Annual Report 2018

A comprehensive report on EPMA's activities throughout the year
**EPMA Government and Management**

**EPMA Annual Report 2018**

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Dear Members, PM Colleagues and Partners,

As another year closes, it is time to review our Association’s performance and achievements.

Our European PM industry is moving at a brisk pace, experiencing robust and successful growth. With this comes a need to reflect and communicate on current trends in our sectors.

PM part production was up again in 2018; a year of strong dynamics for the PM industry as a whole. Thanks to such vigorous growth, PM is at the forefront of technology and the preferred choice for a number of EU industries, including the Automotive industry as well as the Medical, Aerospace and Engineering sectors.

Through PM, our industries benefit from greater efficiency, cost effectiveness, innovation and agility. I am convinced that the growth that we have experienced again in 2018 will continue over the coming years. Special mention goes to AM, which has seen spectacular growth over the last decade. Not a week goes by without an EU company advertising a new application, and through AM, we are reaching out to the general public. In other words, powder metallurgy has made the successful transition into daily life.

What does EPMA bring to the table? First, it brings forum and meeting opportunities: the EPMA serves as a unique platform for all PM supply chain players to work together to create, invent, develop and optimise new concepts. Secondly, these concepts deliver results: new metal parts are built before being put on the market.

The success of our PM industry and its continued growth is linked to the way PM companies optimise business activities across the board. Such an optimization plan include all industry players, represented within EPMA by the several sectoral groups, from Structural Parts through to the Hot Isostatic Pressing, Additive Manufacturing sectors, Metal Injection Moulding, Hard Metal and the recently created Functional Material. Crucially, though, it is important to remember all sector groups are interlinked in the same ecosystem.

PM development is fortunately backed by an extensive European Research & Development Network, which works closely on the ground with all industry players.

2018 saw another positive year with EPMA corporate membership maintaining its 200+ level. With an unwavering commitment to serving our members since 1989, I am proud to say that our non-profit association can now draw on a strong network from 27 countries, confirming our presence in international markets.

In 2018 EPMA organized a large number of seminars in addition to the Euro PM2018 Congress in Bilbao. Most sectoral groups organised seminars: AM seminar, HIP seminar, HM seminar and a new Functional Material Seminar. All of these events outlined the vast array of possibilities offered by PM technologies. 2018 also saw the first session for the PM Life European project that is a series of Life Long learning events seminars.

All of our members can count on the success of our Association, outlined in its three key missions:

First, through the promotion of technology: EPMA serves as the Pan-European benchmark for all PM technology. Our Association acts as the go-between for our PM companies and all legislation that is discussed and drawn up in Brussels.

Second, through communication: EPMA is committed to promoting the European PM Industry and PM technology across the globe. Drawing on an abundance of communication tools, from seminars and conferences through to online tools and videos, coupled with its shared global property database, our Association has to maintain its position as a thought leader in the PM industry. Special praise goes to our events, organised exclusively for young engineers and people new to the PM business.

Third, through innovation: EPMA seeks to shape the future of the PM industry by creating the conditions for exchange. Indeed, our Association serves as a unique platform on which technical debates and discussions can take place and on which R&D programmes and expertise can be shared. The result: forward-thinking concepts are encouraged for development, which further propel our PM industry to the cutting edge.

A real-life case in point is our international PM Congress. The standout event in 2018 was, of course, the Euro PM2018 Congress & Exhibition that took place in Bilbao, with more than 1,100 participants over three full days.

In 2019, several events will be organized by the different sectoral groups. Training will be high on the agenda with our renowned Summer School, Young Engineer’s Day and the second edition of the PM Life project which is a great opportunity for people to continue in deep learning on each of the PM process in dealing with powder and the opportunity to join an internship.

2019 will be an important year for EPMA, with the designation of a new Council, Board, and a fresh dynamic with a new President, as per our rules which ensure periodic rotation between countries and people in our governing bodies. After 6 years as EPMA President, I am deeply impressed by the high level of commitment of our members towards EPMA, as well as, by the hard working spirit of our teams. I would like to thank all of them for their continued contribution to the PM industry. This tremendous energy creates a successful platform for PM development and fosters innovation and growth opportunities. I must say that I remain convinced that all the wheels are set in motion for PM to take off in the years ahead.

Happy reading!

Yours faithfully

Philippe Gundermann
EPMA President
Activity Report 2018

2018 has seen the EPMA developing its service to members in terms of networking, education and training, lobbying, fostering synergies and promotion of PM.

The Euro PM2018 Congress & Exhibition was successfully held in Bilbao with over 1100 attendees from 42 countries and a large exhibition area with more than 100 booths. 78 technical sessions took place where some 250 scientific and technological lectures were presented for the benefit of participants and 55 posters were presented. Seven Special Interest Seminars ran over the full event. There was a high participation of the AM community during the event that made this the biggest technical event for AM in Europe. EPMA is on track to become the main technical European Association for Additive Manufacturing. EPMA would like to thank its Members for their assistance, the members of the Steering Committee and also the members of the Technical Programme Committee who provided such useful support.

The six sectoral groups EuroAM (Additive Manufacturing), EuroFM (Functional Material), EuroHM (Hard Materials), EuroHIP (Hot Isostatic Pressing), EuroMIM (Metal Injection Moulding) and EuroPress&Sinter are a very important link towards EPMA Members fostering discussions and synergy in each sector according to their specific needs and development areas. EPMA expresses its gratitude to all those Members who have participated in the meetings, and especially to the steering groups and chairperson of all sectoral groups for their support in the preparation and chairing of the events, either during Euro PM 2018 Congress & Exhibition or during any of the seminars: a HIP seminar supported by Quintus, a Press&Sinter event in Seville, the EuroHM SUMMEREV hosted by the KTH and a new seminar on Functional Materials hosted by Forschungszentrum Jülich.

The recurrent EPMA trainings were organised, with the Young Engineer’s Day, the Summer School and the PM for Beginners session. Some new training opportunities took place with the AM Motion Additive Manufacturing Summer School and the first year for EPMA Lifelong training programme PM Life with the organisation of two modules: Powder and Hard Metals hosted by Chalmers and Höganas and Additive Manufacturing hosted by IFAM Dresden. Four participants joined the internships, hosted by Eramet, Grenoble INP, Montanuniversity Leoben, and Trento University. The participants enjoyed high quality of lectures, workshop and all the events proved to be successful.

EPMA’s club projects continued to be successful with the EuroAM, EuroHM, EuroHIP and EuroPress&Sinter sectoral groups undertaking work on industry specified short term research.

EU supported projects ran with the AM Motion project and the new European Supreme project.

EU specific legislation is continuously covered through EPMA membership with Eurometaux and other EU institutions by providing continuous support and information for members on REACH and other EU environmental legal specific legislations, such as Energy and Carbon Taxes, Brexit and Sustainability.

In May, EPMA moved into its new office on Shrewsbury Business Park, on the outskirts of Shrewsbury, United Kingdom, leaving behind nearly 30 years of being a Shrewsbury town centre resident.

You will find in the following pages more information on the different events which happened in 2018 and an overview of the forthcoming programme for 2019.

Finally, I would like to thank all EPMA Members for their continuous support!

Dr Lionel Aboussouan, Executive Director
Government and Management

Structure of the EPMA

Authority of the General Assembly
Under the Statutes, authority is vested in the General Assembly of Members, which meets annually. The Council, directly or through its Executive Board, implements policies and decisions of the General Assembly and ensures effective operation between Assemblies.

General Assembly
The 31st EPMA General Assembly was held on 22-23 March at the HUSA President Hotel in Brussels, Belgium. Attendees experienced an extended event with two keynote speeches: ‘Legislation and Lobbying’ from Mr Guy Thiran (Eurometaux) and ‘The Future of the Automotive Supply Industry’ from Ms Sigrid de Vries (CLEPA).

Participants also got to join sectoral group meetings and attend the legal aspect of the general assembly receiving updates of EPMA’s activities from 2017 and looking ahead to 2018 and 2019. The Annual Networking Dinner was also held on 22 March 2018 at Brasserie Mundy, which provided a great opportunity for members to catch up with each other and network with people from companies that are new EPMA Members and attending the General Assembly for the first time.

Feedback from the General Assembly was very positive with the majority of aspects highlighted as either good or excellent as well as positive verbal feedback. We would like to thank the members for attending.

Keynote Speech ‘Legislation and Lobbying’ from Mr Guy Thiran (Eurometaux)

Philippe Gundermann (EPMA President) speaks at EPMA’s 31st General Assembly
Council

The EPMA Statutes requires the Council to be composed of a maximum of twenty individuals with voting power and appointed by the General Assembly. Seats on Council are allocated as below.

Current Council Members for the 2016-2019 Period:

**Representing the following sectors:**

**Additive Manufacturing**
Mr Ralf Carlström (Höganäs AB, Sweden)

**Applications**
Dr Steven Moseley (Hilti AG, Liechtenstein)

**Hard Materials/Refractory Metals**
Dr Lorenz Sigl (Plansee SE, Austria)

**Hot Isostatic Pressing**
Mr Jim Sheard (Bodycote Specialist Technologies, United Kingdom)

**Metal Injection Moulding**
Mr Georg Breitenmoser (Parmaco Metal Injection Molding AG, Switzerland)

**Metal Powders**
Mr Michael Rehnig (Höganäs Sweden AB, Sweden)

**Plant & Equipment**
Dipl.-Ing Ingo Cremer (Cremer Thermoprozessanlagen GmbH, Germany)

**PM Semi-Finished Products**
Mr Philippe Gundermann (Eramet, France)

**PM-Based Parts**
Dr César Molins (AMES SA, Spain)

**General Representatives:**
Dr Pierre Blanchard (Erasteel Kloster, Sweden)
Mr Martin Blömacher (BASF AG, Germany)
Mr Guido Degen (GKN Sinter Metals, United Kingdom)
Mr Magnus Ekelund (Sandvik Coromant AB, Sweden)
Dr Ing Matteo Federici (Sacmi Imola SC, Italy)
Ms Vania Grandi (Rio Tinto, Germany)
Mr Peter Kjeldsteen (Sintex A/S, Denmark)
Mr Christoph Laumen (Linde Gases Division, Germany)
Mr Thomas Lambrecht (Dorst Technologies, Germany)
Dr Harald Neubert (Miba Sinter GmbH, Austria)
Mr James Shaul (Hoeganaes Corporation Europe, Germany)

Contact details for current Council Members can be found on the EPMA website.

**Executive Board Members for the 2016-2019 Term**

Seven current members of Council Executive Board:

**President**
Mr Philippe Gundermann (Eramet, France)

**Vice Presidents**
Dipl.-Ing Ingo Cremer (Cremer Thermoprozessanlagen GmbH, Germany)
Mr Guido Degen (GKN Sinter Metals, United Kingdom)
Mr Thomas Lambrecht (Dorst Technologies, Germany)
Dr César Molins (AMES SA, Spain)
Dr Harald Neubert (Miba Sinter GmbH, Austria)

**Treasurer**
Mr Peter Kjeldsteen (Sintex A/S, Denmark)
Day-to-day management is in the hands of the Executive Director and his staff.

Lionel Aboussouan  
Executive Director

Olivier Coube  
Technical Director

Andrew Almond  
Marketing & Exhibition Manager

Kate Blackbourne  
Congress Manager

Jacqueline Peters  
Accountant

Rhianna Jones  
Membership, Database and IT Co-ordinator

Karen Fisher  
Graphic Designer

Andy Cormack  
Marketing Assistant

Emma Powell  
Event Assistant

Sabine Hazoumé  
Event & Project Co-ordinator

Delphine Nicolas  
Event & Project Co-ordinator

Staff leaving the EPMA Secretariat in 2018

Sam Timmis – Marketing Assistant (May 2018)

Scarlett Williams – Event & Project Co-ordinator (September 2018)
Outlook for 2019: The Year of Development

Again in 2019, EPMA is looking forward to hosting a high number of events in order to help develop knowledge of PM to both members and potential users of our technology.

The Euro PM2019 Congress & Exhibition will take place in Maastricht, The Netherlands, 13-16 October at the MECC (Maastricht Exhibition & Congress Centre). As 2019 will also be EPMA’s 30th Anniversary several events will be organised during Euro PM2019 Congress & Exhibition to help celebrate this milestone. The plenary session will include a discussion on the past and future in Powder Metallurgy and will include several EPMA past presidents. Several SIS will be split into looking at the past development and future for the technology.

Some of the ideas introduced in the past will also apply to the 2019 events or be adapted. For example, the Young Engineers day event will not be limited only to the local young engineers, but will be more broadly open. End User’s Day will once again run during Euro PM2019 Congress & Exhibition, providing End Users with the opportunity to attend the day for free and experience the plenary, the exhibition, Meet and Greet and the PM For Beginners session. More details will be released via the Euro PM2019 Congress & Exhibition event website at www.epma.com

EPMA Seminars
There will be 5 EPMA seminars in 2019: starting with HIP on ‘Rapid cooling’ in February, then Functional Material in April on ‘Processing Functional Materials, Energy Management and Energy Storage’, AM in May on ‘AM Technologies, Preparation and Post treatment’, MIM in June dedicated to ‘The Entire Supply Chain’ and last event will be a Press & Sinter showcase of PM parts in December in Hary, France. Further information, dates and online bookings can be found on www.epma.com/seminars

EPMA Training and Education
The 19th Annual EPMA Summer School will be held in Trento, Italy, 15-19 July. Further information and dates for training events can be found on www.epma.com/summerschool

The lifelong learning training programme called PM Life will continue in 2019. Five weeks will be organised with each week being dedicated to a specific process in a different country: Powder and Hard Metal in Sweden, Press and Sinter in France, HIP in UK, AM in Germany and MIM in Spain. An additional three weeks internship can also be attended if participants wish. Each week will be validated by an exam which upon passing will provide the participant with a certificate for each week successfully passed. This training will be an opportunity for individuals to learn, but also for companies to send their staff to be trained on all PM processes to broaden their understanding about PM.

More information and registration can be found on www.pmifetraining.com

Club Projects & European Projects
Several Projects will be supported in 2019 – some continuing from 2018 as well as some new for this year, showing once again the benefit for the members of this collaborative way of working and sharing resources for high value results.

The SUPREME Project also continues in 2019 after its kick-off in September 2017 focusing on optimising powder metallurgy processes throughout the supply chain by a holistic reduction of raw material resources and energy consumption.

A new project Sector on Skills Strategy in Additive Manufacturing (SAM) will start in January 2019 and will run over the next four years. The AM&HIP Club Project began late 2018 and should end during the second quarter 2019. This project looks at the combination of SLM + HIP which has potential for an optimum in terms of production costs as well as improving density and optimal mechanical properties.

Other Club Projects are still under preparation and will be advertised during the year.

For more information please view the project websites: www.epma.com/projects/rd-club-projects www.am-motion.eu and www.supreme-project.com

European Communication Working Group (ECOM)
The aim of ECOM is to create a forum to enable members to provide insight and knowledge on the promotional events, literature and content for the EPMA to improve its promotional presence.

Any EPMA Member who wants to join the ECOM group can contact Andrew Almond, EPMA Marketing Manager, on aja@epma.com for further information.

REACH
REACH is a European law regarding registering the details of chemicals in a central European database. EPMA continues to provide an email newsletter about twice a year to ensure that members are up to date with news regarding the law. EPMA are following the request for a Cobalt Classification meaning that every alloy containing more than 0.01% Cobalt would have, among others, the Carc 1B classification for all routes.

The EPMA participated in the Public Consultation with the support of its Members and in liaison with the Cobalt REACH Consortium, The Cobalt Institute, the Metals Commodities and Eurometaux. The EPMA will also launch in 2019 an online questionnaire on the Socio-Economic Analysis of such a classification and will keep the Members informed about the next steps through the REACH news email.

EPMA Websites and Microsites
Keeping EPMA’s 13+ website and microsites up-to-date and relevant with the various content and information will be one of the key tasks, as well as developing the EPMA’s flagship website www.epma.com to include more case studies and enhance the various Sectoral Group content and webpages. EPMA also works on a number of EU projects and with external bodies that help with the promotion of the PM process, by providing content, images and text to populate them.

EPMA’s New Technical Office
Following the boards decision and after assessment of different possibilities, a technical office will be opened in Chantilly, France.

This office consists of the Executive Director, two Technical Managers and two Event & Project Co-ordinators. Chantilly has been chosen due to its proximity with Charles de Gaulle Airport and Paris Nord train station.
EPMA Membership 2018

Membership Subscription Rates

It was agreed at the Council meeting that the decision from the 2016 Council Meeting will be held and the membership fees for 2019 will increase by 3% (except for individuals and students). This is the second increase since 2008 and reflects the additional activities at EPMA with an increase over 2 years at a lower rate than inflation.

Large companies with more than three subsidiaries willing to simplify the way they pay membership can contact us.

Contact us at: membership@epma.com

EPMA Corporate Members 2018

Full Members 132
Associate Members 68
Affiliate Members 9
Total 209

New members in 2018

Full 9
Associate 8
Individual 4
Total 21

Countries Represented 27

EPMA Membership by Country 2018 (Corporate Members only)
EPMA Membership 2018

New Members in 2018
EPMA was pleased to welcome the following into membership during the year:

Full Members

Associated Members

Individual Members
Prof Dr Ana Maria Senos
Mr Steven Sparkowich
Professor Hideshi Miura
Professor Dr Yukiko Ozaki
EU: Regulations and Legislation

The EPMA has, through a process of ongoing lobbying and positive contributions to debate, been able to position itself to participate in and influence, the EU’s formulation of regulations and legislation.

REACH and other EHS Legislation Activities

In 2018 the EPMA issued its 109th REACH News Flash. This regular email newsflash informs over 320 interested EPMA member contacts about the latest developments of REACH and related legislation.

The EPMA continues to follow the EHS legislation, especially REACH and CLP, to assess their potential impact on the PM industry. In parallel, EPMA continues to follow the development of Exposure Scenarios, which establish the threshold levels of metals in our industry. Nickel thresholds for inhalation are especially followed by EPMA who are in close contact with the Nickel REACH Consortia. EPMA also works with and supports other metal institutes in their efforts to defend their sectors since the EPMA is a multi-metallic association. Thus, among others, the EPMA is following Cobalt Metal CLH Proposal issue, which may have consequences on the PM industry and supports the Cobalt Development Institute and Eurometaux, who defend the metal industry in this special case.

Proposal of new classification of Cobalt Metal

The Dutch Authorities (NL RIVM) have submitted a Harmonised Classification (CLH) dossier on cobalt metal to the European Chemical Agency ECHA. The NL proposes a very strict health classification for cobalt metal in terms of mutagenicity, Carcinogenicity, and Reproductive toxicity. The NL may also propose a very low specific concentration limit (SCL) for carcinogenicity for cobalt metal (e.g. 0.01%); this means that every alloy containing more than 0.01% Cobalt would have the Carc 1B classification. The EPMA has collected contributions from the PM industry and participated in the Public Consultation with the support of its Members and in liaison with the Cobalt REACH Consortium, The Cobalt Development Institute, the Metals Commodities and Eurometaux. The EPMA will follow this issue and keep the Members informed about the next steps through the regular REACH news email.

Working Groups

EHQ

This group follows mainly REACH and the different issues with chemicals in Europe.

EPMI

Chair: Prof. Alberto Molinari (University Trento)

The EPMI met twice in 2018 during the Technical Programme Committee and during the Euro PM2018 Congress & Exhibition in Bilbao, respectively in February and October 2018. During the second meeting Dr Mark Dougan from AMES presented his view on how to improve the synergy between Industry and Academia in R&D.

ECOM

The ECOM Working Group has continued through 2018 providing EPMA Members the opportunity to assist with the direction of the EPMA’s marketing and promotional activities. The group consists of a cross section of EPMA Membership, representing all PM industry areas and strands of the Association. The group’s members influence and provide input for the annual marketing and communication plan, supporting the various marketing activities through dissemination initiatives and assisting with support at the various events in the annual promotional exhibition schedule.

The meetings are scheduled twice a year in June & December. The June meeting allows for feedback during the mid-point of the annual event schedule, to ensure activity is on track for the year and allows for any adjustments to be made. The December meeting provides a full review of the annual promotional actions, while also looks at planning for the forthcoming year’s activities. Any EPMA Members looking to join future ECOM Group conference calls can contact Andrew Almond, EPMA’s Marketing Manager via email on aja@epma.com
Representing the European PM Industry

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Working Groups
Sectoral Groups

Sectoral Groups

Chairs: Mr Ralf Carlström (Höganäs)
Dipl.-Ing Claus Aumund-Kopp (Fraunhofer IFAM)
The EuroAM group held a special EuroAM Spring Meeting on 30 May 2018. The meeting was hosted by SLM Solutions in their brand-new plant in Lübeck, Germany. An update of the EuroAM/EPMA activities was presented and discussed, followed by two keynote presentations from Lennart Schulenburg from the company Visiconsult on CT and NDT on AM and Christian Seidel from Fraunhofer IGCV on EHS aspects in metal AM. A Networking Dinner at Schiffergesellschaft completed the programme.

For Euro PM2018 Congress & Exhibition the programme included an open meeting of the EuroAM with Keynote presentations delivered from Dr. Christian Kukla, Montan Universität Leoben, Ing. Paul Calves, CETIM and Ing. Nathalie Maillol, IPC.

Chairs: Dr Leo Prakash (WTP Materials Engineering)
Dr Steve Moseley (Hilti AG)
The European Hard Materials Group (EuroHM) organised its usual SUMMEREV Workshop on 7-8 June 2018, this time at Kungliga Tekniska Högskolan (KTH) in Stockholm with the strong support of Susanne Norgren from Sandvik, Henrik Larsson (KTH) and Bryan Roebuck from National Physical Laboratory (NPL). Thirty five participants attended the workshop and heard cutting edge presentations from 12 experts on ‘HETEROGENEITY OF HARDMETALS and SUPERHARD MATERIALS’. A guided short walk around the KTH campus and a Networking Dinner at the restaurant Fjäderholmarna on the Fjäderholm island completed the programme.

During the Euro PM2018, the EuroHM had a general open meeting on Tuesday 16 October and a Special Interest Seminar on ‘Micromechanical Testing of HM part’ held on the same day.

Chairs: Dr Sebastian Hein (Fraunhofer IFAM)
Mr Peter Kjeldsteen (Sintex a/s)
The European Functional Material sectoral group was created in 2018. The objective of the group is to promote the interests of EPMA members in the field of Functional Materials. Its objectives are:
• To increase the awareness of the Functional Material technology
• To enable the benefits of joint action, for example through research programmes, workshops, benchmarking and exchange of knowledge
• To improve the understanding of the benefits of metal based technology by end users, designers, mechanical engineers, metallurgists and students
A first seminar was hosted by the Forschungzentrum Jülich GmbH and attended by 35 participants.
Representing the European PM Industry

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Working Groups
Sectoral Groups

EUROHIP

Chairs: Dr Susan Davies (Bodycote Technologies AB)
Mr Jim Shipley (Quintus Technologies AB)

Steering Committee: Dr Lionel Aboussouan (EPMA), Prof Christoph Broeckmann (RWTH Aachen), Mr Freddie Busschaert (Total E&P France), Dr Thomas Geneses (Areva NP), Ms Adeline Riou (Eramet – Aubert & Duval).

The EUROHIP group focused on raising awareness of PM HIP technology during 2018 by helping support a HIP Seminar ‘Design for HIP’ that was held in Västerås, Sweden in February 2018. The event was successful and attracted 57 participants who listened to presentations from 12 industry experts to improve knowledge of HIP. The seminar ended with the visit of the Quintus site in Västerås, Sweden.

Other areas of focus included working with EPMA to organise and find speakers for the HIP Special Interest Seminar for the Euro PM2018 Congress & Exhibition. Two 90 minute Special Interest Seminars (SIS) were organised. The first SIS being on ‘HIP and Heat Treatment of IN718-Microstructure and Mechanical Property Relationships of HIPed and Heat Treated IN718 Powder’ was attended by over 50 participants and the second SIS on ‘Hot Isostatic Pressing and Additive Manufacturing’ was also successfully attended.

A club Project on AM & HIP was initiated and will run until mid-2019. The project wants to look into the combination of AM and HIP technologies to reduce time and cost as opposed to AM on its own.

EUROPRESS&SINTER

Chairs: Mr Peter Kjeldsteen (Sintex a/s)
Dr Cesar Molins (AMES)

The EuroPress&Sinter Group held a general meeting on the 22 March 2018 in Brussels alongside the General Assembly. The meeting was co-chaired by Dr César Molins (AMES) and Mr Peter Kjeldsteen (Sintex a/s). Dr Olivier Coube (EPMA) made an update on the different tasks and activities of the EPMA and the EuroPress&Sinter group. He reported, among other topics, on the ongoing Ferrous Structural Parts Makers Industry Benchmarking and Trends Survey and explained the status of the upcoming seminar on ‘Systematic Approach to Quality Management in Powder Metallurgy’ to be held in Seville in May 2018. Prof. Alberto Molinari (Univ. Trento) presented the status of the Club Project proposal on ‘Induction Hardening of PM steel parts’ and finally Mr Jean-Marie Reveille (A2mac1) presented on ‘Automotive Benchmarking and Metals Trends in Cars’.

Also over 30 participants attended the EuroPress&Sinter Seminar on ‘Systematic Approach to Quality Management in PM’ which was held on 17-18 May 2018 in Seville, Spain. It included high quality contributions from speakers from all over Europe. The Seminar mainly focused on the quality of Powder Metallurgy (PM) Structural Parts. Participants were shown PM’s advantages and techniques by leading experts from both industry and academia. A series of industrial PM Case Studies, networking lunches, a Seminar Dinner and a visit to the Cobre Las Cruces mine completed the programme.

The EuroPress&Sinter group also held a general open meeting in Bilbao, during the Euro PM2018 Congress & Exhibition.

EUROMIM

Chairs: Mr Georg Breitenmoser (Parmaco Metal Injection Moulding AG)
Prof Dr Frank Petzoldt (Fraunhofer IFAM)

Steering Committee: Dr Lionel Aboussouan (EPMA), Mr Sven Fleischman (BASF), Mr Luke Harris (Sandvik Osprey Ltd), Prof Lars Nyborg (Chalmers University of Technology), Dr Jack Schwarz (GKN Sinter Metals Engineering GmbH), Mr Poul Verner (Sintex a/s)

During 2018, the EuroMIM group continued to focus on education. The group also has an emphasis on technology and quality development, therefore the EuroMIM group completes its annual benchmarking exercise for MIM parts makers across Europe which was sent to members and then analysed.

Other areas of focus included working with EPMA to organise and find speakers for the MIM Special Interest Seminar for the Euro PM2018 Congress & Exhibition. Two SIS of 90 minutes were organised.

First SIS being on ‘Quality and Tolerances of MIM components’ that was attended by 60 participants and the second SIS on ‘Functional Materials: Soft and Hard Magnetic Materials’ was also successfully attended by 29 participants.
EPMA PM Summer School 2018

The 18th EPMA Powder Metallurgy Summer School took place in Vienna, Austria from 2-6 July at TU Wien.

The five-day programme was hosted and coordinated by Dr Christian Gierl-Mayer of TU Wien and also Dr Marco Actis-Grande of the Politecnico di Torino.

The content of the programme was delivered by a range of specialists from across both the industrial and academic spectrum, whose expertise reflects many aspects and topics currently being employed in today's Powder Metallurgy industry. The EPMA strives to keep the course as relevant and up to date as possible with topics on 'Additive Manufacturing', 'Furnace Technologies', 'Hard Metals' and 'Electric and Magnetic'. Other topics included 'HIP', 'MIM' and 'PM Low alloyed steels' to name but a few.

This year the Summer School expanded its numbers due to its ever-growing popularity allowing 60 students to attend. The audience included graduates and industry personnel new to the PM sector, all of which benefited from TU Wien's excellent facilities.

The course included group problem solving sessions and laboratory work where delegates were able to experience Thermodacal practice as well as visit TU Wien's X-Ray & Surface analysis centre and a tour to local factory 'Lithoz'.

EPMA Summer School 2018 Students

Quality PM Seminar

On 17-18 May 2018 EPMA held its 'Systematic Approach to Quality in PM' Seminar at the NHVapol, Seville, Spain.

Over 30 attendees from across the PM supply chain came to the two day seminar to enhance their understanding of quality management subjects from 'Advanced product quality planning' to 'Techniques for continuous improvement', 'Basic metrology characteristics' and also 'Measurement methods'. The sessions were devised to cover some of the areas that end user customers are becoming increasingly involved in, with the hope that improving skills will result in the supply chain companies creating a competitive advantage when negotiating new components. An example of this was the lecture on 'New Mobility, Automated Driving, New Business Models – challenges for Warranty and Reliability Management'.

A Networking dinner besides the Guadalquivir river concluded the first day, provided an excellent networking opportunity. The final day of lectures ended with an optional tour of First Quantum Minerals, Copper mining and extraction site.

First Quantum Minerals, Copper mining and extraction site tour

Young Engineers

The Young Engineers two-day programme was held during the Euro PM2018 Congress & Exhibition in Bilbao, as part of EPMA’s commitment to help promote and develop the industry of Powder Metallurgy to future generations of Engineers. Nine Universities (University of Barcelona, Universidad Politécnica de Valencia, Mondragon University, Castilla-La Mancha University, TECNALIA, Universidad Carlos III de Madrid, University of Navarra, UPC Universitat Politècnica de Catalunya, University of the Basque Country) all sent students to take part in this year’s event.

The Students undertook a two-day parallel programme of lectures on the PM process, followed by an exhibition tour allowing them to question industry experts working in PM.

The students also benefited from a social event with drinks and Pintxos on the first evening and a tour on the second day of the programme to MimTech Alfa to give them an appreciation of the variety of PM employment areas.

Young Engineers Day at Euro PM2018 Congress & Exhibition
HIP Seminar

In February, the EuroHIP group hosted the Design for HIP Seminar in Västerås, Sweden. The two days featured presentations from 12 industry experts, an open discussion about the future of HIP as well as a site visit to the nearby Quintus Technologies facilities.

Feedback from the delegates was very positive with 100% of those responding to the survey stating they would recommend the seminar to a colleague. Many delegates also rated the case study presentations to be excellent or very good, as they provided an end user experience of how Hot Isostatic Pressing can be used.

“The Design for HIP seminar was a great success with 57 participants joining the event,” says Lionel Aboussouan, EPMA’s Executive Director. “It was great to hear from the speakers and learn from their expertise, as well as getting to meet the delegates who attended. The open discussion raised the issue of standardisation, which is a topic that EPMA and the EuroHIP group will hopefully be able to provide a forum for improvement in the near future”.

Functional Materials Seminar

EPMA’s new Functional Materials seminar was held for the first time from 16-17 April 2018. The event was kindly hosted by Forschungszentrum Jülich, Germany and featured 13 speakers along with 40 participants.

Seminar participants arrived on the Monday evening and went to Burg Obbendorf for the seminar dinner which was enjoyed by all. The Tuesday began with a welcome from Prof Dr Guillon from Forschungszentrum Jülich GmbH, a presentation from Dr Aboussouan from EPMA before moving onto an introduction to Functional Materials by Mr Kjeldsteen from Sintex a/s.

The participants then listened to presentations from industry experts covering topics from the challenges of CO₂ and emission compliance to battery technology development to SMC materials in future cars. Finally, the day ended with the chance for participants to tour the Forschungszentrum Jülich facilities, which provided insight to the research centre and its aims.

AM Motion Summer School

One of the outcomes of the AM-Motion Project was the establishment of the AM-Motion Student Summer School in September 2018, aimed at Post Graduate Students. The AM Summer School was organised with the support of AM experts and consortium partners (EPMA, PRODINTEC, SIEMENS, AIRBUS, MATERIALISE, TNO and CEA) in the second year of the project. The event took place at PRODINTEC in Gijón, Asturias, Spain from 4-7 July 2018 with the aim to exchange, spread the knowledge and give rise to vocations. A total of 46 students attended this exciting AM Motion Summer School, focused on main AM concepts, existing materials and processes as well as design and manufacturing paradigms, market relevance and specific best practice examples. Following the lectures on Additive Manufacturing, the students then participated in different interactive AM workshop.

The students had also the opportunity to network during the welcome reception at Gijón Town Hall on the first evening, and at the AM Motion Summer School Dinner, which was held at the Sidrería Tierra Astur Poniente (Cider House).

SUMMEREV18

The European Hard Materials Group ‘EuroHM’ organised its usual ‘SUMMEREV’ Workshop on 7-8 June 2018, this time at Kungliga Tekniska Högskolan (KTH) in Stockholm with the strong support of Susanne Norgren from Sandvik, Henrik Larsson from KTH and Bryan Roebuck from National Physical Laboratory (NPL). 35 participants attended the workshop and could hear cutting edge presentations from 12 experts on ‘Heterogeneity of Hardmetals’ and ‘Superhard Materials’. A guided short walk around the KTH campus and a Networking Dinner at the restaurant Fjäderholmarna on the Fjäderholm island completed the programme.
Developing the Powder Metallurgy Future

Research and Development Projects

As far as research and development work is concerned, the projects can be divided into two. Firstly, large scale, mainly publicly financed projects and then those projects where funding has been coordinated on a private basis by the Secretariat using members’ direct funding. This method has produced a number of smaller scale, but equally successful projects e.g. Ultrasonic Fatigue Testing of Hard Materials Club Project.

Global PM Property Database

The online database GPMD was launched in 2004 as a joint project between the leading regional PM trade associations, the EPMA and its sister organisations in North America (MPIF) and Japan (JPMA). Over the period, content has been increased to a total of nearly 4000 lines of high quality data, covering both ferrous and non-ferrous PM materials, as well as MIM. The number of registered users continues to grow steadily and has now exceeded 10,000.

A major step forward in expanding the reach of the GPMD has been the agreement originally signed in 2009 with Granta Design based in Cambridge, England, a leading company in materials information technology. As a result the GPMD data is now available to a range of end users as part of an integrated and comprehensive materials information management system called GRANTA MI.

The need for members to be proactive in helping to provide information is essential for the growth and success of this long standing and valuable project. New data was uploaded during the year and further improvements made to the operation of the website.

The next step for this database is to keep it up-to-date, with more data from the members and ensure end users and designers are using the data. Members willing to provide more support for this joint effort are very welcome to contact EPMA.

Club Projects

The EPMA continues to coordinate several Club Projects in order to improve the synergy of the PM community. Since 2009, over €800,000 were collected for pre-competitive PM R&D activities. More detailed information on all EPMA Club Projects is available at www.epma.com/projects

Here are the Club projects launched or finalised per Sectoral Groups:

**EuroHIP Sectoral Group**

**AM&HIP18**: Initiated in February 2018, the AM&HIP project wants to look into the combination of AM&HIP to reduce time and cost (reduce porosity and increase reliability and predictability of mechanical behaviour of components) as opposed to AM on its own. It hopes to have minimum cost but maximum return in terms of favourable mechanical properties.

A Steering Committee was held in Bilbao just after EuroPM 2018 Congress & Exhibition with the following participants: Bodycote, Carpenter, EPSI, GKN, Metal Technology Co. Ltd, IAPK, Quintus Technologies AB as well as EPMA.

The project’s total budget is split by the total number of participant companies. As of today there are five companies, with the project still open for new participants.

**EuroHM Sectoral Group**

Kinetic 2: The EPMA launched a new EuroHM Club Project on ‘Kinetics of Multiphase Materials: Atomic Mobility in the Liquid Phase, Simulations and Experiments’ in partnership with Innomat and the KTH Royal Institute of Technology and six industrial Partners (Atlas Copco-Epiroc, Ceratizit, F.I.L.M.S, Hilti, Kennametal, WTP). The project will be a follow up of the pre-study ‘Kinetic’, where a literature survey was performed and the feasibility was demonstrated. A kick-off meeting was organised on 14 March 2018 at NPL, London.

www.pmdatabase.com
RoH2: The ‘Resistivity of Hardmaterials Part 2’ Project reached its end and had its final meeting on 15 March 2018 with NPL, CEIT, Kennametal, Ceratizit, Hilti.

SIMU-CRACK III: The third stage of the collaborative project SIMU-CRACK was successfully concluded with a final meeting hosted by Universitat Politècnica de Catalunya with the participation of Sandvik Mining and Rock Technology, CERATIZIT Luxembourg S.à.r.l., Hilti Group, Kennametal Shared Services Private Ltd., National Physical Laboratory (NPL) and RWTH Aachen University.

EU Funded Projects

SUPREME

The SUPREME project started in September 2017 for a duration of three years. SUPREME aims at optimising powder metallurgy processes throughout the supply chain. It will focus on a combination of fast-growing industrial production routes and advanced ferrous and non-ferrous metals. By offering more integrated, flexible and sustainable processes for powders manufacturing and metallic parts fabrication, SUPREME enables the reduction of the raw material resources (minerals, metal powder, gas and water) losses while improving energy efficiency and thus carbon dioxide emissions, into sustainable processes and towards a circular economy.

EPMA’s role is mainly the dissemination of the public results of the project mainly by using our existing know-how and events like at the last Euro PM2018 Congress & Exhibition and promotional schedule.

In 2018 the EPMA released two Newsletters to update the progress of the project (to be downloaded from the project website).

www.supreme-project.com

EuroPress&Sinter Sectoral Group

HTS: The HTS (High Temperature Sintering) project held a final meeting at Euro PM2018 in Bilbao. The project sees 11 different industry partners (AMES, Eisenmann, GKN Sinter Metals, Höganäs, Hoeganaes Corp, MIBA Sinter Group, PMG Holding, Schunk, Sintertech, Riedhammer) plus PM solutions, PM consulting and Trento University involved. Key results on the difference between HTS and conventional sintering were presented to the participants.

Dr Olivier Coube presenting the SUPREME Project Concept during the Euro PM2018
EU Funded Projects (continued)

The project AM-Motion reached its end in December 2018 with a final meeting in December at the European Commission. The project developed throughout its two years of existence many reports, roadmaps and assisting in the organisation of the database. The EPMA contributed as the voice of the Powder Metallurgy industry and brought its Summer School expertise by organising an AM Summer School in September in Gijon, Spain with the strong support of the AM Consortium.

www.am-motion.eu

PM Life new lifelong learning programme kicked off with the first module ‘Hard Metals and Power’, held on 11-16 June 2018 in Gothenburg, Sweden. The students joined the programme which consisted of lectures, practical work, tours hosted by the University of Gothenburg with a day trip to Höganäs. Some great feedback was received especially about the tours and most participants would recommended the training to their peers. Feedback for the module included the quotes “Tremendous learning opportunity, learning from top researchers at very high-end facilities” and “Very well organized and the perfect place to broaden your knowledge about powders.”

A second module ‘Additive Manufacturing’ took place in Dresden, Germany on 20-24 August 2018. Additive manufacturing, also known as 3D printing, rapid prototyping or freeform fabrication, is ‘the process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies’ such as machining. Students learnt about different AM technologies and design processes from the academic partners Fraunhofer IFAM and Technische Universität Dresden and the industrial partners H+E Produktentwicklung GmbH and Moritzburg. Feedback for this module included “Great overview of the possibilities of Additive Manufacturing” and “The perfect module for people new to this production method.”

Participants greatly appreciated the quality of the speakers and programmes as well as the opportunity to network with other participants and exchange ideas and solutions for their daily life when back in their office.

www.pmlifetraining.com
Euro PM2018 Congress & Exhibition

Bilbao, the capital of the Basque Country in northern Spain is well known for its Frank Gehry designed Guggenheim Museum that helped in the revitalisation of the once industrial city to be the cultural location it is today. In the PM circles, Bilbao will also be known as the host of the Euro PM2018 Congress & Exhibition, 14-18 October 2018. Following on from last year’s successful Euro PM2017 Congress & Exhibition in Milan, the expanded event continued to draw international participants with no less than 51 countries represented from across the globe, including the Far East, Africa and the Americas. The interest in Euro PM2018 has meant that it held some 300 Oral and Poster presentations with a strong attendance in excess of 1100 participants. Dr Olivier Coube, EPMA Technical Director, said "The Euro PM2018 represents a turning point of our annual Congress & Exhibition in terms of size with 50% more presentations vs 2017, including 40% Metal Additive Manufacturing contents, and at the same time we are seeing more delegates than in 2017".

Running in parallel to the technical sessions was the Euro PM Exhibition, which contained over 100 booths representing companies from all parts of the PM supply chain. This year’s Euro PM Exhibition has again raised the bar for the number of companies exhibiting at a Euro PM event making it the largest Euro PM Exhibition to date. Dr Lionel Aboussouan, EPMA Executive Director said “Bilbao was a great location and made for a thriving event. The enlarged technical programme and extended exhibition opening times helped to attract a diverse range of companies and sectors that want to learn more about what PM can do for their applications and industries. We would like to thank all the EPMA supporters and stakeholders who have assisted in making this event a success!”

Philippe Gundermann, EPMA's President, opened the plenary session with an ‘Overview of the Status and Trends in the European PM Industry’. This was followed by a welcome from the Congress Co-Chair Mr Manel Pérez Latre who provided a brief overview of PM production and evolution in Spain. The Technical Programme Committee Chairs, Prof Francisco Castro (CEIT, Spain) and Prof Herbert Danninger (Vienna Technical University, Austria) thanked the work of all the technical programme committee members who reviewed over 350 technical papers. Lehendakari Iñigo Urkullu Renteria, the Basque President, officially opened Euro PM2018 and provided a welcome to the Basque Country. Mr Borja Arenaza Latorre, Director of Advanced Manufacturing at Sistemple, Spain presented about ‘Big Data in Industry 4.0’, followed by Mr Frank Schlehuber, Senior adviser Aftermarket, CLEPA, Belgium, who presented about ‘The Future of the Automotive Supply Industry’. Following on from the keynote speakers was the annual EPMA Thesis Competition with winning theses from:

- **Doctorate category:** Dr Thomas Lapauw, KU Leuven, Belgium ‘Mn+1 AXn Phase-Structured Carbides for Nuclear Applications’
- **Masters category:** Dipl.-Ing Kevin Ouda, TU Wien, Austria ‘Determination Of Retained Austenite In Differently Alloyed Steels By Magnetic Measurements’

The EPMA Board and Council’s Fellowship Award helps to recognise the significant contribution to PM industry development from the scientific/academic community. The EPMA Fellowship Award not only provides a fantastic recognition from the PM community for such tremendous work, but also looks to exemplify the continued involvement in PM science and technologies. The 2018 Fellowship Awards were presented to:

- **Prof. Paul Beiss, IWM – RWTH Aachen, Germany**
- **Prof. Dr. Herbert Danninger, Technische Universität Wien, Austria**

The EPMA 2018 Powder Metallurgy Component Awards also featured highly with the following companies taking first place in their respective categories:

- **Additive Manufacturing category:** Rosswag GmbH, ForgeBrid®
- **Hot Isostatic Pressing category:** Framatome / Aubert & Duval, NNS Reactor Coolant Pump Impeller
- **Metal Injection Moulding category:** AMT PTE Limited, One Piece Nozzle
- **PM Structural category:** Gervorkyan, SRO, Driving Flange

The following companies were Highly Commended in their respective categories:

- **Additive Manufacturing category:** University of West Bohemia, Regional Technological Institute, Kraken, Special Light Milling Head
- **Metal Injection Moulding category:** Schunk Sintermetalltechnik GmbH, HPC-Vane
- **PM Structural category:** ASCO Sintering Co, Lock Bolt

The Congress Dinner on the Wednesday evening gave attendees a unique opportunity to experience a 45-minute concert from the world famous Orfeon Donostiarra, before enjoying a seated meal in the Jauregia restaurant. Euro PM2018 Congress & Exhibition hosted a range of EPMA’s Sectoral Group meetings alongside the technical sessions. The EuroAM Group celebrated its five year anniversary with a packed session on new and innovative AM related processes, a review of the past and future works and challenges for the group and the third Metal AM Trends Survey. The EuroHM Group invited keynote speakers to give an update of the growing Spanish Hard Material community and the EuroPress&Sinter Group used its session to discuss the potential ways to improve the technology and the synergies between Industry and Academia. EuroHIP and EuroMIM also had meetings taking place during the event schedule. A new Functional Materials Sectoral Group ‘EuroFM’ was established, off the back of the 2018 Functional Material seminar held in Jülich, Germany earlier in the year, and will help represent materials that are used in functional applications, such as electric cars/battery systems.

The technical programme also included strand relevant Special Interest Seminars that covered the following topics:

- **Additive Manufacturing: Success Case Studies in Production and Future Preview of Metal AM**
- **Hard Materials: Micromechanical Testing of HM**
- **Hot Isostatic Pressing and Additive Manufacturing: HIP and Heat Treatment of AM Parts – Microstructure and Mechanical Properties and the Effect of Combined HIP and Heat Treatment Cycles Compared to Conventional Processing**
- **PM Structural Parts: A Critical Analysis of the Press and Sinter Technology**

A ‘PM for Beginners’ session by Prof. Dr. Lorenz Sigl was presented to some 50 participants who wanted to learn more about the basics of powder metallurgy. In a first for a Euro PM Exhibition, the exhibition opening time on Monday morning was moved forward to 9am, to allow for increased networking opportunities, between exhibitors and visitors.
Promoting Powder Metallurgy Technology

Euro PM2018 Congress & Exhibition

Euro PM2018 Congress & Exhibition in Pictures

2018 Promotional Schedule

Euro PM2018 Congress & Exhibition in Pictures

2018 Component Awards

Thesis Award

Fellowship Award

Opening Plenary

Young Engineers

The Venue

Welcome Reception

Congress Dinner

Technical Sessions

Speaker Briefings

Poster Area
DEVELOP3D LIVE 2018 – March 2018

EPMA exhibited at the DEVELOP3D LIVE 2018 conference, which took place at Warwick University, on 20 March 2018.

DEVELOP3D LIVE is the UK’s leading conference and exhibition to combine design, engineering, product design and manufacturing technology. EPMA exhibited at the one-day event to promote the benefits of powder metallurgy, showing the attendees what Additive Manufacturing, Metal Injection Moulding and conventional Press & Sinter processes can do for them when they are designing the products of tomorrow!

“Having exhibited at DEVELOP3D LIVE for the past few years and had a positive experiences and the designer orientated demographic the conference attracts, makes it quite a unique annual event in the promotional calendar”, explained Andrew Almond, EPMA’s Marketing Manager. He went on to add “As this event attracts a range of delegates from product designers, from both industry and academia, through engineering students and some end users looking for novel ideas to take from concept to production, makes promoting the entire range of EPMA’s ‘Introduction to…’ process brochure range an attractive opportunity for us, in the hope they will utilise our processes to manufacture their future products.”

Based on the enquiries fielded during the event, the contacts made, have been put in contact with the relevant EPMA Members.
EPMA continued its promotional work by exhibiting at MACH 2018 in Birmingham, UK. MACH, hosted by the Manufacturing Technologies Association, showcases the best innovations and developments in the manufacturing industry with over 600 exhibitors present. With a range of sectors from across the manufacturing industry, it is no surprise the event can attract up to 25,000 visitors.

EPMA exhibited in the 3D Printing and Additive Manufacturing zone, which generated plenty of interest during the week of the event. By displaying a wide variety of components from our members, produced by HIP, MIM or AM, the EPMA stand acted as a showcase for the benefits of using PM processes.

Over 30 business leads were generated at the event, with several visitors to the EPMA stand expressing a desire to reach out to our members with specific components they were looking to produce. The EPMA stand also had a large number of students wanting to learn more about PM technology, with the ‘Introduction to…’ brochures proving to be very popular.

With MACH 2018 pulling in such a large number of visitors, the EPMA stand was able to promote the PM industry to a diverse audience and will participate at the next MACH event in 2020.

International Titanium Europe 2018 – May 2018

EPMA exhibited at the annual European International Titanium meeting in Seville, Spain in May 2018. The two day exhibition and accompanying presentation programme provided an update on many aspects of the titanium industry, including trends in the aerospace and medical device sectors.

The industry orientated exhibition, which ran in parallel to the presentations, covered material suppliers from titanium powders through to pipe and bar suppliers.

EPMA’s exhibition presence provided information on its Introduction to Additive Manufacturing Technology brochure, the EuroAM Sectoral Group activities and how EPMA are promoting AM at its annual event in Bilbao, as well as, the Euro Press&Sinter Sectoral Group and the full range of components PM can make.

“This event allowed us to learn about the Titanium Industry in more detail, which industrial sectors are current to use Ti powders and where the growth curve will be in the coming years, explained Andrew Almond, EPMA’s Marketing Manager. He went onto add “Attending this two-day event allowed EPMA to showcase the work it is achieving through its EuroAM group. Obtaining a good understanding of the recent trends and forecasts in the Ti industry will help EPMA Members to maximise their opportunities in this sector through the presentations they can download from the EPMA Members Area of the website.”

Medtec Europe 2018 – May 2018

Medtec Europe 2018 in Stuttgart, Germany, brought together companies in the medical device supply chain to share ideas, meet partners, and discover, experience and source products and services from all stages of production in order to create the next generation of medical devices.

At this year’s event, the EPMA exhibited with a stand which focused on engaging visitors more by using a large backdrop asking the question “Do you want more complex net shaped components?”. This, accompanied by a range of intricate MIM components on display from our members, saw the EPMA stand generate lots of interest across the three-day event. Overall, up to 25 business leads were gained from discussions with visitors on the stand. The EPMA stand also distributed a range of promotional literature, including a new medical case studies booklet, featuring MIM and AM components.

EPMA member, Indo-US MIM, also exhibiting at Medtec visited the EPMA stand and expressed their satisfaction and appreciation of the promotion efforts of EPMA for the PM industry and representation of its members.

The EPMA team will look to follow up on the success of Medtec Europe 2018 by visiting Medtec Innovation Expo in Coventry UK, to further promote PM technology to the medical sector.
EPMA Annual Report 2018

Promoting Powder Metallurgy Technology

Euro PM2018 Congress & Exhibition
Euro PM2018 Congress & Exhibition in Pictures
2018 Exhibition Promotional Schedule

PowderMet 2018 – June 2018
In June, EPMA attended the MPIF’s PowderMet 2018 industry event in San Antonio, Texas, USA to promote the annual Euro PM Congress & Exhibition taking place in Bilbao, Spain. During the two-day exhibition the Euro PM2018 booth not only promoted the forthcoming event, but also what attendees could expect from Bilbao as a location, from the Guggenheim Museum through to the old town, which is all set against an industrial harbour setting, by giving away city centre maps and tourism related destination brochures. To give the booth a boost a World Cup football competition took place, where attendees had the chance to win a World Cup replica football, during the exhibition opening times.

“The ‘Win a World Cup Football Competition’ was a bit of fun and coincided with the actual World Cup competition to give the promotion a bit of a boost, as Bilbao is also well known for its sporting heritage with Athletic Bilbao’s stadium being located right in the heart of the city, hence the football club strip uniform”, explained Andrew Almond, EPMA’s Marketing Manager. He added “Attending the PowderMet event gave us the opportunity to promote the Euro PM2018 Congress & Exhibition to participants that usually only attend the North American event, to show them what they could be missing out on in Europe this October”.

Advanced Engineering UK 2018 – October 2018
EPMA exhibited at the Advanced Engineering UK 2018 exhibition that took place at the NEC, Birmingham, UK, with 2018’s event celebrating its 10th anniversary. The EPMA stand was located in the Performance Metals Engineering Zone and featured displays of the recent EPMA 2018 Powder Metallurgy Component Award entrants’ parts.

During the event the EPMA had the ability to provide presentational content, showcasing the developments in one of our sectors. This year the presentation slot was fulfilled by Digital Metal AB, with Alexander Sakratidis, Sales and Marketing Manager giving an insight into the new AM binder jetting process and the types of components that can be created using this technique.

During the two event days EPMA discussed various applications where various PM processes could be of interest to a number of industry applications and sectors. The team spoke with end users and academic institutions who were keen to know more about PM and associated technologies, who were enquiring about how PM could benefit their current and future applications.

EPMA at Formnext 2018 – November 2018
EPMA exhibited at Formnext 2018, one of the leading Additive Manufacturing events in the promotional calendar, Frankfurt, Germany. The four-day event, at Frankfurt Messe, provided a plethora of AM related companies, covering all aspects of the sector and supply chain. EPMA’s booth generated a high number of business contacts, who were interested to know how AM could be advantageous to them. The annual AM event attracted over 20,000 attendees, making it one of the largest attended dedicated AM events that EPMA exhibit at.

During the event the 2nd Edition Introduction to AM Technology brochure proved popular and EPMA Member Guides were handed-out to interested parties.

EPMA are working through the business contacts made at the show for follow up opportunities.

International CTI Symposium – December 2018
EPMA exhibited at the International CTI Symposium – Automotive Drivetrains Expo which took place in Berlin’s Estrel Convention Center. The two-day event combined technical sessions with three exhibition areas all centred on the automotive powertrain sector.

Over the two-day exhibition EPMA spoke to a number of companies interested in knowing more about the benefits of the various powder metallurgy processes, which included Nissan Motor Co., Total Lubricants and Jopp to name but a few.

“The well-attended technical sessions gave an indication of the future of the automotive sector and the ways in which drivetrains for the different fuel systems are developing. It was interesting to understand how the automotive industry is still looking to obtain more efficiency savings from traditional internal combustion engines (ICE) as well as the development of synthetic & E-fuels to help reduce carbon dioxide emissions. There were also presentations regarding heavy duty battery applications, such as in buses. These electrical applications that are still using metal gears, such as the gears for electric car transmissions, provide PM with an opportunity for future automotive applications, due to the light weighting aspects PM can create.” explained Andrew Almond, EPMA’s Marketing Manager.

EPMA will be exhibiting at the CTI 2019 event to help ensure PM and all the sectors covered is at the forefront of this changing sector, to help end users understand how PM can leverage competitive advantage and assist in influencing OEM’s to understand the potential PM can bring to their future applications.
EPMA is governed by Belgian Law of 25 October 1919, as amended by that of 6 December 1954. The Association, ‘un Association internationale poursuivant un but scientifique’, is therefore exempt from Belgian income tax. The Secretariat, situated in the UK, is registered for UK VAT. EPMA works to a calendar year. The Articles of Association require that members contribute towards the expenses of the EPMA through an annual subscription; the generation of funds from other sources and activities compatible with its objectives is permitted. Belgian law requires that the EPMA Council shall submit the accounts for the past year and the budget for the following year for the approval of the General Assembly. Set out below are the accounts for 2018, with those of 2017 for comparison.

### Income

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<tr>
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<th>2018 (€)</th>
<th>2017 (€)</th>
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<tbody>
<tr>
<td>Membership fees</td>
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<td>432,581</td>
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<td>Publications and promotions</td>
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<td>Conferences, seminars and courses</td>
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<td>Summer School</td>
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<td>EU and other products</td>
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<td>Bank interest received (gross)</td>
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<td><strong>1,644,934</strong></td>
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### Expenditure

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<tr>
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<th>2018 (€)</th>
<th>2017 (€)</th>
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<tr>
<td>Salaries, Social charges &amp; pensions</td>
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<td>Subsistence and travel</td>
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<td>Printing, stationery, postage and sundries</td>
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<td>Office overheads</td>
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<td>Summer School</td>
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<td>Bank and credit card charges</td>
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<td>Taxation on interest received</td>
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<td>Realised exchange rate differences</td>
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<td>Depreciation</td>
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<td>Profits/losses on disposal of tangibles</td>
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<tr>
<td><strong>Total Expenditure</strong></td>
<td><strong>1,588,297</strong></td>
<td><strong>1,521,480</strong></td>
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**Surplus of Income over Expenditure**

- 2018: 258,931
- 2017: 123,454

**Income Relating to 2019/2020/2021**

- 

**Expenses Relating to 2019/2020/2021**

- 

**Unrealised Exchange Rate Difference**

- 2018: 39,496
- 2017: -

**Net Surplus of Income over expenditure/ (expenditure over income)**

- 2018: 219,435
- 2017: 96,892
### ACKNOWLEDGEMENTS:
Accounts prepared by Baldwins (Shrewsbury) Limited, UK. The Members of Board of European Powder Metallurgy Association engaged Baldwins Audit Services to provide limited assurance on the information described and set out in the Annual Accounts for the year ended 31 December 2018. Based on the procedures performed and the evidence obtained, nothing has come to Baldwins Audit Services attention that causes them to believe that the information as at 31 December 2018 has not been prepared, in all material respects, in accordance with the Reporting Criteria.

<table>
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<tr>
<th>Balance Sheet as at 31 December 2018</th>
<th>2018 (€)</th>
<th>2017 (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  <strong>FIXED ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>23,650</td>
<td>29,804</td>
</tr>
<tr>
<td>2  <strong>CURRENT ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade debtors</td>
<td>576,678</td>
<td>464,523</td>
</tr>
<tr>
<td>Other debtors</td>
<td>222,196</td>
<td>133,260</td>
</tr>
<tr>
<td>Bank accounts</td>
<td>1,403,762</td>
<td>1,252,388</td>
</tr>
<tr>
<td>3  <strong>CURRENT LIABILITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creditors</td>
<td>890,293</td>
<td>763,415</td>
</tr>
<tr>
<td>4  <strong>NET CURRENT ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,312,343</td>
<td>1,086,756</td>
</tr>
<tr>
<td><strong>TOTAL CURRENT ASSETS LESS CURRENT LIABILITIES</strong></td>
<td>1,335,993</td>
<td>1,116,560</td>
</tr>
<tr>
<td><strong>REPRESENTED BY:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accumulated fund at 1 January 2018</td>
<td>1,116,558</td>
<td>1,019,668</td>
</tr>
<tr>
<td>Less: surplus of expenditure over income</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Add: surplus of income over expenditure</td>
<td>219,435</td>
<td>96,892</td>
</tr>
<tr>
<td></td>
<td>1,335,993</td>
<td>1,116,560</td>
</tr>
</tbody>
</table>
Notes to Financial Statements for year ended 31 December 2018

Notes

1 TANGIBLE FIXED ASSETS (Net book value)
   At 1 January 2018 162,949
   Additions 15,795
   Disposals (96,891)
   Depreciation (7,801)
   On disposals 82,744
   At 31 December 2018 23,650

2018 (€) 2017 (€)

1 FIXED ASSETS
   Equipment bought forward 29,803  22,477
   Additions during the year 15,795  10,100
   Disposals during the year (14,147)    -
   31,451  32,577
   Less: depreciation 25% 7,801  2,773
   23,650  29,804

3 DEBTORS
   Trade debtors 576,678  464,523
   Other debtors 222,196  133,260
   798,874  597,783

4 CREDITORS (amounts falling due within 1 year)
   Purchase ledger balances 140,008  67,091
   Trade creditors 496,225  458,302
   PAYE owed to Inland Revenue 8,879  18,573
   Taxation (4,190) (895)
   Professional fees 7,048  8,454
   Other sundry creditors 141,454  74,398
   EU and other projects 100,869  137,492
   890,293  763,415

5 The figures in the Income and Expenditure accounts have been converted at the actual rate of exchange for each month. The balance sheet figures have been converted at the closing rate of exchange as at 31 December 2018, which was £1 to €1.113896 (2017: £1 to €1.125373) and differences arising are shown in the Income and Expenditure account as exchange rate differences.

The unrealised exchange rate differences in relation to the conversion of the bank balance denominated in GB pounds is disclosed separately.
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Processing of Functional Materials
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Metal Additive Manufacturing Technologies
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**Metal Injection Moulding Seminar**
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**EPMA Powder Metallurgy Summer School 2019**
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**Euro PM2019 Congress & Exhibition**
13-16 October 2019
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