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WISHING ALL OUR MEMBERS A

MERRY

*Christmas*



AND A PROSPEROUS NEW YEAR





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## IMF DIARY

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Please note that all course fees must be paid in full before any course materials can be released.

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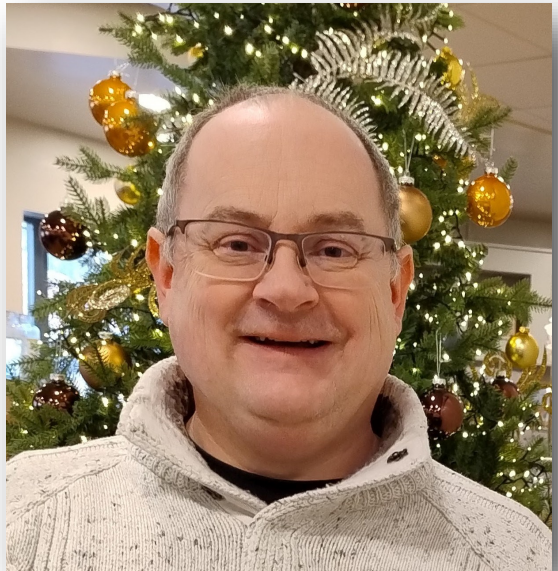


## PRESIDENT'S REPORT (i)

This is my first year as President of the IMF, a position I am very proud to hold, I feel delighted and privileged to hold this position in such an illustrious organization. I would like to thank Karl Ryder for his continuing friendship and support without which my tenure as President would be significantly more difficult.

The thought has occurred to me that the majority of our members will have never met me so I thought a little introduction may be in order. I am the Global Process owner for paint technology for all Rolls-Royce business sectors as well as the chemical process specialist and materials obsolescence lead. More importantly I am a family man with a wife and daughter and have a keen interest in miniature wargames and growing vegetables, the latter being quite challenging this year due to the shocking wet weather we have had. In fact, if conditions were a little warmer, I would consider growing rice.

There have been a number of interesting key activities that the IMF has been engaged in this year that are worth mentioning I feel. We continue to engage in discussions with Ofqual with the desired goal of the IMF becoming a recognized training provider. Progress is slow but will continue going forward, I personally feel this is a worthwhile activity.



# SECRETARY GENERAL'S COLUMN

Secretary General Report to AGM November 2024

Firstly, my apologies for not being able to be present at this year's AGM; I am currently in China for Indestructible where I am training clients in the correct use of our products.

I am pleased to be able to report another successful year for our Institute; we continue to go from strength to strength.

Your board have been discussing plans to increase the membership and to attract younger members from the finishing industries: there is a need to change the demographics and to introduce younger personnel into the management of the Institute.

On this note, I am pleased to welcome Paul Holder as our new vice president; Paul I know will bring a fresh perspective to our operations. I'm sorry to have missed his presentation this morning but I believe this will have been quite thought provoking!

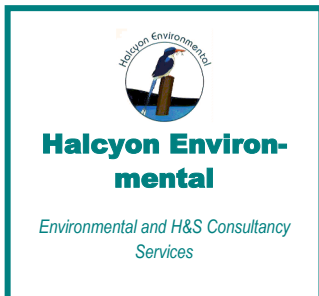
I am also pleased to advise that we have strengthened our office team with Michelle joining us in the summer to work alongside Karen to build our education team. Welcome Michelle to our happy band!

Otherwise, our groups and committees continue to work tirelessly to maintain the Institute's presence in industry, and I would like to thank all our volunteer members for their sterling efforts over the year.

Finally, I apologise for this being a short note, but I'm writing this from my hotel room in Shenyang in northern China at the end of a very busy and intense day in a major aerospace manufacturing company.

I hope you all have had an enjoyable AGM, and that the first Christmas lunch of the year went down well!

Graham Armstrong  
18 November 2024



## PRESIDENT'S REPORT (ii)

Continuing the theme of education we have run a practical training course at Poeton for the first time this year. The feedback we received was very positive and I feel running practical training courses is a very constructive and positive response to the way that the market is changing.

The IMF continues to maintain links and support the wider industry by supporting and visiting events like The Oil & Colour Chemists' Association SURFEX event in Coventry and the International Union for Surface Finishing Interfinish conference in Hong Kong. I feel that this level of engagement between the IMF and other industry bodies globally is essential to maintain our relevance in the world of surface finishing.

At this year's AGM we see the inauguration of a memorial prize. This is awarded by the journal Trans IMF for the best paper contribution in electrochemistry in memory of the greatly respected Peter Farr who we sadly lost last year.

This neatly brings me on to the rest of our staff and volunteers. I would like to offer a warm welcome to two new members of our organisation. Michelle Tennyson joins our office staff to help with the growing workload, she is initially working as admin assistant to Karen while she trains. Paul Holder joins us as our new Vice President bringing with him a wealth of experience and a passion for the IMF. I would like to thank all our staff and volunteers for their help and support this year. Our volunteers deserve a special thank you from me for without them the IMF would not be where it is today.

Next year marks our 100<sup>th</sup> anniversary, a truly impressive milestone by any standard for which we have several celebratory plans in place for events to involve the membership and raise the profile of the Institute.

It is an honour and privilege to serve as President of the IMF and I look forward to the great things we can achieve together in 2025. With that I wish you a very Merry Christmas and a happy, healthy, and prosperous New Year, preferably with a little less rain for my beleaguered vegetables.



**Anochrome Group**





# 2024 AWARDS (i)

## GOLD AWARD

This award the highest accolade given by the Institute, is presented from time to time for outstanding personal scientific or technical achievement and long-term professional service relevant to the objectives of the Institute.

**K Ryder**



## SILVER AWARD

The award should be made to a person of the IMF who is deemed to have given extraordinary service to the IMF.

**K L Yates**



## CANNING BI-CENTENARY AWARD

Sustainable cleaning solutions for improved profitability and reduced CO<sub>2</sub> footprint

**Brandon Lloyd. P233-235.**

## JIM KAPE MEMORIAL AWARD

Electrochemical deposition of a biofunctionalized silver and strontium substituted hydroxyapatite nanocomposite coating on a  $\beta$ -type titanium alloy.

**Azadeh Esmaeil Nejad, Hanieh Nojehdehian, Amir Pasha and Negin Nikmanesh. P338-345.**





## PETER FARR MEMORIAL AWARD

Designing effective plating baths for use in the pulse-reverse plating of copper nanocomposite coatings.

**H.Hilton-Tapp, J.Kelly and D.Weston.  
179-188.**



## JOE EDWARDS MEMORIAL AWARD

Recent advances and challenges associated with thin film coatings of cutting tools: a critical review.

**A.Aditharajan, N.Radhika and B.Saleh. 205-221.**

## BEST STUDENT AR FOUNDATION LEVEL

**Tim Baker**

A dark blue rectangular box containing the SIEBEC UK Ltd logo and contact information. The logo features the word 'siebec' in a stylized font with 'UK Ltd' underneath. To the right of the logo is the tagline 'Expertise you can rely on!'. Below the logo, the text reads 'SIEBEC UK Ltd', 'Unit 3 St Albans Rd, Stafford', 'Staffs ST16 3DR', '01785 227700 | sales@siebec.co.uk', and 'www.siebec.co.uk'. At the bottom left, it lists 'PUMPS, FILTERS, MEDIA, EDUCATORS &amp; SPARES'. At the bottom right, there is a circular icon with a gear and a checkmark, followed by the text 'Choice &amp; Value'.

## BEST STUDENT AT TECHNICIAN LEVEL

**Ryan McGrory**



BE ACTIVE WITHIN  
THE IMF, JOIN A  
COMMITTEE AS  
WE TURN

100

We have many committees and are looking for new committee members get in touch for more details.

Email [office@materialsfinishing.org](mailto:office@materialsfinishing.org)







## Craftsmanship Meets Creativity with HMG Coach Enamel

Whether it be for canal boats, historic tractors or vintage vehicles, Coach Enamel from HMG Paints has been the go-to product for vintage restoration and decorative work for over 20 years. As a traditional high quality, high build, long oil synthetic alkyd enamel it offers an extra-long wet edge to allow for the product to be brushed for a premium finish.



The latest bit of stunning craftsmanship with Coach Enamel comes via the way of Harry's Hot Rod Shop, who has transformed an iconic Series 1 Lambretta with a custom Timothy Taylors Brewery design. This eye-catching project has been brought to life using Coach Enamel, provided by Morleys Derby Ltd, producing a flawless finish that highlights the scooter's timeless appeal.



Harry's Hot Rod Shop, renowned for its expertise in 'hand crafted' traditional designs for shop windows, custom automotive and motorcycle work amongst other things, produced this project for the East Midlands Scooter Show at Newark. Based in Derbyshire, the shop has become a go-to destination for enthusiasts seeking bespoke, high-quality traditional designs. This

latest project is just the latest example of their exceptional craftsmanship.

Owner Harry commented "I've been using HMG Paints since I started 10 years ago. I use KX Undercoat, 14 Line Polyurethane and Coach Enamel on a regular basis all supplied by Morleys in Derby. I work on so many different styles of projects for customers from fairground art to old rusty American trucks and the products are very versatile and produce a great finish."

As an independent paint manufacturer HMG Paints Ltd rely on a loyal, countrywide distribution network to supply and service customers. On this occasion, Morleys Derby was able to supply a variety of products, thanks to their in-depth product knowledge in specific colours. Like many HMG distributors Morleys have access to HMG's ColourBase Tinting Software which allows them to produce over 90,000 colours, including RAL, British Standard and more colour standards across several bases.



This project exemplifies why HMG Coach Enamel is such a popular product and when in the right hands can produce a classic design with a flawless finish – making it a perfect blend of tradition and innovation.

All HMG Paints products, including Coach Enamel, are manufactured in Manchester, under the stringent quality control of an ISO 9001 management system. The company's dedication to quality and innovation is further affirmed by its Made in Britain accreditation. For more information about the HMG range or to find your local distributor, please visit [www.hmgpaint.com](http://www.hmgpaint.com) or contact HMG Paints directly at 0161 205 7631.

For more stunning work from Harry's Hotrod Shop visit <http://harryshotrodshop.co.uk/> or check out their Facebook page over at: <https://www.facebook.com/harryshotrodshop>

If you require further information on the press release, please contact:

Stephen Dyson

HMG Paints Communications

[sdyson@hmgpaint.com](mailto:sdyson@hmgpaint.com)

# JOHN BURGESS part 1

**52 and still at it!!!**

(An extract from a talk I gave at this year's AGM)

**John Burgess**

Life began for me on 17<sup>th</sup> December 1946 and anyone who knows me will recognise that even after all these tears I still have roughly the same amount of hair now as I did then.

I was lucky enough to be at an age in the 60's when music was in its heyday and my favourite group was "The Shadows" with Hank Marvin (lead guitarist) who was my idol.



In order to be part of it, myself and some schoolmates formed a group and as you can see from the picture I had managed to grow some hair.

We were together for some 10 years and made some pocket money out of it but like all good things' 'fame' was not going to come knocking and I was

informed by my parents that a "real job" was the order of the day.



I always loved chemistry and the idea of metallurgy. Where that came from in my family, I do not have a clue but I saw a job advertised in the Birmingham Mail for a laboratory assistant to work at the GPO (General Post office) for £8/week so I applied.

My mother (bless her) also found a job going at a company called W. Canning & Co in Birmingham, again to do laboratory work in their Research Labs with a salary of £10/week.

I went to both interviews and got offered both jobs, but the lure of an extra £2/week could not be missed, and this was the job that started my career. This was 1965.

I never wanted to go to university, but part of the job was to attend a Day Release and 1 evening at Night school which was great, except the 1 night always seemed to be a Friday which was not the best as it often clashed

# JOHN BURGESS part 1

with playing in the band but there were ways around this as there always are.

This was my first experience into Electroplating and in the R&D I was taught a great deal by the different section leaders Copper, Nickel, Chromium and a small amount of Zinc before I left to try my hand at Metallurgy.

As I said before, Metallurgy appeared to be very interesting, so I took a job at Reynolds Tubes in Birmingham but only stayed for about 6 months as I decided the lure of bubbling plating baths and its associated smells was definitely for me.



On leaving Reynolds I had an interview with Shipley chemicals who were suppliers of chemistry for the manufacture of printed circuits boards. (PCB's)

PCB's in the early 70's was an up and coming market and I had to learn a lot about electroless processes (usually copper) which were used in order to plate through holes in the boards and provide a connection between the copper foil on the surface of both sides.

Shipley were also providers of plating on plastics processes using electroless nickel as a conductive medium and because I was knowledgeable on electrochemistry it was often down to me to go and sort out problems.

Kodak (best known for the manufacture of film) had a plant in the south which plated the Instamatic camera with copper nickel and chrome using the electroless nickel system to provide the initial metallisation. I was called in because the adhesion of the metal coating to the plastic was poor and causing blisters and the reason was down to the chromic acid etch being old and needed renewing.

It was decided that they would pump out 80% and put in a new solution and I was to go down on the Monday to see the results.

I arrived to find a complete disaster. The glass frontage around the plating shop was completely blown in and chromic acid stains all over the plating shop walls.

Apparently it was down to a contaminated sludge gulper causing a reaction between the chromic acid and whatever was inside the tanker and because the pressure warning system failed the back end of the lorry failed and discharged all its contents over the plating shop and into the plating solutions.



# JOHN BURGESS part 1

I had to discuss the plating on plastics process to a gentleman called John Whitehouse who worked for a company called M&T Cruickshanks. They were installing the electroplating processes to a company which had our POP process in and he wanted to get a better understanding how it all worked.

To cut a long story short John offered me a job in Technical Service working on the road and the prospect of having a company car appealed to me and also working in electroplating rather than electroless appealed to me much more so I agreed to join and enjoyed every minute of it.

To be continued:

## PRACTICAL TRAINING

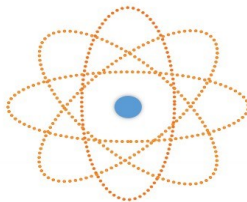


**Coming in 2025**

### Practical Training

For more details, please get in touch

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## Parliamentary and Scientific Committee

The Parliamentary and Scientific Committee is an All-Party Parliamentary Group funded by Membership

The Parliamentary and Science Committee held a meeting on October 14<sup>th</sup> 2024 entitled “Reuse, Repair, Replace”. It was sponsored by the Institute of Corrosion, but the IMF suggested the topic and was asked to help organise some speakers. Comments and suggestions made at the meeting may be used in an upcoming debate to be held in the House of Lords on “How science and technology can be incorporated into political decision making”.

The main driver of the meeting was to highlight the costs of corrosion to the UK and global economies and how they can be reduced and/or mitigated. It is widely accepted that corrosion costs the developed economies represent about 3.5% of GDP; in the case of the UK, this amounts to about £80bn per annum. This is approximately equivalent to the UK’s annual education budget! The Institute of Corrosion also estimates that about 35% of corrosion costs can be saved by implementing existing corrosion control measures – this amounts to about £28bn per annum, so there is a lot of “low hanging fruit”!

There are numerous methods of reducing the effects of corrosion, including:

- Protective coatings such as powders and paints;
- Metal plating, such as electroplating, mechanical plating, electroless plating and hot dipping;
- Corrosion inhibitors, such as chemical additives to suppress or inhibit corrosive electrochemical and chemical reactions;





## REUSE, REPAIR, REPLACE (ii)

- Sacrificial coatings such as cathodic protection and galvanising;
- Environmental measures that will reduce the exposure of surfaces to corrosive substances such as oxygen, sulphur and chlorine;
- Modified designs to avoid designs that create corrosion sites.

Some of these methods, such as metal plating and sacrificial coatings, overlap each other, but the main methods where IMF members can currently gain benefit from corrosion protection are in protective coatings, metal plating, sacrificial coatings and, to a lesser extent, corrosion inhibitors.

The importance of coatings is very well demonstrated by the Forth bridge. Network Rail, who own the Forth bridge, estimate that if the bridge had never been coated, it would have probably only survived about 20-30 years, but due to constant renewing of its paint, it is now about 135 years old. In 2001 a 10 year project was started to repair the bridge and recoat it with a new special, anti-corrosion primer and a high-build epoxy glass-flake epoxy paint; it is expected that this new coating will last at least 25 years and if it is kept protected from UV light, it could last up to 50 years, as opposed to finishing the repainting, only to have to start from the beginning again.

Whilst corrosion protection is one area in which surface coatings can provide major advantages, another is in lesser developed, but increasingly important, sector of remanufacturing. Remanufacturing is a key part of the circular economy and is designed to reduce the use of resources, as well as reduce carbon emissions and energy consumption by repairing and updating already in-use products so that the remanufactured product is as good as a new one.

Currently the remanufacturing business sector only represents about 2% of all manufacturing and about 10% of the reuse and repair market, which is dominated by refurbishment and repair at about 65%, whilst reuse is about 25% and remanufacturing is about 10%. A survey carried out by the Centre for Remanufacturing and Reuse targeted 10 key



## REUSE, REPAIR, REPLACE (iii)

industrial sectors and showed that manufacturing industries in the EU estimated that about 20% of manufacturing could easily accommodate the methodologies of remanufacturing.

One of the major sectors where remanufacturing is carried out is in the very risk adverse aerospace sector, where 11% of the industry uses remanufactured goods; this is measured by the ratio of remanufactured: newly manufactured products. As an example of remanufactured goods in aerospace, about 80% of aircraft tyres are remanufactured, or “retreaded” and the industry is keen to continue developing and expanding the use of remanufactured goods in other areas such as engine parts and electronic components.

There are many challenges to remanufacturing, including the use and re-use of surface coatings. Virtually all surface coatings will ultimately fail, so for successful remanufacturing, the failed coatings need to be either removed or repaired in an economic manner; both options present challenges, but neither are unsurmountable and the coatings industries need to address these challenges. In many cases, remanufacturing is carried out after a component has been taken to pieces and individual parts checked for any evidence of wear or corrosion. In most cases these can be repaired and reassembled to produce an as-new product, as with products such as turbine blades, gear wheels etc, but in some cases, disassembly is not easily achieved and in-situ repairs need to be carried out. Such repairs can be achieved by using technologies such as metal spraying or selective plating (aka tampon plating or brush plating); these are established technologies that allows metallic coatings to be repaired in-situ and this is extremely useful in reducing down time of heavy equipment, such as heavy rolling mill rollers or in repairing wind turbine slip rings. It can also be used to repair anodised surfaces. Similar in-situ technologies are available for the repair or replacement of both paint and powder coatings in many end-uses such as architectural products. In most paint and powder coating repairs, best results are obtained by stripping the coating back to the base material, whilst selective plating can often be



## REUSE, REPAIR, REPLACE (iv)

carried out with minimal stripback.

As coatings become more sophisticated and complex to meet the demands of being suitable for ever more extreme conditions, the need for new coating techniques will become more prevalent. Many such techniques have not yet been developed as they are not yet conceived, but the surface engineering industry must become more aware of developing methods of repair that will be suitable for use in extreme environments and even consider the use of robotic repair systems. One widely used coating range is ceramics, but these are brittle and very difficult to successfully repair for use as remanufactured parts, although laser cladding technologies have been used with some success.

Another aspect of remanufacturing is the implementation of “design for reuse” and “design for disassembly”, both of which permeate back to the initial product concept, manufacturability and design for manufacturing, so designers as well as engineers will need to understand the processing, attributes and limitations of surface coating and surface engineering technologies. These concepts are already in place, through the WEEE Directive (Waste Electronic and Electrical Equipment), although their concepts have not yet been fully implemented.

It is widely accepted that developing, promoting and growing a remanufacturing industry will require upskilling of work forces and this can be achieved by increasing and improving the level of education provided for the surface engineering industry. This technology creates opportunities for both small jobbing shops and major surface engineering facilities, both of which will benefit from the development and use of re-processible coatings. It also provides opportunities for the coating manufacturing industry, as many of these new coatings systems need to be developed and their performances verified.



## What is PFAS?

## What You Need to Know About PFAS Legislation in 2024

PFAS (Per- and Polyfluorinated Alkyl Substances) are synthetic chemicals used across various industries for their unique properties. They have been in use since the 1950s and are found in products like cookware, food packaging, and firefighting foam. However, concerns about their persistence in the environment have led to increasing regulatory scrutiny.

As of September 2024, neither the UK nor the EU has specific legislation governing PFAS usage. However, a proposal submitted in January 2023 by five European nations (Norway, Germany, the Netherlands, Denmark, and Sweden) aims to regulate PFAS. This proposal is still under review by the European Chemicals Agency (ECHA), and its future remains uncertain. Public feedback during the consultation process has caused delays, and even if approved, implementation would be gradual, likely targeting the most toxic substances first.

Given the global reliance on PFAS, especially in critical industries, an immediate ban is unlikely. Instead, any future regulations would phase out the most harmful PFAS compounds while focusing on public end-users. Fraser Technologies, with over 55 years of experience, is committed to helping clients navigate these changes by

offering compliant, future-proof solutions.

### The Environmental Impact of PFAS

PFAS are diverse, with over 5,000 different compounds that vary in their environmental impact. Their persistence and potential for bioaccumulation pose significant environmental risks, but not all PFAS are equally harmful. Each compound behaves differently, depending on its specific properties like fluorination level and breakdown pathways. For businesses, understanding the characteristics of their specific PFAS usage is crucial for assessing environmental risks.

Factors such as how a solvent breaks down, its Global Warming Potential (GWP), and bioaccumulation potential must be considered when determining its environmental impact. Given the complexity, it's important not to generalise all PFAS substances as equally dangerous.

### Current and Future PFAS Legislation

While there is no formal PFAS legislation in place as of September 2024, future regulations are likely. The proposal from the five European nations is expected to be phased in gradually, focusing initially on the most toxic compounds. However, significant delays in the review

process mean that businesses still have time to prepare for the potential regulatory changes.

### PFAS-Free Alternatives

Several new fluorinated solvents fall just outside of the current EU definition of PFAS. These "PFAS-free" alternatives were not available when the original restriction proposal was made and might eventually be included in future regulations. Since they are so new, their environmental impact and performance have not been as thoroughly tested as existing PFAS products. Businesses should carefully evaluate their processes before making any changes. Fraser Technologies can assist in this evaluation, providing non-biased assessments of alternative technologies and offering solutions tailored to each business's specific needs.

The future of PFAS regulation is still uncertain, but businesses have time to assess their processes and prepare for potential changes. Fraser Technologies, with decades of experience, is equipped to guide businesses through the evolving regulatory landscape, offering solutions that balance compliance, performance, and sustainability.

Contact Fraser Technologies today to understand the true realities of PFAS.

**For more information, please contact us:**  
Tel: 01506 443058 | E-mail: [sales@frasertech.co.uk](mailto:sales@frasertech.co.uk) | [www.frasertech.co.uk](http://www.frasertech.co.uk)

## NEW FOR 2025



### Educational Practical Training

In 2025 the IMF are going to be offering Sustaining Members the opportunity to put forward their employees to attend a 1-2 day workshop in the field of electroplating. Over the two days we will cover a general overview of how electroplating works followed by a practical workshop which will see students undertake plating test pieces followed by the solution analysis and micro sectioning the samples that they have plated.

For more information email: [training@materialsfinishing.org](mailto:training@materialsfinishing.org)

Tel: 0121 622 7387



## Wolverhampton Electro Plating boosts capacity and secures jobs

Leading metal finishing specialist Wolverhampton Electro Plating (WEP) has significantly increased its capacity and range of finishes it offers after safeguarding a dozen jobs following the collapse of another business.

WEP, part of The Anochrome Group, purchased two divisions of The Electrolytic Plating Company Limited (EPC) after the Walsall business fell into administration following more than 120 years of trading.

BDO was appointed as administrator and worked with WEP to salvage sections of the stricken business, which had a reputation as one of the largest barrel plating and surface coating companies in the UK, second only to WEP.

The move saw eight EPC employees transfer to WEP, along with key pieces of machinery that will allow WEP to continue to offer outstanding service to its customers.

A further four EPC employees were reassigned to other areas of The Anochrome Group.

Denis Rainbird, General Manager at WEP, said: “EPC was a business with a rich heritage and it was very sad to see it cease trading recently.

“We were pleased to be able to work with the administrators to save 12 jobs which otherwise would have been lost.

“The deal strengthens our position in the market and brings about major benefits for our customers.

“We look forward to working with customers old and new as we continue to enhance and elevate our offering, cementing our position as one of the UK’s premier metal finishing companies.”





Through the acquisition WEP has acquired equipment related to dip spin coating for zinc flake and organic finishes, along with thread locking and patching equipment which has already been relocated to Inlex Locking Ltd, part of the Anochrome Group.

The biggest of the dip spin machines, which can process around six tonnes of material per hour, will be moved and installed first.

Denis added: “We apply a wide range of Zinc flake and organic topcoats and finishes from leading suppliers including, NOF (Geomet), Magni, DÖRKEN and PPG (Xylan). We offer electroplating finishes such as barrel Zinc and barrel Zinc nickel and we are the only job coater to provide mechanical plating to the UK.

“The addition of the EPC dip spin equipment will also result in efficiency gains as more machines mean fewer changeovers, leading to less idle time and improved turnaround times.

“We are excited about how our continued investment will further improve the service we can offer our customers.”

WEP works with some of the biggest tier 1 suppliers into OEMs in the automotive, construction, rail, petrochemical, wind energy, highways and commercial vehicle sectors and holds numerous accreditations, including ITAF 16949:2016, ISO 9001:2015 and ISO 14001:2015.

Its industry-leading testing facilities include two salt spray chambers, two torque and tension machines, an X-ray fluorescence machine, various coating thickness measuring devices and access to cyclic corrosion testing.

For more information, visit [www.anochrome.com](http://www.anochrome.com)

## THE INSTITUTE OF MATERIALS FINISHING

INTERNATIONALLY  
RECOGNISED  
QUALIFICATIONS

We are a leading provider of technical training and skills development for employers and individuals. IMF courses lead to recognised qualifications and cover a wide range of materials finishing and surface engineering applications. IMF tutored courses, distance learning and corporate training underpin business performance and enable profitability.

### Foundation Module Basic Surface Finishing

Develops fundamental understanding from 29 Units of which a student studies 15, including 7 mandatory units. One of three core technology blocks are chosen, either **Electroplating** (8, 9, 10 & 18); **Organic Coating** (19, 20, 21, & 23); or **Aerospace Finishing** (19, 21, 24 & 25), each comprising 5 units plus 3 optional units relevant to the student or their employer – all units are listed below.

Two pieces of marked coursework are required and on passing an examination a student is awarded the **Foundation Certificate**.

Unit 1 *	Surface Finishing
Unit 2 *	Corrosion
Unit 3 *	The Environment & Surface Finishing
Unit 4 *	Health and Safety
Unit 5 *	Cleaning and Pre-treatment
Unit 6 *	Sacrificial Coatings
Unit 7 *	Services
Unit 8	Surface Improvement
Unit 9	Principles & use of Electroplating (Double unit)
Unit 10	Plant and Equipment
Unit 11	Copper, Silver and Gold Plating
Unit 12	Nickel Plating
Unit 13	Chromium Plating
Unit 14	Zinc & Cadmium Plating & Passivation
Unit 15	Electroless Plating

Unit 16	Alloy Plating & Composites
Unit 17	Printed Circuit Board Processes
Unit 18	Electroplating - Care & Maintenance of Solutions & Product Quality
Unit 19	Conventional Paint Processes (Double unit)
Unit 20	Electrophoretic Paint Processes
Unit 21	Paint Application Methods
Unit 22	Coating Powders & Application
Unit 23	Testing Paint & Powder & Coatings
Unit 24	Chemical Conversion Coatings and Sol Gel Coatings
Unit 25	Anodising of Aluminium & Alloys
Unit 26	Vacuum Coating Processes
Unit 27	Duplex Coatings of Galvanising plus Paint
Unit 28	Electroforming
Unit 29	Nanotechnology

\* Mandatory units

On achievement of the **Foundation Certificate** candidates may wish to progress to the **Technician level modules**, please see over the page for details.

# EDUCATION AND TRAINING (ii)

For more comprehensive details of all modules offered please refer to our website [www.materials-finishing.org](http://www.materials-finishing.org) where you find the full syllabus for each module.



## Technician Modules

Develops in-depth knowledge for key finishing technologies and their application and best practice methods.

Principles of Electroplating	Broad introduction to electroplating technology
Electroplating Practice	Industrial application of major metals and supporting pre-treatments for electroplating and electroless deposition
Paints, Lacquers & Varnishes**	Application methods, equipment, curing, drying and testing of solvent and water based industrial finishing processes
Powder Coating	Application methods, testing, environmental, health & safety topics
Environment, Health & Safety	Legislation information on environmental, health & safety topics
Materials Science	Manufacture, properties and examination of materials which require various forms of coating or treatment to meet service life needs
Automotive Surface Finishing**	Applications specific to the automotive industry
Electroforming	How electroforming can be used to manufacture components and tooling

On successful completion of four marked assignments and passing an examination, a student is awarded a **Technician Module** certificate.

Passing two Technician modules leads to the award of **Technician Certificate**.

Passing four Technician modules leads to the award of **Advanced Technician Certificate**.

\*\* These modules together cannot rate towards the award of a Technician Certificate





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