora and fauna in their natural environment.

The cost of the visit is £7.00 + £1.50 for the guide. There is good access for the disabled and for wheelchairs.

Unfortunately, at the present time they are not able to confirm the availability of a guide for the day / time we wish to visit. Can you please assume one will be provided and send a cheque with your reply slip for £8.50 per person. In the event that we cannot secure the services of a guide £1.50 per person will be refunded on the day.

An e-mail circulation plus other announcements will be made nearer the time to confirm a guide will or will not accompany us, so that anyone who has booked early will have the opportunity to cancel for a full refund.

The Arundel Wetland Centre is located at Mill Road, Arundel West Sussex BN18 9PB

Please complete and return the reply slip at the end of the Newsletter before the 10th April 2010

Outing

Tuesday, 4 May at 14.00. Outing to Leonardslee Lakes, Gardens and 'beyond the Doll's House

As you are probable aware, Leonardslee has been sold and will soon be closed to the public. (30th June 2010). This could therefore be your last chance to see these magnificent gardens in full bloom for the foreseeable future.

Our ticket for this outing will in fact be 'an all day ticket' so anyone wishing to go early to spend longer in the gardens will be able to do so. The gardens open at 9.30 am and close at 6.00 pm.

However, we will meet at the Temperate Greenhouse adjacent to the Car Park entrance at 2.00 pm. for an introductory talk by one of the Leonardslee staff, after which we will all be free to wander around the gardens and attractions at leisure.

There are a number of attractions at the gardens, which are all accessible with wheelchairs, including the restaurant, the magnificent dolls house, the Victorian car collection, the Alpine House, the temperate greenhouse, the rock gardens, the Wallaby enclosure, the sculptures nearby, and the gift shop.

The gardens themselves are quite extensive with long, reasonably level paths (suitable for some wheelchair access) along the top of the gardens with numerous paths leading down to the lakes and paths in the valley, (**not** suitable for wheelchair access). This time of year is recognised as one of the prime times to visit the gardens since it is expected that a significant number of the plants at the top of the garden will be in full bloom.

The Doll's House is claimed to be the world's most extensive miniature exhibitor. It depicts a display of life at the end of the 19th century, is a 1/12 scale market town and country estate, and has 140 foot of display frontage brought to life with working automata.

We have permission for disabled visitors to take their cars down to the restaurant level to make it easier to access the gardens – detail to be supplied with ticket.

The restaurant will be open from 10 am and will be serving lunch from mid-day until 2.30 pm. The meals, snacks, drinks etc are all reasonable priced.

The price for our group ticket will be **£7.00per person**.

If you would like to attend, please complete the reply slip at the end of the newsletter

Directions.

The gardens are situated at Lower Beeding on the A281, 5 miles southeast of Horsham, or 3 miles north of Cowfold.
Address Post Code RH13 6PP

Outing

Friday, 21 May at 14.00. Outing to Herstmonceux Castle and Gardens

We will be given a guided tour of the castle (wheelchair access limited) followed by access to the walled garden and grounds.

The café will re-open after Easter and serves light meals and afternoon tea. Please indicate on the application form if you wish to use the café to give the staff advance notice.

A list of members attending will be left at the ticket kiosk from 1.00 pm for those wishing to enter the grounds earlier than the 2.00 pm.

Do not use the post-code with your Sat Nav it will take you to the wrong entrance.

The cost will be **£6.00 per person**

Contact and Reply slips at the end of this newsletter to Brian Buckroyd,

Outing

Wednesday, 23 June 14.00. Outing to Amberley Working Museum

Amberley Museum is a 36-acre open-air site dedicated to the industrial heritage of the southeast. Aided by volunteers, the Museum contains a wide range of exhibits, from transport-based collections, such as the Southdown bus collection and the village garage, to industry-based collections, such as the Print Workshop and Wheelwrights. The Museum is also home to a number of resident craftspeople, who work to traditional methods.

The Museum is situated in West Sussex on the B2139, mid-way between Arundel and Storrington, adjacent to Amberley Railway Station. Free coach and car parking is provided for Museum visitors.

The cost will be **£8-30 per person**

If you would like to attend, please complete the reply slip at the end of the newsletter

Visit

Tuesday, 6 July 14.00 Visit to Hardham Water Treatment Plant

A visit has been organised to the Southern Water (clean) water treatment plant and control room at Hardham.

If you would like to attend, please complete the reply slip at the end of the newsletter

Contact Glyn Mathias, (Telephone 01903 859191). email glyn.mathias@btinternet.com

Outing

Wednesday, 28 July at 14.00. Outing to Guildford Cathedral

The Diocese of Guildford was created in 1927. Edward Maude won an Architectural competition for the Cathedral Design in 1930. The foundation stone was laid in 1936, and the last pile was driven in the presence of Queen Mary in 1937. Building work was suspended for the duration of WW1 and thereafter. In 1952 work was restarted and the Cathedral was consecrated in the presence of the Queen on 17 May 1961.

A short talk by the Administrator about running a Cathedral will be followed by a Guided tour [approx 10 visitors/guide @ £3/head.]

A Refectory, on site, offers hot and cold meals or refreshments.

There is plenty of free car parking available.

Address: Guildford Cathedral, Stag Hill, Guildford GU2 7UP. Directions can be supplied on request.

Please complete the reply slip at the end of this newsletter if you wish to attend.

Contact: John Pound 01903 531153, or johnpound@AOL.com

Outing

SOUTHERN RETIRED CHARTERED ENGINEERS SRCE

In the last issue of our newsletter we published a list of planned activities for the SRCE which might be of interest to RCEA Members. Below is an example of one of their trips for the current year. We understand there are still spaces available on this trip should any of our members be interested. For current information on the space availability on this or their other excursions please contact them direct. Roger R Ball rbconsult@clara.net

Example:

COACH EXCURSION TO THE LONDON 2012 OLYMPIC SITES - THURSDAY 15 JULY 2010 Enjoy a moment in history and see the tremendous scale of developments that are transforming a neglected area of

London's East End into a series of world class venues for the 2012 Olympic Games. The trip includes a guided tour and a roast beef or vegetarian lunch. Members can join the coach at either Fareham, Liphook or Guildford.

Programme

0800 First pick-up point is at a car park approx 100yds to the north of Junction 11 of M27 Fareham.

The car parking charge is £2 per day.

0845 Second pick-up point Liphook. Local Roman Catholic Church car park.

0930 Final pick-up point., Guildford. Sutherland Memorial Park, Burpham (opposite Sainsbury's). 1100 Tour guide joins coach at Stratford for morning coffee and biscuits in pub.

After coffee, drive over to Pudding Mill and Fish island in the Lower Lea Valley and a viewing point for the Olympic Park. The main structure of the stadium is due for completion early next year. Nearby, the aquatic centre is taking shape. Back to Stratford for lunch. After lunch there is a tour through the Royal Docks seeing the Sir Steve Redgrave Bridge and Excel (venue for Judo, Boxing etc.) also views of the old Millenium Dome. Cross the river to Woolwich Barracks where some of the shooting events will be held. Stop at Gun Cafe Woolwich for afternoon tea. 1715 Return to Fareham via Guildford and Liphook.

Cost

£37 per person which includes lunch Places are strictly limited to 33. A waiting list will operate in case of cancellations.

Booking Form for coach excursion to the London 2012 Olympics Site - Thursday 15 July 2010
Please reserve for me places at £37 each. I enclose cheque for the sum of £.....
I will requireNo. roast beef lunchesNo. vegetarian lunches
I would like to join the coach at Fareham / Liphook / Guildford (<i>please delete as appropriate</i>)
Please send your booking and cheque (payable to SRCE) to Sandra Hill, 5 Oakdown Road, Stubbington, Hants. PO14 2QR. If you require a receipt or acknowledgement of your booking please enclose a stamped, addressed, envelope

Coffee Mornings

Thursday 24 June and Thursday 29 July.

Please note these two meetings will be held at the usual time of 10.30 a.m. but at the Swallows Return Restaurant, (off the A259, Titnor Lane, the opposite corner to Northbrook College) instead of at the Beach Hotel.

REPORTS

Talk:

Tuesday 12 January 14:30. CERN and the Large Hadron Collider by Steve Oliver RCEA. The detail of this talk will be published on our web-site since the content is difficult to précis.

See www.rceasussex.org.uk

Visit

Tuesday, 19 January 14.00. Shoreham Power Station

Fifteen members made this visit and were welcomed by the production Manager.

The station has an output of 400 MW and was commissioned in 2003 to replace Brighton B Power Station, which closed in 1987.

After an interesting presentation of the history and technical details of this combined cycle plant, we visited the turbine hall and had a detailed discussion with the production Team in the Control Room.

Brian Buckroyd

Talk:

Tuesday 9 February 14:30. The Future of Coal Fired Power Stations.

Dr David Smith of Doosan Babcock presented scenarios for meeting CO₂ emissions reduction targets from electrical power generation up to 2050.

A study by EPRI -(The Electric Power Research Institute, an independent, non-profit company performing research, development and demonstration in the electricity sector for the benefit of the public) illustrated the complex interplay between technology, cost of electricity, CO₂ emission and security of supply. Increasing the amount of power derived from renewable energies such as wind turbines and wave/tide generators is desirable, but in itself is not a panacea for either CO₂ reduction or electricity demand. The UK is becoming increasingly dependent on imported gas in the short term, which may become unreliable in supply and politically volatile.

New Nuclear power is desired, but the time needed to bring this to fruition is a limitation.

Coal fired power generation continues to have an important part to play in a low carbon and secure energy mix. Much development is being pursued to enable more efficient firing of coal-fired boilers via adoption of supercritical steam parameters. Carbon Capture and Storage technologies are being established which would enable near zero emissions from coal-fired generation.

The key to meeting CO₂ reductions whilst maintaining security of supply and affordable power is a diversified energy mix together with demand reduction via efficiency savings. Clean coal with Carbon Capture and Storage is an important technology in this arena.

Tony Tomkins

Visit:

Tuesday 23 February 10.30 & 14.00. Southern Water, Waste Water Treatment Plant, Ford

Opened in 1999, the Ford wastewater treatment works is part of Southern Water's Bognor Regis and Littlehampton wastewater scheme, which has been introduced to eliminate the daily release of waste into the sea. Part of a multi-billion pound environmental programme by Southern Water, the Ford site is one of six new treatment works built along the South Coast to meet EEC regulations.

The £53 million scheme enables wastewater from Littlehampton, Bognor Regis and the surrounding areas to be pumped through 16km of underground pipelines and to undergo a series of treatment processes before the cleaned wastewater is released back into the environment through a 3.3km outfall. It treats up to 62 million litres of wastewater from more than 130,000 people every day.

The wastewater treatment process involves a number of procedures resulting in the production of a valuable, organic fertiliser. When the wastewater arrives at the site it flows through 6mm screens to remove debris and then through a grit trap, known as a detritor, to remove grit and sand. Following sand and grit removal the wastewater is piped into one of three settlements tanks, each holding 2000 tonnes; where between 60 and 70% of the remaining solid waste is settled out. The settled wastewater then passes to aeration tanks where it is mixed with a biologically active sludge that starts a microbiological action to reduce organic pollutants remaining in the wastewater. Once this process is completed, the solid material is removed from the bottom of the tank and transferred to the sludge-recycling centre.

The first stage of the recycling process involves blending the different sludge's to produce a homogenous mixture of water and solid material. Polymers are added to thicken the mixture and this is fed into one of three large digester tanks where it remains for up to 14 days. During this time a temperature of 35C is maintained in the digester, allowing bacteria

within the waste to break down organic matter to water, carbon dioxide and methane gas. The methane gas is stored on site in a gasholder.

A proportion of the gas is used to provide the necessary heat to maintain the temperature of the digestion process with the remainder being used to heat the dryer.

The second stage of digestion cools the material and feeds it into a centrifuge dewatering plant, which separates the solid material from the water and creates a "cake". The "cake" is fed into a huge drying machine, which heats the "cake" to temperatures of 90C. This evaporates the remaining water to produce virtually odour-free, dry granules that are then sold as fertiliser to customers for €10 per tonne. This is a major financial saving for Southern Water, which used to have to transport solids to landfill at a cost of GBP 1000 a tonne.

The picture below shows the first party who visited the site on the morning of 23 February. A second party visited in the afternoon. The methane gasholder, in the shape of a sphere, can be seen in the background.



Talk:

Tuesday 9 March 14:30 Blue Phoenix 500- an Engineer's dilemma by Ken Wheeler RCEA.

A sequel to the talk on Bluebird K7 given a few years ago this presentation dealt with the various factors effecting the design of a water speed contender with a design point speed of 500 mph; that is 223.6 m/s. (Mach 0.65) The current record is held by Spirit of Australia at around 317 mph and a quantum leap is thought necessary to justify the expenditure of around £2 million which would be needed for such a venture with the considerable expenditure on CFD (computational fluid dynamics) which is par for the course for such hazardous adventures these days. At 500mph there is little point in spending more to achieve an even higher speed due to the onset of transonic effects as a supersonic shock wave ahead of a craft travelling at Mach 1.0 would dig a trench in the water with attendant consequences. Initially all depends on the availability of a suitable engine and several alternative radical formats were examined using such engines as the Viper and the Adour

In the end a prescriptive design is based on K7 but with four shoes, a sleeker aerodynamic hull, a more forward engine position with pitch stability enforced by the aft butterfly tail assembly. In this manner the centre of mass (CM) is located forward of the pitching centre of pressure (CP) giving weather vane static stability with the tailplane also providing powerful damping forces aiding dynamic stability. This is completely contrary to previous craft such as K7 when aerodynamic aids were disallowed. Here, pitch stability was attained by countering the aerodynamic pitching moment (taken for convenience about the transom) by the weight moment about the same point. With this arrangement with the CP also forward of the CM such a craft is only statically stable in pitch within a narrow range determined by the craft's angle of attack to the air freestream.

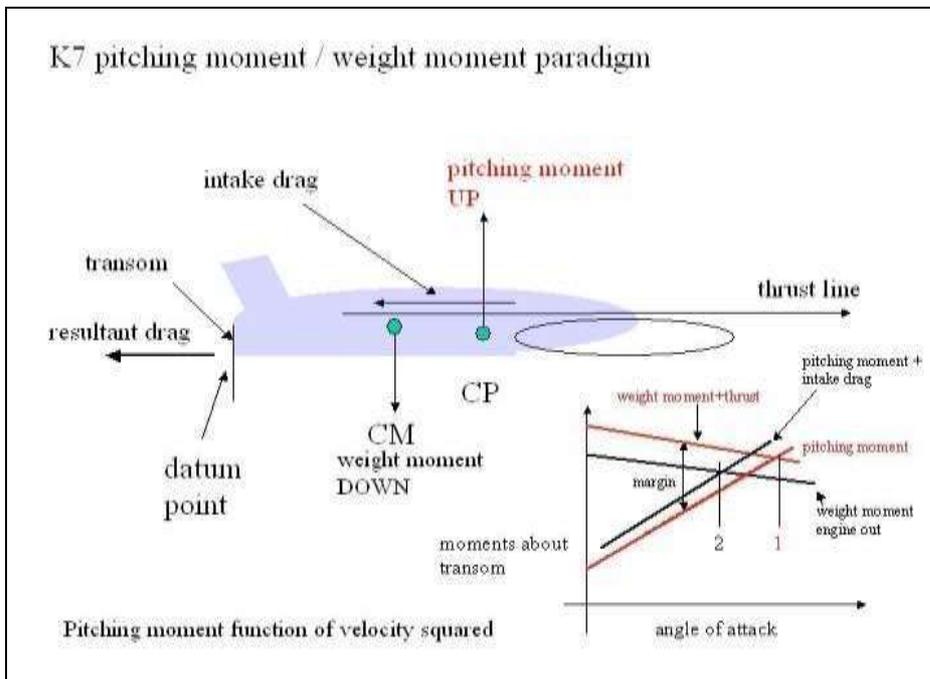
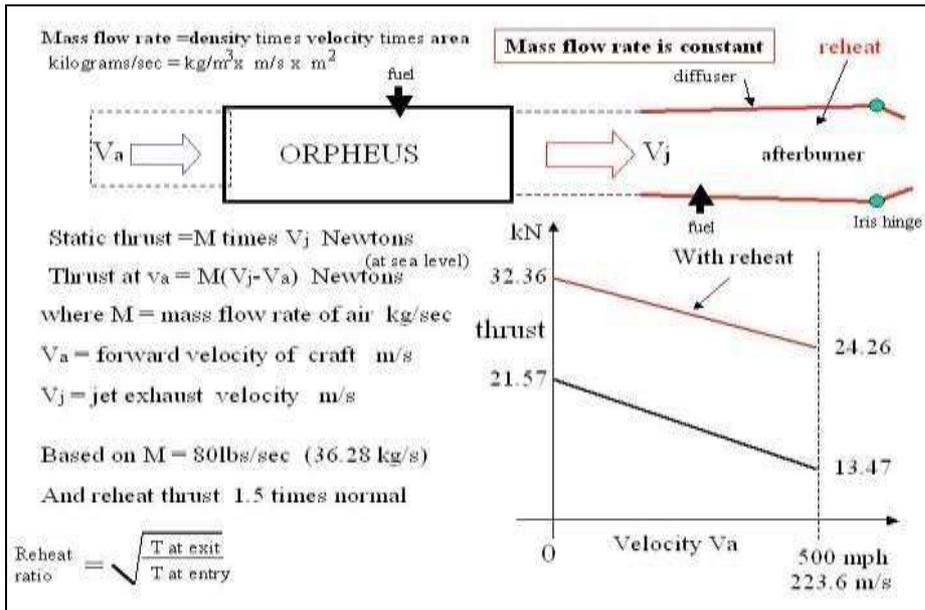
The engine selected was the Orpheus as on K7 with the available thrust augmented by fitting a limited life afterburner. The augmentation ratio required is 1.5. The Orpheus was picked because it is a basic turbojet with good thrust /weight/size ratio it will tolerate abuse and unlike modern bypass engines requires no substantial logistic support in the field. Another factor to be taken into account when calculating the aerodynamic drag (values normally ignored below a speed of Mach 0.3) is the air density compression, which increases to 23% above ambient at Mach 0.65.

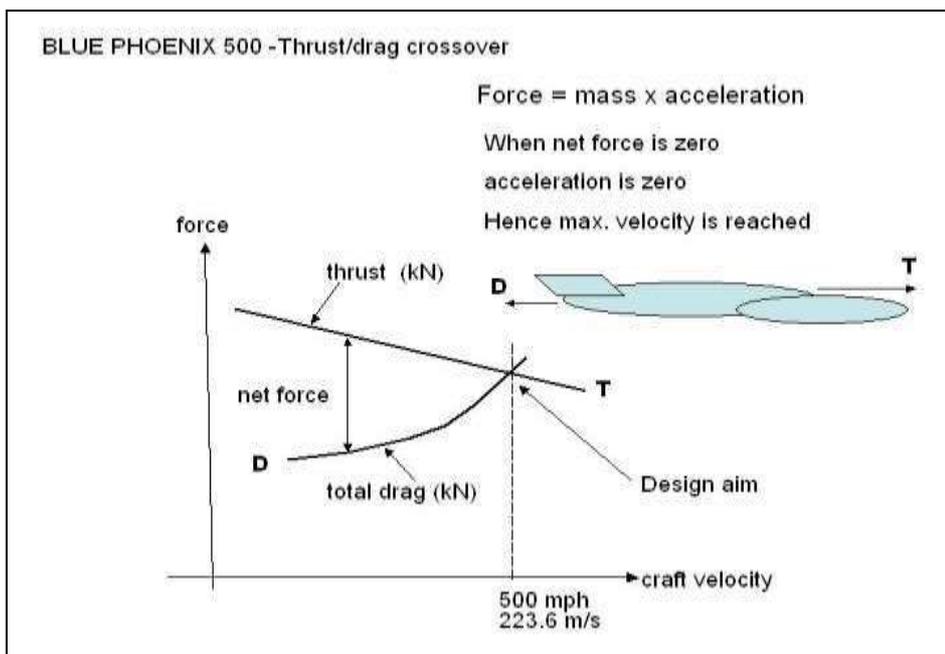
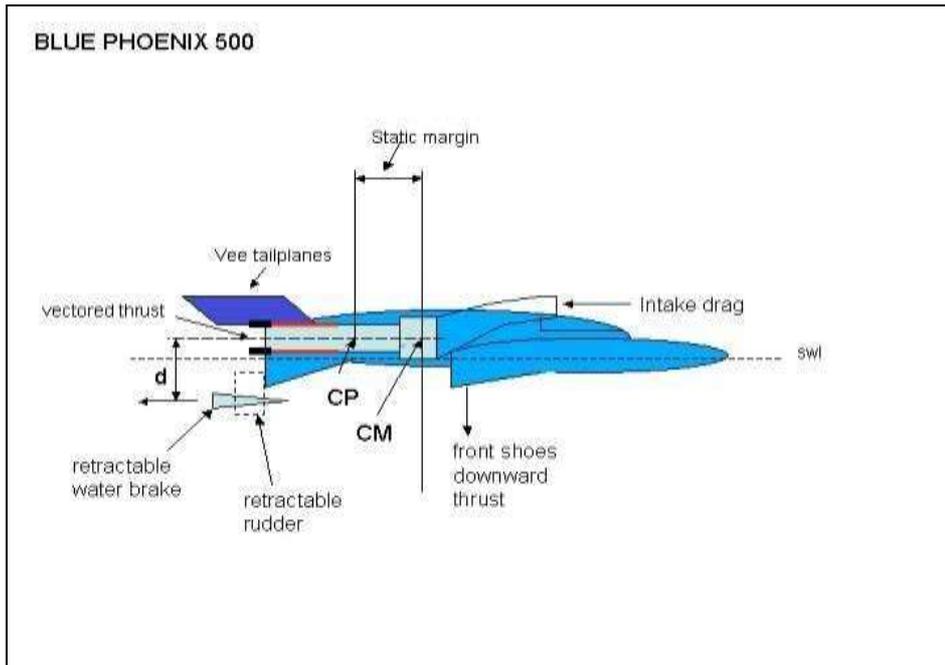
Maximum velocity is attained when the total drag intersects the thrust curve at a specific velocity (in this case the design point speed of 223.6m/s or 500 mph) and if the craft had no rudder fitted it just makes it. The immersed rudder is a principle source of drag and can absorb up to 2000hp at 500 mph. A possible solution is to use a retractable rudder at low speeds and fit vectored thrust to the afterburner exhaust

With a speed through the measured kilometre of 223.6 m/s consideration has to be given to the run out distance, which could be in excess of 10 miles after shutting down the engine and could result in beaching the craft. Additionally, the driver would like some sense of control over the craft's deceleration. To this end a retractable waterbrake is proposed of wedge cross-section immersed across and below the transom. This theoretically will reduce the enormous turbulence caused by the circular rod design used on K7 as a waterbrake.

Ken Wheeler Member

Slides:





Spring Lunch

Thursday 18th March, 12.00 for 12.30 pm Northbrook College

38 guests attended the annual Northbrook lunch. It was considered to be very successful by those commenting and we look forward to seeing more members attending next year.

Visit:

Guildford, Tuesday 23 March 14.00 Visit to Alexander Dennis

Alexander Dennis Limited (ADL) is the UK's leading bus and coach manufacturer, employing around 2,000 people at facilities in the UK, continental Asia and North America.

The fastest growing bus and coachbuilder in Western Europe, ADL encompasses three famous and successful marques – Alexander, Dennis and Plaxton.

April 2010

ADL produces a wide range of innovative and fuel efficient, low floor single and double deck buses, plus a full portfolio of coaches, welfare and mini vehicles.

ADL products offer real operator, passenger and environment benefits, all backed by an unswerving commitment to worldclass customer support.

The ADL website contains a wealth of information on the company and its products.

The visit started with a talk by Andy Boulton, the Technical Sales Manager. After which the group was split into three parties for a tour of the works.

We also had 19 visitors from the Surrey branch of the IET. This meant that the whole group numbered 45 in total.

A useful paper on Hybrid bus technology, written by Andy Boulton, can be obtained from Colin Pilling. It is in electronic format.

Colin Piling

April 2010

REMINDER:

RCEA members are covered by a Members' Club Protection Policy whilst engaged in Association activities. This cover does not extend to non – members and guests.

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REPLY SLIP 1:

To: Glyn Mathias, 16 Tamarisk Way, East Preston, Littlehampton, BN16 2TL, (Telephone 01903 859191). email glyn.mathias@btinternet.com

I/We wish to attend the Visit to the Arundel Wildlife and Wetlands Centre, 2.00 pm on Wednesday the 21st April 2010.

Full name:.....(Block capitals)

Address.....
.....
.....

Phone No..... Number of persons.....

Please return this reply slip by 10th April 2010 with a cheque made payable to RCEA for £.....(£8.50 per person)

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REPLY SLIP 2

**To Ray Wort, Sylvan Glen, Longlands, Worthing, BN14 9NS
(Telephone 01903 217747, e-mail raywort@btinternet.com)**

I/We wish to attend the Outing to Leonardslee Lakes, Gardens and 'beyond the Doll's House on Tuesday, 4th May at 2.00 pm

Full Name(Block capitals) Address
.....
.....

Phone No..... Number of Persons.....

I enclose a cheque made payable to RCEA for £.....(£7.00 per person)

Applications by 29th April 2010

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REPLY SLIP 3

**To: Brian Buckroyd, 6 Fosters Close, East Preston, BN16 2TL
Telephone 01903 784926**

I/We wish to attend the Outing to Herstmonceux Castle & Gardens on Friday, 21st May at 2.00 pm

Full Name.....(Block capitals) Address.....

.....
.....

Café lunch YES / NO

Phone No..... Number of Persons.....

I enclose a cheque made payable to RCEA for £.....(£6.50 per person) Applications by 8th May 2010

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April 2010

REPLY SLIP 4:

**To Randall Kier, 16, Shirley Close, Rustington, West Sussex. BN16 2EG
Telephone 01903 785952**

I/We wish to attend the Outing to Amberley Working Museum on Wednesday, 23rd June at 2.00 pm.

Full name:.....(Block capitals)
Address.....
.....
.....
Phone No..... Number of Persons.....

I enclose a cheque made payable to RCEA for £.....(£8.30 per person)

Please return this reply slip by 1st June 2010

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REPLY SLIP 5:

**To: Glyn Mathias, 16 Tamarisk Way, East Preston, Littlehampton, BN16 2TL, (Telephone 01903 859191).
email glyn.mathias@btinternet.com**

I/We wish to attend the Visit to Hardham Water Treatment Plant on Tuesday, 6th July at 2.00pm

Full name:.....(Block capitals)
Address.....
.....
.....
Phone No..... Name of Guest.....

Applications please by 14th June 2010

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REPLY SLIP 6:

To John Pound, Tranquility, 47 Hawthorn Road, Worthing, BN14 9LT (Telephone 01903 531153).

I/We wish to attend the Outing to Guilford Cathedral on Wednesday, 28 July at 2.00 pm

Full name:.....(Block capitals)

Address.....

.....

.....

Phone No..... Number of persons.....

I enclose a cheque made payable to RCEA for **£.....(£3.00 per person)**

Applications please by 1st July 2010

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April 2010