



IRISH BRANCH MEETING 31ST JANUARY 2018

The Irish branch of the IMF exhibited for the first time since the Institute's name change at the National Manufacturing and Supply chain at Citywest conference centre in Dublin on the 31st January 2018.

Attendance for the exhibition was well subscribed and our stand position was excellent giving us a good footfall for making useful contacts with many potential collaborators. The stand was manned by Greg Payne and Don Chaplin, with help from Neil Cremin, Sam Briggs (organiser) and our newest committee member Douglass Jalovicar.

A great deal of interest was shown in our upcoming IMF Irish Branch seminar to be held at Caterpillar in Larne on May 15th this year. The seminar which will attract the interest of all practitioners and sectors of Material Finishing throughout Ireland will include talks on the latest wet on wet high build technology and dust on dust high build powder technology as well as Sol-gel coatings. The event will conclude with a site tour of the new auto lines set up for handling all the painting and powder coating requirements at the site.

IMF DIARY

IMF EVENTS

9TH – 13TH APRIL 2018
MACH 2018

18TH APRIL
BATTERY SEMINAR – WARWICK UNI

19TH – 20TH SEPTEMBER 2018
SURFACE WORLD NEC

SOUTHERN BRANCH

WEDNESDAY 23RD MAY 2018
EVENING SEMINAR

THE PORT HOUSE, MARINA KEEP,
PORTSMOUTH, HAMPSHIRE, PO6 4TH

PLEASE REGISTER IN ADVANCE BY
CONTACTING JOHN BURGESS
JOHNB IMF@BTINTERNET.COM

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PLEASE MAKE SURE WE HAVE YOUR CONTACT
DETAILS UP TO DATE. ANY CHANGES PLEASE
CONTACT DAVID ON 0121 622 7387 OR
EMAIL: DAVID@MATERIALSFINISHING.ORG

NEWS FROM THE SOUTH

The Southern Branch of the IMF have organised 2 seminars for 2018.

The first seminar entitled “Water, Water Everywhere” will be held on Wednesday 23rd May 2018 at The Port House, Marina Keep, Portsmouth, Hants, PO6 4TH.

THE PRESENTATIONS WILL BE:

- a) “Waste water...what happens to it?
Southern Water
- b) Pumps for the Finishing Industry
Hendor - pc
- c) The Disinfection of water
AGas-EM
- d) Historic Gun Conservation (Marine Salvage)
Conservator of the Royal Armouries,
Fort Nelson]

Our second seminar meeting will be in early October (Date to be confirmed) and will be our first venture into the world of electronics. We are in discussions with speakers and as soon as these are finalised, further information will be available closer to the time.

For further information regarding the May presentation, please contact [John Burgess](mailto:JohnBurgess@btinternet.com) at JohnB IMF@btinternet.com or [Helen Wood](mailto:HelenWood@materialsfinishing.org) at helen@materialsfinishing.org.



I'm sure it's a sign of growing old, but it seems I'm always being chased for my thoughts for my column in IMFormation!

As well as suffering from "jet lag" after a 23-day business trip to Dubai and the Far East (I know, some people have all the fun!) I'm suffering from a catch up on e-mails which seem to breed almost like rabbits.

With the amount of travel for work I've been involved in since the Christmas break, it's with apologies that I have little to report on activities for the Institute. There are, however several newsworthy items coming up in the next few weeks which I will be involved with, either on behalf of the Institute or in support of our groups or branches.

The next meeting of the fledgling Surface Engineering and Advanced Coating leadership forum is arranged for the beginning of March, where it is hoped to be able to define a mission statement and terms of reference and objectives. This is an excellent medium to better communicate with other Institutes and trade bodies involved in materials finishing and surface engineering, and I'm sure all our members will support my efforts in ensuring we have our say.

For those of you not aware, the Institute again have a stand at the forthcoming trade show at the NEC, MACH 18. As usual, in return for our support for our help in promoting the show, the organisers have again provided a shell scheme stand for no charge.

To quote the organisers, "MACH is the UK's premier event for engineering-based manufacturing technologies. Taking place from 9-13 April 2018, MACH is poised to be the destination of choice for engineers and manufacturers, bringing together the best of UK manufacturing under one roof. With over 25,000 visitors across a 5-day period, a vibrant seminar programme and unrivalled networking opportunities, MACH showcases the heart of UK advanced engineering".

As can be seen, the show runs for 5 days, and we need to make sure we support Helen in manning the stand

and promoting the ideals of the Institute and attracting membership. I will be in attendance, but it's probable that work commitments will drag me away for some of the time. Several other members of the board will also be giving up some of their time to assist, but it would be great if any of our members who can spare a few hours could come along and help. If you feel this is a possibility, please get in touch with Helen who will give you the details.

February saw the latest enrolment date for our distance learning courses, both foundation and technician, and its pleasing to report a record intake of students and therefore course fees. There were 34 students registered at foundation level, and 8 at technician level, resulting in paid fees of over £31000! Education is a major contributor to the Institutes coffers and we need to ensure that we keep our offering relevant and up to date, and to promote our courses to the best of our abilities. It is pleasing to note that the Education and Training committee, under the guidance of new chairman Eddy Cotton, have embarked on an updating programme of all modules, initially at foundation level, to ensure the content is up to date, correct and relevant. I am pleased to be involved with this important project.

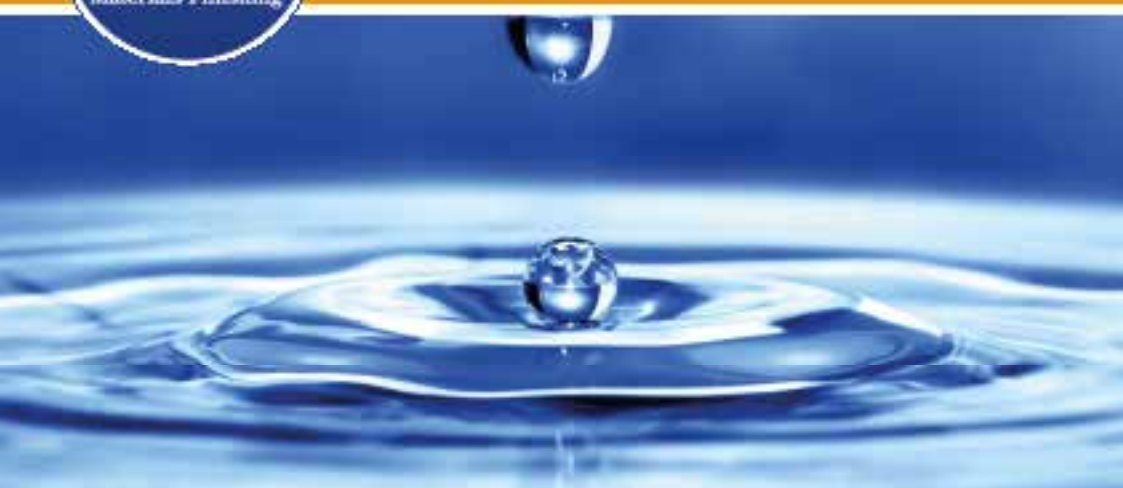
I do hope that you all have an enjoyable Easter season; at least with the nights getting lighter we can look forward to Spring!



Graham Armstrong
March 2018



INSTITUTE OF MATERIALS FINISHING SOUTHERN BRANCH



"WATER, WATER EVERYWHERE"

Wednesday 22nd May 2018 (17.30 – 21.00)

The Southern Branch of the IMF is pleased to invite you to an evening Seminar.
The Port House, Marina Keep, Portsmouth, Hampshire, PO6 4TH

PRESENTATIONS:

Waste Water....what happens to it? Southern Water
All you need to know about pumps. Hendor Pumps
The disinfection of water. Agas Electronic Materials
The conservation of Marine Guns T.B.A

EXHIBITION: 17.30 – 18.45

Space will be available for 7-9 small table exhibits in the auditorium area. If you are interested in exhibiting then please contact **John Burgess** (e-mail: JohnB_IMF@btinternet.com).

CHARGE: £10.00

to cover the buffet payable on the day.

Please register in advance by contacting **John Burgess** (JohnB_IMF@btinternet.com)

A NOSTALGIC LOOK AT THE ELECTROPLATING INDUSTRY

It's hard to imagine that over 52 years ago a young 18-year-old lad started his first job at W. Canning & Co in Birmingham as a junior laboratory technician in the research laboratories.

W. Canning & Co. were the biggest supplier of electroplating chemistries and equipment in the UK and their name could be likened to Ford in the motor industry.

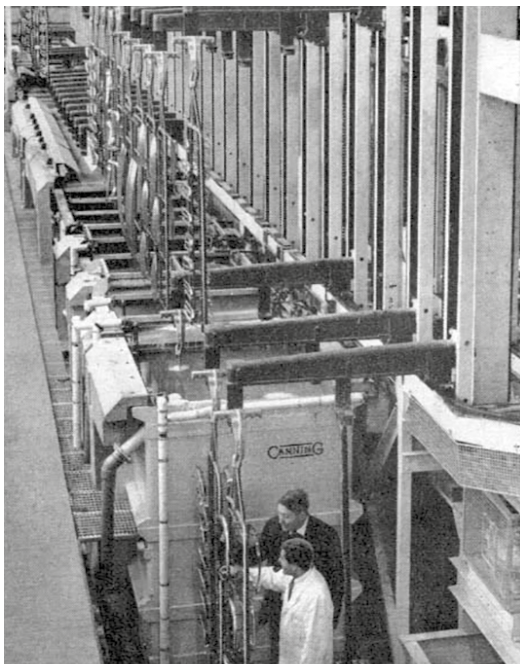
I always wanted to work in a chemical environment and I have to thank my mother for finding the position, so it was in September 1965 that I found myself in a world of bubbling, steaming liquids with a variety of odours and colours of blue, green, red and colourless.

The research laboratory was divided into sections researching in copper, nickel, chrome, zinc and cadmium plating and I started out in the copper plating section followed by nickel and chromium. During this time, I also went on I day and I night release to study ONC, HNC and finally a Licentiate ship in Metallurgy.

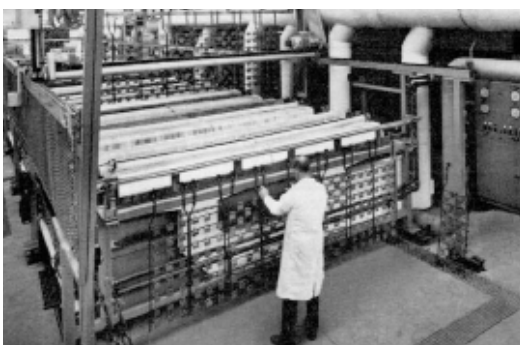
Obviously working in the laboratory, the biggest solution sizes were around 30 gallons (no litres in those days) in the pilot plant so when I was sent out to Ionic Plating in Smethwick to collect a sample of our acid copper that was not working well.

Obviously, the foreman at Ionic recognised that I had never seen a factory installation for electroplating as my eyes were opened wide to the size of some of these plating installations.

The plating industry was probably at its peak during the 60's / 70's and installations were designed to produce many tons of work daily utilising automatic plating lines with names such as "Trojan", "Glydo" and "Gem".

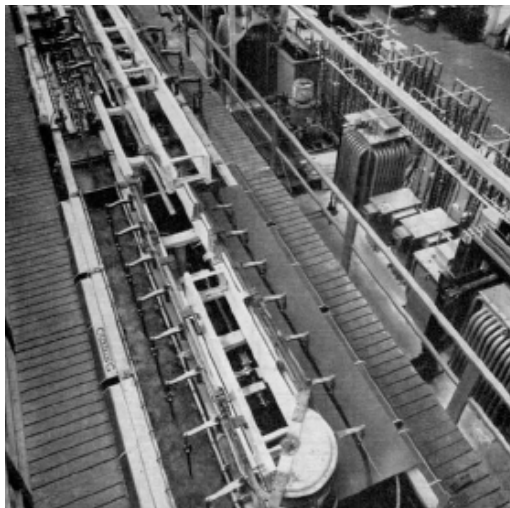


Automatic plant for bright copper, nickel and chromium plating. With this plant the services are taken below plant level and ancillary equipment installed in a basement.



Single line Glydo installation for bright nickel, microcracked and chromium plating.

A NOSTALGIC LOOK AT THE ELECTROPLATING INDUSTRY...



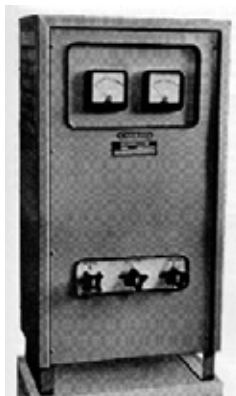
Gem automatic plant for the bright nickel and chromium plating of plumbers' brassware. The plant illustrated is hydraulically operated and provided with an extended carriage over the bright nickel plating section. Rectifiers, filters, storage tank and other ancillary equipment are installed at the right hand side of the plating plant.

The Trojan and Gem type plants were plants that were capable of repetitive type work with a fixed plating time so every part got the same conditions as its fellow part but with the advent of the "Glydo" and the ability of programming the line, variable plating times could be used.

This was a period of time when digital was a word that was not even thought of and analogue systems was the way that plating lines were controlled.

Rectification was mainly controlled by "Westinghouse" rectifiers and the 63-step rectifier was commonplace. This was a rectifier that had a "Coarse, Medium and Fine" four-position switching allowing a variation of 63 positions to control the current.

The rectifier was fitted with a voltmeter and ammeter, which gave the information required to the plater.



The switch 63 step auto-transformer for on-load voltage control. This unit is fitted with voltmeter and ammeter connected to D.C. output of the associated transformer rectifier unit

It was not always the case that these rectifiers were used and often in non-automatic systems a large rectifier was employed which would feed several plating tanks and controlled by a resistance board.

Resistance boards were made of parallel grids of resistors each of different values and these were fitted into the DC side of the circuit with switches that could be closed as required to connect any resistance or resistances to suit the load in the plating tank or vat as it was called in those times.



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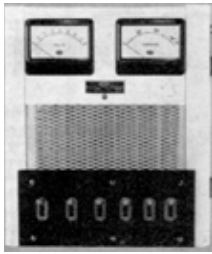
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A NOSTALGIC LOOK AT THE ELECTROPLATING INDUSTRY...

Plating solutions such as hexavalent chrome required smooth voltage adjustment and this was achieved by using a motorised (with manual override) stepless regulator.

This unit consisted of a continuous variable regulator, which was immersed in oil, and carbon rollers moved alongside three wound resistances giving a variable input into a separate rectifier unit.



Meteor resistance board with toggle type switches and expanded metal resistance units.

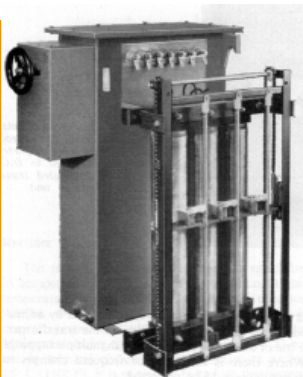


These units gave a smooth change in voltage compared with the 63-step type which was important in chrome plating as interruption in current can lead to a problem known as "whitewash".

A separate voltmeter/ammeter unit supplied information on voltage and current and these were connected to the busbar system that supplied the DC current to the plating tanks.

Motorised stepless regulator for on-load voltage control.

A hand wheel is fitted for alternative manual control.



Busbars fitted alongside a Glydo rack plating installation.

Small manual lines often used cable to supply the DC to the tanks but larger installations used a metal busbar system.

Since low voltage DC is susceptible to any resistance, busbar systems of the correct rating are used and any joints must be perfectly flat to minimise any resistance. Most busbar systems are made of aluminium terminating at copper or brass rod anodes and cathodes.

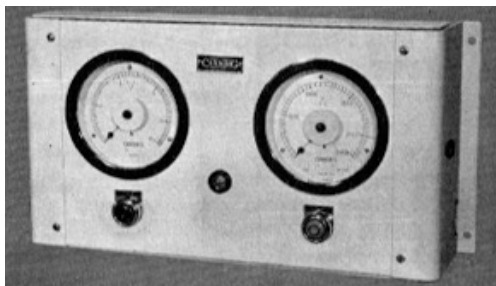
As we all know, electroplating uses a DC voltage to produce the plated deposit.

The plater calculated the current required from knowing the area of the object that was being plated and the current density of the plating solution.

In order to achieve this plating tanks are provided with an ammeter and sometimes a voltmeter. The ammeter provided the current information and the voltmeter gave information as to whether there was any excessive resistance in the leads or busbars.

For example, an acid copper usually requires around 2 – 4 volts to produce a current density of say 50 amps/sq. ft (5 amps/sq. dm) but if in time this voltage increased it could usually be found to be due to some resistance

A NOSTALGIC LOOK AT THE ELECTROPLATING INDUSTRY...



Meter panel for transformer-rectifier unit.

in the busbar system, often due to either corrosion at the joints or build up of salts at the anode connection to the busbars.

Analogue ammeters were mainly of the moving coil type and were fairly precise instruments.

Each analogue ammeter used was furnished with a "shunt" which was fitted into the main busbar system and pair of calibrated leads are taken from the shunt to the ammeter. The low voltage from the shunt caused the needle to deflect and a full scale deflection for the ammeter usually required either 50 or 75mV.

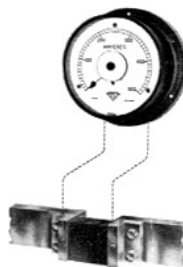
The ammeter specified the mV required for full scale deflection and it was important that the correct shunt was fitted otherwise an incorrect reading was obtained.

I can remember many years ago when I was sent to a company that had a "Clyde" style line that plated bright nickel and chromium.

This was in the 1970's and there was a nickel shortage and the price of nickel was high. Supply houses had been working on replacing 30 percent of the nickel with iron in order to save costs and the process of bright nickel-iron was becoming commonplace.

I was sent to convert one of the solutions to a nickel iron, which went well, and I remained on site during its trials.

Moving coil ammeter, showing method of connection to shunt busbar. Only a small porportion of the total current passes through the meter



One day I was asked if the plating rate of the nickel-iron was similar to nickel to which the answer was yes. So why therefore did it seem that the nickel-iron solution was depositing less metal than the bright nickel given the same time and current density? Of course I had no answer to this so, after checking the chemical analysis (which was found to be okay) other possibilities had to be considered.

One way to prove whether the nickel-iron would plate at the same speed as bright nickel was to set up a lab trial where a solution of both nickel-iron and bright nickel were connected in series and a given current was passed through weighed cathode test pieces. The results from this test showed that there was minimal difference between the two solutions, so what was going on.

The current supplied to each solution was from two rectifiers both of which were the 63 step Westinghouse type described previously.

The busbars coming out of each rectifier had the appropriate shunt for the ammeter but on closer inspection I noticed that although both ammeters required a 50mV shunt for full scale deflection, the nickel-iron solution was only working from a 75mV shunt which obviously was giving the incorrect reading and hence the incorrect thickness. This was corrected and all was then okay but the ironic part was that this rectifier had been in use for over 10 years so all the work in that time was incorrect.

I will continue my "Nostalgia" trip in the next edition of IMFormation.

John Burgess

WELCOME NEW IMF MEMBERS

AFFILIATE MEMBERS

Daniel Allum	Indestructible Paint
Anthony D'Vaz	Indestructible Paint
Martin Davenport	Indestructible Paint
Simon Eaton	Indestructible Paint
Jill Jackson	Indestructible Paint
Stephen Madourie	Indestructible Paint
Ryan Mannion	Indestructible Paint
Gary Payne	Indestructible Paint
Simon Pittam	Indestructible Paint
Stephan Salter	Indestructible Paint
Peter Sword	Indestructible Paint
Patricia Watson	Indestructible Paint
Christopher Watson	Indestructible Paint
David Wyton	Indestructible Paint
Alexander Amemornu	Indestructible Paint
Danny Baker	Ramp Surface Coatings Ltd
Matt French	Ramp Surface Coatings Ltd
Bradlee Shepherd	Ramp Surface Coatings Ltd
Thomas Griffin	Ramp Surface Coatings Ltd
Pa Jerreh Bojang	Amphenol
Ion-Gabriel Dima	Amphenol
Stuart Bourne	Amphenol
Thomas Statham	Amphenol
Josselin Bouche	Moog Wolverhampton Ltd
Daniel Comely	Teign Metal Finishers
Daniel Brock	Teign Metal Finishers
James Short	Teign Metal Finishers
Jaime Hearn-Walsh	Walton Plating Ltd
Alexander Lawson	Brita Finish Ltd
Charles Mason	Russell Labs Ltd
Alex Phillips	Photofabrication
Tim Proudlock	Jaguar Landrover
Cherry Hau	Acorn Surface Technology
Daniel Turner	Silchrome Plating Ltd

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MAJOR AEROSPACE STANDARD ACHIEVED



Indestructible Paint's Operations Director Alan Norton (centre), proudly displays the AS9100 D Certificate surrounded by the Core Team, including Managing Director Brian Norton (far left) and Stephen Salter (third from the right).

Indestructible Paint Ltd. is announcing a major aerospace accreditation achievement. The specialist coating manufacturer has obtained AS9100 Revision D, reflecting a company-wide commitment to achieving and maintaining high quality aerospace system operations.

"The Revision D recognition, which builds on our well-established Revision C accreditation, is a direct result of our management's and employees' committing to the highest standards," says Brian Norton, Indestructible Paint's Managing Director. "The six-month process benefitted from a close liaison with the British Standards Institute – including specific BSI training – with eight staff workers completing BSI audits and a further ten meeting background audit requirements."

The achievement has also seen the appointment of Stephen Salter to the position of Q.H.S.E. Manager who will oversee all aspects of Quality, Health & Safety and Environment at Indestructible Paint. "It is clear that achieving recognition to AS9100 D provides a solid foundation for developing business practices in the future," he says. "It is pleasing to see that there is a great team in place that is focused on developing the business and I am delighted to bring my knowledge and experience to assist with the ambitious plans for the future."

The company created a "core team" to address the accreditation requirements, a part of which involved regular liaison with key departmental employees across the company. "This proved to be a highly efficient means of identifying and implementing the relevant improvement plans," adds Brian Norton.

A reflection of Indestructible Paint's commitment to an ongoing quality improvement programme, the achievement of AS9100 Revision D recognition further enhances its role in the industry. The company is a well-established supplier of paint and protective coatings into some of the most challenging sectors, with its work in the aerospace manufacturing and maintenance industry worldwide seen as a particularly widespread and important sector. The company points to a long list of leading aerospace component manufacturers on its client list.

"We are very proud of the AS9100 Revision D recognition and are confident its importance will be acknowledged by customers throughout the aerospace field," comments Operations Director Alan Norton, who will oversee the integration of the standard into the company's culture alongside a continuous programme of personnel development. "We believe it reflects not only on our manufacturing procedures but also on the commitment and capabilities of our workforce," he concludes.

PRESS RELEASE — NEW TALENT JOINS PEXA




To support its growth in international markets and in its own production unit, Pexa has expanded its team with 4 new members.

In our customer services department we are pleased to welcome Robert Balchin who will be taking care of our customers in Spain. His role involves handling our customers contracts from technical enquiry right through to product support from our HQ in the UK. Robert graduated with a degree in Spanish and German and has been working in Spain for a few years to develop his know-how of Spain and the Spanish language. Robert said, "I love Spain and my new role with Pexa will give me the chance to support the Spanish Aerospace industry and provide our Spanish

customers with a first-class service".


As part of our commitment to apprenticeships we have created the role of Customer Services Apprentice. This is a training role leading to NVQ level 2 and covers the whole range of administrative tasks needed to support our customers. The UK apprenticeship service hooked us up with local candidate Tom Gray and he has fitted right into our team. Tom said, "I am really enjoying my role at Pexa. I enjoy supporting my colleagues and our customers around the World with admin services. I am particularly keen to master our database of incoming product certificates and test reports so that we can supply a complete data pack to every customer with every order". Harvey Wright has also joined the team in an apprentice Warehouse Operative role. His duties will involve picking, packing and shipping customer orders as well as handling a wide variety of hazardous classifications.

Our internal production department has grown so that in addition to our busy tint lines for Aerodur and 58 series we have our own speciality coatings lines including Megadex optical lens coatings. This growth meant that we needed a dedicated production supervisor to ensure that we have a safe, efficient process that meets our customer's tight deadlines. We were lucky enough to secure the services of Chris Swift who worked for 12 years at PPG coatings and arrives with an impressive skill set in paints and coatings production. Chris said, "I'm really pleased to join Pexa at the time they are expanding their paint production facilities. It's the ideal time to implement excellent procedures for HSE, 5S and lean. I'm looking forward to working with the great existing team at Pexa and doing my bit to help the company succeed in the production of high tech, high value coatings".

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Also an opportunity to see a state of the art, most advanced in Europe, powder coating installation.

Further information from tepebl@cat.com

INDESTRUCTIBLE PAINT ENHANCES PERSONNEL DEVELOPMENT COMMITMENT WITH IMF OPPORTUNITY



Stephen Salter, QHSE Manager at Indestructible Paint (centre), conducts a session of the IMF Foundation Course designed to improve the understanding of the industry at every staff level.

The importance of staff development, which is one of the key factors behind the success of specialist paint and coatings manufacturer Indestructible Paint Ltd., is to be further underlined in 2018. The Birmingham-based company is making key Institute of Materials Finishing (IMF) training available to all employees in a move that will develop an understanding of the industry at every staff level.

"We are giving our employees the opportunity to undertake the IMF Foundation Course which is designed to provide a broad understanding of material finishing and surface engineering," says Indestructible Paint's Sales & Technology Mentor, Graham Armstrong, who is also Secretary General at the IMF. "We believe

that the nature of our work calls for an excellent understanding of a wide range of technical factors at every level, so we have taken the step to broaden this knowledge across our full workforce as part of our commitment to Continuous Professional Development."

Graham Armstrong points out that this is one of the key factors behind Indestructible Paint's list of accreditations – not least the company's recent achievement of AS9100 Revision D which is of particular significance in the aerospace sector.

IMF EXAM RESULTS

FOUNDATION

David Byrne
Lufthansa Technik

Adam Byrne *
BEP Surface Technologies Ltd

Calvin Blandford *
Tewkesbury Diamond Chrome

Donald Cochrane #
OPEC Security

Sandra Harrison #
OPEC Security

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POTENTIAL NICKEL METAL PRICE INCREASES



Companies involved in nickel electroplating and electroforming will have experienced the sharp rise in nickel metal prices during recent months. Dr. Tony Hart Managing Director of Hart Materials and an acknowledged expert in nickel electrodeposition has provided the following information, condensed from a News Release issued recently by Metal Bulletin

The price of nickel has been steady recently and actually fell between mid-2014 and early 2016 before remaining steady until July 2017. However, during the latter half of 2017 and January 2018, the price posted on the London Metal Exchange rose from around \$9,000/tonne in mid-June to \$13,830/tonne on 2nd February 2018, an increase of 53 Percent.

Although the overall world nickel metal supply is predicted to remain in reasonable balance until 2030 availability and price is determined by which of the two basic classes of nickel is required for any particular application.

Class One nickel – includes nickel used in electrodeposition processes and high performance alloy manufacture

together with nickel powders and briquettes. Class one nickel is also subject to price premiums due to the additional cost involved in its manufacture.

Class Two nickel – in the form of ferro-nickel and nickel pig iron is only suitable for use in the stainless steel industry and therefore not relevant to nickel plating.

Any further price increases are expected to affect Class One product hardest due to the expected explosion of the market for electric vehicles where Class One nickel powder for battery production. At present, the EV sector uses about 50,000 tonnes of nickel from a total market supply of 2.1 million tonnes but by 2025, nickel demand for EV alone is calculated to reach 400,000 tonnes, rising to 750,000 tonnes by 2030. Increasing the quantity of Class One nickel available will be a capital intensive and long term project.

Since electroplating technology almost always requires Class One nickel this supply situation will almost certainly result in a continuation of price increases.

Tony Hart comments "This is obviously no good news for nickel plating but it is better that those involved in the industry appreciate the reason for recent nickel price increases and the future prospects.



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