

# **NAPIER ON LAND**

The surge of interest within mainland Europe during the 1890's in the internal combustion engine for land transport inspired a pair of British cycling enthusiasts, Montague Napier and Selwyn Francis Edge, to enter the competitive field of motor engineering in 1899. Young precision engineer and designer as he was Napier's first 2-cylinder petrol car was highly successful in the UK "Thousand Mile Trial" of 1900. This led to more powerful cars being built from 1901 onwards such as the 6 litre 4-cylinder Napier car driven by Edge to win the International "Gordon Bennett" Trophy for England in 1902. Napier cars then went on to succeed in the "TT" and taking the world Land Speed Record of 104.6 mph at Daytona in 1905.

The opening of the Brooklands Motorcourse in 1907 gave S F Edge the ideal opportunity to show the power and endurance of the Napier 6-cylinder engine. This he did by creating a 24 hour record of 1,581 miles at 66 mph and which lasted 18 years. A week later the first race at Brooklands was won by Napier works driver H C Tryon, the first of many wins there. Finally the Brooklands outer circuit lap record was taken by John Cobb in his 500 bhp Napier Railton racing car in 1935 at 143.4 mph, a record which will always stand.

Between 1927 and 1932 Sir Henry Segrave and Sir Malcolm Campbell both used "Napier Lion" engines to power their world land speed record cars. Campbell's "Bluebird" reached 254 mph using the supercharged "Lion VIID" while Cobb's world land speed record of 394 mph in 1947 used the power of a pair of these engines giving the "Railton-Mobil Special" 2,800 bhp. Meanwhile in 1931 Napier designed a 3-wheeled lorry which they later sold to Scammels to become their famous "Scarab" mechanical horse.

Two Napier engined petrol-electric railcars were built for the North Eastern Railway in 1903. This was a precursor to the famous 3,300 hp English Electric Napier "DELTAIC" prototype diesel-electric locomotive of 1955 followed by an order for 10 single 9-cylinder 1,100hp turbocharged "Baby Deltics" and a fleet of 22 twin 18-cylinder Deltic engined Class 55 locomotives. These pioneering locomotives operated the first "Inter City" 100 mph services between Kings Cross and Edinburgh for 20 years until replaced by Napier turbocharged Paxman diesel powered Inter City 125 train sets.

# **NAPIER ON SEA**

The advent of the large Napier car engine in the UK was also used to further the sport of international powerboat racing. S F Edge applied his competitive spirit to the water using a series of "Napier" named boats to win trophies for Great Britain around our shores, in Europe and also the USA. In 1905 a 4-cylinder Napier marine motor was produced and demonstrated in sizes between 20 and 75 bhp both singly and in multiple in installations of up to 300 bhp.

In 1905 by Edge had gained 18 first place awards for D Napier & Son engined boats including "Napier II" and "Napier Major". The "Napier Major", fitted with a 20 hp engine, covered 219 miles in 10 hours in the 1905 reliability trials, and gained the best all-British boat award in her class. By contrast the Yarrow built "Napier II" racer, with a pair of 72 bhp motors won the British International Cup (Harmsworth Trophy), scored 14 other first places, and set the world water mile record at 29.9 mph.

Naval interest in the high-speed launch was aroused in 1906 when a 60 foot Yarrow-Napier Motor Torpedo Boat was tested at 25.5 knots. Fitted with five 75 bhp Napier engines this was the forerunner of many such future naval craft.

The supercharged Napier "Lion" aero engine was chosen by Hubert Scott-Paine for his racing hydroplane boat "Miss Britain III" taking the world water mile record to over 100 mph in 1930. For the 1930's armed services Scott-Paine designed the British Power Boat Co. built fast patrol boats powered by triple 500 bhp "Sealion" engines capable of 35 knots laden. These light MTBs were built for the Royal Navy along with fast air-sea rescue launches for the RAF. Both provided vital coastal support during WW2 and into the 1950's.

It was Napier's own marine "Deltic" two-stroke diesel engines, designed before 1950, that provided power for the Navy's next generation of FPB's. The Saunders-Roe "Dark" class for the RN followed by "Ton" Class minesweepers and later the 47 knot Norwegian Navy "Nasty" class MTB used worldwide and fitted with 2 turbocharged "Deltics" of 3,100 hp. Today a few Hunt Class MCMV are still fitted with 9 cylinder "Deltic" power plants designed 70 years ago.

# **NAPIER IN THE AIR**

Despite a Napier petrol-motor dirigible balloon design of 1902, it was 1918 before Napier seriously entered the aero engine market with their advanced 12 cylinder "Lion II" broad arrow engine of 450 bhp. This aluminium alloy, water cooled, double overhead camshaft engine with 4 valves per 2 litre cylinder, was developed over a 20 year period, during which it powered over 150 types of civil and military aircraft worldwide. For example the Fairey III D and F aircraft types served the RAF and RN squadrons for bombing, torpedo and reconnaissance duties in between 1920 and 1935. Squadrons of Vickers "Virginia, Vernon and Victoria" heavy aircraft provided military transport in many parts of the globe.

After winning the Schneider Trophy for Great Britain in 1922, in a 500 bhp Supermarine "Sealion" flying boat, Napier went on to develop the "Lion" to give 900 bhp output for the 1927 Schneider race won by a Supermarine "S5" seaplane at 281.6 mph. When supercharged to give 1,350 bhp the aero "Lion" briefly took the world air-speed record in 1929 at 336mph with the lovely Gloster VI "Golden Arrow" floatplane.

Always innovative in its aero engine designs Napiers produced a series of three "H" configured 4-stroke valved engines from 1930. Designed by Major Frank Halford the 16-cylinder "Rapiet" of 390 bhp had push rod operated overhead valves, the 24-cylinder "Dagger" of 1,000 bhp had double overhead cam valves, while the Napier designed 24-cylinder water cooled "Sabre" developing up to 3,000 bhp had worm-driven sleeve valves. This engine powered the famous "Typhoon" and "Tempest" fighter bombers of the WW2 D-Day offensive as well as in defence against the "V1" flying bombs at home.

After WW2 Napier took the lead in powering gas-turbine helicopters. Two free-turbine "Gazelle" engines were fitted in the RAF Bristol "Belvedere" twin rotor aircraft and singly in the Westland "Wessex" series for the RN anti submarine and air-sea rescue squadrons. Two special 3,500 bhp "Eland" turbo prop engines powered the 44 seat Fairey "Rotodyne" which took the helicopter speed record in 1957. The same year Napier "Scorpion" liquid-fuel rocket boosters were fitted in "Canberra" bomber WK163 which gained the world's altitude record at 70,310 feet.

**WEBSITE: [www.npht.org](http://www.npht.org)**

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# NAPIER TODAY

Napier products are still in regular use today. Many industries including shipping, rail traction, power generation, etc operate diesel engines fitted with Napier equipment. Napier Turbochargers Ltd in Lincoln still designs and produces a wide range of industrial turbomachinery boosting the power of many medium to high powered diesel engines around the world. In Luton GKN Transparency Systems manufactures a development of the original Napier Spraymat electro thermal de-icing system for the aero industry.

In addition to these commercial activities a wide variety of Napier products are displayed by museums and institutions around the world. Veteran car enthusiasts own and run fine examples of the Napier marque, and railway locomotives powered by Napier Deltic engines also operate in preservation.

Whilst there are currently no Napier powered aircraft flying today many can be viewed in museums, several of which benefit from the loan of Napier aero engines restored by members of this Trust. Other Napier products such as coin weighing machines may also be viewed.

The Napier Power Heritage Trust was formed in 1993 "to enhance the heritage of D. Napier & Son Ltd". It currently has some 150 former Napier employees amongst its varied membership. These "Napierians" have collected a technical and historical archive; much of this original source material can be viewed at the Institution of Mechanical Engineers in Westminster. The NPHT has also published several books on subjects including Napier's two centuries of British precision and power engineering since 1808, and the latest which tells the story of the Napier Lion broad arrow engine. An oral archive is also being compiled and other research projects are underway.

The Trust website ([www.npht.org](http://www.npht.org)) covers the Napier Company, its employees, the products and many of their applications. It is also hoped that it will bring ex-Employees back into contact as well as encourage anyone with an interest in Engineering Heritage to join the Trust and help the keep the Napier name alive. The Trust attends a variety of events and exhibitions around the UK every year and is available to give talks on Napier related subjects. The Trust also publishes Napier Heritage News, which is sent to all members on a quarterly basis.



**ENGINEERING  
EXCELLENCE  
ON  
LAND, SEA  
AND IN THE AIR**

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