Pumping News

The quarterly Newsletter of

The Claymills Pumping Engines Trust Ltd

Meadow Lane, Stretton, Burton upon Trent, Staffordshire DE13 0DA

website - www.claymills.org.uk

Number 105 **Spring 2021**

David Kenneth Wombwell (1941-2020)

It was with great sorrow that the Trust learnt that Dave Wombwell, who was instrumental in founding the group formed to preserve Claymills pumping station, passed away in late December. Dave had suffered illness for some time – it was due to ill health that he stepped down from the Claymills board of Directors at the 2008 Annual General Meeting. On that occasion the then Chairman Chris Allen noted: the Trust owes Dave a great debt of gratitude and if Dave had not taken the early action of contacting Severn Trent Water and developments from there, it is unlikely we would be where we are today.

Dave Wombwell on 'C' beam engine throttle valve on the occasion of the very first steaming by the Trust in 2000

Dave was the first to react to a press release issued by Severn Trent Water Authority (STW), that was published by SERG (Stationary Engine Research Group) in 1986, that the authority were minded to demolish the historic pumping station due to its deteriorating condition and awkward position within a busy operational site, but before proceeding were looking for suggestions to preserve the site or salvage equipment. Dave found that he was the only person to approach the authority so he went about raising interest in attempting to save the site. He urged a small group of interested people from SERG and locals to become involved and in response to STW requirements this led to the setting up a working party to study the feasibility of restoring the boiler and engines to a workable condition, seeking financial support for the project and producing costings for operation of the site. Dave was involved with much of the discussion with Severn Trent in trying to convince the authority that we could become a bona fide group capable of achieving the preservation of the site.

The proposal to establish a preservation group was announced in a first newsletter distributed to interested individuals by Dave in March 1987 and an inaugural meeting was held the following month, when Dave provided an informative slide presentation on the pumping station to the forty five people in attendance. Out of this a steering committee was formed with Dave taking a major role in the development of the group and was involved in most of the rolling series of meetings with the Authority as we set out to prove our proposals and negotiate details. Dave became the group's Secretary, a post he retained after formation of the Trust and until he stepped down from the committee.

The work of the steering group resulted in a charity and Trust being set up – some seven years after the initial approach to STW – and the inaugural meeting of the Trust was held at Willington Power Station in January 1994, when Dave gave a progress report from inception to current position to those gathered. Dave became one of the Trust's directors and in addition to being concerned with running the Trust, Dave was very involved in the preservation work from the initial 'stabilisation' on site to the preservation and eventual steam open days. When the Trust introduced appointed individual directors to look after individual parts of the site, Dave took over responsibility for C/D engine house. C engine was the first of the beam engines to be run after a boiler was restored to working condition.

Dave often took indicator diagrams of steam engines and this included some of those at Claymills. In particular, following the return to steam of 'C', he took indicator readings of the beam engine and this was written up in an article contained in Pumping News *number 26. Preceding this, in* Pumping News *number 11, Dave had interpreted indicator diagrams included in a paper by James Mansergh, the engineer who designed the Burton sewage system, covering the indicating of a beam engine at the station in 1885*

After Dave stepped down from the board in 2008 he was less frequently seen on site but did make very welcome returns to a number of steaming events over the subsequent years. It was due to his initiative that the Claymills site was saved and he had been a stalwart of the Trust.

I've known Dave from before the setting up of Claymills, as he was an early member to join SERG in the early 1980s, and he will be missed particularly by those of us who have worked with him on the Claymills project from the start for over thirty years.

Grant awarded to the Trust

Let's start off with the excellent news that we have very recently been notified that the Trust's application for financial support for our workshop/display building has been successful and The Pilgrim Trust is to provide £20,000 towards this project. This is marvellous news and thanks go to Roy Barratt for the work put into making the application. In the present climate there have been very limited opportunities to obtain grant monies for anything outside of funds being provided by various funders to help organisations with recovery from Covid. As a result other funding possibilities have been very rare, but an application was submitted to The Pilgrim Trust in autumn last year.

The Pilgrim Trust was set up over eighty years ago when a £2million endowment was provided by Edward Stephen Harkness. Nowadays the Trust provides over £3million each year to Charities and other public bodies, with 60% going to projects aimed at preserving the fabric of architecturally or historically important buildings, or projects working to preserve historically important artefacts or documents.

During this period of lockdown the Trust has been continuing with the work for the new building that will be constructed adjacent to the joiners' shop. As reported previously in *Pumping News*, some of the foundation pads have been dug out and the Trust's volunteers are intending to construct the foundations and footing on site ready for a contractor to erect a portal steel framed cladded building on site. This will giving a clear space inside with an internal wall, with half of it fitted out as a modern workshop, allowing the existing cramped workshop in the oil store to be relocated and expanded (and hopefully moving some equipment from our historic workshop) and the other half providing display space, including the ex Snibston Buxton and Thornley engine, and undercover storage for the pipe drug and mobile steam winch.

The Trust is extremely grateful to The Pilgrim Trust for the award – the rest of the cost of this project will come out of Trust funds.

Continued lockdown but light at the end of the tunnel

As noted in the last newsletter, a second national Covid lockdown came into force in November preventing activities on site. In December Staffordshire was put into tier three of the Government's restrictions, which continued to prevent general volunteering work on site, although some isolated work was carried out to the mess room as noted below. This period was followed by a third national lockdown in January and February, meaning that for four months there have been no volunteer working days on site. Thankfully with the improved situation the Government has identified a road map to ease restrictions and if this goes according to plan it will enable the return of volunteers from 11th March, albeit this is restricted to maintenance work and preparations to reopen the site.

Needless to say, the ambitious plans for public events for 2021 have been dealt a blow and the Trust has announced that the first public steaming will be the August event over the bank holiday (on the 29th and 30th) – with the intention of organising a 'grand reopening celebration'. The usual September (on 25th and 26th) and October (on 30th and 31st) steamings will follow. In accordance with the current Government thinking, if all goes according to plan, along with other indoor attractions, it is expected that public visits, on a drop in ad hoc basis, will be possible from 20th May. This will still involve the requirements for social distancing and hygiene precautions, until these are lifted by the Government, currently timetabled from 21st June.

Of course it is not a case of just turning up and steaming the site. Much preparation work will be required, both engineering and cosmetic, so that it is ready for a public event, following what will be eighteen months since the last steam operation. The boilers, numbers four and five, are now out of ticket and will initially require a hydraulic test to prove the new crown valves, followed by a steam test and certification by the Boiler Inspector. Work to prepare for this will be necessary together with completing the repair work on number four's mechanical stoker. Once this is done and the boilers have been ticketed, the Trust will hold a steam operation test of the site to check the steam mains and pipework and all of the engines. This will allow us to ensure the site is safe and suitable for public attendance.

On the cosmetic side, much of the brightwork on the engines has gone rusty and there is deterioration elsewhere, for example the paintwork on the C/D beam engine house dado walls. The grounds will also need tidying up and other maintenance work that had been ongoing will need to be completed. Volunteers will of course come back to the site as they feel comfortable and it is hoped that enough will feel encouraged to return to help with the work necessary to prepare the site for the reopening event. There will continue to be restrictions and precautions on site until these are lifted by the Government. But it will be good to get back to site and see all the fellow volunteers.

Have you paid your membership subscription?

The directors have continued to hold virtual board meetings and progress is being made on various fronts off site. Fortunately the Trust has not suffered financially – although there is a loss of income through not holding events, we

have been fortunate to have received grant aid from the Council's leisure and tourism rebate meaning we continue to be financially secure and have money available for proposed projects. Unfortunately the number of members supporting the Trust has also reduced; this is in part due to not holding events on site when some people pay membership dues. If you have been a member but not re-subscribed for the current year we look forward to welcoming you back; options for the various ways of paying subscriptions are given in the last edition of *Pumping News* and on the Trust's web site. The Directors have taken the decision to send this newsletter to lapsed members to give them time to catch up.

Refurbished mess room

Mess room makeover

What started out as a refresh of the decoration in the volunteers' Mess Room ended up transforming into a much larger task as a refurbishment. The old facilities have been removed and new worktops, cupboards and sink installed together with renewed plumbing and electrical installations. This has greatly improved this area and volunteers will be keen to use it when we get back to site.

Building restoration works on the way

During the regular liaison meetings with Severn Trent Water, there have been discussions regarding necessary maintenance works required on the pumping station buildings that are the responsibility of the landlord under the terms of the lease. Last year the first and most important of these, the defective external wall and window in the boiler house, was taken down and rebuilt. The Trust had provided a list of items needing attention and Severn Trent has been considering these and actively moving things on. The Trust has been informed that over a period of time works will take place on site to address these issues with the intention to undertake them in a way that allows the Trust to hold the public open days. However, volunteers should be aware that various parts of the site will be cordoned off at various times to allow for the safe completion of these necessary items.

The works are to include replacement of the boiler house roof, repairs to glazing in the boiler house, refurbishment of engine house windows, checking and refixing/replacing loose roof slates, repairs to rooflights and roof vents, checking roof gutters, repointing brickwork, removing vegetation from walls and roofs, and repairs to external doors.

Key Performance Indicators (KPIs)

As members will be aware, each year the board sets a series of targets for KPIs for the forthcoming year and at the end of the year measures our success against these. Given the year we have had in 2020 you will not be surprised to learn that we did not achieve any of the targets as these became meaningless.

Membership to the Trust remained at a reasonable level, but still less than in 2019. Some members pay their subscription on visiting the pumping station during an event day and given the lack of these it has had an effect. In 2020 the Trust had 331 members, which was a total of ten down on the previous year. It has been noted that membership numbers are significantly lower in the current year to date.

During the year the Trust only managed one of the usual public steaming events, a successful weekend held in February before the lockdown and restrictions started, and two school visits. Other steaming and private events were cancelled and the station was only open for a short period in the summer for ad hoc visitors with a Covid safe regime in place. This meant the attendance to the site over the year, 919 visitors, was not surprisingly severely less than the target set or the number achieved in previous years.

Similarly volunteer hours spent on site were significantly reduced with closure of the site during the first lockdown starting in March, and then the later period covering the second lockdown followed by the Tier 3 restrictions for Staffordshire that completed the year. In between these periods some volunteers were able to attend site and a significant amount of work was achieved, as reported in last year's issues of *Pumping News*. The recorded number of hours for the year was 6736.5, around half of 2019's total, which all things considered is good and probably does not include many volunteer hours undertaken off site.

The one success on the KPI front was finances. Although income was lost during the year through cancelled events this was more than made up for in Covid rate relief distributed by the local council. The Trust also reduced its costs as far as possible resulting in a good operating surplus for the year. Further details can be found in the annual report and statement of accounts for the year.

Geoff Halam

The Trust has been informed that Claymills volunteer Geoff Halam has passed away. Geoff was well known in Burton, being a long-time volunteer at the town's Bass brewery museum. He also organised the popular annual steam rally held at the museum for many years up until 1995. After the brewery museum shut down for a period he came and worked at Claymills, attending on volunteer work days principally in the boiler feed pump house.

Economiser engine Base ▶

The cast iron base plate for the second economiser engine has now been cast at Graydon Castings foundry. The second economiser engine was returned from Ryhope Pumping Station but the base plate, which the engine sits on above the economiser to drive the scraping gear, has been missing presumably scrapped. Fortunately the base is the same hand as the one on the other economiser so it has been used as a pattern for the new casting. It's now being cleaned up ready for installation when the site can be accessed.

HODS challange - Lesley Hirst

This year, our contibution to Heritage Open weekend will be the weekend of 11th and 12th September. The theme for this year is 'Edible England', and we would like to show our Claymills take on this. What we'd like to ask of our members, is a tried and tested recipe from local to them, preferably with a place name. We're not asking members to provide examples, although we would definitely not say no to bite-sized samples! A recipe and a good photo would suffice. What can members come up with? (Lesley is offering scouse).

Annual General Meeting 2021

As mentioned at the last meeting, the AGM is being moved to earlier in the year to give it greater connectivity to the year we are reporting on. Traditionally, the meeting has been held in the summertime – taking place between the spring and late summer/autumn steaming events. In the distant past this had been in June/July, but the date has drifted in recent years to August, with last year's meeting held even later in September influenced by the Covid pandemic.

The intention is to start to hold the meeting in the spring each year, and so the date for the next meeting has been arranged for Saturday 15th May 2021 starting at 17:30. With the problems caused by pandemic restrictions and difficulties members may have attending site (not to mention having to ensure safety through social distancing etc) and also following on from the success of the on line meeting held last year, we will once again hold the meeting via Zoom. The procedures used to manage arrangements and distribute information worked well last year and so the same procedures will be used again. Those members who are on the Trust's electronic database will be sent an e-mail nearer the time inviting them to register for the AGM. Those who are not currently on the database (members who are on the database have been sent a series of update notifications since the first lockdown, so if you haven't received these you are not on the database) can request to be added by sending their e-mail address to 'newsletter@ claymills.org.uk'. Further information for the meeting together with logging in details for the meeting will be distributed to registered members nearer the meeting.

Distributed with this edition of *Pumping* News is the Trust's Annual Report and Accounts covering 2020. During the AGM the Treasurer will review the Statement of Accounts and a review of the Trust's activities during the year, together with a forward look of proposed projects, will be given by the Chairman.

In accordance with Trust's regulations half of the board directors will stand down at the meeting, these being Steve Goodman, Lesley Hirst, Andrew Parsons, John Reeve and Geoff Sherratt. All of these members have agreed to stand for re-election as Directors. There is still a spare place on the board and any member who is interested in joining would be most welcome. If you wish to stand for election to the board you should be proposed by another member of the Trust, no later than three days before the meeting, and also confirm your willingness to stand – these should be sent to the Secretary at the Pumping Station address or via e-mail. The members present will elect the directors at the meeting together with the Chairman, Secretary and Treasurer, who are all standing for re-election.

During the meeting members are able to raise questions to the board or any other items of business. The directors hope that members wish to take part and look forward to welcoming you to the meeting.

The future of coal for the heritage sector

With the Government's clean air act to reduce carbon dioxide emissions in response to climate change concerns, the future supply and use of coal in the UK's heritage sector is in some doubt. The policy to stop the burning of domestic bituminous coal, which is set to become law shortly, will, one way or another, likely have an impact upon the heritage sector in a couple of years' time. The problem has manifested itself in two ways. First, if coal burning is prevented can the heritage sector obtain an exemption - although the Government has stated on occasions that through the proposed law it is not the intention to impact heritage attractions, there is nothing specific in the proposals to give protection and it may get engulfed in time. Secondly, even if there is an exception will suitable coal in small quantities be available at an affordable price. There is the issue of the availability of coal from UK

sources (which has been diminishing for many years) and the problem of the supply of small quantities of good quality steam coal; with the demise of domestic consumption the need for suitable small quantities may make it unviable for merchants to trade.

The steam heritage sector is diverse. The predominant player is that of steam railways – a multimillion pound tourist sector tour de force with many attractions operated by large commercial companies; they are very conspicuous, much loved by many in the UK, with a powerful voice (funnelled through the HRA - Heritage Railway Association) and with friends in high places. Then there are the road vehicles and traction engines, the majority of which (over 90%) are owned by individuals, but they too have a strong voice through the NTET (National Traction Engine Trust) and other groups such as the NTT (National Transport Trust) and FBHVC (Federation of British Historic Vehicle Clubs), who represent owners and enthusiasts.

Then there are the smaller players. There are a small number of steam vessels that still fire boilers on coal, two notable examples being *Daniel Adamson* and *PS Kingswear Castle* and there are other small boats in private hands or owned individually, but again there is an overarching body the Steam Boat Association (SBA) that campaigns for its members. Last, and definitely not least, are the stationary steam sites – many run by small charitable trusts or groups of which Claymills, of course, is one. Unfortunately the stationary steam groups tend to be more insular and unfortunately have less of an impact on the general public. These groups tend to be wrapped up in general museum and heritage site organising bodies the vast majority of which do not deal with steam; probably the nearest we have to an organising body is ABTEM (Association of British Transport and Engineering Museums).

In terms of burning coal - the railways use by far the most in the sector (albeit the heritage sector as a whole only accounts for an extremely small amount of coal burnt in the UK – approximately 35,000 tons annually). The road vehicles/ traction engines and boats tend to burn very small quantities of similar lump coal, usually purchased in individual small bags. Overall steam coal consumption at stationary sites is relatively small but does vary from small sites to larger ones like Claymills; we may well burn more than most because of the significant steam capacity required to keep the large number of engines we have in steam at the pumping station. We also have the added issue of needing a specific type of coal – washed singles to enable firing through the mechanical stoker – which is unlike much of the rest of the sector. In answer to the question of how many stationary steam engine sites in the UK still use coal to fire their boilers, former CPET Chairman Chris Allen has put his thinking hat on and come up with a list, which has been supplemented by more information from Roy Barratt - see the separate details in this newsletter.

Recently the NTET organised a zoom meeting entitled 'Coming clean about coal' to bring people up to date with this issue. The participants included representatives from the NTET, NTT, HRA, and FBHVC. Also present was a representative of a coal merchant - Hargreaves, Lord Richard Faulkner (who has contributed to debate in the House of Lords on this subject matter) and the HFA (Heritage Fuels Alliance). The HFA is an umbrella organisation set up to provide a single voice for the HRA, NTET, HTT, FBHVC and ABTEM (and recently also joined by SBA) and was formed in response to the Government's 2018 announcement regarding the banning of domestic coal, to provide evidence to them and alert them to the consequences of the proposals to the heritage sector. Through the ABTEM the stationary steam engine sites do have representation in this situation.

The number of open cast mines in the UK has been dwindling for some time and for the railway and traction engine fraternity suitable steam coal is only being mined currently at Ffos-y-fran open cast mine located near Merthyr Tydfil in South Wales. It is the largest open cast mine in UK and although the mine, which is part of a reclamation scheme for the area from previous deep mining operations, has enough coal for 15 years extraction, this is a controversial operation and it is likely that extraction will cease next year. Other potential open cast mine sites in the UK have all been refused permission for development in recent years. So when Ffos-y-fran mine closes that will be the end of sources of UK steam coal suitable for the heritage community. The number of other mines in the UK are also now severely limited, and although the last coal fired power stations, one of the main users of the fuel, are due to close in three years' time, other industries are still using coal in substantial quantities (e.g. for steel and cement) at about 8 million tons per annum.

Ffos y Fran open cast mine, Merthyr Tydfil (Wikipeadia commons)

There is a massive input of £1.2 billion income to the British economy due to all steam heritage activities spread across the country. The greatest part of the sector is that of railways. In 2018/19 a Parliamentary All Party Heritage Group on Railways undertook an enquiry that included significant evidence provided by heritage railways. It identified that the new clean air act and closure of all mines producing bituminous coal and the ban on opening new mines could potentially force heritage railways, who depend extensively on steam operation, out of business together with main line tours not being able to operate. DEFRA did state during the enquiry that the ban on domestic coal burning would not cover the heritage railways. However, since this time there has been limited support received from ministers.

The HRA has been in ongoing contact with the Government asking for clarity of its intentions, highlighting the relative environmental impact of mining in the UK against having to

import it by ship from thousands of miles away, indicating the economic and social value of heritage steam in jobs and wellbeing benefits and the value of the sector to the nation's cultural heritage. However, this has had limited impact. The closure in 2020 of some of the UKs last mines and refusal to grant permission for new mines, together with the planned closure of Wales' last mine in 2022 will result in the end of mining of bituminous coal in the UK. Unless there is a change of Government policy there will be no longer be UK sourced UK coal after 2022.

The alternative is of course to import coal and there are still many mines operating in other parts of the world. Coal is currently imported to the UK from various countries including Russia, US, Poland, Columbia and Australia; this is viable for large industry, but is more questionable for heritage requirements. There are undoubtedly sources for the required good quality bituminous coal, and the NFA has identified some Russian coal that is undergoing trial on two UK heritage railways, but the small quantities and specialist type make the sourcing and logistics more difficult and will inevitably led to increased cost.

Notwithstanding all the above, and what appears to be the Government's intention to exempt the heritage sector from the policy to end the sale of bituminous domestic coal, there is the issue of polluting the environment. The question remains that, even if the heritage movement does receive a reprieve from legislation and manages to source suitable and viable imported coal together with the argument that the heritage sector only accounts for 0.2% of current CO^2emissions in the UK (although this percentage will rise relatively as other industries find cleaner alternatives or activities), can this be morally justified? The sector will still be subject to continuing environmental concerns as the Government strives to reduce the country's carbon emissions, creating clean air zones and working towards 'zero carbon'. It is difficult to argue against clean air and it may not be acceptable to point out that the sector is only a very small part of the country's carbon emissions whilst continuing to poison the air. So a long term suitable solution needs to be found.

It may be necessary to find other options and work with the Government who appear to be promoting alternatives. The NRA are considering biocoal as an alternative to coal. Most biocoal is unsuited for the majority of heritage use – railways, traction engines and road vehicles, as most of it goes straight up the chimney when an engine is put under load. Currently the HRA is in touch with a team in Minnesota, USA, who are working on development of a suitable biocoal, made with a higher compression and different type of binder and not needing to be kept dry that would make it more suitable. This is currently at the research and development stage and has been tested on American locomotives. There is a desire to trial it on UK locomotives. If suitable this would need to be manufactured at a suitable scale and if possible from a plant in the UK. It is estimated that availability of suitable biocoals is probably 5-8 years away.

So the HRA are working on the issue in a number of different ways but there is a short timeframe to sort the problem out if there is to be no interruption to activities in the heritage steam sector. In moving forward it is important for the various heritage organisations to work together to rise to these challenges. The sector is dominated by the railways, and they have the prominence to have some clout, but the other types of steam, who will not be able to stand on their own, need to be a part of the solution.

As mentioned above there is some representation for stationary steam sites within the NFA. In terms of the situation at Claymills we do have a need for different type of coal to others, having the stoker systems to feed the boilers, otherwise firing would need to be by hand, bypassing the mechanical stokers. It is unclear how biocoals would work in Lancashire boilers, but at Claymills the boilers are pushed hard to generate sufficient steam capacity to supply the extensive running plant on site. Over a normal steaming year (seven weekends plus some education days) the site uses approximately 50 tons of coal, which is higher than many other preservation sites who fuel their boilers with coal. The coal merchant we use has not had problems to date sourcing suitable coal and in recent times this has been sourced from Poland. In 2019 we were able to purchase some second hand coal that had come from a closed boiler house and the quantity is sufficient to last us for a year or more of steaming events. Sourcing suitable coal will become more difficult in time for all of the reasons highlighted in the NTET meeting and consideration needs to be given to the future and how the site would be run. The Trust needs to keep a close eye on developments to ensure our continued operation into the future.

Stationary steam sites in UK still burning coal by Chris Allen with additional information from Roy Barratt

This is an attempt to pull together a list of stationary steam sites that burn coal to raise steam and generally have no alternative steam raising plant.

Sites generally raise steam a few days per year, for example bank holidays, and probably are only in steam for 10-14 days per year but may require a little extra for warming up. The quantities required are relatively small and probably not in excess of about 40 tonnes per annum/site at the most. That is a pessimistic estimate based on Claymills that has a high consumption with many engines in steam.

In this case one size does not fit all, some sites have mechanical stoking plant and require smaller coal (e.g. washed singles at Claymills) and at least one site has traditionally burnt coke (although not currently in steam). At least two sites have removed mechanical stokers so they can burn larger coal.

Roy Barratt has managed to obtain coal consumption figures for some of the non local authority owned sites and this information is included where received. There is an additional list at the end of sites that I think probably do not burn coal in traditional boilers but use wood instead.

Biggar Gasworks Museum, Biggar, South Lanarkshire. Has a small vertical boiler that is hand fired and can take large lump coal. Schedule of operation uncertain.

Black Country Living Museum, Dudley. They have at least two boilers in steam on regular weekend slots and can use large lump coal. There is also a steam narrowboat (out of service). ◥

Racecourse Colliery vertical boiler at BCLM

Vertical boiler on the mine shaft at Blists Hill

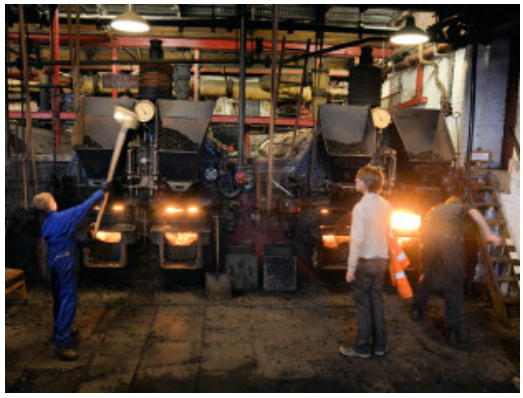
Blists Hill Victorian Town, Madeley, Shropshire. This site has a small vertical boiler for the winding engine that uses large lump coal and is in steam practically daily but also a demand for coal for road steam. The largest engines that are used infrequently have a large gas fired boiler. The site uses around 55 tons of coal a year. ◤

Bressingham Steam Museum, Norfolk. This site uses a small amount of coal in a vertical boiler for a stationary steam engine but has much bigger demands for road steam and locomotives.

Cambridge Museum of Technology, Cambridge. This site has one watertube boiler that is fired on coke/smokeless fuel. However, it has been out of steam for several years but will hopefully be returned to use several days/year in the near future. The site has used around 8 tons a year. ◀

Cheddars Lane Pumping Station in Cambridge

Claymills Victorian Pumping Station, Burton-upon-Trent. This site operates one or two mechanically stoked Lancashire boilers up to about 16 days/year and has a relatively high consumption of washed singles (a specific grade required by the stokers). Claymills uses about 50 tons a year. ▼

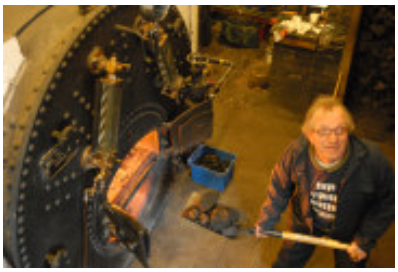


Coldharbour Mill, Uffculme, Devon. This site operates a Lancashire boiler several days/year on big lump coal. However, this site also uses a lot of wood. Coal consumption is 15 tons per year. ▼

Coleham Pumping Station, Shrewsbury. This site has a Cornish boiler fired on large lump coal several days/year. This has a very modest consumption of about 2 tons per year. ▲

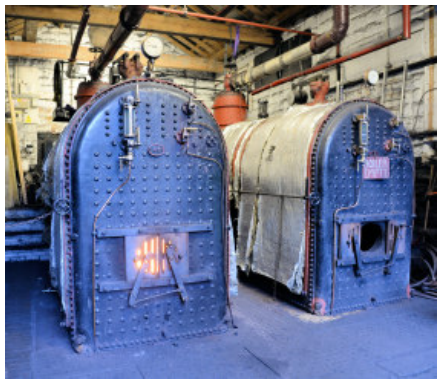
Crofton Pumping Station, Crofton, Wiltshire. This site operates one Lancashire boiler on coal several days/year. Big lump stuff. Coal consumption about 30 tons per year. ▼

Ellenroad Engine House, Milnrow, Rochdale. One Lancashire boiler that runs about 11 days/year. Has just had its mechanical stoker removed so can now use larger coal.



◥ **Etruria Industrial Museum**, Stoke-on-Trent. This site operates a Cornish boiler several days/year on large lump coal.

Leawood Pumphouse, Cromford. This site fires two locomotive type boilers on large lump coal several days/year. Consumption is 18 tons per year. ▼

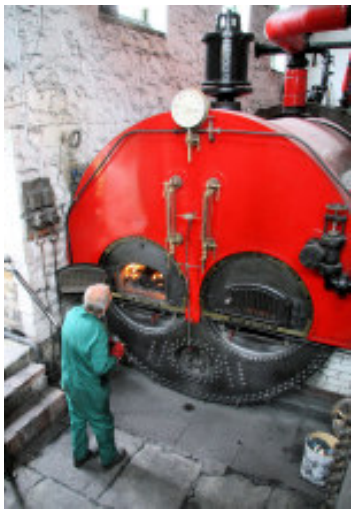


M Shed, Bristol (formerly Bristol Industrial Museum). Burns big lump coal in a steam crane (in addition to locomotives and a steam tug). Several operating days/year.

Mill Meece Pumping Station, Eccleshall, Staffordshire. This site has been out of steam for some years but a return is planned (hopefully in 2021) and they operate a Lancashire boiler with mechanical stokers so require small coal. They are in steam several days/year. Consumption is 50 tons per year. ▼

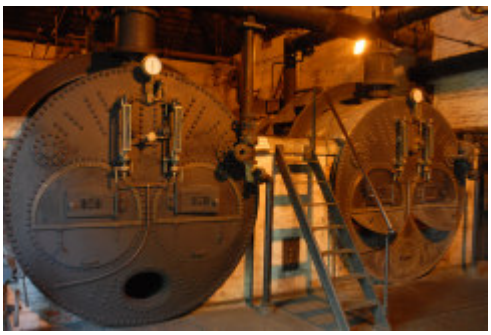
Papplewick Pumping Station, Nottinghamshire. This site operates several days/year and has both Galloway boilers that are hand fired and can take large lump coal but also a package boiler with mechanical stokers that probably requires smaller coal. Consumption is 48 tons per year. ▼

Queen Street Mill Textile Museum, Harle Syke, Burnley, Lancashire. A county council run museum that should return to steam soon (hopefully in 2021). They have a single Lancashire boiler that has had the mechanical stokers removed and runs on large lump coal now. This runs quite regularly in the season with high consumption at 108 tons p.a. ▶



Ryhope Engines Museum, Ryhope, Sunderland. Raise steam in at least one Lancashire boiler that is hand fired and can take large lump coal. Again several days/year. Consumption 14 tons per year. ▶

Sherborne Steam and Waterwheel Centre, Sherborne, Dorset. A vertical boiler was installed to supply steam to a Hindley engine that usually runs monthly. Consumption is modest. ▶



Tees Cottage Pumping Station, Darlington. Raises steam in a Lancashire boiler several days/year. This is hand fired and can take large lump coal. ▲

Thwaite Mills Watermill, Stourton, Leeds. Have a steam crane with a vertical boiler that can take large lump coal and is steamed quite infrequently. Modest requirement.

Twyford Waterworks, Twyford, Hampshire. This site operates one watertube boiler on coal several days/year. I am not sure of the grade. Consumption 6 tons per year. ▶

That is twenty-one sites with varying requirements for coal, mainly capable of taking large coal but at least two sites retaining mechanical stokers with more specific requirements. Also one site that uses coke/smokeless fuel.

Sites thought to be using wood:-

Westonzoyland Pumping Station, Somerset. This site raises steam in a portable locomotive type boiler and they generally use wood is their fuel, with a small quantity (5 tons) of coal.

Eastney Pumping Station, Portsmouth. This site has two locomotive type boilers and I believe they use wood. However, possibly not in steam currently.

Forncett Industrial Steam Museum, Norfolk. This site is in steam several days/year on a vertical boiler. I am not sure if wood or coal. Certainly worth checking.

Dogdyke Pumping Station, Tattershall, Lincolnshire. Another site in steam a few days/year from a vertical boiler that burns wood.

Bancroft Mill, Gillians Lane, Barnoldswick. This site runs a Cornish boiler several days/year and this is fired on wood.

Stott Park Bobbin Mill, Cumbria. A vertical boiler in steam irregularly in the season and fired on waste bobbin wood.

That adds another six sites with traditional hand fired boiler plant that could burn coal but probably use wood for some or all of their needs.

So, an absolute total of 27 stationary steam sites that could have a requirement for a coal based solid fuel.

It is possible that I have missed a smaller site and it is possible that an odd site may be added to the list (e.g. Grane Mill, Haslingden and British Engineerium Hove).