Annual Report 2019

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

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### Promoting Powder Metallurgy Technology

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### Representing the European Powder Metallurgy Industry

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Dear Members, PM Colleagues and Partners,

It is an honour for me to share last year review of our Association’s performance and achievements.

The performance of Our European PM industry varied from sector to sector during 2019, reflecting different market conditions. The Press & Sintered industry showed a decline, related to downturn in automotive production in Europe during 2019. However, other metal powder consuming industries related to our association showed a more positive development. Nevertheless, PM is at the forefront of technology and is the preferred choice for many new applications in a number of EU industries, including the Automotive Industry as well as the Medical, Aerospace and Engineering sectors.

It is well recognised that our industries benefit from greater efficiency, cost effectiveness, innovation, and agility, through PM. Therefore, I strongly believe that the 2019 slowdown in some sectors will be balanced in the future by growth in other sectors. Additive Manufacturing, Functional Materials for EV solutions like motors, magnets, as well as energy storage carriers are examples of new sectors being at the forefront of technology development and preparing PM for successful transition into future life.

The work done by EPMA adds value to its members by fostering networking 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. These concepts deliver results: new metal parts are being introduced into the market.

Several of EPMA sectorial groups from Press & Sinter, Metal Injection Moulding, Additive Manufacturing, Hot Isostatic Pressing, Hard Materials to Functional Materials are interlinked in the same ecosystem. The success of our PM industry is linked to how companies handle business activities across the board.

The extensive European Research & Development Network works closely on PM development, with all industry players and across the sectorial groups.

EPMA corporate membership in 2019 are among the highest level of membership and highest number of countries represented, confirming our presence in international markets.

In 2019 EPMA organized a large number of seminars in addition to the EuroPM congress in Maastricht. Sectoral groups organised seminars: HIP seminar, AM seminar, MIM Seminar, Functional Material Seminar. The sectoral group on Environment Health, Safety and Quality was extended with activities on Life Cycle Analysis and ISO networking, on top of the continuous follow up of REACH.

All of these events outlined the vast array of possibilities offered by PM technologies. 2019 also saw the second session for the PMLife project and the third edition of the PMLife project.

For dissemination of the results, 2019 was the first year for the SAM project and the SUPREME project. Both projects will continue in 2020. The SUPREME project will have a workshop in France just before the summer break and anyone interested is welcome to join the event. The SAM project will end in 2021. EPMA is actively working on finding new European Projects and any member interested to share an idea is much than welcome to do so.

The standout event in 2019 was, of course, the Euro PM2019 congress & Exhibition that took place in Maastricht, with more than 1,100 participants over 3 full days.

In 2020, 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 third edition of the PMLife project. All members can count on the success of our association, outlined at 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 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.

EPMA continue to evolve in order to align with future market conditions. As a consequence of this EPMA will close the UK office during 2020 and merge activities with the office in France in order to improve efficiencies. The UK office was established in 1989, during the creation of EPMA. I would like to take the opportunity and direct my sincere appreciation for the professional work being done by the UK organisation. At the same time I would like to convey to all colleagues who decided not to join the new adventure in France, my best wishes for the future.

Thanks for your continuous support!
Yours faithfully

Ralf Carlström
EPMA President
Activity Report 2019

2019 has seen the EPMA developing its service to members in terms of networking, education and training, lobbying through activities with other European associations, fostering synergies and promotion of PM.

The Euro PM2019 Congress & Exhibition was successfully held in Maastricht with over 1100 attendees from 55 countries and a large exhibition area with more than 150 booths. 64 technical sessions took place where 200 scientific and technological lectures were presented, 60 posters were also presented. Twelve Special Interest Seminars ran. A new topic was added, with 7 “Campfires” that were well attended and where participants have had the opportunity to openly discuss topics proposed by some companies. This year again, thanks to the high participation of the AM community, the event ended up being the biggest technical event for AM in Europe. 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 seven sectoral groups: EuroAM (Additive Manufacturing), EuroFM (Functional Materials), EuroHM (Hard Materials), EuroHIP (Hot Isostatic Pressing), EuroMIM (Metal Injection Moulding), EuroPress&Sinter and the new EHQS (Environment, Health, Quality and Safety) 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 committees and chairperson of all sectoral groups for their support in the preparation and chairing of the events, either during Euro PM 2019 Congress & Exhibition or during any of the seminars.

Renewal of the Board & Council: During the General Assembly in March, the Board and Council were elected. The new President is Ralf Carlström from Höganäs AB and the new Treasurer Christoph Laumen from Linde Gases Division. 2 companies entered the council: Polmo Łomianki SA and Pometon SpA.

EPMA Training was organised, with the Young Engineer’s Day, the Summer School, the PM for Beginners session, the second year for EPMA Lifelong training programme PMLife with the organisation of three modules: Powder and Hard Metals, Press & Sinter and Additive Manufacturing. Some participants joined the internships.

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 European projects SAM and 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, Brexit and Sustainability.

You will find more information on the different events which happened in 2019 on the following pages, in addition to an overview of the forthcoming programme for 2020.

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

Dr Lionel Aboussouan, Executive Director
General Assembly

The 32nd EPMA General Assembly took place on March 21-22 in Brussels. Attendees experienced an extended event with two keynote speeches “Regulatory developments of interest to the Powder Metallurgy Industry” from Mr Guy Thiran (Eurometaux) and “Advanced Lightweight Design-Challenges and Trends” from Mr Thilo Bein (European Automotive Research Partners Association (EARPA)).

Participants also got to join sectoral group meetings and attend the legal aspects of the general assembly receiving updates from EPMA’s activities from 2018 and looking ahead to 2019 and 2020.

The Annual Networking Dinner was held at the Brussels Atomium restaurant, 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.

This 32nd General Assembly was the last one chaired by Mr Philippe Gundermann (Eramet), EPMA President for the past 6 years. EPMA would like to thank Mr Gundermann for his involvement and dedication for the past 6 years and would like to welcome the new EPMA President, Mr Ralf Carlström (Höganäs AB).
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 2019-2022 Period:

**Representing the following sectors:**

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

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

**Hard Materials/Refractory Metals**
Dr Heinrich Kestler (Plansee SE, Austria)

**Hot Isostatic Pressing**
Mr Martin Brear (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 Cèsar Molins (AMES SA, Spain)

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

**Executive Board Members for the 2019-2022 Term**

Seven current members of Council Executive Board:

**President**
Mr Ralf Carlrström (Höganäs AB, Sweden)

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

**Treasurer**
Dr Pierre Blanchard (Erasteel Kloster, Sweden)
Day-to-day management is in the hands of the Executive Director and his staff.

**EPMA Secretariat**

- **Lionel Aboussouan**
  Executive Director

- **Andrew Almond**
  Marketing & Exhibition Manager

- **Kate Blackbourne**
  Congress Manager

- **Jacqueline Peters**
  Accountant

- **Rhianna Jones**
  Membership, Database and IT Co-ordinator

- **Andy Cormack**
  Marketing Assistant

- **Emma Powell**
  Event Assistant

- **James Shadbolt**
  Videographer

- **Sheree Maher**
  Membership, Database and IT Co-ordinator (maternity cover)

- **Peter Blythe**
  Graphic Designer

- **Sabine Hazoumé**
  Event & Project Co-ordinator

- **Delphine Nicolas**
  Event & Project Co-ordinator

- **Bruno Vicenzi**
  Technical Manager

- **Kenan Boz**
  Technical Manager

**Staff leaving the EPMA Secretariat in 2019**

- **Karen Fisher** – Graphic Designer (June 2019)
- **Olivier Coube** – Technical Director (March 2019)
In 2020, 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 PM2020 Congress & Exhibition will take place in Lisbon, Portugal, 4 - 7 October at the Lisbon Congress Centre (CCL). The ideas introduced in the past will apply to the 2020 event. For example, the Campfires will run again and will be organised inside the exhibition area. An “Industry Corner” will be organised also inside the exhibition area, where industrial Members will have the opportunity to make short presentations. End User’s Day will once again run during Euro PM2020 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. More details will be released via the Euro PM2020 Congress & Exhibition event website.

EPMA Seminars
There will be 7 EPMA seminars in 2020: starting in January with, for the first time, a showcase on automotive parts made or potentially made of PM, the targeted audience being end users to teach them about which parts are already made in PM. HIP in March on “Improving safety and innovation offshore”, Functional Materials in March on “Applications of powder based functional materials”, Press & Sinter in April on “Opportunities for PM due to electrification”, AM in May on “Powder based metal additive manufacturing technologies”, Hard Materials Summer in June on “Binder phases in composite hard materials”, and the last seminar, in July, will be a workshop for the European Project SUPREME. Further information, dates and online bookings can be found on www.epma.com/seminars

EPMA Training and Education
The 20th Annual EPMA Summer School will be held in Spain, 20-24 July. 60 participants are expected. Further information and dates for training events can be found on www.epma.com/summerschool
The lifelong learning program PMLife will have three weeks organised: Powder & Hard Metal in Sweden, Press&Sinter in France, AM in Germany; all can be attended separately. An additional three-week internship can also be attended if participants wish. This training will be an opportunity for individuals to learn, but also for companies to send their staff to be trained on specific PM processes to deepen their knowledge. More information and registration forms can be found here: www.pmlifetraining.com

Club Projects & European Projects
Several projects will be supported in 2020 – some continuing from 2019 as well as some new for this year. The SAM European project continues in 2020 on “Raising awareness of AM” http://www.skills4am.eu/ The SUPREME Project, focusing on optimising powder metallurgy processes throughout the supply chain will end in 2020. www.supreme-project.com
Seven Club Projects are running over 2020. Three of these are from HM, two of them from Press&Sinter, one from HIP and one from the AM Sectoral Group.
For more information please view our websites: www.epma.com/projects/r-d-club-projects
EPMA welcomes any new ideas for Club Projects or European Projects. Do not refrain from contacting Bruno Vicenzi - bv@epma.com or Kenan Boz - kboz@epma.com with any ideas, proposals or requests.

Environment, Health, Quality and Safety group (EHQS)
The EHQS group was revitalised in 2019. This group follows REACH, but also initiates joint efforts on LCA (Life Cycle Analysis) and on ISO. EPMA became Liaison Member in 2019 for the ISO TC261 on Additive Manufacturing and should become Liaison Member for the ISO TC119 on Powder Metallurgy. Thus, all EPMA Members will have the opportunity to be kept up to date with recent developments and will have the opportunity to join efforts on Standardisation. EPMA provides an E-Mail newsletter every two months to ensure that Members are up to date with news on all those topics. If you are not already on the list, do not hesitate to contact Kenan Boz - kboz@epma.com. For any questions related to LCA contact Bruno Vicenzi - bv@epma.com.
Representing the European PM Industry

EPMA Membership 2019
Working Groups
Sectoral Groups

EPMA Membership 2019

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 2019

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<th>Count</th>
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<td>Full Members</td>
<td>134</td>
</tr>
<tr>
<td>Associate Members</td>
<td>57</td>
</tr>
<tr>
<td>Individual Members</td>
<td>56</td>
</tr>
<tr>
<td>Affiliate Members</td>
<td>8</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>255</strong></td>
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New members in 2019

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<tr>
<td>Full</td>
<td>9</td>
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<tr>
<td>Associate</td>
<td>8</td>
</tr>
<tr>
<td>Individual</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
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Countries Represented: 27

EPMA Membership by Country 2019 (Corporate Members only)
EPMA Membership 2019

New Members in 2019
EPMA was pleased to welcome the following companies into membership during the year:

**Full Members**

- CMK
- CP
- FORMATEC<br>CERAMICS
- M<br>agna<br> I<br>NDUSTRIALS
- MUT
- REM
- TAG

**Associate Members**

- Fraunhofer<br> IHT
- HP
- Kingway Legend Technology Limited
- mbi
- Orton
- Tritone
- xitiz<br>Technomech LLP

**Individual Members**

- Castro, Francisco
- Coube, Olivier
- Gobber, Federico Simone
- Hunt, Adam
- Li, Ruidi
- Palousek, David
Working Groups

Environment, Health, Quality & Safety (EHQS)

EPMA has combined all its activities in Environment, Health, Quality and Safety in the working Group of EHQS in 2019 for monitoring European legislation and informing members, providing manuals and other reference data for both internal and external use, carrying out collaborative technical projects and maintaining liaison with trade associations and other relevant bodies.

There are three subgroups in EHQS. These are ISO (Standardization and related topics), Chemical Management (Regulations and Legislative issues such as REACH, etc.) and LCA (Life Cycle Analysis Assessment of Environmental Impacts)

ISO

ISO Group first meeting in Chantilly: First meeting of EPMA ISO group has been done on 3rd of September in the Technical office of EPMA (Chantilly, France) with the attendance of Olivier Coissac (Union de Normalisation de la Mécanique), Otto Björnberg (Swedish Institute of Standards), Mats Larsson (Hoegenas AB), Filip Francqui (Granutools), Thomas Eschner (GKN Sinter Metals GmbH), Bruno Vicenzi (EPMA), Kenan Boz (EPMA), and Lionel Aboussouan (EPMA).

EPMA is the official liaison of ISO/TC261: EPMA has been appointed the official liaison office for TC261, Additive manufacturing Technical committee of ISO. The focus will be on the committee JG63 which works on characterization of powder flow properties AM applications. EPMA is also sponsoring SCS of TC 119, Technical Committee for powder Metallurgy through UNE (Spanish Association for Standardization) with the chairing of Dr. Jesús Peñañuel.

Chemical Management

EPMA has followed new coming EU regulations and legislation on Chemical Management through ECHA. The topics of focus were metal related restrictions such as on cobalt and lead, mapping of the “Chemical Universe” for improving REACH and CLP nanoflons and industrial emissions. A briefing has been given by Hugo Waeterschoot from Eurometaux at the annual meeting of EHQS in EuroPM 2019, Maastricht. EPMA continued informing its members with a newsletter that has been enlarged to cover not only REACH but also all topics related with Environment, Health, Quality and Safety with a new name: EHQS Newsletter.

Life Cycle Analysis

In 2019 the group, with the help of Volker Arnhold (PM Solutions), has been actively working to promote a Club Project on LCA of the whole Press&Sinter production route for low alloy steel parts, inclusive of powder production, to obtain a quantitative assessment of the sustainability indicators for powder metallurgy, allowing direct comparisons to competing technologies, but a sufficiently large consortium must be built. For more information please contact Bruno Vicenzi - bv@epma.com: a first “kickoff” meeting is due to happen in early 2020.
Sectoral Groups

**EuroAM**

**Chairs:** Dipl.-Ing Claus Aumund-Kopp (Fraunhofer IFAM)  
Mrs Adeline Riou (Aubert&Duval)

During EuroPM Congress & Exhibition the programme included an open meeting of the EuroAM with the presentations of Adeline Riou on promotional and educational activities, Claus Aumund-Kopp on trends survey of 2019, Keith Murray on Standardization activities and Kenan Boz on EPMA activities and projects. Also, Filip Francqui from Granutools gave a presentation on Powder Flow Characterization as an invited speaker.

EPMA, through the collaboration of the EuroAM Sectoral Group, have launched their 3rd Edition of the well-received Introduction to Additive Manufacturing Technology booklet. This was launched at the Euro PM2019 Congress & Exhibition in Maastricht. The revised 68-page edition includes content from over 100 contributors and now boasts over 60 case studies and contains new and revised content on:

- Overview of standardisation activities in the field of additive manufacturing
- Metal Binder Jetting and Sintering
- Non-Destructive Testing for AM parts – Ultrasonic Testing

‘This is still a great introductory booklet for potential users of the Additive Manufacturing (AM) process, as it provides a neutral view of the main AM processes and how to get the most out of this new manufacturing process’ explained Andrew Almond, EPMA’s Marketing Manager. He added ‘it is with great thanks to Adeline Riou and Claus Aumund-Kopp, who are the main drivers of these editions, that the newly revised edition has been able to be produced, as well as the support of the EuroAM Sectoral Group, to highlight the components that can be manufactured through the AM processes.’

To download a PDF copy of the Introduction to Additive Manufacturing Technology booklet 3rd Edition, please go to the [EPMA.com website](http://www.epma.com) or alternatively if you would like to order a hard copy version, please email Andy Cormack, EPMA Marketing Assistant, [ac@epma.com](mailto:ac@epma.com) and one will be posted out to you. Please note that we can only send hard copy brochures to European postal addresses.

If you would like to know more about the EuroAM Sectoral Group or join the mailing list to keep up-to-date on the group’s activities, please use the following link to subscribe, selecting EuroAM or AM in the relevant fields [www.epma.com/epma-mailing-list](http://www.epma.com/epma-mailing-list).

**Intro to AM 3rd Edition**

**Intro to AM 3rd Edition**

**EuroFM**

**Chairs:** Dr Sebastian Hein (Fraunhofer IFAM)  
Mr Peter Kjeldsteen (Sintex a/s)

The EuroFM Sectoral Group met twice during the year 2019: first in a short, joint meeting with Euro Press&Sinter and EuroMIM on the occasion of the EPMA General Assembly in Brussels in March, and then in the Open Meeting at the Euro PM2019 Congress & Exhibition in Maastricht, The Netherlands, on Monday 14th October 2019. This session was chaired by the Sectoral Group chairs and hosted some presentations:

- Activities within the EPMA and EuroFM in 2019 and 2020 (B.Vicenzi, EPMA)
- Review of CEA activities on Functional Materials (Dr V. Iosub, CEA-Liten)
- Thermal spray to reach high static coefficient of friction (COF) (Dr P. Kjeldsteen, Sintex)

During the year, a seminar was held in Bremen (3-4 April 2019), and a new one was organised to be held this year in San Sebastián (24-25 March 2020); in addition, two Special Interest Seminars were organised in Euro PM2019, both addressing the subject of porosity as a function and its applications. The Steering Committee, that met via conference calls somewhat regularly, also decided to start the preparation of a “Introduction to Functional Materials” booklet, that will be a very valuable tool to disseminate the information about this class of materials, the technologies and the applications.

The group also thanks Volker Arnhold (PM Consulting) for accepting to temporarily co-chair the group for some months.

The next meeting of the EuroFM will be planned at the Euro PM2020 congress in Lisbon, Portugal, 4-7 October 2020.

For further information on the EuroFM sectoral group please contact EPMA (Bruno Vicenzi - [bv@epma.com](mailto:bv@epma.com)).

**EuroHM**

**Chairs:** Dr Steve Moseley (Hilti AG)  
Prof Luis Llanes (UPC)

The European Hard Materials Group (EuroHM) has started various club projects in 2019 such as Micromech II and SimuCRACK IV in addition to ongoing projects such as UFTH and Kinetic. During the EuroPM 2019 Congress & Exhibition, EuroHM had an open meeting in the memory of Dr.Leo Prakash. During the meeting Dr.Olivier Coube gave an emotional speech about the past memories with Dr. Leo Prakash, as the former Technical director of EPMA. Two keynote presentations have taken place through the meeting. The first one was from Dr.Björn Hoschke of Kennametal and the second one was from Dr. Susanne Norgren of Sandvik. During the Congress, two Special Interest Seminars (SIS) were also organized on “Nano, Near-nano and Ultrafine Materials”. A total of six presentations has been done during the Special Interest Seminars.
Chairs: Dr César Molins (AMES)  
Mrs Caroline Larsson (Höganäs AB)

There were two meetings of the EuroPress&Sinter Sectoral Group during the year 2019: the first was a short, joint meeting with EuroMIM and EuroFM on the occasion of the EPMA General Assembly in Brussels in March, the second was the Open Meeting on 16 October 2019 at the Euro PM2019 Congress & Exhibition in Maastricht, The Netherlands. This latter meeting, chaired by Dr César Molins (AMES) and Caroline Larsson (Höganäs), spanned over the whole Wednesday afternoon, and included several presentations, with a focus on the Club Projects running and those that could be launched, the Life Cycle Assessment project and the data from the EPMA surveys:

- Activities within the EPMA and EuroPress&Sinter in 2019 and 2020 (B. Vicenzi, EPMA)
- Club Projects: ongoing, upcoming, proposals: DfS2 and HTS2 (Prof. A. Molinari, UniTN), Damage Prediction (Prof. J. Torralba, IMDEA Materials)
- Life Cycle Assessment Activity: Status and Next Actions (Dr V. Arnhold, PM Consultants)
- Press&Sinter Statistics and Trends Survey (B. Vicenzi, EPMA)

During the year, a showcase was organised together with the benchmarking company A2MAC1 in Hary (initially scheduled in December 2019, then moved to 15th January 2020). Another seminar on “Opportunities in PM due to electrification” has been planned for 1st April 2020 in Brussels. Two Special Interest Seminars were organised during the congress. On the topic of ‘The future of HIP’ the speakers were Tomas Berglund (Sandvik), Gabriele Masi (Baker Hughes). The speakers of the SIS seminar on ‘Optimising the Properties of AM parts Using Hot Isostatic Pressing’ were Dr Harsharn Tathgar (DNV-GL), Dominik Ahlers (University of Paderborn) and Tanja Pleiffer (Pankl Systems).

The next meeting will be planned at the Euro PM2020 congress in Lisbon, Portugal, 4-7 October 2020. For further information on the EuroPress&Sinter sectoral group please contact EPMA (Bruno Vicenzi - bv@epma.com).

Dr César Molins and Mrs Caroline Larsson (Euro Press & Sinter Group Co-Chairs)
EPMA PM Summer School 2019

The 2019 EPMA Powder Metallurgy Summer School took place in Trento, Italy, 15-19 July 2019 and provided a comprehensive overview of all aspects of Powder Metallurgy to over 60 students from across Europe and industry backgrounds. The 5-day programme was hosted by Prof Alberto Molinari of University of Trento and coordinated by Dr Marco Actis Grande of Politecnico di Torino and Dr Christian Gierl-Mayer of TU Vienna.

Topics covered in this year’s programme included Additive Manufacturing, Characterisation, Fundamentals of Sintering, Hard Materials, Metal Injection Moulding and Powder Manufacturing. The classroom sessions were supplemented by group problem solving activities, laboratory work and a case study on the SUPREME Project, by Dr Iñigo Agote Beloki (Tecnalia) and Dr Marta Dai Pré (Dellas), who presented the project and the first results so far.

Social events for the school were held with Welcome Drinks on the Monday evening at the Scrigno Del Duomo Ristorante, and a Networking Dinner on the Thursday evening at the Trattoria Piedicastello, to allow the students more time to mingle after busy days in the classroom. The EPMA PM Summer School 2019 was dedicated to the memory of founding contributor Dr. Bob Moon, who passed away earlier in the year, with a toast being raised as part of the Thursday evening dinner.

EPMA PM Summer School 2020 is currently in the planning phase and will be held in the University of Castilla la Mancha, Ciudad Real, Spain, with more details available from the EPMA website.

Young Engineers

The Young Engineers two-day programme was held during the Euro PM2019 Congress & Exhibition in Maastricht, as part of EPMA’s commitment to help promote and develop the industry of Powder Metallurgy for future generations of Engineers. Applications were generally open to all students in subjects related to PM, and we welcomed 25 students from various Universities and Countries.

The students undertook a two-day programme including lectures on the PM process; an exhibition tour allowing them to question industry experts working in PM; a networking dinner and a tour of a local PM factory - Asbury Graphite and Carbons. This gave the students an appreciation of the variety of PM employment areas and possibilities.

Here is what the Euro PM2019 Young Engineers had to say about the event:

“Amazing opportunity, really glad that I had this experience”
“Programme is very useful for students who will focus on PM.”
“It was very interesting and I learnt a lot.”

EPMA looks forward to welcoming Young Engineers to the PM community!
Developing the Powder Metallurgy Future

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

HIP Seminar

On February 11-12 2019, EPMA hosted the HIP seminar “Rapid Cooling for Conventional HIP” which took place in Sint-Niklaas, Belgium. The two days featured presentations from 14 industry experts, an open discussion about the future of HIP as well as a site visit to the nearby EPSI facilities. The “Rapid cooling for Conventional HIP” Seminar was organised by the Hot Isostatic Pressing Group (EuroHIP) of the EPMA, with support from its members.

FM Seminar

On 3 - 4 April 2019, EPMA hosted the 2-days Functional Materials seminar “Processing of Functional Materials” which took place in Bremen, Germany. 18 experts gave presentations ranging from Powder-in-Tube MgB2 superconducting wires for wind turbines, to Additive Manufacturing of Metallic Glasses, to Permanent Magnets in future cars. An excellent dinner at the relaxing El Mundo restaurant in the old city docks area gave the chance for fruitful networking, and the final tour to the IFAM Fraunhofer impressive institute facilities completed the exciting experience.

SAM Project

EPMA is currently preparing five different videos/animations for the SAM (Sector Skills Strategy in Additive Manufacturing) project. So far three videos have been completed and the team is working on the two new videos. The videos will be used in a vast range of events and activities by consortium partners in the project to raise awareness for additive manufacturing, and also will be available on the web via LinkedIn and YouTube.

SAM promotes the AM sector by engaging with different target groups, namely existing workforce, students from primary school to higher education by putting in an awareness campaign, stimulating the creativity of the partnership.

SAM project consortium is composed of 16 partners of which EWF (European Welding Federation) is the coordinator. The consortium is strongly committed with the aim of supporting the growth, innovation and competitiveness of the AM sector since all the partners have expertise in manufacturing technologies and/or in the provision of education.

For further information on the project please contact EPMA (Kenan Boz - kboz@epma.com).

MIM Seminar

The EuroMIM 2019 EPMA Metal Injection Moulding seminar was a two-day seminar for the ‘Entire MIM Supply Chain’ which took place on 4-5 June at the beautiful venue of Fischingen Kloster in Switzerland and was attended by 35 participants. It was an opportunity for them to benefit from lectures by some MIM Industry experts, as well as case studies and interactive sessions which were particularly appreciated by most of the group. The participants also enjoyed the social event before dinner which consisted of a guided tour of the Monastery Brewery, and the seminar ended successfully with the site visit to Parmaco who was hosting the event in coordination with EPMA.

AM Seminar

On 13 - 15 May 2019, the EPMA-organised seminar Powder Based Metal Additive Manufacturing Technologies covered powder based metal AM technologies and the whole AM manufacturing chain, including aspects such as Design for AM, Powder for AM, Quality Assurance and Standardization in AM as well as Post-AM Treatment. This intensive three-day seminar was hosted by the Centre for Additive Manufacturing - Metal (CAM2) at Chalmers University of Technology, Gothenburg, Sweden and included industrial visits to Arcam Academy and Digital Metal as well as the facilities at CAM2. The event has been truly successful and attracted 52 participants who listened to the presentations from 21 industry experts.
Life Cycle Analysis

LCA stands for Life Cycle Analysis. It is a method of determining the total environmental impact of a product during its entire lifecycle, i.e. extraction of raw materials, production, transport, construction, maintenance, use, end-of-life and recycling. This involves a broad examination of the service life of the product - a holistic approach. The basis for LCA are data coming from industries and then aggregated so that averaged data do represent the impact of a specific product (or service) over the environment. LCA is one of the tools that can be used among other sustainability management tools for communication, analysis, benchmark, competition between products or services. LCA is based on LCI (Life Cycle Inventories) that are like the Lego® bricks: you have to connect the bricks for the different materials and activities used (e.g. metals + electricity + manufacturing) to build your product and you obtain the overall life cycle assessment for your product. Thus, the LCA for a Press&Sinter part would basically (and very shortly explained) be the sum of several LCI for powder production, transport of the powder, pressing the powder into a part, sintering the part, finishing steps, production of the electricity used, production of the gas used, and so on. Each Inventory is like a balance sheet that contains a long list of items: on the input side there are the consumption of energy, consumption of raw materials and all other inputs, and on the output side the release to the environment like Green House Gas emissions, Water Depletion, Resource Depletion, etc.

To have reliable Inventories there is a need to have at least 3 companies to average the figures.

EPMA is committed to provide the LCI for Powder and for Parts, starting with Press&Sinter, MIM and, potentially, AM parts. Following a relaunch of the activity in 2019 that was fostered by the increasing pressure from stakeholders on sustainability issues, that the PM community will feel as more and more urgent in the next years, this will be organised like a Club Project where EPMA will play an important role as neutral data collector and manager, but due to the increasing attention in the funding bodies to sustainability studies, also bigger funded projects could later be initiated, the disadvantage being the amount of additional paperwork and effort needed, the uncertainty on the success of the application, and the delayed start.

To reach the goal powder manufacturers and part makers need to join the club project, and EPMA already collected the positive opinion from most of the powder producers and the larger part makers, but also R&D centres who have knowledge on LCA and may help to close the gap in the data collection or provide already existing information. For more information please contact Bruno Vicenzi - bv@epma.com: a first “kickoff” meeting will happen in early 2020.

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:

- **AM & HIP**
  The AM & HIP project wants to look into the combination of Additive Manufacturing and Hot Isostatic Pressing to reduce time and cost for the whole process chain which is the main obstacle of AM currently. The project had an interim meeting during EuroPM2019 in Maastricht with the participants Metal Tech Co., EPSI, TAG srl, Quintus Technologies, GKN and Carpenter.

- **Press&Sinter**
  High Temperature Sintering 2 (HTS2): Following a successful first stage named HTS that had its final event at the Euro PM2018, in 17 October, at the NH Hotel in Maastricht, the Kick-Off meeting for the new club project “High Temperature Sintering 2” was held. 17 participants were present at the meeting, representing all the member companies of the Consortium and all the contractors.

  The project aims at studying the sintering behaviour and the mechanical performance of special Press&Sinter materials specifically intended to be sintered at higher temperature, that allow to achieve higher densities and better properties, and also to reduce the Ni content in the alloys. The first stage gave satisfactory results in terms of tensile properties, whilst the second stage is moxre devoted to dynamic properties, via impact and fatigue testing; moreover, also real industrial parts will be sintered and characterised. The final meeting for HTS2 will take place during the next Euro PM2020 in Lisbon.

  For further information on the HTS2 project please contact EPMA (Bruno Vicenzi - bv@epma.com).

- **MicroMech II**
  The second stage of Micromech project started with a kick-off meeting in London hosted by National Physical Laboratory (NPL) on 10 May 2019 with the participation of CERATIZIT Luxembourg S.a.r.l, Hilti Group, Kennametal, Seco Tools and Sandvik Coromant, CEIT (Centro de Estudios e Investigaciones Técnicas de Gipuzkoa), NPL and UPC (Polytechnic University of Catalonia).
Club Projects (Continued)

Design for Sintering 2 (DfS2)

‘Design for Sintering 2 – Improving the design procedure accounting for the anisotropy of dimensional changes’ is the follow-up of the previous DfS ‘Design for Sintering – Dealing with the anisotropy of dimensional changes project’, that was concluded in January 2018. It is a study carried out by the University of Trento for 4 Powder Metallurgy companies: this second stage will last three years and will focus on the enlargement of the reference database and a deeper study of the mechanisms causing anisotropy of shrinkage. The Kick-Off meeting was held in Milan on 20 March 2019 and the activity is underway.

For further information on the DfS2 project please contact EPMA (Bruno Vicenzi - bv@epma.com).

SimuCRACK IV

The project ‘Simulation of Fatigue Crack Growth in Hardmetal at a Mesoscopic Scale’ has its kick-off meeting at the Technical office of EPMA in Chantilly, France on 15 November 2019. Prof Luis Miguel Llanes (UPC), Ken Mingard (NPL) and Keng Jiang (RWTH Aachen) gave detailed presentations about the fourth stage of the project. The project intends to develop a numerical computational method to simulate on computer the Fatigue Crack Growth scenarios of real life.

UFTH III

The ‘Ultrasonic Fatigue Testing of Hardmetals in the gigacycle regime Stage III’ project reached its end and had its final meeting at the Technical University of Wien, on 2 July 2019. The participants were CERATIZIT Luxembourg S.a.r.l, Hilti Group, Kennametal and Hyperion Materials.

Data Collection

Data collection within the PM industry is one of the base activities of EPMA and consists in monitoring the status of the industry in terms of production values and other indicators. Due to the variety of materials, technologies and sectors, this activity is mostly carried out by sector, trying to gather as many entries as possible from the different companies operating in Europe. In 2019, the following data was collected:

• Powder production in 2018
• Statistics for PM, in particular for Press&Sinter, MIM, AM, HIP, HM production in 2018
• Benchmarking for MIM and Press&Sinter, 2018
• Trend survey for MIM, AM, HIP, Press&Sinter 2018

The turnout on some of the survey was good and better than previous years, but participation has to improve to have more reliable estimates of the market values and a better understanding of the trends.

Some of the data, like the benchmarking data, are strictly confidential (specific Non-Disclosure Agreements are signed when requested) and their distribution is only for the participants, always in anonymous form; the latter is valid for all the data collected, that are always shown as aggregates or averages and no reference to the actual participant companies is ever made public.

In early 2020, EPMA will collect data about 2019 and all member companies will be warmly asked to collaborate in the process, so that EPMA may in turn give them back a reliable picture of their industry!

For further information on the data collection activities please contact Bruno Vicenzi - bv@epma.com.
EU Funded Projects

SUPREME

The SUPREME project entered its last year of activity and the technical work is accelerating towards the final results expected by the end date of August 2020. The project aims at the optimisation of several PM processes, starting from powder production and development of new powders (for AM and MIM), up to the AM, MIM and HIP processes and to the performance of parts for several sectors (automotive, medical, cutting tools, aeronautics, moulding tools), both in terms of technical properties and of efficient use of resources and energy, and emissions reduction. 16 partners are involved, under the coordination of CEA-Liten (France). EPMA is leading the dissemination and exploitation workpackage.

During 2019, EPMA organised the publication of the third and fourth SUPREME newsletter, uploaded to the SUPREME website and distributed to all interested contacts. In the Summer School event, a special lecture/workshop on the achievements in the field of injection moulding of diamond cutting tools has been presented by partners Deltas, Tecnalia and MBN. The presentation has been recorded and will be available on the SUPREME website. Another presentation was given by the coordinator Dr. Thierry Baffie of CEA at the PM Life Additive Manufacturing week in Dresden (26-30 August), and at the EuroPM 2019 Congress & Exhibition, the results from SUPREME were the subject of 3 oral presentations (from CEA, GKN, and IPC) and a poster (from RHF).

The EPMA has disseminated the information about the project at various international events, including PowderMet2019 in Phoenix (AZ), USA. The Consortium also met several times by remote conference calls (Executive Board meetings with all Work Package leaders) and two times in person, in Brussels in March and in Sheffield in September. The next in person consortium meeting will be held in San Sebastián (Spain) in March 2020. Plans for dissemination in 2020 include many external events but especially the SUPREME Experts Workshop in Senlis (France) on 9 July. For further information on the project and the upcoming workshop please contact EPMA (Bruno Vicenzi - bv@epma.com, Sabine Hazoumé - sh@epma.com).

PM Life, the lifelong learning training project co-funded by EIT Raw Materials, has completed its second year: The three weeks organised in 2019 (Powder and Hard Materials in Chalmers, Göteborg, Sweden, Press&Sinter at INP Grenoble, France, and Additive Manufacturing at Fraunhofer IFAM Dresden, Germany) have shown a slightly improved participation compared to 2018, that means that the interest is raising for this new training opportunity. EPMA has made a special effort in advertising the modules, with a dedicated booth at Euro PM2019 and promotion in many external events, like, for instance, the Formnext 2019 in Frankfurt, plus advertisements on technical magazines and a number of promotional videos for use on social media. The project will continue in 2020, when the same weeks will be organised, with the following timetable:

- Powder and Hard Materials - 1 - 5 June 2020, Gothenburg, Sweden
- Press and Sinter - 15 - 19 June 2020, Grenoble, France
- Additive Manufacturing - 24 - 28 August 2020, Dresden, Germany
- Internships - September - December 2020, Various Locations

PM Life is a training programme aimed at professionals, either working in companies or in universities, university graduates and PhD students, and at unemployed individuals with an interest in PM, to help develop the future of Powder Metallurgy. The participants can pick their specific module to improve their knowledge in their preferred sector but may also attend more weeks in the programme to learn about other fields of the PM industry. Each week is hosted in a different venue across Europe providing a wide range of experience and contacts within the powder metallurgy industry. During the training module, much time is devoted to lab sessions, including real lab experiences, special workshops, lab visits and plant visits to PM companies nearby whose activity is related to the subject of the week; this practical side turns out to be particularly appreciated by participants. Due to the relatively small size of the groups, the interaction and networking among trainees and trainers is intense and fruitful. At the end of each module there is a short exam after which a certificate will be presented. PM Life also offers an optional three weeks internship either in a factory or in a university, to practice in detail in a working environment what has been discussed during the course. Thus, PM Life provides the knowledge and experience needed to help the trainees improve their career. For fees and all additional information, check the PM Life website (https://www.pmlifetraining.com), or contact EPMA (Delphine Nicolas - dn@epma.com, Bruno Vicenzi – bv@epma.com).
Euro PM2019 Congress & Exhibition

Maastricht, at the centre of Europe, played host city to this year’s Euro PM2019 Congress & Exhibition. Located in the southeast of the Netherlands, close to the borders of both Belgium and Germany, Maastricht being one of the oldest cities in the Netherlands with historical architecture and culture dating back to the Romans, made for an interesting backdrop for the international Powder Metallurgy community to experience.

The Maastricht Exhibition Congress Centre (MECC) a modern facility within easy reach of the city, welcomed the annual 4-day Euro PM event series for the first time through its doors.

A 30th Anniversary celebration of the European Powder Metallurgy (EPMA) took place during the 2019 event, allowing attendees to reconnect with past colleagues, companies and milestones in the powder metallurgy industry over the last three decades.

As in recent years the high number of abstracts from across the Powder Metallurgy community, made for a positive number of technical sessions and attracted delegates and visitors from several key end user sectors, which allowed for an active 3-days of presentations, discussions and networking opportunities. Being an all topic event, representing all areas of powder metallurgy – Additive Manufacturing, Functional Materials, Hard Materials and Diamond Tools, Hot Isostatic Pressing, Metal Injection Moulding, New Materials Processes and Applications and conventional Press & Sinter, helped to attract an international audience of attendees from over 40 countries, including the Far East, Africa and the Americas. The interest of the Euro PM2019 event has meant that it attracted over 300 Oral and Poster presentations and a strong attendance in excess of 1100 participants.

Running in parallel to the technical sessions was the Euro PM Exhibition, which contained over 100 exhibiting companies, who represented 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 one of the largest Euro PM Exhibitions to date.

Lionel Aboussouan, EPMA Executive Director said “Maastricht has proved a popular and well-connected location, which has made for a memorable event in the celebration of EPMA’s 30th Anniversary. The diverse technical programme and sold-out exhibition has helped to attract attendees from several key sectors, who 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!”

Mr. Ralf Carlström, EPMA’s new President, opened the Plenary Presentations with an ‘Overview of the Status and Trends in the European PM Industry’. This was followed by a welcome from the Congress Co-Chair Prof Christoph Broeckmann, Director of the Institute for Materials Applications in Mechanical Engineering (IWM), RWTH Aachen University, and Dr Henk van den Berg, Consultant, Van den Berg HMC Consulting, who welcomed the attendees to this year’s event. The Technical Program Committee Chairs, Prof Jie Zhou, Associate Professor, Delft Technical University, The Netherlands and Dr Anke Käletsch, Head of Powder Technology, RWTH Aachen University Germany, thanked the work of all the technical program committee members who reviewed over 350 technical papers.

The opening session saw presentations on ‘Graphite The Wondrous Mineral in PM’ presented by Mr. Stephen A Riddle, CEO, Asbury Graphite & Carbons, United States of America, as well as, a presentation on ‘Powder based Laser Processes in the Context of Digital Photonic Production and Industry 4.0’ by Prof Johannes Schleifenbaum, Chair of Digital Additive Production, RWTH Aachen, Germany.

Following on from the plenary speakers was the EPMA Thesis Award Competition 2019. The winning thesis for the PhD category was: Dr Chu Lun Alex Leung, (The University of Manchester, United Kingdom) - X-ray Imaging of Powder Consolidation During Laser Additive Manufacturing. The EPMA Board and Council’s Fellowship Award help 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 Fellowship Awards 2019 were presented to:

- Prof. Francisco Castro, Independent Consultant on PM, formerly: Principal Senior Researcher at CEIT and Director of Materials and Manufacturing Division
- Professor Dr.-Ing. Bernd Kieback, Technische Universität Dresden, Institute of Materials Science, Chair Powder Metallurgy & Composite Materials and previous chair of the Fraunhofer Institute for Manufacturing and Advanced Materials IFAM Dresden

The Distinguished Service Award 2019 was presented to:

- Dr.-Ing. Ingo Cremer, CEO, CREMER Thermoprozessanlagen GmbH.

After the opening session concluded, a special panel session called ‘EPMA and PM Technologies - Past, Present & Future’ took place, which represented all the different PM sectors facilitated by Lionel Aboussouan, EPMA’s Executive Director, as part of EPMA’s 30th Anniversary celebrations.

An innovation for the 2019 event was a schedule of Campfire Meetings. These relaxed meetings, 30-minutes in duration, provided time to discuss a pertinent topic with a facilitator, for additional networking and cross sector collaborations.

The annual Euro PM event concluded on Wednesday evening, with a special 30th Anniversary Closing Drinks Reception at the MECC, prior to the annual Congress Dinner, which took place at Château St. Gerlach. Attendees enjoyed time to network and socialise with industry peers during a seated dinner in the newly built Pavilion.

Work is already underway for next year’s Euro PM2020 Congress & Exhibition to be held in the Portuguese capital city of Lisbon, 4-7 October 2020 at the modern Lisbon Congress Centre (CCL). Photographs and video content from this year’s Euro PM2019 Congress & Exhibition are available to view and download at www.europm2019.com
Promoting Powder Metallurgy Technology

Euro PM2019 Congress & Exhibition
Euro PM2019 Congress & Exhibition in Pictures
2019 Promotional Schedule

Euro PM2019 Congress & Exhibition in Pictures

Annual Report 2019
Thesis Award
Fellowship Award
Opening Plenary
Young Engineers
The Venue
Welcome Reception
Congress Dinner
Technical Sessions
Speaker Briefings
Poster Area

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TCT Show Birmingham 2019

In September, EPMA exhibited at the TCT Show at the NEC, Birmingham, showcasing Powder Metallurgy components and brochures, as well as promoting Euro PM2019 Congress & Exhibition in Maastricht, The Netherlands.

The TCT Show featured more than 250 exhibitors showcasing a myriad of innovative applications, including EPMA Members such as Digital Metal, HP and Siemens.

The EPMA also facilitated speakers for the event, with representatives from member companies Granutools, Sandvik Osprey, MIMETE S.R.L. and Virto-Cuccolini contributing.

The successful show provided several leads for EPMA Members to assist with Powder Metallurgy enquiries.
2019 Promotional Schedule (continued)

Advanced Engineering UK 2019

Following on from successfully exhibiting at Advanced Engineering in Gothenburg, Sweden in February, the EPMA again exhibited at Advanced Engineering UK in Birmingham, UK.

Greater involvement in technical presentations was made through facilitating speakers for the conference, with talks from EPMA Members - Linde Aktiengesellschaft and Markforged taking place focussing on the field of Additive Manufacturing.

Held at Birmingham’s NEC, UK 30 - 31 October 2019, Advanced Engineering UK hosted more than 500 exhibitors from across the whole engineering supply chain, including raw material suppliers, component manufacturers and tooling specialists working with composites, metals, plastics & many other materials.

The newly revised third edition of Introduction to Additive Manufacturing brochure, launched earlier in the month at Euro PM2019 Congress & Exhibition, was available alongside the entire range of EPMA ‘Intro to’ publications, as well as Spotlight on PM case studies booklets.

Many useful leads for EPMA Members were generated, and End Users from automotive manufacturers such as Lotus Engineering and Jaguar Land Rover also visited the stand for PM information.

Advanced Engineering Sweden 2019

Showcasing innovative, high-end advanced technology from all over Sweden and the Scandinavian region, the two day exhibition was a focus for Automotive Engineering; Additive Manufacturing; Advanced Materials and the Smart Factory. The seminar programme featured presentations from Microsoft, GE Additive and Siemens, to name but a few companies that contributed to the events success. There was also a dedicated Additive Manufacturing seminar that took place within the event on the 27 March 2019.

The two exhibition days attracted over 2000 attendees, helping to generate a number of discussions with end users from Volvo, Ericsson and Saab, through to academics from research institutes such as Chalmers University and the KTH Royal Institute of Technology about the benefits of the Powder Metal (PM) process and how components using PM can be included in future applications. There were also some EPMA Members present at the show, with representatives from Digital Metal and GKN Sinter Metals in attendance.

EPMA staff distributed a number of its range of Introduction to Additive Manufacturing, Hot Isostatic Pressing, Metal Injection Moulding and Press & Sinter brochures, as well as the Spotlight on PM case studies booklets. There were a number of discussions surrounding this year’s Euro PM2019 Congress & Exhibition regarding its unique proposition in Europe, for enabling networking with the entire PM industry in one location during 2019.

“Attending the Advanced Engineering Sweden Show was beneficial in enabling EPMA to generate new leads and introduce PM to a wider geographical audience”, explained Andrew Almond, EPMA’s Marketing Manager. “There was positive conversations with a number of advanced technology users, who expressed interest with what PM can do for their future applications.”

The European Powder Metallurgy Association (EPMA) exhibited at the new home of the Advanced Engineering Sweden 2019 venue, which was held for the first time at the Åbynåssen Congress Centre in Malmö, just outside Gothenburg, Sweden 27-28 March 2019.
Promoting Powder Metallurgy Technology

Euro PM2019 Congress & Exhibition
Euro PM2019 Congress & Exhibition in Pictures
2019 Exhibition Promotional Schedule

**EPMA Exhibit at Formnext 2019**

In November EPMA recently exhibited at Formnext 2019, one of the leading Additive Manufacturing and Advanced Manufacturing Technology events in the promotional calendar, Frankfurt, Germany 19 – 22 November. The 4-day event, expanded on the previous year to 4 halls full of exhibits, forum areas and technology showcases, which were all set in halls 11, 11.1, 12 & 12.1 of the Frankfurt Messe. A plethora of Additive Manufacturing (AM) related companies, featuring many new suppliers and technologies, who are coming into the Additive Manufacturing sector for the first time, made for an interesting event with plenty of discussions and networking opportunities.

The EPMA booth, once again, generated another high number of business contacts and highlighted the interest in the recently released ‘Introduction to Additive Manufacturing Technology’ 3rd Edition. Additionally, there was a great deal of interest in Binder Jetting and advancements in Metal Injection Moulding and Hot Isostatic Pressing techniques, as well as the range of EPMA Seminars and Training Courses the Association organises in 2020. The 2019 Formnext event attracted in excess of 35,000 attendees, making it one of the largest dedicated AM events the EPMA exhibit at.

The EPMA Marketing Team are working through the business contacts made at the show, following up on opportunities for the benefit of its Members.

**Autonomous Vehicle Event 2019 UK**

In June EPMA exhibited at the first Autonomous Vehicles Expo, Telford International Centre, Telford, UK. Jaguar-Land Rover and AVL were amongst the companies providing presentations on the future of Autonomous Vehicles and how the current road infrastructure needs to adapt to accommodate these vehicles and highlighted the technological challenges in the coming years.

“The inaugural event for the Autonomous Vehicle Expo brought together a variety of industry sectors, from software developers, electronics to highway and government departments all interested in this technology”, commented Andrew Almond, EPMA’s Marketing Manager. He went onto add “Although this sector is niche at present, it has the ability to become mainstream in the future, becoming another key market for all aspects of the PM industry.”

EPMA’s exhibition promotion centred around the benefits the automotive sector can utilise through PM technology and applications, from the lightweight and complex components through to possible electric battery applications.

**AP&M Expo Frankfurt, Germany**

 Held at the Messe Frankfurt, Germany, the Airline Purchasing & Maintenance Expo provided EPMA the opportunity to speak directly with manufacturers from the Aerospace sector on the potential benefits of utilising the full range of Powder Metallurgy technologies.

Taking place over three days and attended by more than 3000 visitors, the Expo hosted End Users from Airbus, Boeing and Fokker among many others.

The EPMA was able to promote the potential of PM to reduce component weight to a market that profits greatly from every gram saved when it is in the sky. Additive Manufacturing was a key discussion aspect, surrounding how this technology can create competitive advantage in the coming years for the future aircraft.

The Expo generated more than 40 leads for EPMA, which have been passed onto relevant EPMA Members for follow up.

**EPMA Annual Report 2019**
EPMA are in discussions with the Autonomous Vehicle Expo organiser to see if there are any linkages between EPMA Members activities and future conference content for enhanced EPMA Member communications and partnership presentation slots.

**EPMA Exhibits at the 2019 International CTI Symposium in Berlin, Germany**

EPMA exhibited at the 18th International CTI Symposium 2019 for the third time, with the event taking place in Berlin’s Estrel Convention Centre. The 2-day event combined technical sessions with three exhibition areas all centred on the automotive powertrain sector.

The technical sessions focussed on a range of topics including the looming electrification of the automotive sector and its impact on goods, people and parcels, as well as a more holistic overview on the likely developments in mobility over the next decade.

Some quality discussions were held on the EPMA booth involving delegates from EPMA member companies BASF and SHW, alongside Nichols Portland, AVL and ACTech.

The component showcase on the EPMA stand had a range of Press & Sintered gears from automotive and the developing electric bicycle market. Along with the entire range of EPMA brochures such as Introduction to Additive Manufacturing and Press & Sinter, the Spotlight on PM case studies brochures, encompassing a range of automotive, energy, medical or aerospace components, were distributed.

**DEVELOP3D LIVE 2019**

EPMA exhibited at the DEVELOP3D Live in Sheffield, UK on 17 April 2019.

Alongside over 60 exhibitors, covering software, hardware and services in Additive Manufacturing, EPMA staff distributed a number of its range of Introduction to Additive Manufacturing, Hot Isostatic Pressing, Metal Injection Moulding and Press & Sinter brochures, as well as the Spotlight on PM case studies booklets. A range of AM case studies from the Spotlight on PM series were also showcased on the exhibition stand.

The one-day event attracted a number of engineering students, academics as well as industry professionals to the bustling exhibition held at the University of Sheffield. Exhibitors ranged from specialists in CAD software, generative design, topology optimisation, additive manufacturing, AI, 3D printing, workstation technology, design visualisation, VR/AR, simulation, data management, 3D scanning and tolerance analysis. Companies such as Fujitsu, HP, Siemens and Ultimaker exhibited alongside the EPMA.

Conference sessions focussed on the ‘Additive Manufacturing Breakout’ and developments in design visualisation software to aid product design and optimisation.

Major talking points emerging from the event included the increasing interest in Binder Jetting, a focus on in-situ feedback control during the AM process, as well as general challenges facing those adopting AM technology, including working with precious metals such as Platinum.

**ENGINE EXPO + THE POWERTRAIN TECHNOLOGY SHOW GERMANY**

EPMA exhibited at the Messe Stuttgart, Germany 21-23 May 2019 at the Engine Expo, part of a five-show programme, which brought together businesses from every area of the automotive industry.

The Engine Expo and Powertrain Technology show was held alongside the Autonomous Vehicle Technology Expo, Automotive Testing Expo, Global Automotive Components and Suppliers Expo and Automotive Interiors.

Expo over the three days in the city home to the headquarters of Mercedes and Porsche. Representatives of these end users stopped by the EPMA stand to discuss how Additive Manufacturing, Metal Injection Moulding and Press & Sinter could be used to keep pace with the changing demands in the automotive sector.

EPMA Technical Manager Bruno Vicenzi gave a presentation in the Technology Demonstration Area on Powder Metallurgy for Automotive Applications Status Perspectives Innovation by AM, adding to a comprehensive technical programme.

Exhibiting in the Engine Expo placed EPMA alongside member companies such as Indo-MIM and Bodycote Specialist Technologies Deutschland GmbH.

Of particular interest to participants was the potential for the usage
Promoting Powder Metallurgy Technology

Euro PM2019 Congress & Exhibition
Euro PM2019 Congress & Exhibition in Pictures
2019 Promotional Schedule

of Functional Materials in electrical or hydrogen powered vehicles, and how Additive Manufacturing can improve the speed of bringing components to market.

GENERAL ASSEMBLY 2019

The 32nd EPMA General Assembly took place 21-22 March 2019 at the Crown Plaza Hotel in Brussels, Belgium. Attendees experienced an extended event with two keynote speeches ‘Regulatory Developments of Interest to the Powder Metallurgy Industry’ from Guy Thiran (Eurometaux) and ‘Advanced Lightweight Design-Challenges and Trends’ from Thilo Bein (Fraunhofer LBF and EARPA). Participants also got to join sectoral group meetings and attend the legal aspects of the General Assembly receiving updates of EPMA’s activities from 2018 and looking ahead to 2019 and 2020. The Annual Networking Dinner was also held on 21 March at the Brussels Atomium restaurant providing 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. The Council meeting, with newly elected members, took place on the following day and consisted of a brainstorm about the strengths, weaknesses, opportunities and threats for EPMA. The full list of elected council members can be found on www.epma.com/epma-council

This 32nd General Assembly reached a special milestone as it was the last one chaired by Philippe Gundermann (Eramet), EPMA President for the past six years. Philippe concluded his address by saying “The PM world is moving fast and offers new challenges but we have the right competencies to move fast as well especially if we continue to work well together in the coming years”. EPMA would like to thank Philippe for his involvement and dedication and would like to welcome our new EPMA President, Ralf Carlström (Digital Metal AB). Ralf thanked everyone for their vote and confidence and said “I am looking forward to the future and my new presidential tasks”. A new EPMA Treasurer was also elected, with Pierre Blanchard (Erasteel Kloster AB) taking over the responsibility of EPMA’s finances for the next three year term from Peter Kjeldsteen (Sintex A/S) the outgoing Treasurer.

Thank you Peter and welcome to Pierre!

INTERNATIONAL TITANIUM EUROPE 2019

In May EPMA exhibited at the annual European International Titanium meeting in Vienna, Austria. 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 sector.

The industry orientated exhibition, which ran in parallel to the presentations covered material suppliers from across the globe and from all industrial areas, powders through to pipe and ingot suppliers.

EPMA’s exhibition presence provided promotion on the end user sectors it covers, with information on its ‘Introduction to’ series of brochures and provided details on the various Sectoral Group activities during discussions with delegates and visitors alike.

“This event allowed EPMA to promote the benefits of the Powder Metal sector to the Titanium Industry in more detail, providing a platform for us to have dialogues on the changing PM industry and how Titanium Powders can be part of the future of the sector”, explained Andrew Almond, EPMA’s Marketing Manager. He went onto add “Attending this 2-day event allowed EPMA to gain a good understanding of the recent trends and forecasts in the Ti industry, which will help EPMA Members to maximise their opportunities in this sector.

TITANIUM WORLD CONFERENCE FRANCE

EPMA exhibited for the first time at the 14th World Conference on Titanium held at La Cite Nantes Events Center in France on 10-14 June.

Organised by the Association Française du Titane and Société Française de Métallurgie et Matériaux (SF2M), the conference and exhibition was attended by more than 600 delegates.

The technical programme covered topics such as Additive and Near Netshape Manufacturing, Aerospace Applications, Microstructure Evolution and Healthcare Applications.

EPMA were able to provide excellent exposure for the PM industry to companies such as Airbus and Safran, as well as network with member companies such as Aubert & Duval and Sino-Euro Materials Technologies.
EPMA is governed by Belgian Law of 25 October 1919, as amended by that of 6 December 1954. The Association, ‘une 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.

**ACKNOWLEDGEMENTS**: Accounts prepared by Baldwins (Shrewsbury) Limited, UK, on a “going concern” basis. Plans are in progress to relocate operations to France by Summer 2020. 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 2019. 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 2019 has not been prepared, in all material respects, in accordance with the Reporting Criteria.
Your guide to

**EPMA Seminars, Events & Training 2020**

**Hot Isostatic Pressing Seminar**
The Use of HIP to Improve Safety and Innovation Offshore
10-11 March 2020 | Oslo, Norway

**EPMA Powder Metallurgy Summer School 2020**
20-24 July 2020 | Ciudad Real, Spain

**Functional Materials Seminar**
Processing of Functional Materials
17-18 November 2020 | San Sebastián, Spain

**Additive Manufacturing Seminar**
Metal Additive Manufacturing Technologies
2-4 December 2020 | Augsburg, Germany

**Press and Sinter Seminar**
The benefit of using Powder Metallurgy (PM) in the automotive sector
8 December 2020 | Brussels, Belgium

**Euro PM2020 Congress & Exhibition**
4-7 October 2020
Lisbon Congress Centre (CCL), Lisbon, Portugal

**WINTEREV 20**
TBC | Aachen, Germany

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