GMES NEWS

February 2026

The newsletter of Guildford Model Engineering Society

Chairman's Chatter

Hello everybody.

Well, Christmas and the New Year came and went. I hope you had a good one. The three month *quiet* period, where we catch up on maintenance jobs and new project work, is upon us. Metal sections have been delivered to enable progression of the new signalling system and more fencing to be constructed around the new gates to the upper field.

Work has started on preliminary jobs prior to the construction of the new traverser which will enable much safer and efficient transfer of locos from car to steaming bays.

The signalling team has been doing a sterling job of maintaining the current system and it is noticeably more robust and less prone to failing on open afternoons. This, of course, is in addition to installing the new system.

As usual, a big thank you to those who turn up and give their time and effort to the society. It is very much appreciated.

Our resident mole seems to have raised its tunnelling skills to a new level and has been putting up some large hills by the ticket office, which gave the children at the December open day and new game to play, stomping them back into the ground. The foxes have started gnawing through the blue nylon fencing rope again, so we are constantly reminded that our site also serves as a refuge for wildlife.

In my last chat I mentioned that I had read that *Camden Steam Services* were closing at the end of 2025. I'm happy to report this was wrong and that they still seem to be very much in business.

Safeguarding is a subject that has been exercising the minds of the CoM over the last few months.

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Dates for Your Diaries

Bits & Pieces evening (19.30)	**18th March**
Public Running Afternoon (14.00 to 17.00)	**22nd March**
Annual General Meeting (19.30)	**25th March**
Public Running Day (School holiday) (14.00 to 17.00)	**9th April**
Members' Running Day	**12th April**
Small Engine Group Meeting (14.00 onwards)	**12th April**
Bits & Pieces evening (19.30)	**15th April**
Public Running Afternoon (14.00 to 17.00)	**19th April**
Members' Running Day	**3rd May**
Public Running Afternoon (14.00 to 17.00)	**17th May**
Bits & Pieces evening (19.30)	**20h April**
Gala Weekend	**4th/5th July**
Next Newsletter Closing Date: *May edition*	**2nd April**

Chairman's Chatter (concluded)

It has become increasing imperative that the Society conforms to the law and that younger members are kept safe on site. Please read the article in this newsletter for a more detailed explanation and the responsibilities that the Society must undertake.

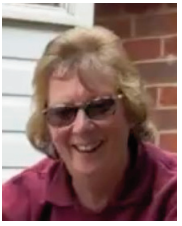
And finally, it was with a very sad heart that I heard the news that Chris Rushton had passed away. Chris was a stalwart of the midweek maintenance team and was willing to turn his hand to anything that needed doing.

He also constructed a traction engine in an impressively short period of time which he ran round the field on open afternoons giving rides to the public. My seven-year-old granddaughter was fascinated by the motion and valve gear on this and my abiding memory of Chris is of him patiently nodding his head and listening to my Granddaughter asking endless questions whilst he waited for the steam pressure to rise and to start off round the field again. His obituary is included in this newsletter.

Matthew Clark ***Chairman*** ❖

A New GMES Role

Barbara Dix



I am sure that all the GMES membership would want their hobby and passion held over many years to continue well into the future.

In order to achieve this, new members need to be encouraged to learn and experience the excitement and enjoyment which is an integral part of the club and its activities. Whilst older members are a joy to welcome, the addition of junior members is what is most required.

To that end, the Council of Management has agreed that this aspect of recruitment be focused on and has therefore begun to put into place, measures which would allow this to happen. The club wants to prepare for juniors in the best possible way; and to ensure the safety and enjoyment of any who may come along to enjoy anything the club has to offer.

Apart from seeking out those amongst us who have the appropriate certification to work with youngsters (although this does not exclude anyone who has no such qualifications), it will comply with current legislation. As with anything organised, the smooth running of this requires someone to coordinate the process.

I have been privileged to be appointed by the Council of Management to undertake this role as Designated Safeguarding Lead. My aim in this role will be to ensure that, on any occasion youngsters are on site for whatever reason, there will be a warm, welcoming and safe environment for them to enjoy themselves. I thank the council for considering me worthy of this role and look forward to working with everyone. ❖

Guildford Model Engineering Society AGM 25th March 2026

Our AGM will take place in the GMES Clubhouse at 7:30pm on **Wednesday 25th March 2026**.

We also plan to provide a Zoom video connection for those unable to come to the meeting in person. Postal voting will also be available to those who are unable to attend and do not have the Internet.

The AGM Document Pack comprising the Calling Notice, Agenda, 2025 Accounts Summary, and 2025 AGM draft minutes are being distributed by e-mail, and with this GMES Newsletter for those who do not have e-mail. These documents are available on the Documents page in the Members Section of the GMES website.

As usual with the AGM, there will be a number of statutory matters that need your votes, and we propose to achieve this by a combination of methods:

Voting in person at the meeting

Polling Facility within Zoom

Polling Facility in the Notices e-mail group, an e-mail will be sent out prior to the meeting with the polling options

Paper voting slip enclosed with this newsletter.

For any questions please contact Bryan Finch or Chris Phillips if it is a financial question. ❖

Editorial

Peter Shakespeare

A belated happy New Year and welcome to the first edition of *GMES News* for 2026.

Firstly, I would like to thank everyone who contributed to this edition. I hope you will agree there is some excellent engineering content.

On the subject of engineering, I whiled away several hours over the Christmas period watching Allen Millyard videos on *You Tube*.

For those of you who don't know of him; Allen Millyard is a British engineer renowned for building extraordinary, hand-crafted motorcycles in his *TARDIS*-like garden workshop.

A former nuclear engineer, living near Reading, he applies meticulous engineering principles to create motorcycles that seem impossible yet run flawlessly. Millyard is famous for multi-cylinder conversions, including V-fours made from single-cylinder engines, as well as his iconic V12 Kawasaki, V10 Viper engined bike – which holds the pillion world speed record at over 173mph - and his 5-litre V-twin *Flying Millyard* made from two cylinders of a radial aero engine.

His work blends mechanical ingenuity, precision machining, incredible manual metal working skills.

He builds his amazing engines using tools all too familiar to us model engineers relying heavily on his hacksaw, files, Colchester Bantam lathe and old milling machine. TIG welding enables him to join complex aluminium crankcases together and he builds up crankshafts for six-cylinder machines using his lathe and a small hydraulic press.

His *How it's made* videos contain some great explanations and tips, so are definitely worth a watch.

editor@gmes.org.uk ❖

Safeguarding at GMES

Now Barbara Dix has been appointed as the GMES *Safeguarding Officer,* to help her in her new task, we wish to build up a list of GMES members who hold valid DBS certificates in whatever capacity who could act as a designated point of contact on occasions when she is not available.

The DBS Update Service mentioned below enables a person's DBS certification to be visible to other organisations so that individuals only need to have one DBS check no matter how many organisations they are involved with. However, subscribing to the Update Service needs to be done within 14 days of DBS certification, or re-certification.

Your co-operation please!

At the January 2026 CoM meeting it was decided to formalise procedures and best practice for the inclusion of Junior Members to the club. To this end it would be helpful to be aware of any of the members who currently hold a valid DBS certificate. Whilst this does not imply or include any safeguarding training, it would nevertheless prove useful information for the club to have.

Therefore, members are invited to submit their details as soon as possible so that appropriate measures can be put into place to ensure the most enjoyable experience for Junior Members in which to thrive.

Please respond with the following information (which will be held in confidence):

A Do you hold a current DBS certificate (if so, for which organisation), and date of issue?

B Are you a subscriber to the *Update Service* for DBS?

C Have you ever received Safeguarding training?

D Is your safeguarding training is current, and date last undertaken? ❖

Treasurer's Doodlings — Chris Phillips

Open Days

While I was finalising the year end accounts, it is clear that our open days are now our major source of regular income. The graph below illustrates the significant growth that we have seen over recent years and the massive hole that was caused by the *Covid Lockdown*:

The profit we actually realise is that after the *Cost of Sale* (Cakes, Tea, Coffee, Ice Creams & so on) that HMRC allow us to deduct from our income to produce a *Trading Profit* figure. This Trading profit is potentially taxable. However, in recent years, we have successfully persuaded HMRC that we have a lot of other costs (coal, track & loco repairs for instance) so we end up with a trading loss for the year - so no Corporation tax!

One of the reasons for the increase is the increasing turnout of the public who enjoy the afternoon entertainment and catering that we offer.

Thank you all those who turn out to run trains, operate boats and garden railways to keep people entertained. Without you, our subs would be a lot higher.

Subscriptions

Now that the Festive Season is behind us, can I respectfully remind members that subscriptions were due on the 1st of January.

The 2026 subscription is £60 for *Senior* members, £30.00 for *Distant* members (over 60 miles away), £15.00 for *Associate* members, and £5 for *Students & Juniors*.

Subscription Payment

There are several ways of subscription payments:

Cash: Please try to catch The Membership Secretary – David Hughes, Bryan Finch or myself at GMES on a Thursday or at one of our events.

Cheque: This is my least favourite payment method! We now get charged a flat 40p plus 60p value related for each subs cheque we pay into the account and someone (thank you Sue) has to go into town to pay it in.

Bank Transfer: The GMES bank details are:-

- Payee: *Guildford Model Engineering Society Ltd.* (The full name is required by some banks to prevent payments to the wrong account)
- Bank Sort Code: 40-47-08
- Account No: 01641603
- Account Type: Business
- Reference: *please insert your initials & surname*

Cards: We now have the facility to accept payments by card (Credit, Debit, even Amex!).

This can be done in person if you see myself or Bryan Finch at GMES.

Insurance Reminder

Guildford Model Engineering Society has insurance under the Federation Scheme to cover our property and our liabilities. As part of this policy, (and as a consequent direct benefit of being a GMES Member), individual members are automatically covered for Public Liability (excluding Road Traffic Act) under the GMES policy, when undertaking model engineering activities, whether as a GMES activity or on their own, up to the GMES limit of indemnity, currently £5 Million.

Should you need to provide evidence of insurance, certificates are available from the Treasurer or the Secretary.

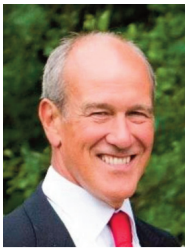
However, the GMES policy does not cover your models and other property at any time even while they are at GMES. You need to arrange cover for these yourself.

As a GMES member you can get cover from Walker Midgley at a 10% Federation discount. Walker Midgley can offer advice as to the appropriate policy. Contact Walker Midgley with the reference "GMES Federation" Insurance. Email: *Alison.cinnamond@walkermidgley.co.uk* or call them on: 0114 250 2770.

Chris Phillips ***Treasurer*** ❖

Chris Rushton

An appreciation and obituary from his fellow members at GMES

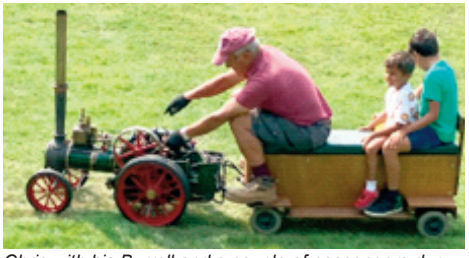


Chris Rushton died on Monday 12th January, he was in his early seventies and been ill with an untreatable brain tumour that became apparent in the middle of last year. We know that Chris was a Chartered Accountant working for KPMG in his life before Guildford Model Engineering Society. Chris and his wife Barbara had two sons, Ben and Sam, and a daughter, Charlotte, and there are eight grandchildren some of whom we have met on a number of occasions.

Chris, one his sons, Ben, and some of the grandchildren, Alex, Thomas, William and Joe as passengers

Chris was also a keen dinghy sailor, and was a member of a sailing club on Thorney Island where, with the family he sailed a Wayfarer dinghy. He enjoyed skiing, and hiking and often visited the Himalays. He also played bass guitar in a local band, and classical guitar.

Chris joined GMES in 2017. He was a skilled self taught engineer and built a 3" scale Burrell single cylinder Agricultural Traction Engine, which he enjoyed driving around our grounds during Galas and other open days.



Chris with his Burrell and a couple of passengers during a GMES Open Day

Chris was keen to support local events and spent a very cold windy day at the Safeguard Coaches Centenary celebrations at Guildford Cathedral in March 2024 taking children on rides around the car park.

At GMES, we were always in admiration with the dynamic and brave way he launched into tackling difficult jobs. On one occasion, he brought in his traction engine rear wheels and amazed us with the fantastic pieces of work.

Having finished the Burrell traction engine, he sought something more complex to challenge his new skills and commenced building a 5" gauge LNER Enterprise 2-6-2T steam locomotive which has three cylinders and conjugated valve gear which is all very complicated and fitted in a tight space.

At the club he was an able and willing helper. When Chris was involved in a project we always knew the outcome would be a solid and workmanlike job. He was always willing to join in any of the working parties on Tuesdays and Thursdays. He always carried a tape measure in his pocket so was ready to check dimensions and offer constructive advice. For example, he provided wise words when we were installing the fencing along the roadway beside the Ground Level track.

Chris also provided support on a number of occasions to the Society's Treasurer.

Chris was a beekeeper and provided many jars of the best honey ever tasted "made by more than one bee". One GMES member's granddaughters spooned it straight for the jar into their mouths until being stopped, it was so good. Although he didn't brag about it, he regularly taught at local Apiary meetings to further the interest in beekeeping.

Chris was such a personable chap, always greeted you with a smile. He was an educated, intelligent, thoughtful man, always kind, sensible, down to earth, and polite, a very practical man, and a tower of strength.

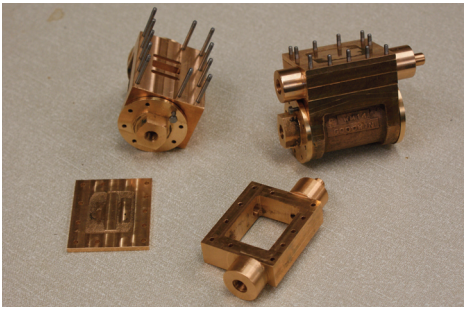
We were privileged to have him with us, he will be so sadly missed in so many ways, the club is very much a lesser place without him. ❖

November 2025

A cold and wintry night reduced the attendance but we still got a few members turn up to present their work.

New member **Daniel Sebastia-Saez** has purchased a five inch gauge 0-4-0 electric diesel outline locomotive. It came without a battery, so Daniel was asking for advice and help to get the loco running.

Peter McConnachie brought along the cylinders for his 3½" gauge 2-6-2 tank locomotive *William*. Machining up the cylinders proved not to be too difficult. The steam passages were drilled out without any mistakes. The bought cylinder covers were of a good quality but the bosses proved to have variable dimensions. They were machined in a jig to ensure they were the same. The steam chest caused the most headaches as the centres were difficult to line up. Peter admitted, with hindsight, he should have held the part in a vice and drilled them in the pillar drill.



The purchased cylinders

They are now mainly complete except for fitting the drain cocks and putting a chamfer on the cylinder cover ports and the register.

The fit is a bit tight when the valve chest is fitted over the cylinder studs and put together.

Peter Shires has already built a *RG65* class racing yacht. This design has a world wide following and has its own association. There are nearly two thousand registered *RG65*s in the UK.

He has now started on a *DF65* yacht which is aimed at introducing newcomers to the hobby of radio controlled racing yacht. This is two centimetres smaller across the beam than the *RG65* class.

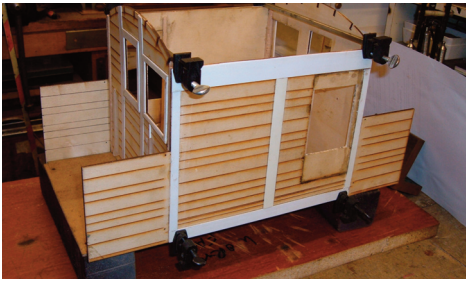
DF65 yacht being built

A proprietary hull costs £200, so Peter is building his own one. He is repurposing his *RG65* hull template jig to reduce the beam for the DF build and using this has drawn a full size plan of the model's hull to work out where the servos will fit.

The hull templates have been laid out and await covering.

Peter did, however, buy the sails as he had no idea of the dimensions. On measuring the sails he found that the main sail was the same size as the RG class but the jib sail was bigger by sixteen square inches.

Ivan Hurst has made further progress with his 16th wagon build, a 5" gauge *SR Brake Van,* the prototype being the last one the company built in 1948. As described in a previous newsletter the chassis and brake gear have been finished.



The body construction of Ivan's SR Brake Van

The build of the body is progressing well. Two hundred and fifty brass rivets are being fitted to attach the "metal" strapping (actually Plasticard) to the wooden planking of the sides and ends. The box in the middle has been built and work is

progressing on the verandas.

Unlike most of the other railway companies that placed the duckets in the middle of the sides, the Southern always had the duckets on the left or right hand end of the sides of the body.

Martyn Harrold has continued detailing the cab of his GWR *15xx* 0-6-0 tank locomotive. He could not find any detailed drawings of the cab doors, so had to go searching for more details.

Cab doors now fitted to the 15XX

He eventually found what was needed, so the doors have been hinged to the cab sides with working catches. A sliding hatch has been fitted to the roof. A detachable rear spectacle plate has been fitted that is detachable when being driven.

December 2025

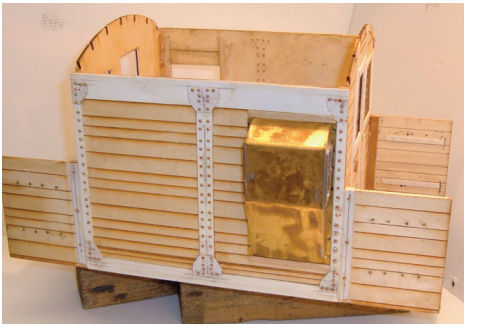
Peter Shires kicked off the last *Bits & Pieces* of 2025 with an update of progress on the sails for his *Dragon* class yacht. He has refurbished the mast which he had to straighten with heat with the help of a jig to hold the sections straight in both planes and then superglued them together. The capillary action of the superglue ensured good penetration of the joints. The original sail hooks were reattached to the top of the mast and new ones added to accommodate various sail combinations Peter envisages using.

Peter intends to use the original sails, although he isn't sure what the material is. Some repair stitching may be required.

Peter has also made a spare hull for his *Dragon* class yacht.

Ivan Hurst continues to build his Southern Railway *Brake Van* and has made good progress fitting the rivet detail, bracing and corner plates to the van body. Ivan is another user of Superglue and recommends Screwfix No Nonsense Superglue as inexpensive and reliable.

A unique feature of the planking is the one wide, two narrow, one wide width pattern running down the body. Apparently this was in response to a shortage of larger planks caused by the war.



The SR Brake Van *body is becoming complete*

Ivan is busy ticking off the internal fittings. The brake standard, stove and guards' seats are all in place.

Martyn Harrold continues adding details to *Paddington*, the *15xx* pannier tank he is building. He found it easier to make the stainless steel brake rod by machining a piece of bar in the lathe and milling machine rather than a piece of bar.

One of the remaining small but awkward jobs was to cut a piece of cladding to fit on the top of the tanks. Luckily a drawing had already been done by another modeller for this that Martyn could borrow to get laser cut.

The gauge glass fittings were made a while back, so Martyn has taken the opportunity to take them apart and refurbish them including an improvement to stop the glass bottoming on the base of the fitting.

A tip Martyn passed on was to repurpose worn micrometers as effective small G clamps. ❖

Canadian Pacific on 7.25" gauge, a new build Merchant Navy locomotive – Instalment three

In the previous instalment, we looked at the boiler design, and I mentioned this was something we identified very early on as needing to be ordered, to avoid any delays later.

Over the course of a few months, some photos started appearing of the build, here the inner combustion chamber and tapered barrel:

Lo and behold a 100kg boiler arrived, and by this time it could take its place next to the fully completed frames

As mentioned last time, we also had all the wheels lined up, primed and ready to tackle what for me was a new challenge… A crank axle.

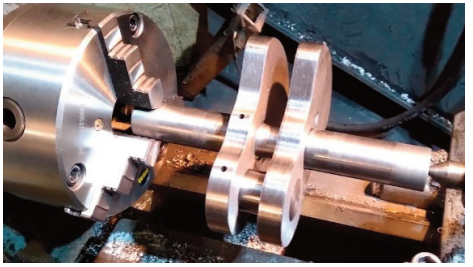
Initially, my plan was to have the crank webs laser or water jet cut, but around that time, Martyn was

having some parts CNC machined for another project and we thought it was worth a discussion. The advantage of that wasn't only that they would be ready for paint and assembly, but also that I would be able to include starting holes for the taper pins through the axle and crank, and most importantly a locating datum hole that would allow me to very accurately position the eccentric in relation to the crank. In retrospect, keyways in the axle would have done the same job and also probably made "sixthing" easier. (I suppose we can still call it quartering and everyone knows what it refers to).

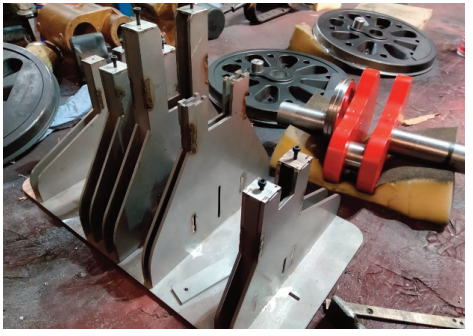
Martyn got some quotes for the webs, the eccentric and the eccentric strap, which were reasonable and the order was placed. Before very long, we had some very accurate crank webs.

That gave me the impetus to get them on to the 30mm diameter axle and crank, the first step following usual practice of a full axle and crank first, to help keep it all in line, only milling away the middle of the axle afterwards. I let the loctite set, then drilled right through at each joint three times, taper reamed them and hammered the taper pins

very tightly home. I certainly don't expect it to move.

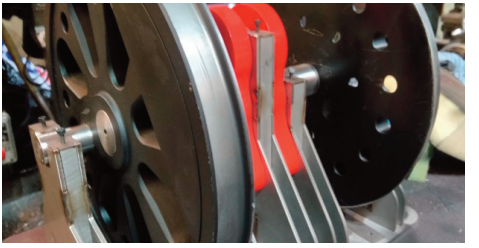


I don't seem to have a good photo of the painted and assembled crank axle, but here it is behind the sixthing jig I devised. I had always used quartering jigs in the past simply because I don't consider my manual machines to have the necessary accuracy to guarantee the consistent repetition of keyway cuts between each axle. My logic is, even a very small movement of the dividing head, or mill table, when cutting keyways in the axle, is amplified at the pitch circle of the crank pin, a risk which is avoided with a quartering jig. I also find it reassuring that once quartered (6thed), I still have the option of heating and breaking the loctite for another go, only pinning them once I am sure all axles are exactly consistent.



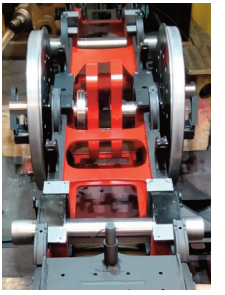
This jig is of course a little more complicated than the usual ones in that the vertical slots have to position the crank pins at the correct angles whilst accommodating the inside eccentric, it is all welded stainless.

And here is the main driving wheelset assembled with loctite in the jig.

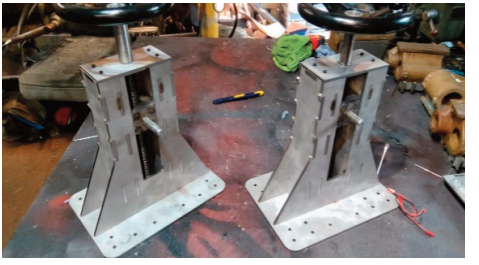


I would now, in retrospect, probably prefer to make use of the CNC to machine keyways in the axles, mainly because the loctite started to "go off" much quicker than I had expected, even though I deliberately chose the slow curing version, so it was a bit panicky at times, well aware of how critical this operation is.

Still, it did all go well in the end, time to stand back and spin the main wheelset in the frames:



At this stage, it was abundantly clear that as soon as the wheelsets were added to the frames, it was instantly too heavy to lift and even turning it over was suddenly a hazardous operation, not just for my back, but also for the brackets on the frames. At the time, the under-construction SAR class 16E (also 1:8 scale and very heavy), was suspended between "rotisserie" jacks, allowing the entire chassis to be lifted off the rails and rotated. Clearly, we needed another set for the Merchant Navy, so other building was put on hold as these were urgently produced.



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And as the spring sunshine came through the windows, it was very pleasant to bolt on the horn stays, flip the loco over in the rotisserie, and lower the chassis for the first time on to 7.25" gauge rails - albeit only its building frame rails.

As a brief aside at this stage, and before the above image, I was not prepared to wait until the side rods were made to discover whether the sixthing was exactly accurate, and so simple brass false side rods were laser cut to allow me to roll the wheelsets and check for tight spots. Fortunately, all was very smooth and so I could proceed to drilling and pinning the wheels in situ.

At this stage, I was all fired up to get cracking on the cylinders, rods and valve gear to get to a chassis running on compressed air, but we started a discussion on painting. Now the fact is, I don't have the space for a decent painting booth in my cramped workshop, so my best option would be spray enamels, rubbed down and re-sprayed to the desired finish. Using two pack paint would be possible, but would need serious re-arranging of my workshop space, with the inevitable delays. I have a copy of Chris Vine's excellent book on painting, and although I can take away the most practical tips from that, his setup is a little out of my league.

Out of curiosity, Martyn set the quote machine in motion, and after some back and forth, we had several painting contacts and quotes. One of the lines of enquiry Martyn took was powder coating. Chris Vine mentions it as a good option, of course being the most durable of them all, with care needing to be taken to avoid orange peel. The main downside, however, is that neither automotive filler nor soft solder can be used for filling seams and general neatening, due to the material needing to be both electrically conductive and resistant to high temperature.

Previously I had had the luxury of being able to use filler and solder judiciously to smooth and shape tricky areas once the boiler cladding was on. This time the boiler cladding sections were going to have to be an excellent fit with very little margin for error, as they would need to all come off the boiler, get powder coated, and have to fit back seamlessly, or at least the seams that are not covered by boiler bands.

The powder coaters provided a test piece, and it looked excellent, with no sign of orange peel, so based on that we simply had to proceed, and see what was possible.

There are many tricky shapes to the Bulleid boiler cladding - not only the challenge of a neat Belpaire shoulder, a pressed section on the full size, but also the steam manifold take off cover on the nearside, not to mention the pressed manifold supply pipe cover on the firebox top, all important features.

I will say straight away that the cladding was the most difficult part of the build so far, involving a welded web of crinolines (the cladding support framework), and steel and copper sections to shape and bolt on, several items scrapped in the process.

As mentioned before, the flat copper throatplate would need to be disguised by the correctly formed cladding piece, and fortunately I found a supplier able to CNC machine a hardwood former.

Canadian Pacific New Build (concluded)

In due course, after a lot of shaping and hammering, all the sections were bolted on without any filler needed, and ready to go to the paint shop.

In the next instalment, we'll look at the cylinders; then why we put the running chassis on hold.

❖

Talks

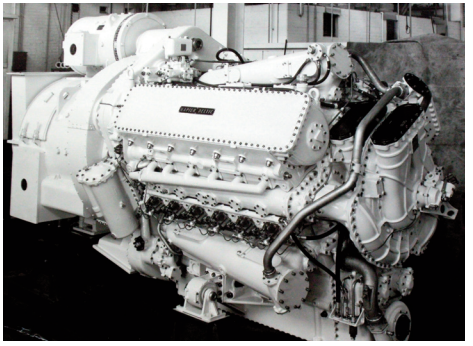
Reported by Matthew Clark and Peter Shakespeare

5th November 2025

The Napier Deltic Engine and Applications

A talk by **Nigel Paine** of the *Napier Power Heritage Trust*.

Following on from the talk about Deltic locomotives by the *Deltic Preservation Society* we had a while ago, tonight's talk concentrated on the Napier Deltic diesel engines, one variant of which powered the locomotives.



Nigel first explained the early development of the opposed piston diesel engine which could be traced back to a friend of Rudolf Diesel named Wilhelm von Oechelhaeuser. In 1898, an Oechelhaeuser two-stroke opposed-piston engine producing 600 hp (447 kW) was installed at the Hoerde ironworks. Oechelhäuser's apprentice was Hugo Junkers of German aircraft fame who went on to develop diesel aero engines.

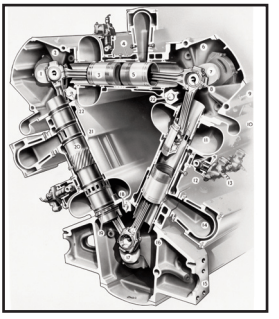
In the late 1920's the Air Ministry entered in discussions with Hugo Junkers of Dessau, Germany to produce their new 6-cylinder opposed piston compression-ignition engine which was later designated as a Junkers Jumo 204. The engine was fuel efficient and being a diesel, didn't have the inherent risk of fire that petrol engines had.

By 1934 the Air Ministry had placed a contract with D Napier & Son for seven Culverin engines for experimental and development use based on the Jumo 204. The Jumo 204 engine design was re-drawn to imperial measurements with a bore and stroke of 4 3/4" x 8 1/4" and power output of 720hp at 1,700 RPM. The first engine (Serial Number 85000) completed and ran on 24th September 1934; delivery of the remaining engines was to be on a monthly basis.

Junkers 204 engines has been fitted in a Hawker Horsley II at the Royal Aircraft Establishment in Farnborough. Napier Culverin (85000) was fitted in the same aircraft for a short time between August 1936 and early 1937.

The Air Ministry wanted these engines on account of their fuel efficiency enabling reconnaissance aircraft to remain longer in the sky with the same fuel payload.

The Napier Cutlass was a six cylinder opposed piston compression-ignition engine originally designed by Junkers Flugzeug und Motorenwerke AG. Hugo Junkers created several opposed piston CI aero engines and the Cutlass was based on the



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Talks (concluded)

Junkers Jumo 5 later 205 engine.

Napier then converted the metric engine to one with imperial dimensions and named it the E102 became the forerunner to the Deltic.

During the second world war the MTB Power Unit Committee, a government body was tasked with designing the next generation power units for Motor Torpedo boats. Because of the fire risks that petrol engines imposed the design had to be diesel.

The specification was for a 3000hp, 7,500cc. compression diesel engine. From the recommendations of the report Napier built the Deltic E130T. This was a single triangle, two stroke, valveless engine with opposed pistons and cylinders.

After further development, the first Deltic engine to be fitted into a MTB was the Deltic 18-1 with 5" bore and 7.5" stroke. The units were sufficiently powerful to be fitted into minesweepers.

Because each triangle of cylinders were compact, had a good power to weight ratio and could be coupled together to create a more powerful engine, in 1951 the *Enterprise* project was instigated to build a Deltic powered rail locomotive. The prototype, now in the national collection, was the most powerful diesel loco in the world when built. It first ran in 1955 and clocked up almost half a million miles in service.

This prototype led to the the British Rail Class 55, also known as a Deltic, or English Electric Type 5, built in 1961 and 1962 by English Electric for British Railways. Twenty-two locomotives were built, designed for the high-speed express passenger services on the East Coast Main Line (ECML) between Edinburgh and London King's Cross.

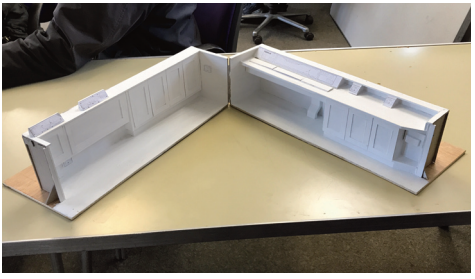
Nigel then went on to describe the many variants designed to power a variety of applications including ships, generators, compressors and pumps.

Towards the end of production an experimental compound engine was produced by fitting a compressor in the hole in the middle of the engine raising the power output to 5,500hp but it was just a one off and never went into production. ❖

The New Signal Box

Neil Heptonstall

The 'new signals' team have now reached the stage where we have set maybe 99% of the design of the signals' system and the fit-out of the new signal box. To act as a catalyst to solving anything that remains - Neil has made and brought in a 1/10th scale model of the box interior - it hinges open to be similar to 'walking in the door'. At the far left side – the first cabinet to be built will contain the 'main distribution frame' where cables heading in/out of the box will be terminated.



Model of the interior

If you would like to see it - we will occasionally have the model at our work Thursday club house coffee break meetings. ❖