NEWSLETTER June 2018

FORTHCOMING EVENTS

- **PEEMS Railway At Welburn Hall School:** Tuesday 26th June. Details Below
- **PEEMS Railway At The Malton Show:** Sunday 1st July. Details next page
- **Club Meeting:** Wednesday 4th July ~ Mike Sayers' Trophy.
- **Workshop Morning:** Tuesday 17th July 10-12 noon.
- **Club Excursion To The "Flower Of May" Scarborough**. Thursday 19th July. Details next page.
- **PEEMS Railway At The Ryedale Show:** Tuesday 31st July. Details next page.

CLUB MEETING: Wednesday 6th June.

As Vice Chairman, Colin Bainbridge ably stood in for David Proctor. A few announcements were made prior to the talk by Chris Blackstone.

First, we welcomed a visitor, John Richardson, who was interested in model railways.

- **Doncaster Show:** PEEMS chairman David Proctor wished to convey his thanks to everyone who helped with the setup, those who supplied models, and also to the stewards who acted as the public face of the club in answering questions and queries. A special thanks was given to Mike Sayers who acted as co-ordinator for the whole event. Whilst PEEMS did not win the "best stand in the show" award, PEEMS heartly congratulates the club that did win.

- **GDPR :** The General Data Protection Act came into force on the 25th May. A request was made for any members who hadn't filled in their personal information form, with regard to their membership of PEEMS, to do so. The club may not be able to contact members who haven't filled in the forms, because under the regulations, they have not given permission to PEEMS for their data to be used.

  In addition, some of the forms that were completed at the last meeting, have ambiguous and missing entries. This has generated a few additional queries which David proposes to address at the next club meeting. The draft membership list is in the progress of being completed. Even though several people have filled in these forms, quite a few people have not provided e-mail addresses, which makes it difficult for the club to keep in contact with those individuals. A telephone number is not necessarily the answer, and postage is the most expensive way to contact a member, so e-mail addresses are appreciated where they are available. If an e-mail was not provided last time and a member has one, they should feel free to submit another form, so David can collate the information.

  In may be necessary in the future, that all new members will be asked to provide an e-mail for future correspondence.

- **The Railway:**

There are three outings this year: Welburn Hall School and the Malton and Ryedale shows

i) **Welburn Hall School, Tuesday 26th June:** The annual visit to Welburn Hall School will be led by Mike Sayers. Mike said that it is a privilege to take the railway to the school, and it is always a wonderful day. Mark Angus and Charles Hill will also be taking their engines. It is recommended that volunteers get there at 9.00 to 9.30am. The entrance to the field is the immediate turning on the left after turning off the A170 to the school. This is a "cart track". Mike would like volunteers to bring <u>anything</u> that can entertain the young people. If means of giving rides can be provided, that would be ideal.

   At the committee meeting it was suggested that for the benefit of those members who have taken part in operating the railway in the past, and may wish to do so again, or those who may wish to learn more about setting up and taking apart the equipment, that Welburn Hall School would be a good opportunity for learning just that.

Tony Leeming has devised a procedure to enable assembly and disassembly of track with the minimum of effort. This will be an ideal opportunity to try out the procedure. The grounds at the school are a "contained environment", which lend themselves to tuition, and mistakes can be made under supervision.

ii) **Malton Show on Sunday 1st July**: The railway will be set up on the 30th June, the day before. Jim Everett will be leading that outing. Jim Everett explained that the Young Farmers have been organised to assemble and disassemble the track. However, some people will still be needed on the Saturday. PEEMS will be arriving with the equipment at 16.00 hrs on the Saturday for setting up, and the Young Farmers will be there at that time. On Sunday, those helping should arrive at 9.00am. Jim has spoken to the organisers, and they can provide half a dozen tickets.

iii) **Ryedale Show: Tuesday 31st July**. The railway will be set up on Monday 30th July, and David will discuss this further at the next meeting. Tony Leeming will be leading this outing.

Tractor And Engine Rally: Sunday 29th July. PEEMS has received an invite to take part in the "Tractor and Engine" day at the Ryedale Folk Museum. This is an announcement to test the waters to see if there is the level of interest for PEEMS to be involved. It will be discussed at the next committee meeting as to whether or not PEEMS officially agrees to provide the railway track, locomotive and rolling stock. This can be discussed further at the next club meeting. Details of the "Tractor and Engine" day are provided at the end of this newsletter.

- **Outings.**

The outings booked so far for the club are:

i) "The Flower Of May" Scarborough on Thursday 19th July. Ted Fletcher is organising this.

Of interest to PEEMS members is the on-site 'Scarborough Fair Collection". This is a museum of fairground mechanical organs and showman's steam engines. It is one of the largest collections of its type in Europe. There is also a collection of classic cars, vintage motor cycles and vintage vehicles. Here is the website: http://www.scarboroughfaircollection.com/collection/ *Please press on back arrow ⟵ to return to newsletter*

This outing is open to wives and partners. It has been suggested that people may want to join up beforehand, and "Mother Hubbard's" fish restaurant has been recommended. The Scarborough "Park and Ride" can be used to travel to "Mother Hubbard's" and then be used to travel on to the "Flower Of May".

The suggested time for the meeting at the restaurant is 12.00-12.30pm

Ted added these notes:

Visit To 'Scarborough Fair Collection' at the 'Flower Of May' Holiday Park: Suggestions.

- *Use the 'Park and Ride' (P&R) on Filey Road: SAT NAV YO11 3 JY which is on the way to the 'Scarborough Fair' venue. Have a shopping morning in sunny Scarborough, followed by fish and chips at "Mother Hubbards". Catch the P&R bus to the P&R car park then onto 'Scarborough Fair. The admission is £5.50. Michael Carr will be playing a selection of your favourite dance music for you to dance to on the Wurlitzer organ. Tea and coffee snacks are available. As we could be a large party, both at "Mother Hubbard's" and 'Scarborough Fair', could there be a rough idea of just how many members, wives and partners will be in attendance, as this could be an advantage?*
- *Seamer Road 'Park and Ride': SAT NAV YO12 4LW. I suggest you use Filey road then you avoid Seamer road altogether, as you would be travelling across Eastfield to the P&R site.*
- *Just join us at 'Scarborough Fair': SAT NAV YO11 3NU. Telephone 01723 586698.*
- *Alternatively, you can spend the morning in Filey, and have lunch in Filey. Then you can join up with other members and their wives and partners at 'Scarborough Fair' 13.00 hrs onwards. For those without SAT NAV, follow signs to "Flower Of May" Holiday Park, Stone Pit Lane, Scarborough. When going from Scarborough direction look out for the 'Plough Inn', a larger pub/restaurant on your left and then take the first left at the roundabout. Follow the road along for 250metres then turn left again. Continue along the well kept road, slow across the small junction and follow signs to the left and to the car park.*

ii) Parkol Marine Shipyard At Whitby: Thursday 27th September**.**

This will be a morning visit between 10 and 12 am. It is suggested that there is meeting for lunch afterwards, especially as the shipyard is very close to the harbourside restaurants.

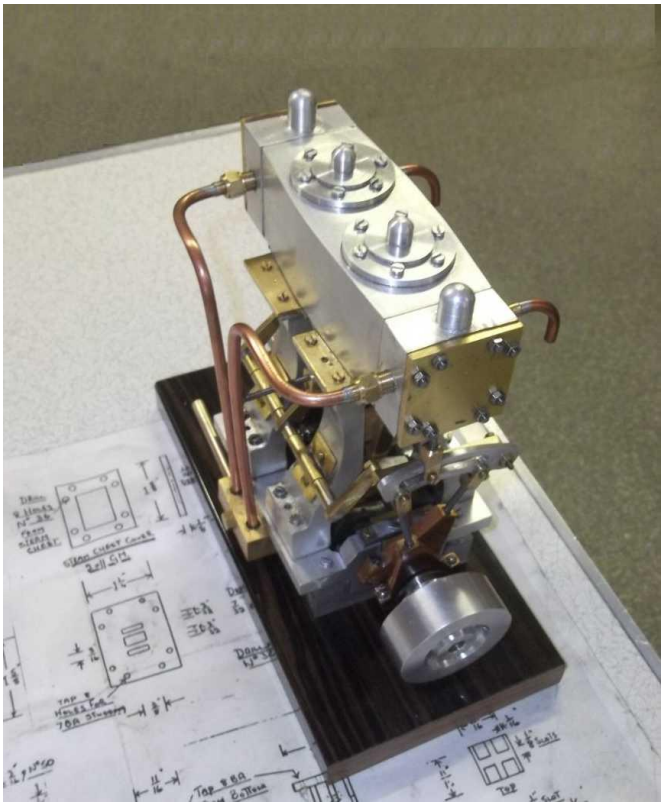
- **Volunteers**

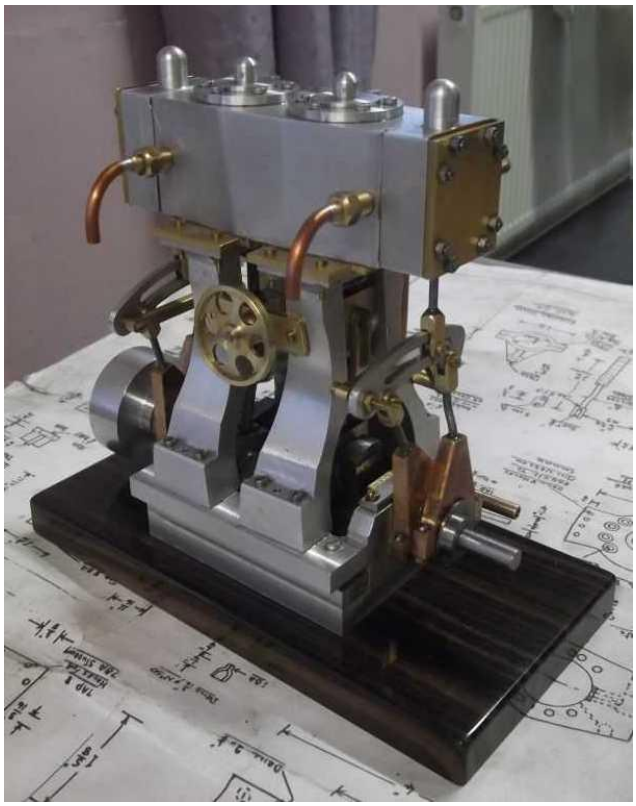
Two members have officially volunteered for the vacant posts advertised in previous newsletters.

i) Peter Bramley has kindly offered his services to take over technical lead on the railway. This is a maintenance role only. Peter will make sure that the track, engine and rolling stock are in good condition for any outing the railway makes.

ii) Alistair McCloud has volunteered to be Safety Officer. His first outing in this role will be to the Welburn Hall School event as part of the training

- **Mini 'Bring and Brag' ~ Brian Stephenson: A "Cunardia" Marine Engine**





Brian brought along his latest model, the "Cunardia" marine engine. This is a simple twin marine engine. It has a forward and reverse, operated by the central wheel at the back (see above). It was a challenge making some of the components, but these challenges were overcome. There are no castings in the model.

Chris Blackstone ~ A Talk On Programmable Logic Controllers (PLCs)

i) Introduction

Chris gave a very interesting talk about his experience in the use of Programmable Logic Controllers (PLCs), in the NHS and Flamingoland.

This was a topic which was very instructive for those of us who had little knowledge of how important these controllers are in making healthcare facilities environmentally friendly, cost efficient, and very useful in helping medical staff in their every day delivery of services.

The talk was split into two, with a tea break between. First there was an explanation of PLCs and their varied uses, followed by an explanation of how PLCs control autoclaves which are used to sterilise medical instruments.

ii) A Brief History

Chris started his career by taking up an apprenticeship at Scarborough hospital in 1975. He was tutored by Ted Fletcher at the technical college and then started a career as a craftsman at the hospital. He progressed to supervisor. In 2004 he left and studied for an internet computing degree with the University of Hull at the Scarborough Campus. After his degree Chris went to Flamingoland for the summer and ended up staying there for three years. He was introduced to PLCs while at Flamingoland, and in 2010 returned to the hospital, first in medical engineering, and then as a technician.

iii) So What Is A PLC?

NEMA* defines a PLC as follows:-

"A digitally operating electronic apparatus which uses a programmable memory for the internal storage of instructions by implementing specific functions such as logic sequencing, timing, counting, and arithmetic to control, through digital or analogue input/output modules, various types of machines or processes".

*National Electrical Manufacturers Association (American)

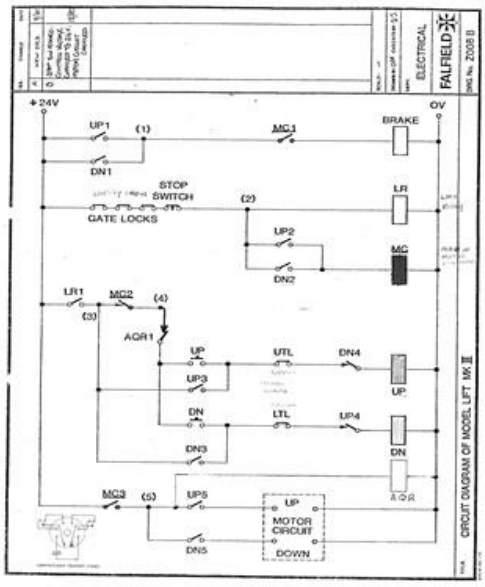
iv) Why and When Was The Technology Developed?

- An idea thought of by Dick Morley, an electrical engineer, on Jan 1st 1968 who "got sick of designing systems for different clients that did similar things".
- A one box fits all scenario – a stand-alone unit that would be adaptable to any purpose – to replace cabinets full of relays.
- The impetus for Dick Morley was that at the same time, General Motors had a need for a 'solid state controller' to replace unreliable hard-wired relay systems which were getting bigger and bigger. Dick Morely worked with GM and started the company Modicon, (Modular Digital Controllers). Modicon is still around today but is run by Schneider.

v) Relay Logic For A Simple Lift

As an illustration of the type of job a PLC was designed to replace, Chris showed us a relay circuit to operate a simple two floor lift. The drawings are shown in an unenergized state.

- A good example of simple Relay Logic.
- A two floor lift with basic controls.
  - Up & down button
  - Floor call button
  - Overtravel limits
  - Anti Quick Reversal relay
  - Safety chain consisting of gate locks and 'E' stop
  - Motor Contactors providing directional control also interlocked
  - Brake

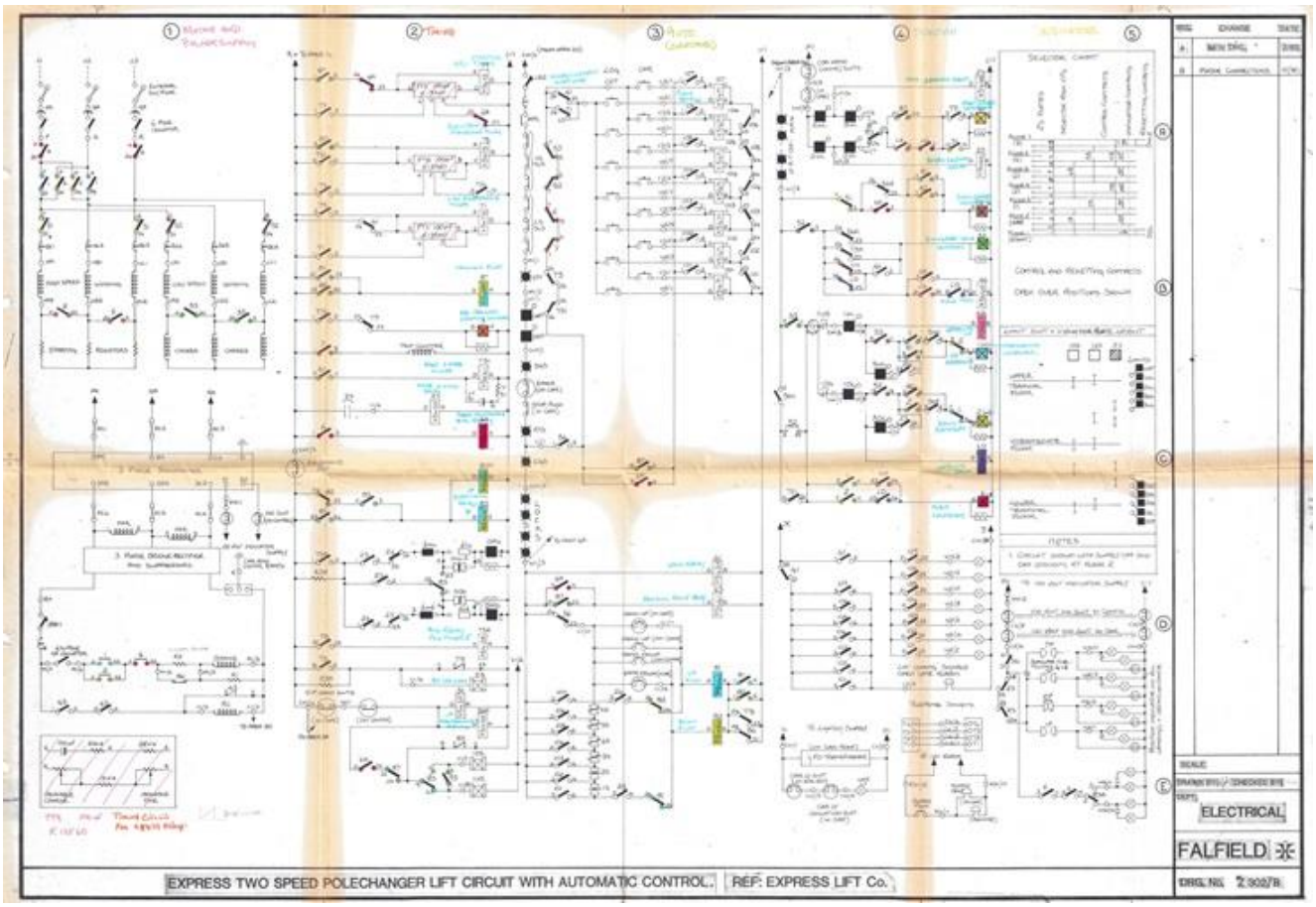


All fits in a small cabinet.

vi) A Not So Simple Lift

Far more complicated than the previous lift, it has bigger motors, more lights and relays.

- Seven floors
- Two speed for travel achieved using large multiple winding motor
- Electric doors
- Indicator lights for floor level
- Car top controls for servicing
- Telephone and Alarm
- Phase reversal relay
- Needs a large cabinet approx 6 feet wide and 6 feet high crammed with electronics.



vii) Because Of The Complications And Sizes Of The Previous Circuits, PLCs Are Used.

With the PLCs more floors can be covered, there are more safety features and the components fit into a box approximately one meter x one metre. PLCs have shrunk the relay systems, so in summary:

- Multi floor
- Fewer components – still need inputs and outputs
- Motor speed controlled by VFD invertor – smoother ride
- Smaller motor with only one set of windings
- Energy efficient

viii) Another Place PLCs are Used ~ Flamingoland (Kumali Roller Coaster)

a) The complexity, just for a two minute ride:

b) Some Facts About The Circuitry Controlling The Car.

- Each module has 16 inputs or outputs
- Two of the modular 500 series micrologic and three of the smaller PLCs
- Five cabinets of relays, contactors and around two thousand terminals controlling one main DC drive motor, several pairs of reversible motors for moving the train and dozens of sensors collecting information from all around the ride

There are three PLCs in a cabinet, one runs the show, one checks the one running the show, and there is another PLC which checks the other two to make sure everything is right. If there are any problems it shuts down the ride.

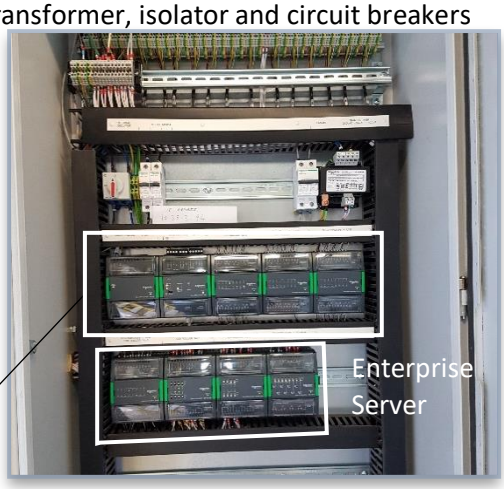
Each of the boxes is either an input or an output. Each box contains 16 relays. There are contactors which run the smaller motors which drive the car out of the station. There are also PLCs which monitor the sensors around the ride. There are fifteen sensors on the way up, and these watch the car as it goes through to the top. Once it gets to the top, the car is released, and it is then in freefall. There are no drives. Once it gets back to the station the eddy current magnetic brakes slow the ride down. There are no electrics, just big magnets which stop the car as it passes through. The car has to be driven out to get back to the station. The main incoming power which is 3 phases, runs right across the top of the five cabinets which hold all the equipment. There is a DC motor driving the lift motor, which takes the car up to the top of the ride and releases it. That is controlled by the PLCs as well.

ix) The BMS (Building Management System)

Another use for PLCs is for building management systems. Chris showed us the one in Malton hospital.

a) Cabinet 1 of 2
This consists of circuit breakers, contactors and relays

b) Cabinet 2 of 2
This consists of a power supply, automation server, I/O Modules (17 types available), transformer, isolator and circuit breakers



This is the PLC and contains some of the newest electronics on the market. It is made by Schneider and it's called Struxureware. The first module is the power supply, the second module is the brain, and the other modules are relays and switches that control pumps and motorised valves which control the heating. There are inputs where sensors in the room instruct the valves to open or close to control the temperature in a room.

x) Schneider Smartstruxure

The units below the PLC contain the Enterprise Server. The Building Management System is run from the 'Enterprise Server' which is a centralised PC. This is accessible from any PC using web access or by a mobile phone app. The 'Enterprise Server' runs the master programme which tells all the small servers (which each cabinet has), what to do. If the mains fail, they can run as a "stand alone" system as they have their own memory of the programme.

The BMS can be accessed with a mobile phone app, so that when the engineers attend they can alter settings on programmes when required.
The Enterprise Server can control up to 250 'automation servers'. A panel will consist of a power supply, one automation server and a maximum of 32 I/O modules. This means it can control 464 I/O points.

The system can be easily expanded and the modules can be chosen to suit the purpose they are needed for:

- Energy management
- Plant monitoring. For example, when motors are starting to fail this is indicated by an increase in current. The system can stop plant freezing up by increasing the temperature.
- Lighting. For example, a sensor in a doorway can detect when someone is entering a room and turn on the lights automatically. It can also control lighting when walking down a corridor, turning the lights in front on and lights behind off.
- HVAC – heating, ventilation and air conditioning
- Fire safety. The fire alarm is just a switch. When fire and smoke increase, an output is switched on, the hospital switch board is alerted, and the fire brigade can be directed to the source of the fire.

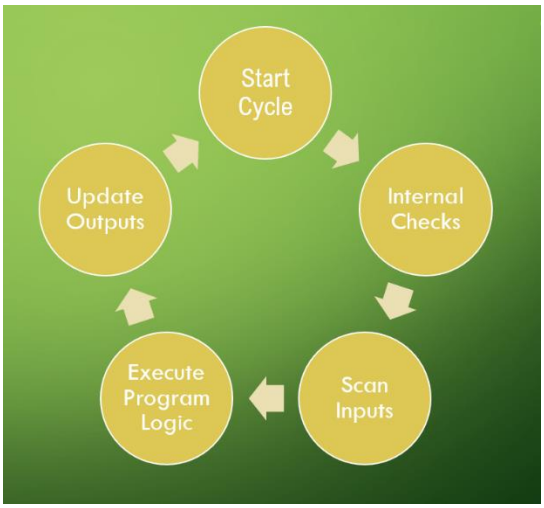
Enterprise Server

Modules

xi) The CPU Operating Cycle

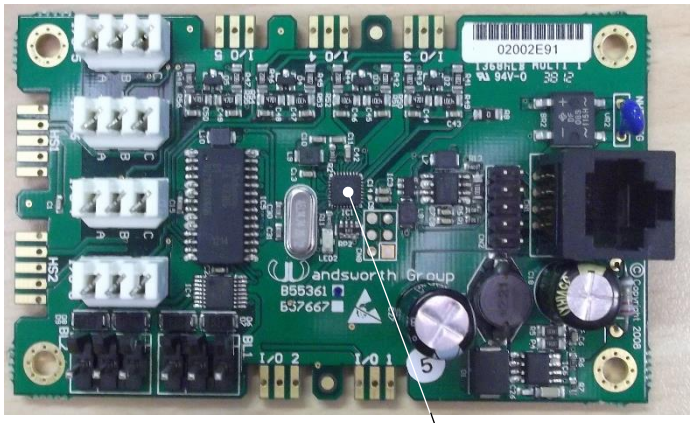
The way the PLC works is like starting a new computer. It is turned on, it boots up, runs the programme, and starts to perform internal checks to make sure everything is alright with the processor. It then scans the inputs looking for a signal telling it what it needs to do, such as increasing temperatures or putting lights on. It executes the programme, activating the relays to perform the functions. It updates the output performing the function, such as putting on the lights. It then goes back to the start of the programme. The PLC is constantly loitering.

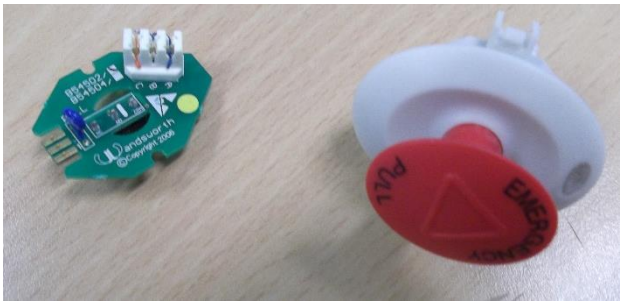
Here is an example of a simple programme for changing a duty motor on a constant temperature (CT) heating circuit :



xii) A Small PLC Which Is Used In The "Nurse Call" System In Hospitals

Chris then showed us a small PLC which is part of "Nurse Call" system and fits into a panel behind the bed. The PLC monitors what is going on at the bedhead.





The Reset and Emergency Buttons

The emergency button, reset button and handset fit onto the other connectors on the board.

xiii) Further Examples Of Modern Programming For PLCs

As can be seen in xi) on the previous page, the PLC programming works using the "IF/THEN" statements. Using the previous example of room management, if a room needs the lights on when it is occupied, then the programme may indicate "IF room is occupied THEN turn lights on" and "IF room is unoccupied THEN turn lights off". However, because it is inefficient to keep turning lights on and off when people intermittently enter the room after being occupied, a line of code would keep the lights on for a specified time after the room is empty. The PLC will perform the same function for fans, and any other function associated with operations in the room. The PLC can be programmed to lock the room during holidays, but allows entry with access codes in swipe cards.

xiv) PLCs And Their Use In Controlling Sterilising Autoclaves At The Hospital.

Chris said that one of his more interesting jobs is looking after the sterilisers at the hospital. The sterilising of medical instruments is done by means of an autoclave, which is basically a steam oven.
The instruments first go into a "dirty room" where they are washed with disinfectant, after which they are about 90% clean. They are then moved into a middle room where they are passed through washers. They are then moved into a "clean" or "pack" room where, if anything else is needed to clean them up, that is done. They are then packed into trays and listed. Each operation has its own set of instruments.
The instruments are then moved to the autoclave. Before they pass through the autoclave they are still classified as being "dirty", but the sterilisation process ensures they are 100% sterile and ready for reuse.
As the instruments pass through the autoclave on racks, they are subject to temperature and vacuum.
The jacket of the autoclave is pressurised to about 3.2 bar, starting at 0.5 bar and increasing in pulses.
The jacket is heated all the time.
The whole process is monitored by a PAC 2000 PLC.

- The Vacuum Cycle : During the sterilisation process, three vacuums are pulled, first going down to about 50 millibars and then increasing up to just below zero. The vacuum cycles are to pull all the moisture out of the packs. After this the sterilisation process begins.
- Temperature Cycle : The temperature is brought up slowly in five pulses, and then there is a final heat-up to 134°C which is the sterilisation temperature. Sterilisation takes about 3 minutes. Then there is a short drying period of about three minutes, but this can be extended up to 20 minutes. The temperature is monitored using thermistors. If the temperature goes above 137°C, there is too much steam, and if it fails to reach 134°C, there is not enough steam.
- Leakrate Test. A leakrate test is periodically carried out on the autoclave. This makes sure the system is sound with no leaks. The pressure is pulled down to 50 millibar. The PLC checks the system after five minutes and then ten minutes and compares the two results, indicating whether or not there is a leak.

It should be noted that any kind of waste that may be infectious (clinical waste), is dealt with by an external company. It is double bagged, transported in big wheely bins, and a registered waste disposal contractor incinerates it.

xv) A Video Showing How To Set Up A PLC To Operate Automatic Signalling Lights On A Model Railway

Chris has recommended this video for anyone who wants to programme a PLC to operate automatic lights, in this case, automatic signalling lights for a model railway. This video is comprehensive, showing the components required, how to build the system and circuits, and how to programme the PLC with a programme downloaded from the internet. It is also a good illustration of how PLCs work.

https://www.youtube.com/watch?v=wL4I3MXxKZo *Please press on back arrow ⟵ to return to newsletter*

Note: The video neatly shows the process as it goes around the flow chart, and by operating the different inputs, you can watch the cursor go through all the paths. In this way, you can see how different inputs affect what the output does.

xvi) Question and Answer Session

There followed a question and answer session.

Question: *You mentioned that PLCs can turn lights on and off when someone walks down a corridor. I have been involved in factory maintenance, and the general rule at the time was that turning fluorescent lights on and off all the time was bad.*

Answer: The lights in the hospital are now the ones that dim and don't go off totally. They just go down to a low level. Fluorescent tubes have heaters at each end. When the light is switched on, the field in the choke collapses, which causes a large voltage, which in turn strikes the tube. That caused the tubes to fail. The heaters were expanding and contracting. The original tubes used bi-metallic strip starters, but electronic starters have been developed which ramp the voltage up to the point where the lamp is lit. This extends the life of fluorescent tubes.

There are now electronic ballasts which do the same thing. The ballasts are programmable, and contain PLCs. This means that when the fittings go up in the hospital, they can be programmed to go on and off in the most efficient way. For instance, the fittings at the hospital are programmed in "corridor mode". There is a sensor in the ceiling, and the fittings are turned on permanently, but they run in dim mode. As someone walks down the corridor, the sensor causes the choke to go up to bright. Once the person has passed, the programme in the ballast counts to 30 seconds, and the tube is dimmed. This saves energy.

The photographs in this article have been reproduced with kind permission from Chris Blackstone. Chris is also thanked for his help in compiling this article

A Note From Paul Windross :

I spoke to Beccy and Mick Ellis and they were over the moon with the donations from PEEMS. Beccy will reply soon. The donation was a first for them.

Here is a little about my Sunday Elvington day:

A lovely day at Elvington. It was a pity about the side wind for the super fast boys and girls, but I found a new friend who wants to drive my car, but I'm not sure about the driving licence!

Nice to meet the Beeline boys, and see some very creative machines. The memory cells were working overtime today.

I learnt that a certain gas turbine hydroplane will be at Coniston later in the year. Roger (Taylor) will have to brush up his turbine knowledge if we go again.

It was a good social day at Elvington and meeting fellow speed enthusiasts made my day.

Paul Windross

Tractor & Engine Day at Ryedale Folk Museum

We are looking forward to running our Tractor & Engine Day event here at the Museum on Sunday 29 July 2018 from 10am to 4pm. We would like to invite members of Pickering Experimental, Engineering and Model Society to enter their exhibits, or perhaps join us as a club at this year's event, for what we hope will be another busy and enjoyable day for exhibitors and visitors alike.

http://www.ryedalefolkmuseum.co.uk/event/tractor-engine-day/
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The classes for exhibit entries are: Best Tractor / Best Engine / Most Original (Tractor or Engine) / Best Fordson and Best Exhibit - all entries will automatically be entered in to the Best Exhibit class, which will be chosen via a combination of judge and visitor votes.

Access to the Museum is available from 8am and all exhibits must be on site by 9:30am, ready to open to the public at 10am. Awards will be presented at 2pm. A run around the village, for those who wish to participate, will take place at 4pm, when the event will end.

Entry terms and conditions can be found on the attached entry form. There is no charge to enter. Each exhibitor will be issued with vouchers for two drinks (from our pop-café) and a hot sausage/veggie roll (from our Victorian White Cottage range).

Please note: completed entry forms and a copy of public liability insurance related to each entry, valid for Sunday 29 July, is essential. Entry can not be confirmed without a copy of public liability insurance, which must prove indemnity not less than £2,000,000 for any one accident.

It would be very helpful if entrants could include a contact number on their form so that we can confirm entries via telephone, as we aim to reduce paper use and postage costs.

Flyers and poster for our event are available (digital version attached) and we would be very grateful if you could help us spread the word by displaying these locally – please make a note on your entry form (or give us a call) if you would like any posting out to you. Please also feel free to pass on our contact details to anyone you think may be interested in submitting an entry.

If you have any questions in relation to this event, please don't hesitate to get in touch using the contact details displayed below.

Kind regards,
Kirsty Holtby
Commercial Manager
Ryedale Folk Museum
Hutton le Hole
North Yorkshire
YO62 6UA
Tel: 01751 417367

Tractor & Engine Day
Sunday 29 July 2018, 10am-4pm
Entry Form

RYEDALE FOLK MUSEUM

Title _____ First Name _____ Surname _____

Address _____

_____

Postcode _____ Telephone Number _____

Email (if you're happy for future correspondence regarding this event to be sent via email only)

_____

Entry Classes - please tick which class(es) you are entering:

- ☐ Best Tractor
- ☐ Best Engine
- ☐ Most Original Tractor
- ☐ Most Original Engine
- ☐ Best Fordson
- ☐ n/a (agricultural implements/models/etc.)

Description of entry #1 _____

Description of entry #2 _____

Please note: our site is not suitable for track layers.

Please tick if you require trailer/lorry parking (limited space, early entry is advised) ☐ Length: _____

Terms & Conditions of Entry

All entries must be fully insured for public liability, having indemnity not less than £2,000,000 for any one accident, valid for the event on Sunday 29 July 2018 – a copy of documentation must be attached to this form.
All entries must be on site in their allocated position at the Museum by 9:30am and must remain until 4pm.
Entries may not be driven or moved on site after this time unless agreed by a member of Museum staff – you will be advised when it is safe to move off site for the village road run/to depart the site upon close of the event.
Entries will be accepted on a 'first come, first served' basis (entries made after 15/07/18 cannot be guaranteed).
Entry acceptance will be confirmed by telephone/email.

By signing this entry form you agree to adhere to the terms & conditions of entry as stated above, as well as any site-specific instructions provided by Ryedale Folk Museum staff prior to and/or on the day of the event.

Signed _____

Completed entry forms with ATTACHED COPY OF YOUR PUBLIC LIABILITY INSURANCE are to be returned via post or email by 15/07/18.

FAO Kirsty Holtby
Ryedale Folk Museum
Hutton le Hole
YO62 6UA

kirsty@ryedalefolkmuseum.co.uk

We will only use the information you have provided here to contact you about this or subsequent events at Ryedale Folk Museum. We will not pass on your details to any other organisation.

Items For Sale.

These items have no price, but offers should be made to Tony Keld, contact given at the end.

Electrical Motor Is A Flange Type

IP54

Kw 1.1 or 1.4751 HP

RPM 1420

Volts 240

PH 1

Hz 50 Amp 10.5

Hydraulic Power Unit

Type PHE 40 1PH

F.L.A 10.5

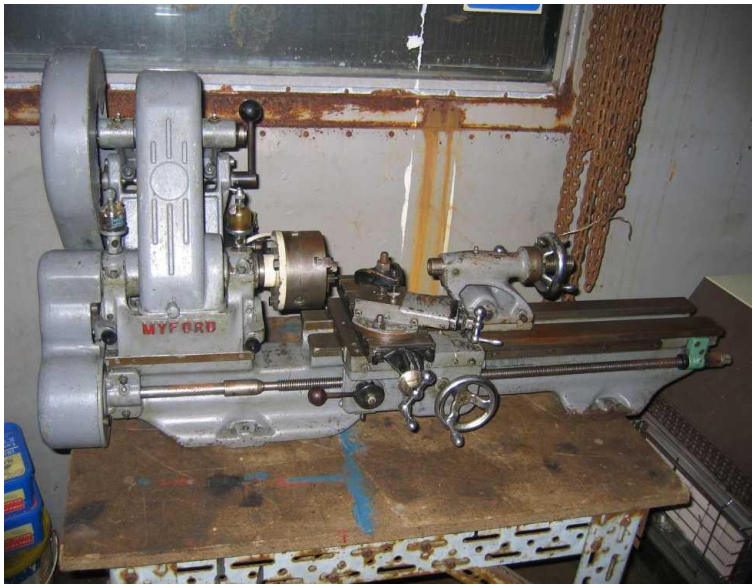
MAX W.P 210

Flow 13

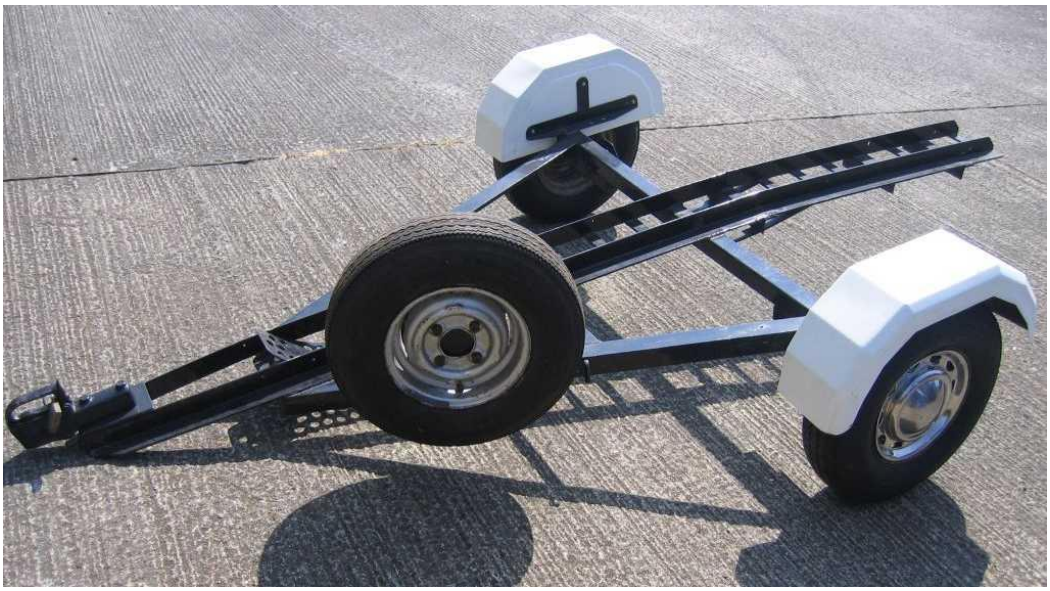
New, Never Used ~ Micromaster 420 Frequency Inverter

For Sale Together

Lathes



Single Bike Trailer On Mini Wheels



Single Leg Vice.

Set Of Old Cast Wheels Suitable As Garden Ornaments.

Approximately 10 Electric Motors ¼ HP to 1.5 HP

1 off ½ BHP Volts SER 220/230 Amps SER 4
Or Volts PAR 110/115 Amps PAR 8

1 off Flange Motor HP 1.5 Volts 220/240 or 380/420
F.L. Amps 4.3 or 2.5
Phase 1 or 3

1 off Flame Proof ½ BHP Volts 220/240 Amps 3.7

A Workshop Heater In Suitable Condition

Old Gas Light For Restoration And A Parts Washing Bath

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Try any time but best time is after 6.00 pm

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