Oil installer

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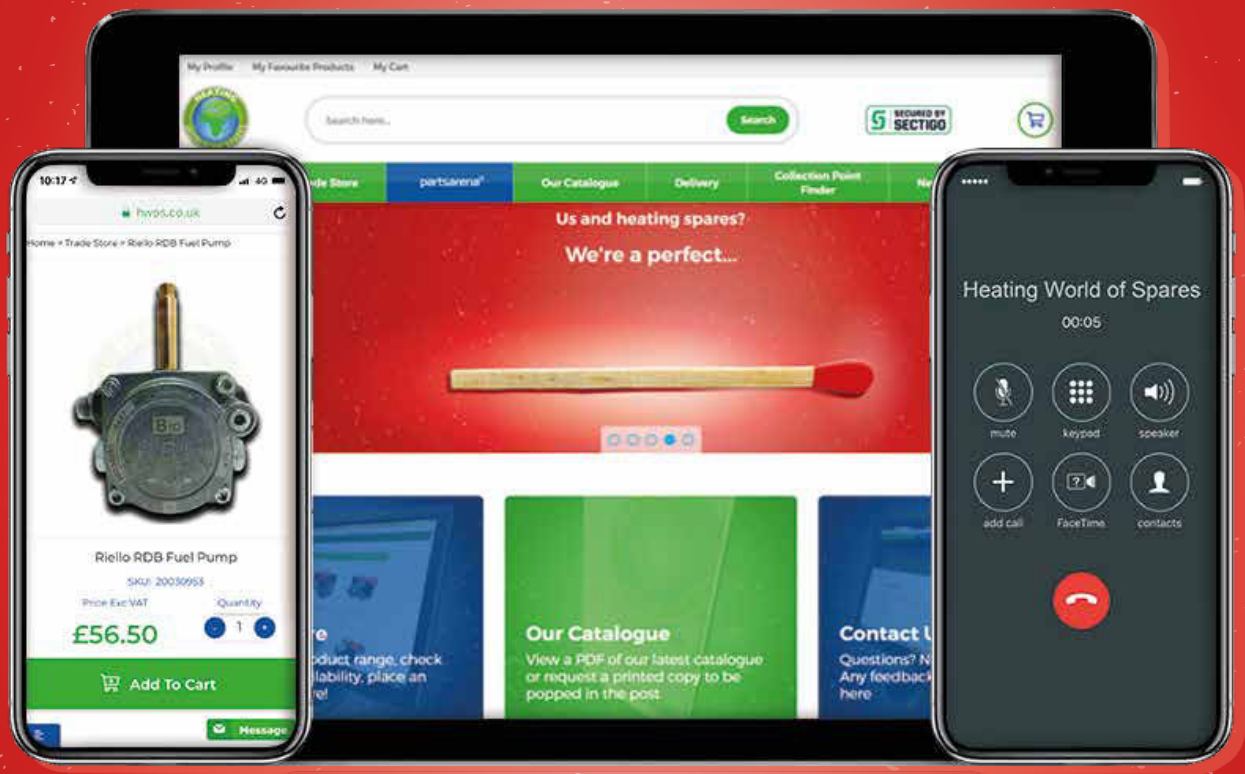

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Installers play a crucial role...

Responding to industry consultations is a regular part of OFTEC's work. However, this autumn has seen us join forces with several other trade associations and the UK government to ask installers for their views instead. This is an extremely welcome development and the response has been excellent, so thank you if you took the time to contribute your views.

Until now, the voice of installers has largely been missing from the debate about the future direction of the heating industry and it doesn't take a genius to know that their role will be crucial to a successful transition to renewable technologies.

There are two main reasons for this. One is that installers will be doing most of the work, so understanding their views is critical if the changes required are going to happen smoothly, or even at all! The second is because the public has a high level of confidence in heating technicians and depends on them to provide advice and good outcomes. Most consumers have little understanding yet of the relative merits of hydrogen, biofuels or heat pumps, and won't know which options are best for their home. Without good advice from their trusted local expert, they will struggle to make the right choices.

It's also essential that the government listens to the feedback from installers. So far, despite well-intentioned schemes like the RHI, the renewables market remains sluggish. The products are often expensive and it's hard for small heating businesses to get involved in delivering them. This needs to change. After all, simpler, more affordable renewable solutions are more likely to be successful than those that are not.

And that's where manufacturers can play a vital role too. As the new chairman of OFTEC I will be working hard to ensure that, as an industry, we deliver a biofuel solution for off-grid homes that ticks all the right boxes when it comes to cost, convenience and practicality. You can read more about my thinking on page 7.

Laurance Coey

Chairman,
OFTEC

OFTEC raises funds for Mates in Mind

Each year, staff at OFTEC headquarters raise money for local or national charities by holding a Christmas raffle. However, this year – following a review of our corporate social responsibility – we've decided to do something different and nominate a charity to work with throughout the year. We will be holding regular fundraising activities during the year, including our annual raffle.

This year, we've chosen 'Mates in Mind' as it focuses particularly on the construction industry which we feel aligns closely to OFTEC's activities. Mates in Mind raises awareness and addresses the stigma of poor mental health in the workplace. Their aim is to promote positive mental wellbeing by helping to make sense of the support that is available to employers to address mental health within their company.

In 2019 Mates in Mind has already reached more than 200,000 individuals. Mates in Mind partner with a construction industry helpline – so if you, or someone you know needs support, please call 0345 605 1956 or visit: www.matesinmind.org

Staff update

OFTEC colleagues are very pleased to welcome two new faces to the team. Michelle Hill replaces James Barnes in the ICT department. Michelle has extensive IT experience and before joining OFTEC has worked in several industries including the MOD and railway maintenance.

Having run his own heating business for a number of years, Robin Clark has decided to take his career in a new direction and join the OFTEC field inspection team. OFTEC registered businesses based in the south of England will get to meet Robin at their next inspection.

Michelle Hill

Robin Clark

A day in the life of... OFTEC's technical department

You may think that your first contact with OFTEC's technical team is when you pick up the phone for some guidance on a tricky installation. However, you'll have bumped into us much earlier in your career when you took your first oil heating training course. That's because we will have written your assessments. And, even before that, the standards to which oil heating equipment is manufactured will have been developed under the careful scrutiny of industry working groups attended by OFTEC.

Who's who in the technical team?

A prerequisite of joining the technical team is a background in the heating industry – experience 'on the tools' is ideal to help resolve the types of issues that technicians frequently encounter.

Contrary to popular belief, OFTEC doesn't write the regulations – we just know them really well!

Technical director – Tim Lock

Training manager – David Knipe

Technical officer – Joe Bath

Technical officer – Evan Brown

Technical officer – Clare Griffin

Committees and Schemes

The technical team sits on national and European committees and actively contributes to British and European standards. We don't write the standards, but we do try to influence them in the best interest of the UK and Irish liquid fuel heating industry. We also review latest regional legislation and industry documentation, which is then communicated to technicians through technical notices, technical book updates or articles in E-news or *Oil Installer.*

Whilst reviewing documentation, we also monitor any consultations from UK or Irish government so that OFTEC can submit the views of the liquid fuel heating industry to help influence heat policy. Recent examples are the partial government U-turn on including oil heating in ECO3.

OFCERT scheme

The technical team administers the OFCERT scheme, which assists manufacturers in voluntarily producing equipment that is innovative or exceeds minimum industry requirements. OFCERT licenced products are designed and tested to comply with recognised performance standards developed by OFTEC in consultation with its members (e.g. OFTEC standards) and are required to be manufactured under an approved quality management system, such as ISO 9001.

OFTEC consultancy services

From time to time a member of the technical team may be required to carry out a site visit and report on their findings. This will generally include contraventions of building regulations, manufacturers' instructions or industry codes of practice. They report on the issues found and recommend how compliance can be achieved. It's important to remember that the role of OFTEC is to bring about compliance – not to catch technicians out!

Training

We are very proud of the extensive network of approved centres offering OFTEC assessments for oil and solid fuel heating in the UK and ROI. OFTEC's training manager, David Knipe, has regular review meetings with the centres to ensure they continue to meet our approval criteria and to get feedback on the courses.

OFTEC assessments are written by working groups made up of manufacturers, technicians, training centres, certification bodies, industry experts and the OFTEC technical team. The groups are convened whenever there are changes to standards or regulations and will also have regular review meetings to ensure the assessments are up to date and relevant.

Although we write the assessments, the certification of candidates is carried out by one of seven certification bodies (CBs), accredited to BS EN ISO/IEC 17024. We hold regular meetings with CBs to review updates to paperwork, changes to procedures or standards and to discuss new training programmes, such as the solid fuel servicing and commissioning course launched earlier this year.

Are you making use of OFTEC's technical advice service?

The technical team assists registered technicians in numerous ways and don't forget, this service is included as part of your annual registration, so please make use of it:

- Online – we have compiled a fantastic FREE resource on www.oftec.org. You'll find technical notices, technical book updates, calculation tools and a host of other information.
- Helpline – we answer around 7,200 calls each year on **01473 626 298** (UK), **01 864 5771** (ROI) and we do our best to help solve all queries on, for example, tank location, problematic installations or by giving a second opinion on specifications.
- Email – we receive around 1,200 email queries on: **technical@oftec.org**.
- Technical articles – your queries help us identify issues to address in technical articles in E-News and *Oil Installer*.
- Support – we also provide guidance to manufacturers, inspectors, training centres, homeowners and other OFTEC departments.

So, next time you are confronted with an unfamiliar system or an issue you are struggling to resolve, to be assured that you will be given the correct/latest information, contact OFTECs technical team. We would much rather you called us to ensure the work is carried out compliantly and above all, safely.

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Meet Laurance Coey – OFTEC's newly-elected chairman…

During OFTEC's annual mini conference and AGM, held in June, Laurance Coey was elected as chairman of the association for the next two years. Many Oil Installer readers will know Laurance from their dealings with Harlequin Manufacturing Limited. But, to get to know him better, we have conducted a special interview with Laurance in which he explains his professional background and his hopes and aspirations for OFTEC and oil-heating industry.

What are your main priorities during your first few months as OFTEC chairman?
Initially this has been getting a communication routine that works for the OFTEC CEO and myself which allows me to keep the right level of involvement and support to the senior management team.

Will you be recommending any immediate changes to current OFTEC strategies?
No. There is a clear understanding within the organisation of what it needs to do in order to support our industry and steer government and policy makers in their goal of reducing the country's carbon footprint.

How long have you been involved with OFTEC and what is your background in the oil-heating industry?
I first got involved with OFTEC soon after I joined Harlequin, then Clarehill Plastics, back in 1994 in the role of production manager. My involvement in the early days was with the plastic tank committee, helping to put tank standards together and shape the training programmes for their installation. As a time-served aeronautical engineer, I have always taken a very practical approach to developing products and helping influence the path of our industry.

With a professional background in the storage tank industry, are tank manufacturers ready for the future, i.e. the introduction of biofuels?
I believe we are in the position to deliver product that is suitable for the current biofuels on the market up to 100%. With bunded tanks there is little to none of the environmental degradation on the inner holding tank, allowing for the use of the current chemical grade materials available without the need for lengthy weathering tests. I believe that compatibility with current bottom outlet materials will be the big issue and expect a need to move to top offtake tank designs as standard.

What do you see as the main challenges to oil-fired heating during the next few years and how can the industry be future-proofed?
Our industry needs to get ahead of the game. Whether we like it or not, heat pumps are here to stay and so too is the desire to get rid of our use of fossil fuels. The only viable alternative is a biofuel heating market. So, we need to ensure all our products sold are suitable for its use at maximum concentrations, even though I suspect it will be many years before the infrastructure is in place to supply the quantities of fuel required.

How do you see the oil-heating industry in ten years…twenty years? And how will this affect OFTEC?
I have no doubt that there will be an industry… it will be smaller, but the equipment used will be of a much higher specification. Burner and boiler technology will have been developed to ensure we are delivering the capability to burn fuel with virtually zero emissions. Our engineers will also have to change… gone will be the days of "we've always done it this way" as these new fuels and emission targets will require a step change in how we get the best from the equipment. The necessity for this should be seen as an opportunity, the higher skill level required for installing and maintaining the equipment should help eliminate the installer who wants to cut corners and, as manufacturers, we will be doing what we can to ensure our products are only installed by the best engineers. Gone will be the days of large tanks and top up deliveries in periods when the heating is not used for long periods.

What do you consider to be OFTEC's biggest challenges during the next two years and what are your long-term priorities?
Our challenge is to convince government that we can deliver a sustainable alternative to electric heating and with the current disarray in UK politics, this will take all my two-year tenure. As for the longer term, it is to ensure our business is flexible enough to deliver to the needs of our customers and the whims of our politicians and policy makers.

In your opinion, how will Brexit affect OFTEC and its members – both in the UK and Ireland?
This is a difficult question to answer. Until a trade arrangement is in place, no one can give a definitive opinion on what the effect on our businesses will be. For sure there will be hurdles to overcome, but that's what business does best. For the UK, it is more concerning what post-Brexit politics looks like. I think we are about to enter an era of turmoil in UK politics brought to a head by the referendum. How well future coalition governments will learn to work with each other will be interesting to watch, far right and left politics is not good for any policy making and as an industry it is extremely difficult to influence politicians that don't want to listen.

Outside OFTEC, what are your main passions and interests?
I am now at a time in my life that I don't have the ties of a young family, so I like to think I get lots of opportunity to indulge myself. I like to get out with my local cycling club – of which I am the treasurer – on regular club rides. I enjoy taking photographs and follow Ulster Rugby and most motorsport. Nice cars and holidays are very important and, hopefully, if I cycle enough then I'll remain fit and in good health to enjoy them for the foreseeable future!

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Planning the way ahead for liquid biofuels

This winter, field trials are expected to recommence as the oil heating industry begins to gear up for the introduction of biofuels. The trials, which will be led by OFTEC, will be designed to pave the way for the smooth introduction of the new fuels, which is expected to begin in the 2020s.

The introduction of biofuels is seen by many as vital if homes that currently depend on oil heating are to reduce their carbon emissions in a fair and cost-effective way.

A number of other low carbon options are already available, including biomass, bioLPG and heat pumps, but these impose significant additional capital costs on the homeowner. In the case of heat pumps, this can extend to often invasive and disruptive fabric improvements for homes with low levels of energy efficiency, but in all cases appliance changes are required.

By contrast, switching initially to a blended liquid biofuel such as B30K avoids the need for appliance changes in most cases. Some older storage tanks may need to be replaced but, with biofuel-ready tanks expected to be available very soon, well ahead of the fuel introduction date, many tank changes can be managed as part of routine upgrades at a convenient time for the customer. Importantly, tanks introduced in preparation for the move to biofuels will be compliant with all future biofuel types.

> Tanks introduced in preparation for the move to biofuels will be compliant with all future biofuel types

The reason why biofuels are needed is to reduce the damaging carbon emissions that cause global warming. The government has recently set a more demanding target of reaching net zero carbon emissions by 2050. That means fossil fuels must be phased out completely and 100% low carbon biofuels will eventually need to be introduced. These fuels will also be investigated as a later part of the trials.

There are likely to be several options for how a 100% biofuel (B100) can be manufactured, using blends of various low carbon fuel types, depending on their performance characteristics and availability. Depending on which blend is selected, it's possible that boiler upgrades will be needed, but as 100% low carbon fuels won't be introduced until the 2030s, it should be possible to switch most households to new appliances as part of the natural process of boiler replacements. This means that boilers that can accept the new fuels will already have been installed, well ahead of time.

Look out for updates on progress in the next issue of *Oil Installer*.

OFTEC partners with Evergreen Energy to offer discounted Easy MCS and Easy Green Deal membership

Following feedback from last year's technician questionnaire, as well as the short surveys in our monthly E-News, we have been looking at ways we can support registered businesses through the complex task of preparing for MCS or PAS2030 registration. To date, the default position of most small businesses has been to leave these schemes to the 'big boys' who have the resources to dedicate staff to their administration.

This is where Easy-MCS or Easy Green Deal comes in! Their experienced consultants will guide you through the whole process – from registering for the consumer code to preparing for your OFTEC MCS or PAS2030 audit. All the systems are set up and ready for you to use – you simply select the templates you need from their easy-to-use online installer toolkit. They keep everything up to date and will let you know when there are any changes.

To encourage OFTEC registered businesses to get involved with these schemes, we've negotiated a £50 discount off the annual subscription fee, bringing the cost down to just £345 per year for either Easy-MCS or Easy Green Deal membership.

OFTEC currently offers MCS registration for biomass, solar thermal and heat pumps.

PAS2030 registration through OFTEC enables installers to secure work under the ECO scheme and covers the installation of oil-fired condensing boilers, heating controls, heating system insulation, underfloor heating, hot water systems, warm air heating and water efficient taps and showers.

For more information:
visit: www.oftec.org/technicians/easy-mcs-certification-support
call the OFTEC registration team on: 01473 626 298
email: registration@oftec.org

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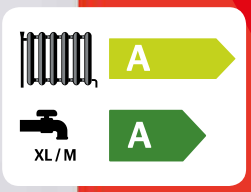

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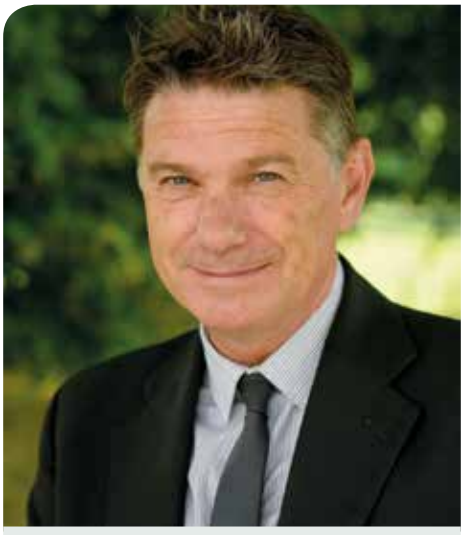
OFTEC comments in its response to ECO3 'Improving Consumer Protection' consultation

"OFTEC believes PAS2035 and Trustmark do not provide the answer to overcoming the quality and compliance issues which have been associated with the delivery of ECO funded installations."

These were the comments of OFTEC registration director, Adrian Lightwood, on the trade association's response to the Energy Company Obligation ECO3): Improving Consumer Protection consultation, which closed on Tuesday 6th August.

He continued: "Building services such as heating, hot water and electrical already have mature, long-standing training and registration schemes in place such as GasSafe and OFTEC's competent persons scheme, which largely work to overcome this problem.

"These issues have mainly been caused by funders focusing on quantity rather than quality. As a result, on-site installers have not been given enough time or resource to complete the work to the required standard.



OFTEC registration director Adrian Lightwood

Undue financial burden

"Therefore, introducing another scheme for installers to join is unnecessary and will just add undue financial burden on those who already have to belong to a certification body for PAS2030, a competent person scheme certification body for building regulations self-certification, and possibly the Microgeneration Certification Scheme (MCS) if renewables are being installed.

"We are also concerned it will deter many smaller installation companies – who make up the overwhelming majority of UK heating businesses – from participating in ECO, especially when it is these local installers who are most likely to achieve high quality outcomes as they have a greater stake in the work.

"Since the failure of Green Deal, the heating industry has lost confidence in government schemes and before a new initiative is forced on hard working tradespeople, government needs to get buy-in from various trades, otherwise crucial retrofit energy measures will once again fail to gain traction. OFTEC would also like to see further industry consultation on PAS2035:2019 and how TrustMark can/will interact with established schemes such as competent persons or MCS."

...and a warning from the HHIC

The Heating and Hotwater Industry Council (HHIC) has warned that the proposals in the government consultation for the Energy Company Obligation (ECO3) would threaten the livelihoods of thousands of heating and plumbing businesses.

Stewart Clements, director at the HHIC, said: "The HHIC has consistently argued that the industry needs the existing building regulations to be better enforced and to have access to greater resources.

"Better policing and adherence to current standards is needed. What is not needed is another layer of expensive red and blue tape. This additional complexity will almost certainly lead to worse outcomes for more vulnerable people, who could be misled into options they do not want or need.

Disruptive policy changes

"PAS2035 and Trustmark are potentially the most disruptive policy changes to hit the heating industry in decades and if we allow it to filter in unchecked, it could radically transform how heating engineers not only carry out their day job but whether they can operate at all.

"Why is the government enforcing yet another scheme which is set to fail before it has even begun? A scheme that will financially benefit a number of accreditation companies and TrustMark, but not consumers, installers, or ultimately the government, who will see costs rise without any discernible change in delivery.

"Some will say that there is no cause for concern, as ECO work is not compulsory and they can simply choose not to engage. We believe to adopt such a view would be naïve. This policy is sliding in below the radar."

Technician questionnaire generates big response

OFTEC would like to thank all registered technicians who contributed their views on the future of the heating industry by completing the installer questionnaire developed in partnership by BEIS and several trade associations. More than 800 technicians clicked on the links from OFTEC's e-news and social media.

The results of the survey are now being evaluated and a detailed summary will be published in the next issue of *Oil Installer*. With the heating industry likely to see very significant changes in the next twenty years as the carbon emissions are reduced through the adoption of cleaner fuels, more efficient appliances and fabric improvements to buildings, it's vital that the views of technicians are heard.

Look out for further opportunities to contribute to future thinking in OFTEC's newsletters.

Considering branching out into renewables?

With the UK government's commitment to net zero emissions by 2050, there's never been a better time to consider adding renewable technologies to the services you offer your customers. The widely reported skills shortage in the heating sector means there are fantastic opportunities awaiting skilled, qualified heating engineers. Here is OFTEC's step-by-step guide to registering for MCS.

Why register with OFTEC for the MCS?

Many homeowners in the UK opt for an MCS registered business to carry out the installation of a renewable technology because this is a requirement to access funding through the Renewable Heat Incentive (RHI). By not registering for MCS, you could restrict the number of prospective customers you have.

The domestic RHI was launched by the UK government in 2014 to encourage the uptake of renewables. Homeowners receive payments according to the amount of heat deemed to be generated by the renewable technology for seven years after installation, which helps offset the cost of the initial installation. Current payment rates are listed on: www.ofgem.gov.uk.

The technologies currently supported by the RHI and offered by the OFTEC MCS registration scheme are:

- Heat pumps (ground and air source)
- Biomass
- Solar thermal.

You can register for one, two or all three technologies. To qualify for domestic RHI payments, applicable technologies must be less than or equal to 45kW in size and have a 45kW or less microgeneration (MCS) certification. Installers must hold MCS registration and install MCS certified products.

How do I join MCS?

It's not as difficult as many people think! You will need to have completed an Ofqual regulated training course that is either QCF or RQF mapped (QCF stands for qualification and credit framework and RCF stands for regulated qualifications framework). Your local training provider will be able to advise on the suitability of courses and any prerequisites – some of which you might already have.

Alternatively, heating professionals can join MCS via an 'experienced worker route' subject to strict criteria. This includes auditable evidence of at least three years working in the heating sector such as a CV, witness testimonies and documents completed for historical installations, plus any evidence of qualifications, whether regulated or non-regulated. You must also have attended some manufacturer product training to be accepted as an experienced worker.

I've completed my qualifications, what next?

You'll need to demonstrate that you work according to MCS standards (download for free from: www.mcscertified.com/standards-tools-library):

- MCS 001 – covers business operating systems such as contracts, design methods, installation, commission and handover procedures, which are documented through a quality management system (QMS) and consumer code registration.
- The standard covering the practical elements of installation for the renewable technology you wish to install.

Probably the easiest way to do this is to subscribe to an online service such as Easy-MCS provided by Evergreen Energy (see page 9). Their online installer toolkit provides you with all the templates you need. However, you may already have suitable systems in place as most OFTEC registered businesses will already be meeting the requirements of a quality management system (QMS). Sample quality management templates can be downloaded for free from: www.mcscertified.com/standards-tools-library. Using these templates provides a simple way of documenting and recording your business procedures. Some manufacturers also offer help and support.

Your business will also need to become a member of a renewable energy consumer code that helps protect your customers if something goes wrong. There are three approved organisations to choose from which can also be found on the website: www.mcscertified.com/installers-manufacturers/becoming-certified. Easy-MCS can guide you through joining the consumer code.

Once you have the right level of training or experience and have set out how you are going to meet the above standards, visit: www.joinoftec.com/competent-persons-scheme-renewables/ and complete an application form or request an R572 form. The cost to register for MCS with OFTEC is currently £495 + VAT per year for one technology – then a further £100 for each additional technology. This fee includes adding your chosen renewable technology to your competent persons registration.

The MCS evaluation process

1. Our scheme advisers check your application.
2. We contact you to arrange an initial inspection.
3. One of our regional inspectors visits you to evaluate your business against the MCS standards and requirements – QMS and practical installation.
4. Upon successful completion of the evaluation, you will be registered with OFTEC as an MCS installer.
5. Once registered, you will be listed on both the OFTEC and MCS websites as a registered installer which will help you win more business.

What do I need to do as an MCS installer?

The fee you pay OFTEC gives you access to the MCS installation database for you to register your installations. You will also need to self-certify your installations through the OFTEC CPS work notification scheme as you already do for oil and solid fuel installations.

We hope that this guide takes some of the mystery out of MCS registration, if you would like any further information, please contact one of our advisors on 01473 626 298 or email: registration@oftec.org. *Turn to page 15 for a guide to 'getting into solar thermal'.*

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Changes to energy efficiency standards for rented homes *"could disproportionally affect rural landlords"*

Minimum Energy Efficiency Standard (MEES) regulations for privately rented homes in England and Wales are a vital step towards tackling fuel poverty and carbon reduction but could prove a major financial challenge for landlords to meet, especially those with properties in rural areas, says OFTEC.

The MEES was first introduced in April 2018 to ensure all privately rented properties meet a minimum Energy Performance Certificate (EPC) rating of band E before they can be let to a new tenant, or a tenancy renewed or extended.

Updates to the regulations in April mean landlords must now pay up to £3,500 (incl. VAT) towards the cost of energy efficiency improvements in sub-standard rental homes, funding these either from their own pockets or with third party support. The MEES will become even more stringent from April 2020 when landlords will be required to improve all band F and G properties, even when tenants are staying in place, or face penalties of £2,000-£150,000.

According to the English Housing Survey 2017-18, the private rental sector has doubled in size since 2002 and now accounts for 4.5 million or 19% of households. Of these, 25% fail to meet the 'Decent Homes Standard' – a quality standard for council and housing association properties.

Social consequences

The data also shows that a far higher percentage of rural housing stock falls into the lowest EPC bands, with some 97% of oil using homes currently rated band D or below. Rural landlords are therefore more likely to face property upgrade costs and this could have unintended social consequences.

OFTEC CEO Paul Rose comments: "Reducing heat demand from UK housing stock, particularly from older, poorly insulated properties which 'leak' heat, should be a crucial part of any heat decarbonisation strategy where financially and practically possible. It is also a vital step in reducing fuel bills for those struggling most to affordably heat their homes.

OFTEC CEO Paul Rose

"However, meeting the MEES could prove a heavy financial burden for many landlords, especially those with multiple properties or extensive upgrades to fund. With around 40% of homes in villages in England and Wales built pre-1919[1] and constructed very differently to modern, well-insulated properties, the issue is likely to disproportionately affect rural landlords.

"There is no question that in 2019, no one should be living in sub-standard homes. However, the legislation could cause some landlords to pull out of the rental market because they can't afford the property upgrade costs. At a time when the number of renters is soaring, the need is for more rental homes, not less."

Rental trap

The MEES could also mean some tenants are left without a home if the property they live in suddenly becomes illegal. Some landlords may also try to offset the cost of home improvements by passing it on to tenants through increased rent. This would put further strain on already tight household budgets and potentially push even more people into fuel poverty. It could also further inhibit tenants' ability to save for a deposit on their own property, keeping more people in the rental trap.

Paul Rose concludes: "OFTEC absolutely supports the overall concept of MEES – reducing fuel poverty and carbon emissions are priority issues. But, as with all strategies, it's important to consider the variables as there is never a one-size-fits-all solution.

"The reality is that rural housing stock in the UK is amongst the least energy efficient in Europe. Heat demand from these homes must be reduced where practically possible but this will inevitably prove a costly exercise. We need to ensure the transition to a decarbonised future is a just one and that policies introduced do not inadvertently cause further hardship or penalise those most in need."

[1]Country Land and Business Association (CLA) 2017

Brexit guidance

OFTEC has created a page online with guidance about how Brexit may impact registered businesses or trade association members once the UK has left the EU. As and when we receive updates, we will add them to this page: **www.oftec.org/brexit** as a handy reference point.

There is an article clarifying the situation for businesses registered in the Republic of Ireland on page 21.

This renovation is missing an opportunity for solar panels

The benefits of solar thermal

When someone talks about capturing solar energy, they are most probably talking about solar photovoltaic (PV), turning energy into electricity, but it is a little-known fact that solar thermal is more efficient than PV. This is because energy from the sun is transferred directly into the water and there is no process of transformation into electricity

Solar thermal technology was the first solar energy product to be used commercially in the UK and you may have seen it during holidays to Europe where it is widely used as the main source of providing hot water to some properties. *But, hang on, we live in the UK,* you say! Well, solar thermal can work in cold climates too and can still be productive in overcast weather and strong winds.

The principle is simple. Solar panels (flat plate or evacuated tube) mounted on a roof absorb the sun's energy and use it to heat up water, stored in a cylinder. The fluid flowing around the solar panel is a mixture of water and antifreeze. Energy collected from installed panels can provide enough heat to meet a typical household's domestic hot water needs in summer months and make a considerable contribution for the rest of the year.

RHI payments

Heating in the property will have to be provided by some other means and this is where a solar thermal system combined with an oil or gas fired boiler can pay dividends, especially as a solar thermal system installed by an MCS installer can attract Renewable Heat Incentive payments (RHI). However, not all properties can accommodate solar panels and structural integrity and the orientation of the roof must always be surveyed beforehand.

Getting into solar thermal is not difficult. OFTEC offer this scope (coded OFT501) and you can consider joining our Competent Person Scheme (CPS), which allows you to self-certify installations rather than involving building control. Joining the Microgeneration Certification Scheme (MCS), which is a UK government endorsed scheme specifically for the renewable sector, can enable your customers to access incentives and government funding. See our article on page 12 for more details.

As an established OFTEC registered heating technician you will already have some pre-requisites for this type of technology and with some further training would be eligible for CPS and MCS registration. It has been said, somewhat dismissively, that solar thermal systems are just glorified radiators mounted on a roof, but, as with all heating technologies, training and knowledge is the key. We would recommend you attend a local training centre for a solar thermal course which is either QCF or RQF mapped. This ensures the training is consistent and to the national standard. We also recommend manufacturers' training to get a greater insight into how specific products should be installed and commissioned.

Once you have upskilled your knowledge, you'll be in a great position to offer this technology and sell the benefits of this excellent renewable option.

Managing NOx gas emissions from combustion

Pollution can only be managed effectively if it is monitored effectively. So, as political pressure increases on measures to limit the emissions of the oxides of nitrogen, James Clements, managing director of UK analyser manufacturer Signal Group, explains the current issues and unveils the latest advances in monitoring technology.

James Clements, managing director of UK analyser manufacturer Signal Group

Nitrogen and oxygen are the two main components of atmospheric air, but they do not react at ambient temperature. However, in the heat of combustion, such as in a vehicle engine or within an industrial furnace or process, the gases react to form nitrogen oxide (NO) and nitrogen dioxide (NO2). This is an important consideration for the manufacturers of combustion equipment because emissions of these gases (collectively known as NOx) have serious health and environmental effects and are therefore tightly regulated.

Nitrogen dioxide gas is a major pollutant in ambient air, responsible for large numbers of premature deaths, particularly in urban areas where vehicular emissions accumulate. NO2 also contributes to global warming and in some circumstances can cause acid rain. A wide range of regulations therefore exist to limit NOx emissions from combustion sources ranging from domestic wood burners to cars, and from industrial furnaces and generators to power stations. The developers of engines and furnaces therefore focus attention on the NOx emissions of their designs, and the operators of this equipment are generally required to undertake emissions monitoring to demonstrate regulatory compliance.

The role of monitoring in NOx reduction

NOx emissions can be reduced by:

- reducing peak combustion temperature
- reducing residence time at the peak temperature
- chemical reduction of NOx during the combustion process
- reducing nitrogen in the combustion process

These primary NOx reduction methods frequently involve extra cost or lower combustion efficiency, so NOx measurements are essential for the optimisation of engine/boiler efficiency. Secondary NOx reduction measures are possible by either chemical reduction or sorption/neutralisation. Naturally, the effects of these measures also require accurate emissions monitoring and control.

Choosing a NOx analyser

In practice, the main methods employed for the measurement of NOx are infrared, chemiluminescence and electrochemical. However, emissions monitoring standards are mostly performance based, so users need to select analysers that are able to demonstrate the required performance specification.

Infrared analysers measure the absorption of an emitted infrared light source through a gas sample. In Signal's Pulsar range, gas filter correlation technology enables the measurement of just the gas or gases of interest, with negligible interference from other gases and water vapour. Alternatively, FTIR enables the simultaneous speciation of many different species, including NO and NO2, but it is costly and in common with other infrared methods, is significantly less sensitive than CLD.

Electrochemical sensors are low cost and generally offer lower levels of performance. Gas diffuses into the sensor where it is oxidised or reduced, which results in a current that is limited by diffusion, so the output from these sensors is proportional to the gas concentration. However, users should take into consideration potential cross-sensitivities, as well as rigorous calibration requirements and limited sensor longevity.

The chemiluminescence detector (CLD) method of measuring NO is based on the use of a controlled amount of ozone (O3) coming into contact with the sample containing NO inside a light sealed chamber. This chamber has a photomultiplier fitted so that it measures the photons given off by the reaction that takes place between NO and O3.

NO is oxidised by the O3 to become NO2 and photons are released as a part of the reaction. This chemiluminescence only occurs with NO, so in order to measure NO2 it is necessary to first convert it to NO. The NO2 value is added to the NO reading and this is equates to the NOx value.

Most of the oxides of nitrogen coming directly from combustion processes are NO, but much of it is further oxidised to NO2 as the NO mixes with air (which is 20.9% Oxygen). For regulatory monitoring, NO2 is generally the required measurement parameter, but for combustion research and development NOx is the common measurand. Consequently, chemiluminescence is the preferred measurement method for development engineers at manufacturer laboratories working on new

Quasar gas analyer

technologies to reduce NOx emissions in the combustion of fossil fuels. For regulatory compliance monitoring, NDIR (Non-Dispersive Infrared) is more commonly employed.

Typical applications for CLD analysers therefore include the development and manufacture of gas turbines, large stationary diesel engines, large combustion plant process boilers, domestic gas water heaters and gas-fired factory space heaters, as well as combustion research, catalyst efficiency, NOx reduction, bus engine retrofits, truck NOx selective catalytic reduction development and any other manufacturing process which burns fossil fuels.

These applications require better accuracy than regulatory compliance because savings in the choice of analyser are negligible in comparison with the market benefits of developing engines and furnaces with superior efficiency and better, cleaner emissions.

Rack analysers

Signal Group always offers non-heated, non-vacuum CLD analysers for combined cycle gas turbine (CCGT) power stations because these stations emit lower than average NOx levels. NDIR analysers typically have a range of 100ppm whereas CLD analysers are much more sensitive, with a lower range of 10ppm. Combustion processes operating with de-NOX equipment will need this superior level of sensitivity.

There is a high proportion of NO2 in the emissions of CCGT plants because they run with high levels of air in the combustion process, so it is necessary to convert NO2 to NO prior to analysis. Most CLD analysers are supplied with converters, but NDIR analysers are not so these are normally installed separately when NDIR is used.

In the USA, permitted levels for NOx are low, and many plants employ de-NOx equipment, so CLD analysers are often preferred. In Europe, the permitted levels are coming down, but there are fewer CCGT large plant operators, and in other markets, such as India and China, permitted NOx emissions are significantly higher and NDIR is therefore more commonly employed.

In England, the Environment Agency requires continuous emissions monitors (CEMS) to have a range no more than 2.5 times the permitted NOx level, so as a manufacturer of both CLD and NDIR analysers, this can be a determining factor for Signal Group when deciding which analysers to recommend. The UK has a large number of CCGT power plants in operation and Signal Group has a high number of installed CEMS at these sites, but very few new plants have been built in recent years.

New NOx analysis technology

Signal Group recently announced the launch of the Quasar series IV gas analysers which employ CLD for the continuous measurement of NOx, nitric oxide, nitrogen dioxide or ammonia in applications such as engine emissions, combustion studies, process monitoring, CEMS and gas production.

The Quasar instruments exploit the advantages of heated vacuum chemiluminescence, offering higher sensitivity with minimal quenching effects, and a heated reaction chamber that facilitates the processing of hot, wet sample gases without condensation. Signal's vacuum technology improves the signal to noise ratio, and a fast response time makes it ideal for real-time reporting applications. However, a non-vacuum version is available for trace NOx measurements such as RDE (real-world driving emissions) on-board vehicle testing, for which a 24VDC version is available.

A key feature of these latest instruments is the communications flexibility – all of the new series IV instruments are compatible with 3G, 4G, GPRS, Bluetooth, wifi and satellite communications; each instrument has its own IP address and runs on Windows software. This provides users with simple, secure access to their analysers at any time, from almost anywhere.

In summary, it is clear that the choice of analyser is dictated by the application, so it is important to discuss this with appropriate suppliers/manufacturers. However, with the latest instruments, Signal's customers can look forward to monitoring systems that are much more flexible and easier to operate. This will improve NOx reduction measures, and thereby help to protect both human health and the environment.
www.signal-group.com

Warmflow helps raise £110,000 for cancer charity

With the help of Northern Ireland-based boiler manufacturer, Warmflow Engineering, Friends of the Cancer Centre, based at the heart of Belfast City Hospital, has raised more than £110,000 from its 5th annual *"Take On The Tower"* abseil charity event.

More than 260 people took part in the Take On The Tower event, abseiling 190ft down Belfast City Hospital's famous yellow tower block and raising sponsorship to support the charity's vital work. The cash will enable the charity to enhance its care and support for local people with cancer.

Claire Hogarth, events and community fundraising manager at Friends of the Cancer Centre said: "This was the fifth year of our Take on the Tower abseil and we were delighted to raise the phenomenal sum of £110,000. This could enable Friends of the Cancer Centre's team of ten nurses to provide 4,400 hours of specialist nursing care for local people with cancer.

"Everyone at the charity is overwhelmed by the response from the local community, many of whom put on their superhero costumes and completed the abseil challenge, helping us make such a difference to so many families. Huge thanks also go to our event sponsors, Warmflow, for helping us make the Take On The Tower abseil such a success."

Pictured from left to right: Claire Hogarth, events & community fundraising manager and Ana Wilkinson, corporate fundraising manager at Friends of the Cancer Centre, with Brian Beattie, head of marketing & GB sales at Warmflow Home Heating

Friends of the Cancer Centre is one of the leading cancer charities in Northern Ireland working to support cancer patients and their families through key projects in the areas of clinical care, patient comforts, and research. Friends of the Cancer Centre is currently funding 34 additional staff in the Cancer Centre, including doctors, nurses and researchers, and the charity is committed to raising at least £5 million during the next three years to fund on-going and new projects which will continue to support local cancer patients.

Brian Beattie, head of marketing and GB sales at Warmflow, is delighted that the company's support has made a difference. Brian said: "Warmflow has been supporting Friends of the Cancer Centre for a number of years and we were delighted to sponsor the Take on the Tower abseil again in 2019. The challenge of abseiling down Northern Ireland's 4th tallest building and the superhero theme really seemed to grab people's attention. We were thrilled to hear that such a huge amount of money was raised as we know it will make a big difference to Friends of the Cancer Centre."

www.warmflow.co.uk

Grant continues long-term partnership with Bath Rugby

Grant UK has confirmed the continuation of its successful business partnership with Bath Rugby for a fifth consecutive year.

The engineering firm became a business partner of Bath Rugby in 2015 with the clear objective of using home games at the Rec ground to strengthen and build relationships with customers. Since then, Grant has hosted guests in its hospitality box at the Rec, supporting the squad in both domestic and European competitions.

This year's campaign kicked off in September with the Premiership Rugby Cup. The club's first home fixture was on Saturday 28th September where the team took on Worcester Warriors. Grant UK is looking forward to supporting its local premiership club whose home, the iconic Rec in the heart of the City of Bath, is located less than an hour from the company's head office in Devizes, Wiltshire.

"Over the past few seasons, Grant UK's ties with Bath Rugby have strengthened so we are very pleased to announce our fifth year as a business partner of the club," says Paul Wakefield, Grant UK's managing director. "With the 2019/20 season now upon us, we are

looking forward to returning to the Rec to support our local team. From local derbies through to international fixtures, Bath Rugby always deliver a wonderful afternoon or evening of rugby, providing superb entertainment for all. We are already looking forward to welcoming our customers and staff to the Rec to watch another season unfold of exciting action on the pitch."

www.grantuk.com

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One boiler too much...*but Ben makes it to the top!*

In the last edition of *Oil Installer* we featured a small article within the Boiler News section asking why OFTEC registered technician Ben Kennedy, together with some of his mates, were attempting to take a Turco boiler to the summit of Errigal – at 751 metres, the tallest mountain of the Derryveagh range in County Donegal, Ireland. Ben can now provide you with the answer!

"We completed our challenge on the 3rd August and raised more than £2800 for NASS – the National Ankylosing Spondylitis Society," he explains.

"We all arrived early at the base of Errigal at around 9am, and we got a few group photos and a pep-talk from myself before we started the climb. The first third of the climb is mostly all bog which was sticky and wet in places, making it hard enough for us to walk let alone carry our boiler!

"We took it in turns to carry and lift, making sure if one man was tiring to swap that lift team with another not so tired team. In some places we had to join forces with 9/10 men around the boiler, carrying it through some of the really sticky wet terrain.

"Errigal has almost three stages and we managed to get to the first in good time. I gave the choice to the team and it was decided by all to try for the top. I'm unsure of the gradient but I wouldn't be too wrong in saying that it could've been anywhere between 25-30 degrees, on loose shale and stone.

Too dangerous...

"We continued on as far as we could. It took every man we had around all sides of the boiler to get it lifted and pushed up any distance at all and after a few 100 feet, I decided that it would have been a little bit too dangerous to continue to carry it up but I can confirm that the boiler made it down again!

"We pulled the boiler out of the way of the other mountain climbers and we got a few good pictures of the team gathered around the boiler. We then climbed up to the top and ate our lunch."

Ben added: "Huge thanks to Turco for supplying the boiler, to my friends and family for giving me a hand on the day, and a special thanks to the staff down in Basset's Derry branch, some of whom helped on the day and went beyond what was asked to raise money for our cause. It was such a great day and everyone really enjoyed the challenge!

"I do hope that we have raised the profile of ankylosing spondylitis in our corner of the UK and with money still being donated, I hope that it will go a long way in helping NASS. I'm thinking of making this a regular thing in my yearly schedule as I've thoroughly enjoyed organising and doing my part for NASS."

Latest information for commercial drivers

The Freight Transport Association (FTA) has updated its two popular drivers' handbooks – one for HGV drivers and one for van drivers – with key up-to-the minute compliance information which must be provided to drivers of commercial vehicles by their employer.

Of the most relevance to heating engineers, the van drivers' handbook is an essential guide to ensuring the safe, legal and efficient operation of vans and light commercial vehicles. It contains practical advice and information and covers topics such as legal requirements, defensive driving, safe use of vehicles, drivers' hours and records, driving licences and offences, speed limits and much more. Key updates in this edition include the addition of information on alternatively fuelled vans, the ability for a category B driver to drive up to 4.25t, and additional contact information for the Northern Ireland Office, with contact numbers and opening times added for driver licensing purposes.

The price for either handbook is £6.95 for FTA members and £8.00 for non-members, with substantial discounts for multiple purchases. Further information can be found on the FTA Shop website at: www.shop.fta.co.uk

Post Brexit – *what you need to know*

We have been receiving enquiries from technicians in the Republic of Ireland concerned that their qualifications will no longer be recognised or that OFTEC will no longer operate in the ROI if the UK leaves the EU. We would like to reassure businesses and clarify the situation as far as we can. *However, at the time of writing Brexit hasn't yet happened and there are still many issues for the government to resolve.*

Registration scheme and qualifications

OFTEC will continue to operate as a voluntary registration scheme for heating technicians in this region post Brexit. OFTEC registration is now a requisite for many local councils and can be used to meet the requirements of the Housing (Standards for Rented Houses) Regulations 2017.

Training and assessment courses will still be certified independently by two certification bodies operating under UKAS accreditation to ISO 17024. UKAS's international recognition through the International Accreditation Forum (IAF) will remain unaffected by Brexit.

Within Europe, UKAS will also retain its membership of the European cooperation for Accreditation (EA) and will remain a signatory to the EA multi-lateral agreement. Therefore, OFTEC is pleased to announce that UKAS accredited certificates issued to candidates in the Republic of Ireland will continue to be valid and accepted as a pre-requisite for the OFTEC registration scheme. Registered technicians will still have to work in accordance with the building regulations 1997-2014 (technical guidance documents). At present the technical guidance documents call up British Standards for further guidance and OFTEC is currently seeking clarification from the minister for housing, planning and local government to see if their technical guidance documents will change post Brexit.

Keep an eye on your email inbox, OFTEC will keep registered technicians in the Republic of Ireland informed of any further updates as quickly as possible.

Buying products, control documents or technical books from OFTEC Direct

You will need to obtain an EU EORI number from your local customs authority. We would recommend that you check locally whether there will be any import duties for items you plan to purchase. We will provide further guidance on this in due course.

CE marked products

Products currently certified from a UK 'notified body' may no longer be placed on the EU market once the UK has left the EU – this could have an impact on supply chains and product availability. The NSAI can provide further guidance.

Products and schemes certified through UKAS accredited organisations will continue to be recognised because UKAS is a member of the International Accreditation Form and the EA.

Reference guide

Visit: www.oftec.org/brexit for further information and links to official advice.

OFTEC supports ROI awards

OFTEC acted as a judge and sponsored one of the prestigious awards in this year's ROI Plumbing and Heating Awards.

The awards are a recognition and celebration of the wealth of talent that exists in today's plumbing and heating industry. They started in Northern Ireland in 2012 and have now become an all-Ireland event taking place in Dublin for the third year running. The annual event provides an opportunity to recognise the achievements within this thriving sector.

Sean McBride from OFTEC commented: "Having your work recognised by the industry is a great achievement for plumbers, installers and all those involved in the construction sector. As judges, we had to work hard to decide on the winners as the quality of application was so high. These awards are a great way for both small and large companies to demonstrate how successful they are in a competitive marketplace".

This year's competition saw 17 different categories independently judged by a panel of experts with a broad depth of sector knowledge.

Sean McBride with Tony Macken from C&F Quadrant (left), and Sean McBride with Richard Louth from Baxi Potterton Myson

"Carbon tax will affect the most vulnerable in society and those living in rural communities" – UKIFDA

With the Irish government set to increase the state's carbon tax from the current fixed rate of €20 per tonne to €80 by 2030, liquid fuels trade association, UKIFDA (formerly the Federation of Petroleum Suppliers – FPS), is concerned this will affect the most vulnerable in society and those living in rural communities.

Poorer households will be impacted the most in terms of disposable income, consumption, price increases and welfare if the carbon tax increases at the rate planned by the government, says the UKIFDA. By introducing more expensive heating solutions, such as heat pumps, and decreasing the options for home heat in rural Ireland either through carbon tax increases or moving consumers to expensive electricity they will have a negative impact on rural households.

This will also be seen as an anti-rural measure due to its dependence on liquid fuel, as opposed to urban areas where mains gas is available. In the 2016 Census, 36% of the Irish population lived in cities, 34% lived in rural towns and 30% in the countryside. Ireland is thus a very rural country and most of the population is off the mains gas grid.

Chief executive of the UKIFDA, Guy Pulham, comments: "Poorer households spend a greater proportion of their expenditure on energy than richer households. The UKIFDA is working with trade associations within the heating oil industry in Ireland, to develop a pathway that enables consumers to cut their carbon emissions through a series of planned steps rather than one major heating system change and is calling on the government to work with industry to introduce biofuels to replace heating oil.

Guy Pulham, UKIFDA chief executive

Biofuels

"Initially, using biofuels, consumers can change the fuel and not the heating system as a 30% blend of biofuel with kerosene would work well with current oil boilers and infrastructure. It is also a more environmentally friendly fuel with lower carbon emissions. Over time, as the blend increases to 100% biofuel, boilers can be replaced – but the transition would enable consumers to cut carbon emissions today without a big financial outlay straightaway.

"We would like the government to look at adopting best practice available from other EU states on the use of biofuels for heating as well as transport. New fuels from biological or non-biological origin with reduced greenhouse gas emissions, such as advanced biofuels or synthetic fuels ("e-fuels"), can contribute to the success of the energy transition. They represent a future solution for the 686,000 people currently using heating oil within Ireland.

"We have been lobbying the Irish government and feel disappointed that liquid biofuels for home heating, was not part of the 'Climate plan to tackle climate breakdown' document that the government released in mid-June.

"Ireland's housing stock is among the least energy efficient in northern Europe and many are not suitable for heat pumps – to retrofit would be expensive, especially as so many would need to improve insulation, or the running costs would be too much.

"We're calling on the Irish government and the Sustainable Energy Authority of Ireland (SEAL) to meet with heating oil industry trade bodies to develop a pathway for the further development of liquid biofuels for home heating."

The use of plastic pipe in oil installations

The use of plastic oil line on new build sites in both Northern Ireland and the Republic of Ireland is on the increase. However, the use of such pipe from the tank all the way to the burner is contrary to BS 5410 guidelines.

In Northern Ireland, installations should comply with the requirements of Technical Booklet L (combustion appliances and fuel storage systems), section 6, clause 6.4, which states: *"The fuel pipework should be resistant to the effects of fire and be fitted with a fire valve system where it enters the building, in accordance with the relevant recommendations in BS 5410: Part 1 ..."*

In the Republic of Ireland, installations should comply with the requirements of Technical Guidance Document J (heat producing appliances), section 5, clause 5.2.6.4, which states: *"The oil feed installation from the oil storage tank to the appliance should conform to the recommendations contained in BS 5410: Part 1 …"*

BS 5410-1: 2019, clause 9.2.2, states: *"Pipework carrying liquid fuel within a building or structure or below ground externally should be constructed of steel or copper or other material with an equal degree of fire resistance, except where it is inside an appliance casing which is protected by a remote fire valve in accordance with (clause) 9.3. Underground plastic liquid fuel pipelines should conform to BS EN 14125 and should only be used externally below ground."*

David Blevings, OFTEC Ireland manager, commented: "While plastic pipe may be easy to use, it should only be used in the correct application. We recently visited a site in Monaghan with extensive use of plastic pipe which resulted in a leak and the clean-up cost was in excess of €70,000. This was paid by the insurer who then took legal action against the installer – be warned!

If you need further information, contact the technical department on 01473 626298 (NI) or 01 353 1864 5771 (ROI).

Navien confident of a bright future in the UK

For any company looking to break into a new market there is little point in replicating products that are already available from established competitors. That is the business philosophy of Navien.

A new name to many UK oil heating engineers, the South Korean manufacturer is confident that its new range of blue flame oil boilers – claiming the industry's lowest NOx emissions, energy saving technology and a lightweight, easy to handle design – will win their approval.

Operating from UK offices in Guildford, Surrey, Navien have already claimed their stake in the nations heating sector with a competitively-priced, premium range of gas boilers and long-term warranty – with a similar strategy proposed for their oil boilers. Featuring a blue flame burner, stainless steel heat exchanger and smart controls, the LCB boilers are said to provide installers with the latest in oil heating technology, without the premium price tag.

The LCB700 range will initially comprise regular and system boilers, available with outputs of 21, 28 and 36kW, with a combi model to be added following WRAS approval. All models are available in internal and external options, with a smart corrosion-resistant casing and user-friendly panel control.

As well as low NOx emissions – 57mg/kWh – the LCB700 boasts an ErP A rate energy effciency of 93% and an ErP A+ rating energy effciency of 98% (when used with Navien's new SmartPlus thermostats). A noise level of 48dB also makes it one of the quietest oil boilers.

Other key features that have proven popular with installers include the boiler's low lift weight of 67kg, making it easy for just two people to manoeuvre a Navien boiler into a kitchen. The install process is further simplified by a space-saving combined pipe for PRV and condensate drainage.

Exceptionally low flue outlet temperatures allow the use of a simple multi-directional flue system (21m up and 20m across), which is the same as that used on the company's gas boilers. This eliminates the need for purchasing a more costly stainless steel flue, and frees up warehouse space for stockists. Furthermore, the full text driven display clearly states problems in plain English, eliminating the need to decipher fault codes.

Although an unfamiliar brand to some UK oil heating installers, the South Korean manufacturer has 40 years history as a dominant force in North America, Russia and Asian markets. Their highly automated and 5G equipped factory produces over 200,000 oil boilers every year.

Navien continue to invest in the future and, as this new range demonstrates, invest in and listen to the UK market. They are developing heating solutions that not only meet the needs of today's market but are also future-ready.

www.navienuk.com

Riello looks to the future with new oil burner designs

As the market faces important changes in legislative requirements, such as the upcoming Energy-related Products (ErP) regulations, Riello continues to work closely with its OEM partners and installers to meet this challenge with updated products and technologies.

The current generation of RDB low NOx, blue flame burners are already fully compliant with existing ErP requirements and, through its advanced development programme, the company is implementing all of the required measures to ensure compliance with later phases of this legislation.

To that end, Riello is focusing strongly on innovative features that will deliver high turndown, low NOx and improved efficiency in terms of both combustion and electrical consumption. The future generation of low NOx blue flame burners will therefore not only meet increasingly stringent NOx emission levels, it will also satisfy higher turndown requirements with more efficient response to variable heat loads.

In parallel, many of the familiar elements and characteristics of the current RDB oil burner range will be maintained for ease of installation, commissioning and maintenance – with many of the same first line spares as earlier models.

"A combination of feedback from stakeholders and anticipation of future legislation, such as the ErP 2021 directive, is helping to guide our R&D programmes to ensure we not only meet future expectations, but exceed them," explained Riello's UK residential key account director Graham Barker. "The new designs will help to ensure that Riello low NOx, blue flame oil burners remain the first choice for installers and their customers."

www.rielloburners.co.uk

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Firebird and Elco delivering outstanding combustion performances and innovation for the future

Technological advances in boiler design, combined with the experience in low NOx and ultra Low NOx combustion technologies, have allowed Firebird Heating Solutions and Elco to offer new innovative burner options in the domestic heating market.

EKL 2/M BLUE modulating burner

The Firebird FB 2 LN burners (derived from Elco's single stage EKL 2 series) fitted to the Envirogreen range of boilers currently available on the market, have exceeded all expectations since their launch in June 2018, delivering outstanding combustion performances and clean burn technology.

The key to this success has been the close cooperation between Firebird and Elco to ensure a perfect match between boiler and burner.

The result has been proven in the market with increased sales, as engineers and installers recognise the superiority of the solution. For instance the FB 2 LN was introduced to meet challenging and stringent NOx emission levels demanded by Legislation changes that took place in September 2018 (NOx emission limit at 120 mg/kWh).

Independent evaluation of the NOx levels measured has demonstrated levels in the region of 60-80 mg/kWh depending on the range model involved (outputs available from 12 to 100 kW) and proven reduced carbon emissions.

This allows both companies to offer a "light blue" single stage burner solution, based on Elco patented combustion technology. This solution meets the toughest legislative limits expected for the future, without the need for "fully blue flame" single stage alternative.

Firebird and Elco are now focused on advanced research and development programmes, which are considered key elements in the continuing success of future burner and boiler ranges. The companies are also looking to offer biofuel alternatives with even more fuel efficient options using the well proven Elco patented fully modulating system, compatible with Firebird modern high efficiency boiler designs.

A result of this development has been the boiler matching with the EKL 2/M BLUE kerosene burner, a fully modulating solution delivering excellent perfomances, high efficiency and reliability, all in one package.

EKL 2/M BLUE modulating burner

Key technical features:

- Firing rate from 12 to 58 kW
- Ultra Low NOx and very low CO emissions
- Clean combustion resulting in extremely clean burn results
- Suitable for kerosene and diesel applications
- Ultra quiet operation
- Well proven patented modulating operation
- Fully automatic electronic control for air and fuel management
- Advanced diagnostic capabilities
- "Plug & Play" component replacement
- Low electrical consumption
- High fuel economies

The modulting range of burners will be introduced into the Firebird range in the near future and will complement the successfull Firebird boiler range currently available.

For advice on your next project – or if you just want to find out more about us – please visit www.firebird.ie or www.firebird.uk.com or ring direct on +353 (26) 45253, + 44 (0) 1752 691177 or +44 (0) 28 3088 8330

Warmflow heats up boiler market with launch of new Agentis range

In time for the winter market in the UK and Ireland, Warmflow has announced the launch of their *"innovative, reliable and highly efficient"* Agentis oil boiler range.

Available in a selection of internal, external, boilerhouse and professional models, Agentis represents new levels of craftsmanship and innovation from Warmflow, says the company, which produces the UK and Ireland's only AA-rated oil boiler and has recently been awarded 5-star ratings on Trustpilot.

Brian Beattie, sales director with Warmflow says: "For almost 50 years, Warmflow has been heating homes throughout Ireland, the UK and further afield. We wouldn't be where we are today without our customers, which is why we've listened closely to what they've needed in a modern heating appliance and have worked hard to deliver an entirely new product range which meets those needs precisely.

"We are delighted to launch our new and improved product offering in the form of the Agentis range and look forward to introducing both existing and new customers to its innovative design features and benefits, many of which are entirely new to the oil-fired sector.

Both internal and external models are available in the company's professional product variant

Perfect solution

"The new internal model is both slim and compact making it ideally suited to kitchens and utility rooms where space is at a premium; sizing of the Agentis internal also makes it the perfect solution for replacement installations. Inwardly, a radical rethinking of internal plumbing and hot water circuitry produces a premium quality product with easily de-mountable components and improved ease of installation and maintenance. Combine this with the pre-wired, pumped, system and combination product options and there's an Agentis model appropriate to every installation situation."

The external model offers all of the same design features and benefits as the internal model, but is housed within an IP45-rated, maintenance-free, robust weatherproof casing, which will withstand whatever inclement weather can throw at it, explains Brian.

Both internal and external models are available in the company's unique professional product variant which includes brands such as an Adey Magnaclean Pro, Teddington fire valve, Crossland fuel filter, an improved condensate drain installation kit and two bottles of inhibitor.

All of the new Agentis models feature the latest Riello low NOx technology and are supported by a five-year parts and labour warranty.

Supplementing the company's new product range, and exclusive to both existing and new Warmflow installers, the new Warmflow Connect Installer rewards scheme offers the opportunity to accumulate points for every boiler registered. These points may be exchanged for a range of benefits including free tools and instruments, training, extended warranties and other Warmflow products and accessories.

www.warmflow.co.uk

Grant achieves Which? Best Buys for three years running

Consumer group Which? has published the results of its 2019 oil boiler survey. Amongst the range of products to receive Which? Best Buys this year are all of Grant's Vortex Pro Utility oil boilers. This is the third year running that Grant boilers has achieved this accolade making them the only oil boiler brand to be awarded Which? Best Buys in 2017, 2018 and 2019.

Consisting of models with outputs ranging from 15kW up to 70kW, the Vortex Pro Utility Range is a popular choice for both installers and homeowners alike. Each boiler incorporates the latest low NOx burner technology and the patented Vortex stainless steel heat exchanger. The range can achieve gross seasonal efficiencies of up to 93.3% (SAP 2009), says Grant, and with the smallest model being just 348mm in width, Vortex boilers are designed to be ideal direct replacements for older oil-fired boilers.

"Grant Engineering is very proud that their oil-fired boilers have once again performed so well in the latest Which? Boiler Report," comments Paul Wakefield, Grant UK's managing director. "Since the company was founded, Grant has strived to listen to customers and develop innovative heating products in response to the needs of engineers and householders. In particular, we are thrilled that Grant is the only oil boiler manufacturer to achieve Which? Best Buys for the past three years."

www.grantuk.com

Grant UK's *Big G1 Giveaway* is back!

£5,000 worth of holiday vouchers up for grabs

Following its success in 2018, Grant UK's 2019 'Big G1 Giveaway' has thousands of prizes up for grabs between August and December with monthly prize draws and, new to 2019's promotion, a 'big holiday superdraw' where one lucky installer will win £5,000 in holiday vouchers.

The G1 scheme is Grant's loyalty programme designed to support and reward engineers who fit and work with their products. All of Grant's products are eligible.

The 'Big G1 Giveaway' this year consists of monthly prize draws. G1 installers who register a Grant product via their portal or G1 click app between now and 31st December 2019 will be automatically entered into that month's prize draw. In each monthly draw, 50 installers will win one of the top prizes and then a runner-up prize will be sent to all of the remaining entrants.

The 50 top prizes being given away every month consist of supercar driving experiences for two, Grant UK branded workstation canopies and Velocity 6.0 tech cases. The runner-up prizes will be different each month and include pipe cutters, tape measurers and a few surprises that Grant UK are keeping under wraps!

The 'big holiday superdraw' will take place in January 2020. Every product registration submitted via the G1 portal or G1 click app means installers will be entered into two draws – the monthly prize draw where they are guaranteed to win a prize, plus the 'big holiday superdraw'.

"The 'Big G1 Giveaway' was a huge success last year so we were keen to bring it back for a second year," comments Paul Wakefield, Grant UK's managing director.

"Once again, the aim of the promotion is to reward our G1 installers, giving every single member a chance to be a winner by simply registering products – it really is that easy to enter."

All Grant products are eligible for the promotion, from the Vortex and VortexBlue oil boilers through to its latest Aerona³ R32 air source heat pumps. Grant's solar thermal systems, biomass boilers, cylinders and heat emitter ranges are also eligible so G1 installers of all technologies can win with 2019's 'Big G1 Giveaway'.

www.grantuk.com.

Hilton Banks cuts single use plastics

Hilton Banks has launched its HB42 all-in-one sealant and adhesive in 400ml "Eco-Foils", removing the environmental problem of disposing of the single use plastic cartridge, normally associated with this type of product.

The new HB42 400ml eco-foils produce 95% less waste than the single use tubes and users get 38% more sealant than in the 290ml plastic tube. HB42 seals, sticks and fills, is flexible up to 230%, can be over-painted and works in the wet.

It is estimated that over 2 million single use plastic cartridges are put into landfill every week in the UK.

"We are acting in a bid to tackle the pressing environmental problem of disposing of the single use plastic cartridge," explains Scarlet McAleese-Banks, marketing director for Hilton Banks.

"The eco-foils are very durable and foil guns are easy to use and keep extremely clean throughout their use. They also take a plastic sealant cartridge so can be used with every type of sealant if required. At the end of their life, the waste left over from foils is tiny compared to the plastic tubes and the foils are much easier to dispose of."

www.hb42.co.uk

PipeSnug comes to Screwfix

PipeSnug, the product designed to give a quicker, smarter finish around pipework, is now available in Screwfix.

The Screwfix distribution marks an important milestone for the company, which was founded three years ago by bricklayer and builder Chris Burdett and his business partner Alex Lever, after Chris had invented PipeSnug as a quicker, easier and more efficient way to finish around pipes.

"With some 643 stores nationwide, getting PipeSnug into Screwfix has been a target for us since we began," explains Alex. "It secures national availability and convenience for the trade that we have been seeking and we are delighted to be working with them."

A recent agreement with national distributor Davant has also significantly expanded PipeSnug's availability.

http://pipesnug.co.uk

FUELSTOP
THERMOSTATIC FIRE VALVE

Atkinson extends its range of oil heating products with the acquisition of the Fuelstop Fire Valves that is now manufactured in the Westbury facility alongside the Tankmaster, Tanktop and Filstop.

OFTEC™
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FUEL STOP
Fire safety value

OFTEC certified
3-year Warranty
1.5m – 35m capillary lengths available
Liquid filled capillary for positive action
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3/8 valves come with 10mm pipe fittings & soft copper support tubes – FREE
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BIO compatible

Manufactured By:

Atkinson Equipment Ltd
The name you know and trust

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Tel: 01373822220 email: sales@fuelstop.co.uk web: www.fuelstop.co.uk

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GTEC are delighted to announce we are now working together with GRANT UK to provide OFTEC courses.

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Mamma mia! Elco plays host to Firebird installers

Firebird are offering their installers the opportunity to visit the 8,000m2 Elco burner factory in Resana, Italy, where the Firebird by Elco low NOx burner is manufactured.

The three-day visits include one-to-one training on the Firebird by Elco low NOx burner, a factory tour to view the manufacturing process and an afternoon of sightseeing in Venice.

Designed in conjunction with the company's new Envirogreen boiler range, the NOx emission levels at 60mg/kWh far exceed the stringent 120mg/kWh limit introduced last year.

The Envirogreen boiler range which features a Firebird by Elco low NOx burner, is easily installed, commissioned and serviced using a single Allen key, says the company. The range includes models for internal and external applications in a variety of outputs. The 'plug and play' burner, which requires only two settings for pump and air pressure makes installation simple.

To ensure the highest level of efficiency is achieved by the burner,

the CO2 level is factory-set at optimum 12.5%. Should this need to be adjusted for any reason, the CO2 level settings are printed on the burner casing as a reference guide.

Commenting on the initiative, David Hall, UK director of Firebird Products Ltd, said: "We are delighted by the success of these visits; the thirst for knowledge from the heating industry and the incredible hospitality provided by Elco. By having the opportunity to observe the manufacturing process, installers are seeing first-hand the numerous benefits Firebird by Elco low NOx burner and the Envirogreen range has to offer."

www.firebird.uk.com

Survey reveals how users neglect their boilers

A survey of the nation's gas boiler users by Worcester Bosch has revealed that half have never asked for the service history of a boiler upon moving into a new house, with 18% believing that servicing is unnecessary until a boiler breaks down.

Coinciding with the recent Gas Safety Week, Worcester Bosch's survey also revealed that more than a tenth of the population have never had their boiler serviced, and a further 20% have not had their boiler serviced for over 12 months.

However, the survey revealed significant regional differences. According to Worcester Bosch, almost three quarters of the population in Northern Ireland knew that their warranty would be voided without regular servicing prior to completing the survey. Similarly, in the north east of England, almost double the population have had their boiler serviced in the past six months when compared with Londoners.

www.worcester-bosch.co.uk

EOGB revamps burner for updated RoHs compliance

In order to comply with the RoHs (Regulation of hazardous substances) 2/3 directive, EOGB have re-designed their staple product – the X Series range (X400, X500 & X600) of burners.

The new directive specifies amended maximum levels for the following 10 substances: cadmium; lead; mercury; hexavalent chromium; polybrominated biphenyls; polybrominated diphenyl ethers; bis(2-Ethyllhexyl) phthalate; benzyl butyl phthalate; dibutyl phthalate; diisobutyl phthalate.

EOGB have amended the production of their X Series burner to remove the use of cadmium – primarily affecting the photocell flame detector. All EOGB X Series burners will now have a Danfoss OBC control box and a cadmium-free flame sensor.

Manufacturers and distributors have a duty of care to ensure that any equipment they are supplying is fully compliant with RoHs legislation. The deadline for compliance was July 2019.

A spokesman for EOGB commented: "It's worth being aware of this update to ensure that the products that you're installing comply with the new RoHs directive – not only to protect the accountability of your business, but also to provide your customers with an informed service and the appropriate products."

www.eogb.co.uk

Tenth *"Best Buy"* accolade for Worcester Bosch

Gas and oil-fired boiler manufacturers, Worcester Bosch has now been awarded the Which? Best Buy endorsement ten times since 2009.

Carl Arntzen, CEO of Worcester Bosch said: "We are beyond thrilled to be recommended by Which, an independent consumer association that tests and surveys products and services across a range of categories. We are extremely proud to continue to be market leaders in the boiler industry and we look forward to servicing more and more customers in years to come."

In the annual Which? report, which gives homeowners a useful insight into brands to avoid and the comparison between the best and worst boiler brands, it's revealed that the vast majority of owners are satisfied with their Worcester Bosch boiler.

Which? principal researcher, Matthew Knight, commented, "Reliability is the single most important consideration when buying a new boiler and Worcester Bosch has it in spades. We've been running boiler reliability surveys for 10 years and Worcester Bosch has impressed us every single year."

www.worcester-bosch.co.uk/professional/which-2019

Grant launches aluminium radiator range

Grant UK has launched its new Afinia aluminium radiators which are the third addition to the company's heat emitter product line. Available in horizontal and vertical options, Afinia radiators combine functionality with aesthetics to deliver the ideal partner for both traditional and renewable heating systems, says the company.

Following the launch of the Solo fan convector and Uflex underfloor heating system ranges, Grant UK has now unveiled its new Afinia aluminium radiators. Suitable for both high and low temperature systems, Afinia radiators are compatible with all of Grant's products including Vortex oil-fired boilers as well as the latest Aerona³ R32 air source heat pumps. This latest product launch further increases the range of heat emitters that Grant UK can supply to complement its other heating appliances.

"Afinia radiators, which are supplied in finished size combinations of between six and 15 sections, are highly responsive and incredibly efficient," says Grant. "The excellent thermal conductivity of aluminium enables Afinia radiators to heat up and cool down very quickly, rapidly responding to any changes in the temperature demand set via the thermostat. Not only do they deliver maximum room comfort, but Afinia radiators also have a low energy consumption which can help householders reduce their energy bills."

The Afinia aluminium radiator range includes horizontal models which are available in three standard heights – 430mm, 580mm and 680mm. In addition, the two vertical models are available with heights of 1,842mm or 2,042mm, providing a solution when space in the room is limited. Twenty-one sectional combinations are available throughout the range, all of which are supplied fully assembled.

A distinctive feature of the Afinia radiators is their curved, rounded surface. They are slim in build and come with an off-white colour finish, and each has a 15 year guarantee.

www.grantuk.com

Latest update to EOGB app

Burner manufacturer and distributor EOGB Energy Products Ltd has announced the latest update for its popular nozzle calculator app. The tool for oil engineers calculates burner and boiler outputs in kW based on pump pressure, nozzle size and boiler efficiency inputs.

Updated in early September, the app is compatible with most mobile devices and is available now from the Google Play store and Apple store.

The latest version of the app improves upon the intuitive, easy-to-use design and allows all app functions to be made offline, says the company.

Martin Cooke, technical director at EOGB said: "We're really happy to announce the latest update of our popular nozzle calculator app.

"It continues to be an essential tool for oil engineers and now we've been able to include Danfoss and Delavan type nozzles. Ultimately, we wanted to provide an alternative to manual calculations and guesswork, saving engineers time and money."

www.eogb.co.uk

Hounsfield provide the heat at Ringshall Grange

Ringshall Grange, an eight-bed listed manor house in Suffolk, used for self-catering holiday breaks, has installed two Hounsfield oil-fired boilers to ensure its guests are kept warm.

The manor house's old 60kW oil boiler had started to show its age, according to owner, Laura Ormerod, who needed a very reliable new boiler that would not cause any maintenance issues for her or the guests. Laura turned to Kevin Brand of Brand Plumbing and Heating Limited in Bury St Edmunds and asked him for his recommendation.

Kevin says: "Hounsfield boilers are renowned for their excellent quality, price and reliability plus they are very economical to run, so I didn't hesitate to recommend these boilers

to Ringshall Grange as I knew they would be up for the job! In fact, I have a Hounsfield boiler in my own home as I know they're the best."

Ringshall Grange has a large heat consumption which meant either a commercial boiler or two domestic boilers were needed. Kevin and Laura decided that the two-boiler option would be the best solution, as Laura says: "That way, should one ever fail there would be a back-up to ensure guests are never short of heat, and that gives me peace of mind."

The installation was straightforward, as Kevin explains: "Hounsfield are very knowledgeable, and their customer service and advice to installers is second to none. I discussed the two-boiler solution with the Hounsfield team and they were very insightful about using a multiple boiler system."

Kevin installed two Hounsfield Tuscan kitchen oil-fired boilers which have an output of 22-28 kW. The boilers are designed and manufactured in Britain and have a five-year warranty.

www.hounsfieldboilers.co.uk

A good starting point

Invited to see a biofuelled oil boiler in action by Worcester Bosch, Oil Installer's editor, Jane Raphael and deputy editor, Peter Clayton were very pleased to accept.

Touring the shop floor first, operations manager, Peter Wragsdale, proved to be an excellent guide. It was interesting to learn that the Clay Cross facility, which can receive up to 40 tonnes of steel a day, manufactures every component of its oil-fired boiler range by cutting, folding, punching and welding the raw material. The only exception being one small piece which must be finished externally to form its requisite shape. Up to 15,000 components are produced by the press shop every day for the 36 different variants on offer to those using oil-fired heating.

Having seen oil-fired boilers ready to leave the factory, training engineer Alan Moody explained that the demonstration boiler was exactly the same, bar a tweak to the ignition. Some older boilers may possibly require nozzle or burner adjustments. The difference is that this boiler's fuel is 30% biofuel. Supplied by Argent Energy, the bio element is made up of waste products such as used cooking oil, chip fat and tallow which would otherwise go to landfill.

The primary aim of this demonstration boiler, which is monitored alongside a conventional kerosene boiler, is to show policy makers, engineers and installers just what can be achieved by using waste products to help lower carbon levels.

Paul Rose (OFTEC CEO), Peter Clayton (deputy editor, Oil Installer), Jane Raphael (editor, Oil Installer), and Martyn Bridges (director of technical communication and product management, Worcester Bosch), with the oil-fired boiler modified to B30K biofuel

'*A good starting point*' for OFTEC's CEO, Paul Rose, who was also present; OFTEC has long been a champion of biofuels. Indeed, biofuels trials and research commissioned by OFTEC has already established that a high percentage of existing oil-fired boilers would require little or no modification to run on B30K or higher.

As always, good housekeeping will be essential for both tank and boiler to operate efficiently, with fuel tanks needing to be fit for purpose and thoroughly cleaned out before storing biofuels.

How Clay Cross plans to benefit the world...

Oil-fired boilers have been manufactured on the same site in Clay Cross, near Chesterfield, Derbyshire, since 1962 when a purpose-built factory was constructed for industrialist Robert Ingham on the location of what was the old Parkhouse pit. That same production facility – although having undergone several changes of ownership and countless upgrades in technology and production methods – is now one of the heating industry's most modern, innovative and prestigious manufacturing plants, owned and operated by Worcester Bosch.

In 1971 the business was bought from Ingham by Delglo Appliances to manufacture gas boilers, who themselves were acquired just six years later by Worcester. In 1982 the first solid fuel boiler was built on site… a production line which enjoyed a limited future.

Ten years later, Worcester Heating Systems became part of the Bosch Group and in 1993 the Clay Cross facility began making oil boilers for Junkers. In 2001, the Highflow gas boiler production was transferred to Clay Cross, and 2005 saw the integration of Boulter Buderus. Two years later high efficiency oil boiler legislation came into effect, resulting in the introduction of the condensing boiler range.

The 50th anniversary of Worcester was celebrated in 2012, just one year before the launch of the company's ErP-compliant boiler range. In 2014, Worcester Bosch held the official opening of a gas-fired boiler assembly line at the Clay Cross facility, and today the total manufacturing capacity of the site is up to 48,600 boilers each year on a 70/30 oil to gas split – even though the company stepped up production to 50,000 boilers to meet market demand in 2017.

During the past couple of years, Worcester Bosch's Clay Cross site has benefitted from a multi-million-pound investment programme, including new production and testing facilities, a major facelift to both the exterior and interior of the 20,482 square metre site, and enhanced facilities for the company's 220 employees based there.

Apart from its home UK market, for which Clay Cross has produced 27,662 oil and 6,205 gas boilers so far this year, the facility also produces both oil-fired and gas-fired boilers for many overseas markets – including North America, Belgium, France, Germany, Greece, Poland, Italy, the Czech Republic, Spain, Hungary, Portugal, Latvia, Slovakia, Russia and Croatia.

As for the future, the company is closely aligning itself to a green, low-carbon environment and the Worcester Bosch Clay Cross facility is now totally geared up for the manufacture of its oil-fired boiler ranges suitable for biofuels – not only for the UK market, but also to benefit customers throughout the world.

Welsh businesses urged to get ready ahead of new tank regulations

New regulations from Natural Resources Wales, due to come into force in March 2020, will mean that all above-ground tanks in excess of 200 litres, used to store oil at commercial premises in Wales, are required to have a secondary containment system to prevent oil escaping to the environment in the event of a spillage.

Those businesses that fail to make the required changes to their oil storage system risk fines of up to £5,000 for non-compliance.

OFTEC has teamed up with member company Harlequin, that supplies bunded oil tanks, to offer free advice to businesses on how to get ready in advance of the new regulations coming into force next year.

The campaign is reminding Welsh businesses of all sizes that the Control of Pollution (Oil Storage, Wales) regulations 2016 require any above-ground oil tank over 200 litres to be provided with 110% secondary containment by April 2020.

Also known as the Oil Storage Regulations or OSR Wales, it requires all commercial premises in Wales which store more than 200 litres of oil, to provide more secure containment facilities for above ground oil storage. This is to prevent oil escaping into the environment.

Tim Lock, technical director of OFTEC commented: "We recognise that the average business owner or managing director is an incredibly busy person, so the campaign is designed to make them aware of the new regulations and guide them on the simple steps to ensure their storage meets the requirements and stops them falling foul of the law."

Free site assessment

Harlequin has teamed up with installers across Wales to offer a free site assessment and advice on oil tank awareness for businesses owners. Laurance Coey, managing director of Harlequin commented:

Laurance Coey, managing director of Harlequin Tanks with OFTEC's David Blevings

"The regulations not only apply to containers at offices, shops and industrial premises but also to businesses, churches and commercial workshops. It requires that all commercial properties with an oil tank over 200 litres must have secondary containment in place, such as an integrally bunded storage tank. If businesses don't comply, they could face a large fine and could potentially cause a serious pollution incident. This can be avoided by taking advantage of one of our free site assessments, available across Wales."

Tim Lock, technical director of OFTEC

The legislation provides guidance on: who must comply, how to comply and maintenance requirements. It also sets out some simple steps to ensure oil is stored safely, reducing the risk of pollution and offering better protection for the environment.

OFTEC's Tim Lock added: "We are keen to ensure that commercial operators are aware of the March 2020 deadline relating to secondary containment (or bunding) of commercial oil tanks. An OFTEC registered technician can assess and provide advice to any commercial company storing oil and unsure of whether their existing oil storage is sufficient. The key goal is to ensure the protection of the Welsh rural surface and groundwater against pollution which can be significant and expensive to remedy."

Welsh businesses can register for a free site assessment in advance of the March 2020 deadline by visiting: http://www.harlequinplastics.co.uk/Contact-us.aspx

Grant training now available at HLI Centre, Livingston

Grant UK's training academy is now delivering product training courses at the HLI Centre in Livingston. From oil boilers and air source heat pumps, through to Grant's new underfloor heating range, a wide range of Grant product courses are now available in West Lothian, Scotland.

Throughout the summer, Grant products have been installed at the HLI Centre. All of the products are fully operational models and include a range of Vortex and VortexBlue oil boilers, Aerona³ R32 air source heat pumps and a VortexAir oil boiler/ASHP hybrid. In addition, a Uflex MINI wet underfloor heating system is installed at the centre allowing engineers to get to grips with this new product available from Grant.

The selection of installed products at the premises will allow Grant UK's training academy to deliver a comprehensive range of its product courses. This will include courses on oil boilers and burners, two-day air source heat pump training and the underfloor heating course. All of the product courses held at the centre will be delivered by one of Grant's trainers who are experienced not only with all of their own products but also on the latest industry changes which are affecting heating engineers today.

An underfloor heating system is installed at the centre allowing engineers to get to grips with this new product available from Grant

The addition of the HLI Centre further expands the availability of product training that Grant can deliver and make accessible to installers and engineers. This new facility in Scotland joins the GTEC Centre in Hawes, North Yorkshire, and the main training academy at Grant UK's head office in Devizes, Wiltshire.

www.grantuk.com/professional/training

A new era for plumbing and heating apprenticeships

The Plumbing Heating Skills Partnership (PHSP) has announced the launch of a marketing campaign which promotes the benefits of the new level 3 Plumbing & Domestic Heating Technician Apprenticeship. Set to become the new industry standard, this apprenticeship has been specially designed to meet employers' needs, fill skills gaps and secure the future of England's plumbing and domestic heating industry.

Aimed at plumbing and heating businesses in England, the campaign has been developed by the Plumbing Heating Skills Partnership, a collaboration of key industry players, led by BPEC. Neil Collishaw, CEO at BPEC, explains: "We're very excited about the new level 3 apprenticeship. It offers employers a fantastic opportunity to grow their business and potentially expand into new areas such as renewable technologies.

"These apprentices will be equipped with the very latest plumbing and heating skills and knowledge. They'll also specialise in either natural gas, oil, solid fuel or environmental technologies – so the apprenticeship programme can be tailored to meet the current and future needs of individual business."

The level 3 Plumbing & Domestic Heating Technician apprenticeship will replace the old level 2 and 3 apprenticeship in England by 2020. The new apprenticeship will typically take up to 48 months to complete. Qualified apprentices have the opportunity to gain EngTech status from the Engineering Council, adding credibility to their employer's business. They are also eligible to apply for a CSCS card, showing clients they have the right skills and knowledge to work safely and competently

Plumbing Heating Skills Partnership

STANDARDS • QUALIFICATIONS • APPRENTICESHIPS

"The level 3 apprenticeship really is a win-win for English plumbing and heating businesses," adds Neil. "Up to £21,000 of funding is available for training and assessment and the training provider will explain how this works as well as providing lots of support with recruitment and admin. We want to make it as easy as possible for employers to benefit from the new level 3 apprenticeship – and getting involved now offers a genuine chance to get ahead of the competition."

For more information about the new level 3 Plumbing & Domestic Heating Technician apprenticeship, visit: www.instituteforapprenticeships.org

RIELLO

THE FUTURE IS COMING...

Riello RDB BG Lo-NOx BLU flame burners - 2021 ERP* compliant - with advancing developments to include -

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- **New Innovative Flame Sensing**
- **Lower Emissions**
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The Genuine Riello RDB burner...
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ErP RIELLO RDB

www. **rielloburners**.co.uk

* according to expected future ERP regulations

ASK OLLIE!

Ollie and his friends in the OFTEC technical team respond to the latest questions

I have been asked by a customer to install a new fuel contents monitoring device on their integrally bunded tank. Can a sight tube contents gauge be used?

No. Where secondary containment is provided, a sight tube contents gauge must be contained within the secondary containment system. Therefore, on an integrally bunded oil tank this arrangement would be impracticable and an alternative type of contents monitoring device should be used e.g. electronic, hydrostatic, pneumatic, mechanical, etc.

Before carrying out a boiler service, where can I find guidance on the procedure for safe electrical isolation?

The procedure for safe electrical isolation can be found in OFTEC technical book 1, section 12.2.2, or technical book 2, section 6.3.4

I am looking to install an externally located de-aerator. How close can it be sited to a flue termination?

De-aerators should not be above or within 500mm of a flue terminal. Further information regarding the siting of de-aerators can be found in OFTEC technical book 3, section 2.1.16.

Are the technical notices from E-News published online? I want to look back at the notices issued before I registered.

Yes. There is an OFTEC technical notice board exclusively available to registered technicians on: www.oftec.org in the heating technician's area. Once you've created a user account, head to the 'technical resources' section and select 'technical notice board' where you will find all notices that have been issued to assist technicians with everyday work. Current notices at the time of print include:

- Integrally fire rated tanks
- CE Marking of plastic fuel storage tanks
- Not signing off the work of others
- Alternative guidance on fuel supplies in Jersey
- Capping open-ended fuel supply pipes
- Condensate pump safety alert
- Reclassification of flammable liquids
- How to apply varying technical standards
- Cleaning and gas-freeing fuel storage tanks
- Fuel tank gauge safety alert
- Fuel storage tanks near non-fire rated structures
- Use of fire boards to protect fuel storage tanks
- Appropriate condensate disposal
- Solid fuel back-boiler safety alert.

Ecodesign regulations update

Solid fuel-fired boilers

On 1st January 2020 European-wide Ecodesign regulations will affect heating technicians who install solid fuel-fired central heating boilers.

The regulations place restrictions on solid fuel boilers providing central heating. The aim of these regulations is to improve the energy efficiency of appliances and reduce harmful emissions. Manufacturers of solid fuel boilers with a rated heat output of 500 kW or less must ensure their products meet these new requirements if they wish to sell their products in the European Union.

In all cases, manufacturers must only place on the market, and installers must only put into service, appliances that meet the following requirements:

- Solid fuel boilers with a rated heat output of 20 kW or less must have a seasonal space heating energy efficiency of at least 75%
- Solid fuel boilers with a rated heat output of more than 20 kW must have a seasonal space heating energy efficiency of at least 77%

In addition, the following maximum emissions limits apply:

Automatically stoked boilers	
• particulate matter	40 mg/m³
• carbon monoxide	500 mg/m³
• organic gaseous compounds	20 mg/m³
• nitrogen oxides	200 mg/m³ for biomass boilers; and 350 mg/m³ for fossil fuel boilers.
Manually stoked boilers	
• particulate matter	60 mg/m³
• carbon monoxide	700 mg/m³
• organic gaseous compounds	30 mg/m³
• nitrogen oxides	200 mg/m³ for biomass boilers; and 350 mg/m³ for fossil fuel boilers.

Installers should not struggle to identify suitable products as another requirement of the regulations is that the manufacturers must provide clear information detailing the efficiency of their appliances and the emissions produced.

Circulators

Stand-alone circulators and circulators integrated in appliances, such as combi/system boilers, have had to be of an energy-efficient design since January 2013 and August 2015 respectively. As a result, when replacing a stand-alone circulator, a technician has had to replace it with an energy-efficient model.

However, this has not been the case with circulators integrated into appliances manufactured before August 2015. Less efficient circulators have been permitted to be sold as spare parts for this purpose.

Ecodesign regulations preventing manufacturers placing such products on the market were due to come into force from 1st January 2020. However, to provide manufacturers with enough time to redesign or adapt their products, and to reduce costs to end-users, these regulations have now been postponed until 1st January 2022.

Heating system preparation:

To flush or not to flush?....that is NOT the question!

Cleaning, flushing and adding corrosion inhibitor treatment to domestic heating systems is required by regional building regulations guidance and by British Standards. Appliance manufacturers also require this in their installation instructions, often making it a condition of their warranty, so in this article we explain everything you need to know.

When is it necessary to clean, flush and chemically treat a heating system? At the very least, when a new heating system is installed or when an appliance is replaced. But there may be other occasions, such as when a build-up of sludge leads to component failure.

Much confusion (and opinion!) exists on this subject. Common questions include "How do I clean and flush?", "Do I have to power-flush or is mains-water flushing enough?", "What cleaner and inhibitor should I use?" and "Do I have to fit an in-line filter (magnetic or not)?" The answers to these questions and more can be found in BS 7593. Appliance manufacturer's installation instructions often reference this standard but rarely explain what it states. To assist technicians, OFTEC's technical team has reviewed the latest revision of BS 7593 and hopes this article answers your questions about flushing domestic heating systems.

Cleaning

Before cleaning an existing system, careful consideration should be given to its current design, age and condition. Any of the following common problems should be remedied before cleaning starts, otherwise corrosion and associated sludge will soon return:

- Ingress of air through poorly made joints or through plastic non-barrier pipe, for example
- Poor system design/installation. This includes pumping over or sucking down at the open vent, incorrect sizing of the cold feed pipe, inadequately sized or incorrectly installed feed and expansion cistern, or system leaks that result in the system being topped up with fresh oxygenated water
- Aggressive mains water supply, with low alkalinity and low pH, for example

Ignoring these issues and increasing the dose of corrosion inhibitor will not prevent further corrosion and sludge build-up. If there is evidence of bacteria/microbiological growth in the system (such as organic slime, a foul odour or restriction of flow), pre-flushing with a disinfectant designed for heating systems is recommended.

Cleaning is accomplished by using a chemical cleaner designed for central heating systems that is BuildCert (now called NSF International) approved, or equivalent. Cleaners are designed for different scenarios (new systems, heavily fouled systems, etc) so select the correct type and check that the cleaner is compatible with the materials found within the heating system. Follow the usage instructions carefully and, unless permitted by the manufacturer, do not mix different products, even from the same product range. Cleaning takes time and cannot be rushed, although higher water temperatures during a cleaning cycle can speed up the process.

A word of warning! Give careful thought to the age and condition of components such as valves, joints and particularly radiators before selecting a cleaner and cleaning method. Some products/methods could remove corrosion debris covering pinholes in radiators and this could result in leaks. It is better to replace or repair relevant components prior to cleaning. Finally, ensure it is permissible to dump heating water/cleaners to drains in your area.

Preparing to flush

There are three flushing methods to choose from: power-flushing, mains pressure flushing and gravity flushing (using circulator). Whichever method is chosen, the following steps must be taken prior to starting:

- isolate the cold-water supply to the heating system
- remove TRV heads
- record the position/setting of lock-shield or other regulating valves and open fully
- manually open any diverter valves
- clean any existing inline filters
- isolate any sensitive components

If power-flushing or mains pressure flushing open vented systems, cap-off or isolate the feed and expansion pipe and open the safety vent pipe. It is not good practice to include a newly installed appliance when cleaning/flushing as it might become damaged or contaminated.

Power-flushing

Power-flushing is a very effective method of cleaning a system and removing sludge/debris, with the possible exception of microbore systems. A power-flushing machine (basically a tank and high-powered circulating pump) is connected to the heating system and the pump circulates water at high velocity throughout the system as a whole and particularly through one radiator at a time (where fitted). The turbulent water dislodges debris, stirs up and carries sludge in suspension so it can be removed from the system. Some machines allow flow to be reversed and this can increase the effectiveness of the flush. The usual procedure for flushing a radiator system is outlined below, however power-flushing machine manufacturers' instructions should always be followed:

- Circulate untreated water through the whole system, reversing flow regularly to dislodge sludge/debris and discharge to foul drain until clear
- Adjust water flow into the machine to ensure the machine's tank water level remains steady during discharge
- Add cleaner to the machine's tank and circulate throughout system
- Use radiator valves to isolate each radiator in turn, allowing full flow through each to remove sludge/debris and reverse the flow regularly. Remember to open the next radiator fully before isolating the radiator being cleaned, otherwise the pressure build-up could damage the heating system/cause leaks
- In reverse order, flush each radiator in turn, discharging the water to foul drain until clear
- Before moving to the next radiator, reverse flow until discharge water is again clear
- Finally, open all radiators and flush the entire system until the water runs clear
- Sensitive components, which were isolated before the procedure, should be backflushed before they are restored to the circuit where appropriate.

Mains pressure clean and flush

Mains pressure cleaning uses mains pressure water to flush out sludge/debris from a system that has already been cleaned with a chemical cleaner. A cleaner is circulated (usually at operating temperature) within the system by the existing heating circulator. Next, mains pressure water is used to flush the system as a whole and then individual radiators.

The usual procedure for flushing a radiator system is outlined here:

- Drain the entire heating system to foul drain
- Dose the system with a cleaner and refill with water, bleeding the radiators and any other vent points
- Circulate cleaner in accordance with the manufacturer's instructions and then drain the system again
- Connect a mains pressure hose to an appropriate point in the central heating system (such as the flow pipe) and a hose from a drain valve (on the return pipe, for example) to foul drain. IMPORTANT: a suitable backflow prevention device should be used when connecting the mains supply to the heating system
- Flush each radiator in turn by isolating the other radiators until the water runs clear, discharging the water to foul drain. Remember to open the next radiator fully before isolating the radiator being cleaned, otherwise the pressure build-up could damage the heating system/cause leaks
- Open all radiators and flush the entire system until the water runs clear
- Sensitive components, which were isolated before the procedure, should be backflushed before they are restored to the circuit where appropriate.

Gravity flushing (using circulator)

Gravity flushing is not the flushing of gravity fed heating systems. Gravity fed systems cannot be cleaned or flushed without the use of a circulator. Rather, it refers to the repeated draining (by gravity), re-filling and recirculating of water within a heating system that has already been cleaned with a chemical cleaner. The idea is that if a large enough volume of fresh water is used, turbulence will dislodge sludge/debris and assist its removal. The usual procedure for flushing a radiator system is outlined here:

- Drain the entire heating system to foul drain
- Dose the system with a cleaner and refill with water, bleeding the radiators and any other vent points
- Circulate cleaner in accordance with the manufacturer's instructions and then drain the system again
- Refill and bleed the system and circulate the system water before draining the system again
- Repeat the filling, circulating and draining procedure until the water runs clear
- Sensitive components, which were isolated before the procedure, should be backflushed before they are restored to the circuit where appropriate

Recommissioning, filter installation, water treatment

Reinstate TRV heads, reset lock-shield or other regulating valves to their recorded position, reset diverter valves, ensure feed and expansion pipe and open safety vent pipe are reinstated and reconnect the appliance.

BS 7593 states that if there is a filter (featuring magnets, hydrocyclones or porous media) installed within the system, it should be serviced before refilling the system; if there is not, one should be fitted.

Refill the system with mains water. If a water softener is installed within the premises, this should be bypassed unless all system component (appliance, pump, radiators, for example) manufacturers confirm that their products are suitable for use with softened water. Privately supplied water (well water, bore hole water, grey water, for example) may not be suitable for filling a heating system. This should be assessed by a water treatment specialist.

After refilling and bleeding the system, a correct concentration of corrosion and limescale inhibitor should be added to the system. Inhibitors must be compatible with the appliance, system components and water quality. This should circulate long enough to ensure dispersion.

For systems that are not used over the winter months and which might be exposed to very low temperatures, corrosion inhibitor with anti-freeze should be considered. A biocidal product is worth considering for all systems, but especially underfloor heating systems or other low temperature systems (below 60°C) which are vulnerable to contamination from bacteria and fungi.

Pressure testing existing fuel supply pipework

Following the release of BS 5410-1:2019, here's a quick reminder that one of the key changes relates to pressure testing fuel supply pipework.

The previous version of BS 5410-1 stated that fuel supply pipework should be pressure tested when newly installed. BS 5410-1:2019 now requires a pressure test of existing fuel supply pipework before a new fuel storage tank or appliance is connected.

Additionally, when undertaking service/maintenance work, if parts of the fuel supply pipework are hidden or inaccessible, the customer should be advised to have their existing fuel supply pipework tested at least once every five years to prove its integrity.

Guidance for non-domestic sites

Control of Pollution regulations in England, Wales, Scotland and Northern Ireland set out circumstances where fuel supply pipework must be pressure tested by law. They all contain the same requirement – to pressure test all underground fill pipes and draw off pipes before their first use and, if not fitted with a leakage detection device, subsequently every five years (if underground joints are fitted) or 10 years (if there are no joints below ground). If fitted with a continually monitoring leakage detection device, this device must be maintained and tested at appropriate intervals to ensure that it works properly.

Although Control of Pollution Regulations require the same action, they apply in different circumstances, depending on region. They all apply to non-domestic installations, but only apply to domestic installations in the following circumstances:

- Wales – Any newly installed tank with capacity of 201 litres or more
- England – Tank capacity 3500 litres or more
- Scotland – Tank capacity 2501 litres or more
- Northern Ireland – Tank capacity 3501 litres or more

Information on how to undertake pressure testing can be found in OFTEC Technical book 3, section 2, page 18.

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The GOOD – *and not just the bad and the ugly!*

In this edition's Gallery pages, we are, of course, featuring the usual array of worrying shots showing poor and cheapskate installations. However, in the Autumn issue of *Oil Installer* we appealed for photographs showing some of our readers' proudest moments – so it is refreshing to be able to feature the 'good' rather than merely the 'bad and the ugly'! Do keep them coming!

OFTEC registered technicians who have their photographs featured in this section will win a special seasonal prize – *courtesy of OFTEC Direct!* So, for a chance to win, send in your snaps showing the good, the bad and the ugly sides of oil-related installations. Don't forget to include your name, address, and OFTEC registration number – and, if published, you will be a lucky winner of an OFTEC Direct special prize! (www.oftecdirect.com)

Send your pictures, together with a brief description of your business and where you came across the subject of your snaps, to: jane@oilinstaller.co.uk

Joe Arkell, an OFTEC-registered technician from JNA Plumbing in Gloucestershire, recently received a call-out to service a relatively newly-installed top-of-the-range oil boiler with a conventional flue with a liner kit installed. Routine stuff, or so he thought…

"All the ventilation and main liner and terminal were all fine and within regs," Joe told *Oil Installer.* "But as I touched the bottom length of flue pipe, it started to crumble in my hands.

"It transpired that the original installers had apparently 'run out' of Oilfit conventional flue pipe and had used a length of Gasfit balanced flue pipe. They had also taken out the inner plastic exhaust liner.

"The gases from the condensing oil flue gases had caused the gas liner to deteriorate within 12 months of initial installation. Remedial work has since been completed…"

JNA Plumbing undertakes most works associated with plumbing and heating, but do not complete any gas work because where they are – in the Forest of Dean – most homes use oil as their choice of heating fuels.

When OFTEC registered technician **Paul Hamblin** of Kintbury near Hungerford attended a routine boiler service for a new customer, he was not impressed with what he found…

"I noticed that the snorkel tube on the condensing boiler balanced flue had been disconnected," he explained to *Oil Installer.* "The air intake was blocked with something like sheets of blue roll. I removed the paper to find that the roll was semi burnt/charred!

"The flue itself was faulty and must have been putting gasses into the air snorkle. Even though the flue temperature on a condensing boiler is relatively low I don't think it was a wise choice to make just to keep the burner running!!"




"It is said that *'a little knowledge can be dangerous'*," says self-employed OFTEC-registered technician **Chris Bailey** from Coventry.

"This new customer near Daventry obviously thought he knew a little bit about installing oil tanks. As my photographs show, the hydraulic hose is connected to the kerosene tank serving the boiler… The isolation valve and filter are fitted downstream of this inside a home-made steel cabinet that prevents any access to the filter too!

"I issued a warning notice, labelled the tank and advised them to contact a nearby oil tank specialist to get the tank pumped out."

Chris's second pair of pictures show a 'before and after' of a fire valve found during a boiler service visit. "This was one of my regular customers near Hinckley," says Chris. "At each service I chat to him about the boiler and ask if it has been running ok. He always says it has been fine. But I always find something surprising. One year I found both oil filter elements had been completely removed but I knew I had fitted replacement filters the previous year. And this time I found he had 'fixed' a problem with his fire valve. He was happy to have a proper fix once he knew I had spotted it!"

Chris added: "I have quite a few more photos of terrible oil installations, so if you want more for future issues please let me know..." *Thanks Chris – we'll get back to you!*

In the last edition of *Oil Installer* we featured a small article appealing for photographs featuring some of our readers' proudest moments, rather than the usual tales of woe which regularly appear on the Gallery pages.

The article obviously struck a chord with installer **Matt Withers** of Swindon, who responded by sending us a photograph of one of his latest tank installations.

"I've been reading your articles since becoming an OFTEC registered technician and would like to get some of our work published in your magazine," he told us. "We are a small business based in Wiltshire and have six guys installing tanks and a dedicated team in the office.

"Here is the finished product of an installation we did recently. Work consisted of constructing a new concrete base, an LP1200BT installed to current regulations, and decommission and removal of an ageing tank.

"The customer was delighted with the result of the work and with the low visual impact of the tank compared to the older tank." *Well done Matt and team! It's refreshing to see the 'good' rather than just the 'bad and the ugly'!*

Fuel price commentary

It doesn't take much to push up the price of crude oil as recent events have proved once again. It's a familiar recipe. Take some increased instability in a troubled part of the world, mix it with a little political posturing by some of the world's leading powers, add a couple of provocative acts – in this case some attacks on oil tankers and an important Saudi Arabian oil refinery – and you have the perfect conditions to send the crude price soaring.

Fortunately, the effect this time seems to have been both short lived and limited in effect. That's because other factors that affect the price are pushing it down rather than up. The global economy has slowed, choking demand for crude, while American production is booming, so availability is good and prices on world markets have slipped back after a small autumnal spike. This means that while heating oil prices in GB have crept up recently, there's reason to hope that this will just be a temporary blip.

Alongside the slight increase in average annual oil heating cost, prices for some other technologies have fallen. Many British households will see lower gas and electricity prices from October after the regulator, Ofgem, lowered price caps. The new cap could see these households typically pay around £70 less a year. Conversely, solid fuels have gone up in price.

In the Republic of Ireland, prices have been largely static, but in Northern Ireland some prices do not appear to have followed the trends seen in the rest of GB. For example, electricity prices have risen, while in GB they have gone down, emphasising that, to some extent, regional factors can also influence the prices households pay.

Comparative space and water heating costs for a three-bedroomed home in Great Britain, Northern Ireland and the Republic of Ireland

GREAT BRITAIN

	Average: Oct 15-Oct19	October 18	October 19	Price change	% difference
Anthracite Grains	1145	1127	**1209**	82	7.28%
Electricity (Economy 7)	1842	2069	**2088**	19	0.92%
Gas (British Gas – condensing)	996	1036	**1016**	-20	-1.93%
LPG	1858	2003	**1933**	-70	-3.49%
LPG (condensing)	1530	1647	**1590**	-57	-3.46%
Oil	1173	1439	**1356**	-83	-5.77%
Oil (condensing)	962	1178	**1110**	-68	-5.77%
Wood Pellets	1420	1548	**1491**	-57	-3.68%
Air source heat pump radiators	1642	1805	**1835**	30	1.66%
Air source heat pump underfloor	1392	1380	**1404**	24	1.74%

NORTHERN IRELAND

	Average: Oct 15-Oct19	October 18	October 19	Price change	% difference
Anthracite Grains	988	987	**1047**	60	6.08%
Electricity (Economy 7)	1597	1650	**1924**	274	16.61%
Gas (Phoenix – condensing)	928	968	**1050**	82	8.47%
LPG	2414	2629	**2708**	79	3.00%
LPG (condensing)	1980	2155	**2219**	64	2.97%
Oil	1131	1436	**1326**	-110	-7.66%
Oil (condensing)	927	1165	**1086**	-79	-6.78%
Wood Pellets	1116	1144	**1104**	-40	-3.50%
Air source heat pump radiators	1496	1524	**1686**	162	10.63%
Air source heat pump underfloor	1232	1150	**1271**	121	10.52%

REPUBLIC OF IRELAND

	Average: Oct 15-Oct19	October 18	October 19	Price change	% difference
Anthracite Peas	1551	1628	**1628**	0	0.00%
Electricity (Urban Night Saver)	2048	2153	**2194**	41	1.90%
Gas (Bord Gais condensing)	1345	1399	**1431**	32	2.29%
LPG	2691	2792	**2986**	194	6.95%
LPG (condensing)	2215	2296	**2454**	158	6.88%
Oil	1584	1951	**1834**	-117	-6.00%
Oil (condensing)	1297	1594	**1499**	-95	-5.96%
Wood Pellets	1350	1394	**1400**	6	0.43%
Air source heat pump radiators	1799	1890	**1919**	29	1.53%
Air source heat pump underfloor	1490	1496	**1509**	13	0.87%

Notes. The tables above are based on quarterly data published by the Sutherland Tables. They show the annual average cost of a range of heating options for a typical pre-1980 three bedroomed semi-detached home with a heat requirement of approximately 16,000 kWh. Prices are shown in pounds sterling (£) for Great Britain and Northern Ireland, and euros (€) for the Republic of Ireland.

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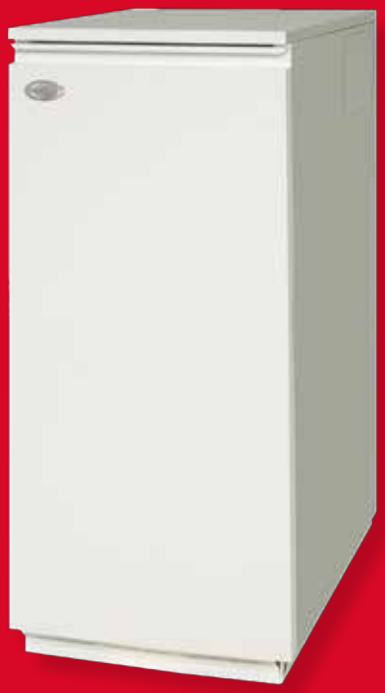

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