Annual Report 2017

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

EPMA Annual Report 2017

Developing the Powder Metallurgy Future

Promoting Powder Metallurgy Technology

Representing the European Powder Metallurgy Industry

EPMA Government and Management

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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 2017; 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 2017 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 will depend on whether we can optimise business activities across the board. Such an optimization plan will include all industry players, from Structural Parts through to the Hot Isostatic Pressing and Additive Manufacturing sectors. Crucially, it is important to remember all sector groups are interlinked in the same ecosystem.

While there is still a need to plan for business optimization in the PM industry, we are fortunate to be backed by an extensive European Research & Development Network, which works closely on the ground with all industry players. By pooling resources from this network, we are able to leverage expertise from no fewer than 20 renowned PM academic research centres.

2017 saw a record for EPMA corporate membership, increasing to above 220. 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 30-country strong network, confirming our presence in international markets.

In 2017 EPMA organized a large number of seminars in addition to the Euro PM Congress & Exhibition in Milan. Each sector group organised a two-day seminar: Design for PM, HIP seminar, MIM seminar, AM seminar and PM for Non PM seminar. All of these events targeted end users, outlining the vast array of possibilities offered to them by PM technologies. 2017 also saw two new initiatives on training, organised in the form of two PM beginner events: one has been a two-day seminar and the other has been organised as a session during the Milan congress.

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

First, through the promotion of technology: the 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: the EPMA is committed to promoting the European PM Industry and PM technology not only across Europe but right 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 consolidated its position as a thought leader in the PM industry. To cap this off, 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 2017 was, of course, the Euro PM2017 Congress & Exhibition that took place in Milan. The event was a success with a record turnout for a European congress and exhibition. We welcomed almost 1,200 participants over three full days.

In 2018, several events will be organized by the different sectoral groups. Training will be high in the agenda with our renowned Summer School, Young Engineer’s Day and the new project PM Life which is a great opportunity for people to have in depth learning on each of the process dealing with powder and the possibility to join an internship.

To round off, I must say that I remain convinced that all the wheels are set in motion for PM to take off in the years ahead. Through our hard work, we are creating an EPMA platform that not only encourages agile organisation and workflow but also favours the environment and promotes innovative practice in our industry. By concentrating our focus on our key missions, we are also creating an EPMA platform that will drive down costs.

Happy reading!

Yours faithfully

Philippe Gundermann
EPMA President
Activity Report 2017

2017 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 PM2017 Congress & Exhibition was successfully held in Milan with over 1200 attendees from 42 countries and a large exhibition area with over 125 booths. 36 technical sessions and 5 Special Interest Seminars took place where more than 170 scientific and technological lectures were presented for the benefit of participants. There has been an intensive participation of the AM community during the event which means that EPMA are 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 their support.

The five sectoral groups EuroAM, EuroHIP, EuroHM, EuroPress&Sinter, EuroMIM and are a very important link between EPMA members and the meetings, fostering discussions and synergies 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 chairs for their great support during the Euro PM or during any of the five seminars: AM, HIP, MIM, Press&Sinter and PM For Non PM Specialists.

Several EPMA training events took place with the fourth Young Engineer’s Day and the usual Summer School that was recorded to allow videos to be available to participants. This was enhanced by two new events; a seminar ‘PM for Non PM Specialists’ hosted by GKN and a specific session ‘PM for beginners’ organised during the EuroPM. The participants enjoyed high quality of lectures, workshop and all the events proved to be successful.

EPMA’s club projects continue to be successful with the EuroHM, EuroPress&Sinter and EuroAM groups undertaking work on industry specified short term research. By the end of 2017, 19 projects have gathered the highest degree of scientific and technological interest.

During 2017, EU supported projects continued to run with the ongoing ‘AM Motion’ project and the launch of the new European project ‘Supreme’.

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.

You will find in the following pages more information on the different event that happened in 2017 and the upcoming programme for 2018.

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

Lionel Aboussouan  Executive Director
**Government and Management**

**Structure of the EPMA**

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<td><strong>Working Groups</strong></td>
<td><strong>Sectoral Groups</strong></td>
<td><strong>Environmental Health and Quality (EHQ)</strong></td>
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<td><strong>Research, Education and Training (RET)</strong></td>
<td><strong>Hard Materials (EuroHM)</strong></td>
<td><strong>Hot Isostatic Pressing (EuroHIP)</strong></td>
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<tr>
<td><strong>Research &amp; Development (EPMI)</strong></td>
<td><strong>Metal Injection Moulding (EuroMIM)</strong></td>
<td><strong>PM Structural Parts (EuroPress&amp;Sinter)</strong></td>
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**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**

On 31 March 2017, EPMA Members met for the 30th General Assembly at the Eurometaux Metals Conference Centre, Brussels. Members representing all sectors of the PM supply chain attended the one day meeting, which featured presentations from the EPMA President, Mr. Philippe Gundermann, who provided an update and overview of the state of the Powder Metal Sector in Europe, as well as EPMA’s Executive Director, Dr Lionel Aboussouan, and Technical Director, Dr Olivier Coube, who provided updates on their respective areas.

EPMA’s Sectoral Group Chairs provided presentations on their respective EPMA Sectoral Groups and updated the audience on what key actions the groups had been undertaking in the last 12 months, including a view on what 2017 has in-store for their specific sector.

The General Assembly was closed with a presentation called ‘Electrifying! – The Shift to Electro-Mobility’ by Mr Rob Rickell, President Group Technology, GKN plc. Mr Rickell presented what the future holds with the electrification of the automotive sector. This provided some interesting discussion points during and after the meeting.

There were also several sectoral group meetings that took place around the General Assembly, these being:

- European Powder Metallurgy Hot Isostatic Pressing Group (EuroHIP) and HIP Club Project Meeting
- European Structural Parts Group (EuroPress&Sinter)
- European Injection Moulding Group (EuroMIM)

If you would like information relating to the above Sectoral Group meetings, please contact either Dr Aboussouan (la@epma.com) for the EuroHIP and EuroMIM Groups or Dr Coube (oc@epma.com) for the EuroPress&Sinter Group.

The video recording from the EPMA’s 30th General Assembly, including Mr Rickell’s presentation, are available via www.epma.com Members Area. The 30th General Assembly power point presentation can also be download from the Members Area.

EPMA’s 30th 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, Liechenstein)

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  
Accounts & Membership

Scarlett Williams  
Event & Project Co-ordinator

Rhianna Jones  
Event & Project Co-ordinator

Karen Fisher  
Graphic Designer

Sam Timmis  
Marketing Assistant

Emma Powell  
Event & Administration Assistant

Staff leaving the EPMA Secretariat in 2017

James Batten – Graphic Communications Assistant (June 2017)
Tammy Harris – Website Administrator (July 2017)
Alice Young – Administration Assistant (July 2017)
**Outlook for 2018: The Year of Expansion**

Again in 2018, EPMA look forward to hosting a high number of events to help develop knowledge of PM to both members and potential users of our technology.

The **Euro PM2018 Congress & Exhibition** will take place in Bilbao, Spain, 14-18 October at the BEC (Bilbao Exhibition Centre). Some of the ideas introduced at Euro PM2017 Congress & Exhibition received positive feedback and therefore will apply to the 2018 event too.

For example, the number of spaces on the Young Engineers day has been increased from 30 to 50 due to the success of this 2-day event. The introduction of the PM For Beginners Session at the Congress was also successful and this year will be recorded and made available online for EPMA members who may wish to educate their customers on what PM is. The Special Interest Seminars will be held across multiple days as opposed to on one day to allow participants to join more than one SIS session. Two sectoral groups have also decided to split their SIS into different sessions to ensure they can cover more topics. End User’s Day will once again run during Euro PM2018 Congress & Exhibition providing the opportunities for End Users to attend the day for free and experience the plenary, the exhibition, meet and greet and the PM For Beginners session.

The extension of the congress by half a day will also be continued due to the increasing number of abstracts. We have extended the event into the Wednesday afternoon to enable an extra half-day of Technical Sessions and exhibition time. More details will be released via the Euro PM2018 Congress & Exhibition event website.

**EPMA Seminars: A new seminar is introduced alongside the sectoral seminars**

There will be four EPMA seminars in 2018: starting in February with ‘Design for HIP’ in Sweden, a ‘Systematic approach to Quality Management in PM’ seminar in Spain and the ‘Summerrev’ on Hardmetal in Sweden.

A new event ‘Functional PM Components in Next Generation Electric Cars’ will be introduced in Germany, hosted by Jülich Forschungszentrum. This event will be a great forum for those dealing specifically with functional materials, e-mobility and next car generation. Further information and dates for training events can be found on www.epma.com/seminars

**EPMA Training and Education: Two new events**

The 18th Annual EPMA Summer School will be held in Vienna, Austria and will be welcoming a further 60 students to the week of Powder Metallurgy study. Further information and dates for training events can be found on www.epma.com/summerschool

A new AM Summer School will be organised in Gijón, Spain under the framework of the AM Motion programme. The students will learn a complete overview of all AM Technologies from Powders for MetalAM to Laser Beam Melting among many more topics. Further information will be available on www.am-motion.eu

A lifelong learning training program called PM Life will start in 2018. Five weeks will be organised with each week being dedicated to a specific process in a different country: Powder & Hard Metal in Sweden, Press&Sinter in France, HIP in UK, AM in Germany and MIM in Spain. An additional three week 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 found here: www.pmlifetraining.com

**Club Projects & European Projects**

Several Projects will be supported in 2018 – some continuing from 2017 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 AM Motion European project continues in 2018 and is supported by EPMA through the organisation of the AM Motion Summer School. The project shows the increasing interest of our members to Additive Manufacturing.

The SUPREME Project also continues in 2018 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.

The AM&HIP Club Project will begin this year with an initial meeting being held in February with the Kick-Off to follow shortly after this. 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.

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

**European Communication Working Group (ECOM)**

To further strengthen the synergy between EPMA Members, a new Working Group on Communication was formed in 2017 and will continue into 2018. The aim of the European Communication Working Group (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 continue to provide an email newsletter about every six months 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 2018 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 EPMA.com to include more case studies and enhance the various Sectoral Group content and webpages.

EPMA also work 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.
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EPMA Membership 2017

Membership Subscription Rates

It was agreed at the December 2016 Council meeting that 2017 membership rates should be increased by 3%, the first increase in eight years. This is to emphasise the increased work done by EPMA for 2017. It was agreed at the December 2017 Council meeting that 2018 membership rates will not be increased but the 2019 fees will be increased by 3%, meaning that over 2 years the fees are increased to 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 2017

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<td>Associate Members</td>
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<td>Affiliate Members</td>
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<td>Individual Researchers</td>
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New members in 2017

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<td>Total</td>
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EPMA Membership 2017
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Proposal of new classification of Cobalt Metal

EPMA Membership 2017

New Members in 2017
EPMA was pleased to welcome the following into membership during the year:

Full Members

Associate Members

Affiliate Members

Individual Members
Dr Tamara Aleksandrov Fabijanic
Dr Ian Bailon-Poujol
Dr Robert Bidulsky
Mr Alexander Burkhardt
Aurelie Franceschini

Dr Mike Fry
Dr Christian Giert-Mayer
Prof Kwan Hee Han
Prof Bernhard Peters
Dr Oliver Schauerte

Dr Volker Uhlenwinkel
Mr Pascal Jauslin
Prof Elsa Wellenkamp de Sequeiros

EPMA Annual Report 2017
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 2017 the EPMA issued its 108th REACH News Flash. This regular email news flash 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 term 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

Environmental Health and Quality (EHQ)

Benchmarking is a requirement under both ISO9000:2000 and ISO TC16949, and since 2001 EPMA has offered companies the chance to benchmark their operations externally. The procedure comprises questions covering all the productivity benchmarks for the PM industry, such as: delivery achievement, productivity, energy usage, overall equipment effectiveness, wage and absenteeism, etc. The 2017 exercise saw a total of sixteen sites participating in the programme. We also maintain the service of advertising EPMA member quality accreditation on the EPMA website, which remains a popular area amongst the numerous visitors per year to the site.

Following the request of the council at the last council meeting in June 2014, the EPMA has approached two organisations in order to benefit from their activities and their influence at the European Commission regarding the EU Energy and Climate Change legislation. The EPMA is now a member of the Eurometaux Energy and Climate Change Policy Department and an associate member of the Industrial Federation of Industrial Energy Consumers (IFIEC Europe). IFIEC Europe represents the interests of industrial energy users in Europe for whom energy is a significant component of production costs and a key factor of competitiveness in their activities in both Europe and throughout the world.

European Powder Metallurgy Institute (EPMI)

The EPMI group comprises of the 20 leading PM related Universities and research groups across Europe. Partners continue to work on a bilateral basis on student exchanges, joint projects and use of equipment. They also provide a number of lecturers for the PM Summer school and other EPMA Seminars. The EPMI had a productive 2017, holding two meetings in Milan, once in February and once in October during the Euro PM2017 Congress and Exhibition. Valuable contributions and discussions were made on the progress of the EPMA Summer School, PM Life. It was also discussed to update the Vision 2025 document with new developments and actions. The next meeting is due to be held in Bilbao in February 2018.

European Communication Working Group (ECOM)

At the start of 2017 the ECOM was created. The main purpose of the ECOM Working Group is for EPMA Members to assist with and provide direction of the EPMA’s marketing and promotional activities. The group consists of a cross section of the EPMA Membership, which allows all industry areas and strands of the association to be represented. 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.
Representing the European PM Industry

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Working Groups

Sectoral Groups

**EUROAM**

Chairmen: Mr Ralf Carlström (Höganäs)
Dipl.-Ing Claus Aumund-Kopp (Fraunhofer IFAM)

Steering Committee: Mr. Ralf Carlström (Höganäs AB),
Dr. Olivier Coube (EPMA), Mr. Keith Murray (Sandvik Osprey Ltd),
Mrs Adeline Riou (Erasteel SAS)

The EuroAM organised its second Additive Manufacturing Seminar at the MTC, Coventry. It was an extremely successful two-day course focusing on all aspects of Metal Additive Manufacturing with ca 60 participants. Regarding the Euro PM2017 Congress programme included 12 AM Specific technical sessions, an open meeting of the EuroAM with Keynote presentations delivered from Dr Thierry Baffie (CEA Liten) on the new Supreme EU Project and also from Mr Tobias Bretschi (APworks) focusing on ‘More than 3D printing, Design, material, production. Dr. Baffie’s Supreme Presentation was recorded by EPMA and is available to watch on the EPMA and Supreme websites. A Special Interest Seminar was also held during the Euro PM2017 Congress & Exhibition entitled: Developments in Metals AM – Materials and Powder Handling.

**EUROHIP**

Chairmen: Dr Susan Davies (Bodycote Technologies AB)
Mr Peter Henning (Quintus Technologies AB)

Steering Committee: Dr Lionel Aboussouan (EPMA),
Prof Christoph Broeckmann (RWTH Aachen), Mr Freddie Busschaert (Total E&P France),
Dr Mark D’Souza-Mathew (Nuclear AMRC),
Dr Anders Eklund (Quintus Technologies AB), Dr Thomas Geneves (Areva NPF),
Dr Benjamin Picqué (Aubert & Duval)

The EuroHIP group focused on raising awareness of PM HIP technology during 2017 by helping support the HIP Seminar: The event was successfully held in April and attracted 43 participants who listened to presentations from 11 industry experts to improve knowledge of HIP for large and complex shapes.

Other areas of focus included working with EPMA to organise and find speakers for the HIP Special Interest Seminar at Euro PM2017 Congress & Exhibition as well as attending EuroHIP meetings throughout the year. During 2017 and leading into 2018 the group began to revisit the Introduction to HIP booklet as well as preparing for the Kick-Off Meeting for the AM&HIP Club Project and inviting speakers for future events.

**EUROMH**

Chairmen: Dr Leo Prakash (WTP Materials Engineering)
Dr Steve Moseley (Hilti AG)

Steering Committee: Dr Olivier Coube (EPMA), Prof Luis Mllanes-Pitarach (Catalunya Universitat Politecnicà UPC), Dr Steve Moseley (Hilti AG), Dr Leo Prakash (WTP Materials Engineering),
Dr Bryan Roebuck (NPL – National Physical Laboratory)

The European Hard Material Group (EuroHM) activities in 2017 included several club projects such as UFTH 3, Kinetic 2 and the SIMU-CRACK III. In addition to preparing and coordinating ‘SUMMEREV 18’ Hardmaterials Workshop to be held in KTH, Stockholm, Sweden in June 2018.

For the Euro PM2017 Congress & Exhibition, the EuroHM prepared a General open meeting on Tuesday 3rd October and a Special Interest Seminar on ‘Diamond and Superhard Materials, Manufacturing and Applications’ held on Monday 2nd October. The EuroHM Sectoral Group also presented a special award at the Euro PM2017 Congress & Exhibition in Milan, to Mr Kenneth Brookes for his highly regarded contributions and association with the Hardmetal and Hard Material community over more than 40 years.

A special EuroHM Sectoral Group meeting was held on the 23 November at the National Physics Laboratory, Teddington, London. The meeting focused largely on the visions and objectives of the EuroHM Groups as well as its overall future. The general objective of the discussions was to establish a 3-5 years vision for the EuroHM group and its activities. All participants took part in various discussions regarding EU projects, Education and inspiration for Vision 2025 to name a few.

The EuroAM Sectoral Group during their meeting at MTC in May 2017

Dr Andreas Bock from Wolfram Bergbau answering the questions of the participants during the EuroHM meeting at the Plansee Seminar.
Representing the European PM Industry

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Working Groups
Sectoral Groups

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

Steering Committee: Mr Martin Blömacher (BASF), Mr Keith Murray (Sandvik Osprey Ltd),
Prof Lars Nyborg (Chalmers University of Technology), Dr Jack Schwarz
(GKN Sinter Metals Engineering GmbH), Mr Poul Verner (Sintex)

During 2017, the EuroMIM group continued to focus on education and
helped organise the MIM Seminar which took place in June at BASF’s
facilities in Ludwigshafen, Germany.

The group also have an emphasis on technology and quality development
therefore the EuroMIM group completes annual benchmarking exercise
for MIM parts makers across Europe which was sent to members and
then analysed.

The Introduction to Metal Injection Moulding booklet was also updated
in 2017 with new case studies added to the re-print which was brought
up to date with the EuroMIM branding.

Chairmen: Mr Peter Kjeldsteen (Sintex)
Dr Cesar Molins (AMES)

Steering Committee: Dr Olivier Coube (EPMA), Dr Guido Degen
(GKN Sinter Metals) Mr Peter Kjeldsteen (Sintex), Dr Cesar Molins
(AMES)

The EuroPress&Sinter group started the year with a special
brainstorming meeting on the 22 March in Barcelona where 41
Members met to discuss on how to prepare for the future changes in
the sector.

The EuroPress&Sinter group also held a general open meeting in
Brussels and another one in Milan, during the Euro PM2017 Congress &
Exhibition as well as a Supply Chain Meeting which presented statistical
data and trend survey reports and discussed issues brought up in their
previous meeting of the 22 March 2017.

The Sectoral Group has also been focusing on two club projects –
The Design for Sintering (DFS) project which is due to end in January
2018 and also The High Temperature Sintering (HTS Project) which is
had its first kick off meeting in Milan, after the Euro PM2017 Congress &
Exhibition.
EPMA PM Summer School

The 17th EPMA Powder Metallurgy Summer School took place in Grenoble, France from 19 - 23 June. The five-day programme was hosted by Prof Didier Bouvard of Grenoble INP and coordinated by Dr Marco Actis Grande of Politecnico di Torino and Dr Christian Gierl-Mayer of TU Vienna.

The content of the programme was delivered by a range of professionals drawn from both industry and academia, whose expertise reflects many aspects and topics currently employed in today’s Powder Metallurgy Industry. The EPMA strives to keep the course as up to date as possible with topics covering all aspects of the Powder Metallurgy industry including AM, MIM, HIP and Hardmetals.

The 50 strong European audience of graduates and industry personnel new to the PM Sector engaged in lectures, laboratory work, case studies, problem solving sessions and also participated in two local PM Organisation tours; CEA and Sintertech.

The annual Summer School event wouldn’t be the same without its closing dinner; held this year at Chez per la Gras at the top of the Bastille, with views overlooking all of Grenoble. The evening proved a huge success with excellent food and drink, not forgetting the now traditional mini Eurovision Song Contest.

AM Seminar

Following the success of the AM Seminar held last year in Bremen the EPMA once again saw an extremely positive response to the AM Seminar held this year at MTC in Coventry, United Kingdom. The Seminar welcomed 52 delegates and 21 speakers from across academia and industry participating from all over Europe.

The seminar proved worthwhile from both the high quality talks from companies such as Airbus, Jaguar Landrover and Rolls Royce and multiple networking opportunities. At the end of the first day, delegates and speakers were able to discuss different features of Additive Manufacturing whilst enjoying the magnificent surroundings and delicious food at the historic Coombe Abbey.

On the second day, a Tour of the MTC was also organised to see aspects of what the delegates had learnt put into practice.

MIM Seminar

The 2017 Metal Injection Moulding Seminar was held in BASF, Ludwigshafen, Germany at the start of June and was attended by 53 participants. The event explored MIM and its uses through educational presentations and case studies from industry experts. The seminar also featured a participant-led showcase of MIM parts showing just a small selection of ways the technology can be used by nine companies.

For the social and networking side of the event, participants were able to dine in BASF’s beautiful restaurant and even have a private tour of their underground wine cellar while learning more about the history of the company.
HIP Seminar

At the start of April, EPMA held the Hot Isostatic Pressing (HIP) Seminar 2017 at the Nuclear AMRC, on the outskirts of Sheffield, UK. Delegates got to hear 12 industry experts discuss their HIP knowledge and experiences with a focus on demanding applications, large parts and complex shapes.

The two-day event also featured a discussion session which allowed participants to ask questions to each other as well as facilitating opportunities to discuss the future of the technology.

“The seminar was not only a chance to learn more about Hot Isostatic Pressing but a great opportunity to network and connect with others in the HIP community” said Lionel Aboussouan, EPMA’s Executive Director, “The seminar dinner at Brown’s was a great success as delegates got to know each other and even finished off the night in song!”

Design for PM Seminar

The Design for PM Seminar took place in Bologna, Italy from the 27-29 April and proved a success for EPMA. The event was organised with help from the EuroPress&Sinter Group and saw 41 delegates from across Europe attend the two day course, which benefited from the expertise of 12 speakers from areas of both academia and industry.

Topics covered several areas including: Ferrous Powders in Powder Technology, Effects of Porosity on both mechanical properties and Fatigue resistance of PM steels as well as Design of a PM Gears.

Participants also had the opportunity to visit the Ducati factory for a full tour of both the museum and the working factory.

PM For Non PM Specialists

EPMA’s first PM For Non PM Specialists Seminar was held in GKN’s Innovation Centre in Radevormwald, Germany from 27-29 June. The event was created in order to help provide a basic knowledge of PM for those who are new to the industry or looking to begin using PM within their company. The seminar content ran over two days and included a site visit around the innovation centre with the chance to ask questions to industry experts.

The seminar was successful as it received positive feedback from the participants with particularly high scores for the content of the event and opportunities to network.

Young Engineers

The Young Engineers two-day programme was held during the Euro PM2017 Congress and Exhibition in Milan, as part of EPMA’s commitment to help promote and develop the industry of Powder Metallurgy to future generations of Engineers. Five Universities (Aalborg University, Brescia University, Politecnico di Milano, Politecnico di Torino, and University of Padua) 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 and recent graduates now working in PM.

The students also benefited from a social dinner on the first evening and a tour on the second day of the programme to CEA to give them an appreciation of the variety of PM employment areas.
Developing the Powder Metallurgy Future

Research and Development Projects

As far as research and development work is concerned, the projects can be divided in two. Firstly, large scale, mainly publicly financed projects and then those projects where funding has been co-ordinated 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.

www.pmdatabase.com

Club Projects

The EPMA continues to coordinate several Club Projects in order to improve the synergy of the PM community. This year the EPMA celebrated its 20th Club Project with the new High Temperature Sintering (HTS) project. Since 2009, over €800,000 has been collected for pre-competitive PM R&D activities. More detailed information on all EPMA Club Projects is available at www.epma.com/projects

The following Club Projects were coordinated in 2017:

EuroAM Sectoral Group

SLM-POWD Final Meeting: The final meeting of the SLM-POWD Project was held on the 25th October 2017 hosted at Fraunhofer IFAM. With the support of the 9 industrial partners (Boehler, Granutools, HC Starck, Heraeus, Höganas, IMR, Linde, Sentes-BIR and SMS Group) Fraunhofer IFAM carried out 38 tests on a 316L powder with very interesting results. A follow-up project proposal will be presented to the partners and AM community soon.

Final SLM-POWD meeting participants
Developing the Powder Metallurgy Future

Education & Training Projects
Research & Development Projects
Club Projects
EU Funded Projects

EuroPress&Sinter Sectoral Group

DfS: The Design for Sintering – Dealing with the anisotropy of dimensional changes project has reached its end with a final meeting on 31st January 2018 between the contractor Univ. Trento and the industrial participants (AMES, GKN Sinter Metals, Höganas, MIBA Sinter Group, Sintex). The Univ. Trento will present the final results and further actions that are now planned.

HTS: The HTS (High Temperature Sintering) project held a kick off meeting at Euro PM2017 Congress & Exhibition in Milan. The project sees 11 different industry partners (AMES, Eisenmann, GKN Sinter Metals, Höganas, Hoeganaes Corp, MIBA Sinter Group, PMG Holding, Schunk, Sintertech, Riedhammer) plus PM solutions, PM consulting and Trento university involved. Key decisions were made on technical procedures and test methods, company involvement throughout the project and cost assumptions. The consortium is keen to progress the project.

EuroHM Sectoral Group

UFTH 3: In March 2017 EPMA launched another club project on Ultrasonic fatigue testing of hardmetals in the gigacycle regime Stage 3, in partnership with TU Vienna, University of Vienna and CEIT San Sebastian as contractors and Ceratizit, Hilti, Kennametal and Sandvik as industrial partners.

Kinetic 2: EPMA agreed in 2017 and will launch in 2018, 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 6 industrial Partners (Hilti, Kennametal, Ceratizit, F.I.L.M.S, Atlas Copco-Epiroc, 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 will be organised on 14 March 2018 at NPL, London.

SIMU-CRACK III: On the 22 November 2017 the National Physics Laboratory in Teddington, London, held the latest SIMU-CRACK III meeting. The contractors IWM, UPC and NPL presented the latest development of the project ‘Simulation of Fatigue Crack Growth in Hardmetal at a Mesoscopic Scale Project Phase III’ to the industrial partners (Ceratizit, Hilti, Kennametal, Sandvik Mining and Construction Tools).

RoH2: The ‘Resistivity of Hardmaterials Part 2’ Project is reaching its end. In partnership with NPL, London and CEIT, San Sebastian and with the support of AMES, Ceratizit Materials, GKN Sinter Metals, Madrid, Høganas AB, PMG and MIBA. The project aims are to study the mechanical properties and the fracture behaviour (hardness and tensile features) in correlation with the microstructure using real parts. It will have its final meeting on 15th March 2018.
EU Funded Projects

EFFIPRO

EFFIPRO (Energy Efficient Manufacturing Process) was a three-year project part funded by the European Commission in the 7th Framework Programme. The objectives of this project were to develop a significantly shorter PM process using a new concept of hybrid electrical current assisted sintering and hard materials with improved properties, thus resulting in a more energy efficient and cost effective process. The developments of this project directly impacted on the cutting tools industry as tools with enhanced properties and a longer lifetime have been obtained using a highly efficient process. A prototype was built and two types of parts were machined, one for the aerospace sector and the other for the automotive sector. For this project, the EPMA joined a Consortium of nine members including also: Airbus Group, AMES Group, Fraunhofer IFAM, KYOCERA UIMIMERO, MIRTEC S.A., The University of Seville (USE) and TECNALIA as the Project Leader. The EPMA’s main responsibility was for the dissemination and training activities. The EFFIPRO project was closed on 1 February 2017 with a very high mark from the EC. More information can be found at the project website at www.EFFIPRO.org

SUPREME

The SUPREME Project kicked off in September 2017 with a meeting in Brussels. SUPREME aims at optimizing 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. To achieve this goal, an ambitious cross-sectorial integration and optimisation has been designed between several powder metallurgy processes: gas and water atomization, as well as, ball milling for metal powder production, laser-based additive manufacturing and near-net shape technologies for end-parts fabrication. A consortium of 17 partners has been gathered on this purpose under the coordination of the Commissariat à l’Energie Atomique et aux énergies alternatives CEA, France.

At the Euro PM2017 Congress & Exhibition in Milan, EPMA, promoted Supreme during its EuroAM meeting, allowing the 65 plus participants to be the first to hear of the Supreme Projects proposals. The presentation given by Dr Thierry Baffie was videoed by EPMA and can be viewed both on the EPMA website and via the SUPREME website at www.supreme-project.com

AM Motion Project: AM Motion (Energy Efficient Manufacturing Process) is a three-year Project which was launched in November 2016, it is part funded by the European Commission in the Horizon 2020 Framework Programme. The overall objective of the AM-Motion CSA is to contribute to a rapid market uptake of AM technologies across Europe by connecting and upscaling existing initiatives and efforts, improving the conditions for large-scale, cross-regional demonstration and market deployment, and by involving a large number of key stakeholders, particularly from industry.

For this Project, EPMA has joined a Consortium of 13 members including: Airbus, Brainport, CEA., Cecimo, D’appolonia, ERRIN, IDEA, Materialse, Siemens, TNO, TWI and Prodintec as the Project Leader.

In October 2017 EPMA (alongside the European Commission) assisted with the Additive Manufacturing European Forum (AMEF 2017) in Brussels, followed by an expert working group focusing on ‘AM Materials and Process’. The objective of this 1st workshop was to bring together key stakeholders to identify the barriers to AM business development on both the technological and non-technological side, and search for possible and feasible solutions of several selected value chains (Aerospace, Automotive, Construction, Consumer goods, Electronics, Energy, Health, Industrial equipment and tooling). More information can be found at the project website at www.am-motion.eu
Euro PM2017 Congress & Exhibition

Milan, a well-known capital of art, design and science, played host to this year’s Euro PM2017 Congress & Exhibition, 1-5 October 2017. The annual Euro PM Congress & Exhibition created an international hub for participants to discuss, develop and distribute the latest industry trends and techniques the powder metallurgy sector has to offer.

Following on from last year’s very successful World PM Congress & Exhibition, Milan has proved an incredible international draw with no less than 42 countries represented at this year’s event, with participants attending from across the globe, including the Far East, Africa and the Americas. The interest of the Euro PM2017 has meant that it attracted over 200 Oral and Poster presentations and a strong attendance in excess of 1200 participants.

The event also included a sell-out exhibition with over 125 booths covering companies from all parts of the PM supply chain, making it one of, if not the largest Euro PM Exhibition to date. Lionel Aboussouan, EPMA Executive Director said “Milan was an exceptional event, being well located within Europe and providing a diverse technical content has made for a productive 5-days. We would like to thank all the EPMA supporters and stakeholders who have assisted in making this event a success!”

Mr Philippe Gundermann, EPMA’s President, opened the Plenary Presentations with an ‘Overview of the Status and Trends in the European PM Industry’. This was followed by an update on EPMA activities and recent initiatives. Eng. Massimo Giannozzi, Senior Engineering Manager – Materials Science and Engineering at Baker Hughes a GE Company – Turbomachinery Process Solutions, provided a thought provoking presentation on how powder metallurgy is providing components for BHGE gas turbine and compressors.

Following on from the key speakers was the EPMA Distinguished Service Award that was presented to Mr. Thomas Lambrecht (Dorst Engineering Manager – Materials Science and Engineering at Baker Hughes a GE Company – Turbomachinery Process Solutions, provided a thought provoking presentation on how powder metallurgy is providing components for BHGE gas turbine and compressors. Lambrecht said “The Euro PM Congress & Exhibition is the event of the year for the powder metallurgy industry, providing networking opportunities between exhibitors and visitors.”

Mr. Lambrecht said “Milan was an exceptional event, being well located within Europe and providing a diverse technical content has made for a productive 5-days. We would like to thank all the EPMA supporters and stakeholders who have assisted in making this event a success!”

The annual EPMA Theses Competition also featured in the Opening Session with the winning theses from:

- Dipl.-Ing Julia Ureña, University Carlos III Of Madrid, Spain
- Dr. Torsten E M Staab, Fraunhofer ISC Wuerzburg, Germany
- Prof Dr. Luis Llanes, Universitat Politecnica Catalunya, Spain
- Dr. Gian Filippo Bocchini, PM Consultant, Italy

The technical programme also included strand relevant Special Interest Seminars, which in a change to previous years, were contained within the overall programme schedule. The Special Interest Seminars programme covered the following topics:

- Additive Manufacturing: Developments in Metal AM – Materials, Powder Handling
- Hard Materials: Diamond and Superhard Materials, Manufacturing and Applications
- Hot Isostatic Pressing & Additive Manufacturing: Thermal Post Treatment for AM Parts
- Metal Injection Moulding: MIM & Aerospace Applications
- PM Structural Parts: Industrialisation of Powder Metal Process Simulation

For the fourth successive year the EPMA’s Young Engineers Day presented EurIng Kenneth J A Brookes, FIMMM, CEng a special ‘Lifetime Service Award in the Hardmetal Industry’ for his longstanding commitment to hardmetal industry, the EuroPress&Sinter welcomed for the first time the full ferrous structural part supply chain members for a special business meeting, the EuroAM welcomed the first presentation of the new EU funded full PM project SUPREME and finally the EuroHIP presented the first intersectoral EPMA club project proposal ‘AM and HIP’.

A special one off ‘PM for Beginners’ by Dr Volker Arnhold, Powder Metallurgy Solutions Wuppertal, was presented to some 50 participants who wanted to learn more about the basics of powder metallurgy. The 90-minute presentation looked at the key topics of powder metallurgy, including the variety of materials, processes and applications covered by the PM industry today.

A further modification to this year’s event saw the exhibition open for an additional 1/2 day, on the Wednesday, which provided additional networking opportunities between exhibitors and visitors.
Promoting Powder Metallurgy Technology

Euro PM2017 Congress & Exhibition
Euro PM2017 Congress & Exhibition in Pictures
2017 Exhibition Schedule

Euro PM2017 Congress & Exhibition in Pictures

EPMA President Philippe Gundermann presents the following awards:

Top left: Prof Alberto Molinari, University of Trento – EPMA Fellowship Award
Top Right: Pro Dr.-ing. Christoph Broeckmann, RWTH Aachen University – EPMA Fellowship Award
Bottom Left: Prof Jose Manuel Torralba, Universidad Carlos III, Madrid – EPMA Fellowship Award
Bottom Right: Mr Thomas Lambrecht, Dorst Technologies – EPMA Distinguished Service Award

Opening Plenary
Welcome Reception
Poster Area
EPMA Awards
2017 Exhibition Schedule

Sweden’s Advanced Engineering 2017 Exhibition

During the start of March, EPMA exhibited for the first time at the Swedish version of the Advanced Engineering Exhibition, which took place at the Svenska Mässan Conference Centre, 7-8 March. The 2-day event comprised of an exhibition focussed on high value manufacturing technologies and electronics. The exhibition area also contained two presentation areas covering a range of topics including additive manufacturing, Industry 4.0, aerospace applications, autonomy & electrification and the digital revolution.

“As this was the first time the EPMA have exhibited at an event in Sweden, in fact in Scandinavia, I was not sure what level of leads to expect” explained Andrew Almond, EPMA’s Marketing Manager. He added “However we had some interesting discussions regarding the potential use of PM for new components and applications, attending the next event in this series in 2019 will be considered, given the positive response from this year’s attendance. It is also hoped that the contacts made at this show will seriously consider using PM in their future applications.”

The range of industrially focussed presentations, which operated within the exhibition area, helped to attract a number of companies from many industrial sectors, which included aerospace, industrial design, automotive applications and mining companies. Based on the enquiries fielded during the event, the contacts made, have been put in contact with the relevant EPMA Members.

Global Automotive Lightweight Materials Europe

EPMA visited the two-day event which attracted many automotive OEM’s such as VW, Daimler and Renault to name but a few, who were at the event to learn about advances in materials relating to the automotive sector. The focussed exhibition area consisted of a small number of sponsor suppliers who contributed to the presentation programme.

“This was a good event to attend as it allowed us to network with automotive OEM’s, although the focus was more on the light weighting of the automotive structure, rather than the components, where PM does not have as much involvement. However, as Additive Manufacturing becomes more mature, this could be of more interest for the attendees in future years”, explained Andrew Almond, EPMA Marketing Manager. EPMA will track the event content for future events in this series to understand where we can maximise promotional activities.

Metalysis Launch Event

Metalysis, an EPMA Member company based in Rotherham, UK, have expanded their operations by opening the Materials Discovery Centre at the Advanced Manufacturing Park (AMP) on the outskirts of Sheffield. The £10m expansion will include an advanced R&D facility and manufacturing plant, with 100 employees now working for the company. EPMA were invited to take part in the launch exhibition, where the centre was officially opened by Lord Prior of Brampton, Parliamentary Under Secretary of State at the Department for Business, Energy and Industrial Strategy (BEIS), who cut the ribbon in front of over 200 researchers, scientists, politicians and financiers. EPMA look forward to giving ongoing support to the member company in the future.

The range of industrially focussed presentations, which operated within the exhibition area, helped to attract a number of companies from many industrial sectors, which included aerospace, industrial design, automotive applications and mining companies.

Based on the enquiries fielded during the event, the contacts made, have been put in contact with the relevant EPMA Members.

Automechanika 2017

In June EPMA visited Automechanika Birmingham – the UK’s leading exhibition for the automotive aftermarket and supply chain. The 2017 event welcomed over 850 exhibitors and attracted over 12,000 trade visitors to the NEC for three days of discovery, learning and networking.

As the event was aimed at the distributor/after-sales market, and as there was little if hardly any OEM’s present, with a great deal of the exhibitors being B2B sellers for the retail supply chain, it was difficult for EPMA to discuss future PM alternatives.

As the majority of EPMA Members agreed not to pursue the aftermarket supply chain, instead of wanting to directly influence OEM’s designs and future applications, unless this event changes its current orientation it would not be suitable for EPMA to exhibit at in future years.
Global Automotive Component Supply Chain Expo

The Global Automotive Components and Suppliers Expo 2017, Stuttgart, Germany has been hailed by the organisers as a huge success with over 900 exhibitors from more than 25 countries showcasing more components than ever before. The show, which also hosts Engine Expo and Automotive Interiors Expo, welcomed over 3,000 attendees and numerous product innovations during the three-day event.

EPMA exhibited under the title of ‘Powder Metal Components’ to help make it easy for the intended target audience of tier one and two automotive purchasing managers and designers to understand what we do,” explained Andrew Almond, EPMA’s Marketing Manager. He added, “During the exhibition over 90 contacts were made, with many of the discussions centred on automotive applications and how PM can assist with future applications, including the types of components that can be made using the process, the wide range of materials that can be used and choice of EPMA Member companies involved in making components throughout Europe and Internationally.”

EPMA last exhibited at the Global Automotive Component Supply Chain Expo in 2009 and since then the event has become one of the most important events to exhibit at for the automotive and engine supply chains, due in part to its close links with the German automotive industry.

Contacts made at all the events attended are being followed up with, any specific enquiries being passed on the relevant EPMA Member sectors.

Med-Tech Innovation

EPMA visited the annual Med-Tech Innovation event, held at Ricoh Arena, Coventry in April. The medical orientated conference, which is one of EPMA’s key end user target markets, combined a programme of medical presentations, within the exhibition area. The exhibition was aimed at the medical device market such as connectors, and off-use items, such as scalpels.

“An event of this nature can be of interest to Metal Injection Moulding manufacturers, due to the complex and small components that can be made using the MIM process”, commented Andrew Almond, EPMA’s Marketing Manager. He added, “this may be a consideration for a potential future exhibition, if some oral presentations could be combined with a presentation programme, to further enhance the marketing communications, which has worked to good effect at other exhibitions the EPMA has exhibited at.”

Advanced Engineering UK 2017

EPMA exhibited at this year’s Advanced Engineering UK 2017 exhibition which took place at the NEC, Birmingham, UK on 1-2 November 2017. Located in the Performance Metals zone EPMA Members provided content for the presentation programme covering hard materials and PM structural parts.

On Wednesday 1 November, Dr Steve Mosely, Chief Scientist, Hilti AG presented the ‘Developments in Hard Materials’ during a thought provoking presentation. This was followed the next day by a presentation on ‘Powder metallurgy structural components: Comparative overview vs other manufacturing technologies’ by Dr. Jesús Peñafiel, Marketing Director, AMES S.A., who examined the benefits of using the PM process and the advantages that it can produce, compared to other manufacturing technologies.

During the two event days EPMA discussed various applications where PM could be of interest in a number of industry applications. The team spoke with academic institutions keen to know more about AM and related technologies and to consumer goods manufacturers and engineering companies wanting to know how PM could benefit their current and future applications.

EPMA will be following up with the contacts made at the event to discuss further opportunities.

Formnext 2017

EPMA recently exhibited at Formnext 2017 Additive Manufacturing event, Frankfurt, Germany 14-17 November 2017. The sold out exhibition provided a busy schedule relating to all aspects of the Additive Manufacturing (AM) Industry. EPMA’s 12m2 booth generated over 100 business contacts from all areas of the supply chain from equipment and raw materials contacts through to End Users who are exploring how AM can fit into their supply chain.

The event was set over two levels in Hall 3 in Frankfurt Messe and attracted in excess of 14,000 attendees during the four days. Over 450 2nd Edition AM brochures and nearly 200 EPMA Member Guides were distributed during the four event days, making it one of, if not, the largest distributions of EPMA related literature at any one singular event.

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

CTI Symposium

Towards the end of 2017 EPMA exhibited at the 16th International CTI Symposium – Automotive Transmissions, HEV and EV Drives which took place in Berlin’s Estrel Convention Center. The 2-day event which combined technical sessions with three exhibition areas all focussed on the automotive transmission sector.

Over the 2-day exhibition EPMA spoke to a number of companies interested in knowing more about the benefits of the various powder metallurgy processes, which included Daimler, Continental, Kate LLC, Jatco and DIEHL Metall Schmiedetechnik to name but of the companies spoken to.

“The technical sessions were well attended and provided food for thought on the future of PM components within automotive applications. It was interesting to understand the shifting nature of the automotive industry with the numerous hybridisation options becoming available for future power trains and the vehicles they will be made for” explained Andrew Almond, EPMA’s Marketing Manager.

EPMA will be exhibiting at the CTI 2018 event to help ensure PM is at the forefront of this changing landscape, 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 Annual Report 2017
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 2017, with those of 2016 for comparison.

**ACKNOWLEDGEMENTS:** Accounts audited by Baldwin’s Chartered Accountants, Shrewsbury, UK.

### Income

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<td>Printing, stationery, postage and sundries</td>
<td>21,114</td>
<td>20,085</td>
</tr>
<tr>
<td>Office overheads</td>
<td>54,523</td>
<td>64,065</td>
</tr>
<tr>
<td>EU and other Projects</td>
<td>174,253</td>
<td>72,000</td>
</tr>
<tr>
<td>Summer School</td>
<td>30,231</td>
<td>24,945</td>
</tr>
<tr>
<td>Bank and credit card charges</td>
<td>9,123</td>
<td>7,212</td>
</tr>
<tr>
<td>Taxation on interest received</td>
<td>5</td>
<td>4,715</td>
</tr>
<tr>
<td>Realised exchange rate differences</td>
<td>1,335 (12,038)</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>9,853</td>
<td>9,440</td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td>1,521,480</td>
<td>1,993,545</td>
</tr>
</tbody>
</table>

**Surplus of Income over Expenditure**

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Relating to 2018/2019/2020</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expenses Relating to 2018/2019/2020</td>
<td>-</td>
<td>77,770</td>
</tr>
<tr>
<td>Unrealised Exchange Rate Difference</td>
<td>26,562</td>
<td>-</td>
</tr>
<tr>
<td><strong>Net Surplus of income over expenditure/ (expenditure over income)</strong></td>
<td>96,892</td>
<td>163,212</td>
</tr>
<tr>
<td>Notes</td>
<td>2017 (€)</td>
<td>2016 (€)</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>1</td>
<td>FIXED ASSETS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
<td>29,804</td>
</tr>
<tr>
<td>2</td>
<td>CURRENT ASSETS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trade debtors</td>
<td>464,523</td>
</tr>
<tr>
<td></td>
<td>Other debtors</td>
<td>133,260</td>
</tr>
<tr>
<td></td>
<td>Bank accounts</td>
<td>1,252,388</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,850,171</td>
</tr>
<tr>
<td>3</td>
<td>CURRENT LIABILITIES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creditors</td>
<td>763,415</td>
</tr>
<tr>
<td>4</td>
<td>NET CURRENT ASSETS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,086,756</td>
</tr>
<tr>
<td></td>
<td>TOTAL CURRENT ASSETS LESS CURRENT LIABILITIES</td>
<td>1,116,560</td>
</tr>
<tr>
<td></td>
<td>REPRESENTED BY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accumulated fund at 1 January 2017</td>
<td>1,019,668</td>
</tr>
<tr>
<td></td>
<td>Less: surplus of expenditure over income</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Add: surplus of income over expenditure</td>
<td>96,892</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,116,560</td>
</tr>
<tr>
<td>Notes to Financial Statements for year ended 31 December 2017</td>
<td>2017 (€)</td>
<td>2016 (€)</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>1 FIXED ASSETS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment bought forward</td>
<td>22,477</td>
<td>31,154</td>
</tr>
<tr>
<td>Additions during the year</td>
<td>10,100</td>
<td>6,853</td>
</tr>
<tr>
<td>Disposals during the year</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>32,577</td>
<td>38,007</td>
</tr>
<tr>
<td>Less: depreciation 25%</td>
<td>2,773</td>
<td>9,440</td>
</tr>
<tr>
<td><strong>NETT TOTAL</strong></td>
<td>29,804</td>
<td>28,567</td>
</tr>
<tr>
<td><strong>2 DEBTORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade debtors</td>
<td>464,523</td>
<td>425,708</td>
</tr>
<tr>
<td>Other debtors</td>
<td>133,260</td>
<td>141,867</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>597,783</td>
<td>567,575</td>
</tr>
<tr>
<td><strong>3 CREDITORS</strong> (amounts falling due within 1 year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase ledger balances</td>
<td>67,091</td>
<td>36,149</td>
</tr>
<tr>
<td>Trade creditors</td>
<td>458,302</td>
<td>406,904</td>
</tr>
<tr>
<td>PAYE owed to Inland Revenue</td>
<td>18,573</td>
<td>30,912</td>
</tr>
<tr>
<td>Taxation</td>
<td>(895)</td>
<td>834</td>
</tr>
<tr>
<td>Professional fees</td>
<td>8,454</td>
<td>5,274</td>
</tr>
<tr>
<td>Other sundry creditors</td>
<td>74,398</td>
<td>5,058</td>
</tr>
<tr>
<td>EU and other projects</td>
<td>137,492</td>
<td>115,820</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>763,415</td>
<td>600,951</td>
</tr>
</tbody>
</table>

4. 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 31st December 2017, which was £1 to €1.125373 (2016: £1 to €1.171969) 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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**Systematic Approach to Quality Management in PM**
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Application deadline: 11 April 2018

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**EPMA Powder Metallurgy Summer School 2018**
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Application deadline: 2 May 2018

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**Additive Manufacturing AM-Motion Summer School**
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