Annual Report 2014

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Contents

Introduction by the President 2
Executive Director’s Report 3
Annual Meeting 4
General Assemblies & Government and Management 5
Council 6
EPMA Secretariat 7
Outlook for 2015 7
Highlights of 2014 8
EPMA Membership 2014 9
EU: Influencing Regulations and Legislation 10
Sectoral Groups 10 / 11
Working Groups 12
Education and Training Projects 13 / 14
Research and Development Projects 15
Member Funded Activities 15 / 16
Publicly Funded Projects 17
Euro PM2014 18
Euro PM2014 in Pictures 19
Other Activities in 2014 20 / 21
Financial Statements 21 / 24
Dear Members, Dear PM Colleagues, Dear Partners,

The EPMA’s annual report is always a perfect opportunity to take a look back to what happened during the past months and to watch where are the trends for our PM industry and for our Association.

I am very proud that the year 2014 has again been a really dynamic year for our Association with successful events and a continued support to PM industry. This has been achieved thanks to the key involvement of all of you, members, customers and clients, and with the highest degree of energy of EPMA’s staff, Council and Board.

I am especially delighted to report the exceptional degree of teamwork in order to release a new road map for our PM world, the Vision 2025. Many of you, individual members, academics, industrial partners, have offered considerable time to participate to the thinking process, implying extensive exchanges and workshop participations.

The result has enabled us to construct the vision of PM 2025:

• By 2025 PM is recognised as a resource-efficient industrial process by which optimised powders and equipment are used to produce tools and components with unique properties, high quality and superior performance.
• PM is the preferred net shape metal forming process for components with special properties and requirements for a wide range of critical and demanding applications.
• The European PM industry is recognised as the world leader in technology application and productivity leading to enhanced growth and profitability.
• PM is seen as a source of constant innovation for European industry.

Any and all of the sectoral groups are contributing to develop our PM-industry in each of their fields: press and sinter, Hardmetals, Diamond Tools, MIM, HIP or Additive Manufacturing. Innovation continues to be a key differentiation factor in each sector including, of course, all equipment and machinery manufacturers who design and construct specific equipment for all these technologies.

Moreover 2014 has been the year of the 25th anniversary of EPMA, which we had the pleasure to celebrate in London last June. It has been a unique moment, gathering around the founders of the Association and the present active members. It has been a fantastic occasion to grasp the technical and market dynamics in different applications, techniques, markets, products or innovations.

Is has been amazing to contemplate how, starting with a small number of core members, we are today more than 300 committed members taking part in the Association.

I truly believe that EPMA, as a non-profit association, continues to serve after 25 years the PM industry with three key missions:

• Firstly, to promote PM technology with a special dedication in Europe.
• Secondly, to represent the European PM Industry, within Europe as well as internationally.
• Finally to develop the future of PM.

To conclude, I would like to share my strongest belief in the future. Our PM-industry has so much to contribute in our economics, as well as to the development of innovative products and technologies!!

Yours faithfully

Philippe Gundermann
EPMA President
Executive Director’s Report

The year was marked most notably by the Association’s 25th Anniversary and the events that were held in London and Salzburg to mark this milestone in our history. Thanks in particular to all those members who participated in or supported those events and made them such a success. Overall, 2014 was a good year for the PM industry and the Association with many members seeing growth in their business despite the uncertain political and economic climate. From our side, membership continues to increase steadily and has now effectively recovered to pre-crisis levels. Financially as a result of a number of new initiatives agreed by the Council, including the Young Engineers Day held in Salzburg and the start of the project to develop the History of PM archive which will be launching in 2015, we recorded a small deficit on our accounts.

We continue to maintain our efforts in training and education activities that included the PM Summer School held at Kraków in Poland and the Hardmetals Short Course, which took place in Vienna. Thanks must also go to the excellent efforts of our lecturers and as a result both the events proved to be successful.

June saw the launch in Orlando of the World Congress PM2016 which will take place in Hamburg from 9 - 13 October 2016. Closer to home the Euro PM2014 Congress & Exhibition was held in Salzburg and the overall attendance was our highest ever for a Euro PM Event with over 860 attendees and a large exhibition area with over 80 booths. In addition to the Young Engineers Day, the event saw the introduction of free electronic proceedings for all our delegates and the launch of a new congress website application. We would like to thank in particular our Austrian members for their assistance and also the members of the Technical Programme Committee who provided much useful support.

The success of our club projects continues with the EHMG, ESPG and EPHG groups undertaking work on industry specified short term research. As far as the EU supported projects are concerned the Diragreen project successfully concluded in October and the EFFIPRO project where we are acting as a dissemination and training partner continues until 2017. There is now an additional large scale project that was launched during the year being Metallurgy Europe, a Eureka programme in which EPMA and some 30 plus of our members are participating, more details of which are given later in this report.

In terms of our European level activities we continue to use our contacts within Eurometaux and other EU institutions to provide support and information for members on REACH and other EU environmental legislation such as Energy and Carbon Taxes.

In 2015 we will again have a strong programme of training activity, a Powder Injection Moulding Short Course will be held in Barcelona and the PM Summer School will take place in Sheffield. In addition we are organising the fourth WinterLee meeting which will take place in Oxford. The Euro PM2015 Congress & Exhibition will take place in Reims, France, with a full topic programme including three special interest seminars. Interest is high for the event with the exhibition area nearly full and the programme of over 200 oral and poster papers, will as usual, be complemented by meetings organised by our Sectoral Groups. After its successful introduction last year we will be repeating Young Engineers Day for 32 undergraduate students.

In summary, 2014 was an exceptionally active year which was an excellent way to mark our 25th Anniversary with a range of new initiatives being introduced. Looking at finances our reserves stand at a high level which enables us to maintain our membership fees for the seventh successive year. Therefore the Association is in good health but we will maintain our efforts to improve the service that we provide to you, our members.

Yours sincerely

Jonathan Wroe, Executive Director
Nearly 60 Members of EPMA met together in London on 5th and 6th of June for the 2014 Annual Meeting and a special one off seminar to celebrate the Association’s 25th Anniversary. Executive Board and Council meetings plus the General Assembly were held on 5th June at the historic Stationers Guild Hall in London. EPMA President, Philippe Gundermann, welcomed members to the annual meeting and gave an overview of the current improving financial and market situation in Europe. He also said he believed that the PM sector will continue to expand in the future because of its technological advantages plus that it is fast-moving, lean, green, cost efficient, and innovative.

Jonathan Wroe, Executive Director of EPMA, then gave an update of EPMA’s activities over the past twelve months which focussed on key industry statistics, research projects, a wide range of working group activities plus the success of the PM Summer School and Euro PM2013 Congress in Gothenburg. He reported that the Association has nearly recovered its membership numbers to pre-crisis levels and produced a break even financial result in 2013.

Once the formal business was complete there followed a celebration dinner at the same venue, whereby participants were able to enjoy a pre dinner aperitif outside in the evening sunshine, within earshot of St Paul’s Cathedral.

The special one day seminar, covering the development of the European PM industry, took place the following day in the splendid surroundings of 116 Pall Mall close to Trafalgar Square, which is the home of the UK’s Institute of Directors. The eight invited speakers are all well known in the field of PM. Starting the day Dr César Molins from AMES in Spain, past President of the EPMA, gave an excellent and personal overview of the development of the Association since its and even before its formation in 1989.

This was followed by four papers covering the history of the main sectors of the industry. Paul Beiss looked at Press and Sinter, Leo Prakash gave an interesting personal view of the Hard Materials sector and they were followed by Bruno Vicenzi of MIM Italia who gave a high speed overview of the impact of IPR and the development of MIM in Europe. Finally Olle Grinder gave an update on the relatively new technology of HIP going back to the earliest previously classified work in the 1950’s.

There was then a change of tone as Volker Arnhold put forward a list of candidates which could be viewed as market changing products for the PM industry - these included PF Con rods, etc. After lunch a more forward looking session saw Adeline Riou from Erasteel look at the recent developments in Additive Manufacturing as applied to metal powders.

Finally EPMA president Philippe Gundermann, made an inspiring speech to present the case for the need for an updated European PM roadmap which will help to outline and develop a route forward for the industry in its relations with government, legislation and activities. This roadmap called Vision 2025 has recently been circulated to members.
Changes to EPMA Company Registration and additional General Assemblies

During the year it was brought to the attention of the Council that we needed to update our Association’s registration with the Belgium authorities to comply with changes in Belgian company law, as the existing registration was only valid under a now obsolete law. The adaptation of our bylaws required both some changes in detail to the wording of the articles of Association plus updating of the personal details of all current Council members.

In order to manage this change it was necessary receive authorisation by our voting (full) members at a general assembly and in front of a notary in Brussels. In order to ensure that the Association was both seen to act in a proper manner and fulfil the legal requirements it was agreed after various discussions between the President, our Board members and the notary that we would hold two additional General Assemblies as allowed by the bylaws. The first of these was held directly before the Council meeting on 2nd December 2014 in Paris and was attended by the members of Council.

The second meeting was held in front of a notary in Brussels on January 15th 2015 and was attended by the President, the Executive Director and two other members (Mr Cremer and Mr Blanchard) in order that it would be quorate. In both cases full members were able to cast proxy votes. At these meetings the revised form of words for the Articles of Association were agreed and these are now being submitted to the Belgian authorities, in order to ensure we are fully up to date with the relevant legislation covering not for profit organisations. A set of the revised Articles of Association will be circulated prior to the next regular General Assembly which will take place on 12th June 2015 in Barcelona. At that meeting it will also be necessary to adapt the Bye laws to reflect the new Articles of Association and details will also be circulated with the documents for the meeting.

Authority of the General Assembly

Under the Constitution, 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.
• Council

The EPMA Constitution requires the Council to be composed of a minimum of seven individuals with voting power and appointed by the General Assembly. In practice, the Council has always been larger than its permitted minimum. Initially, it consisted of twelve members. In line with increases in the range and number of members it has subsequently been increased to the present sixteen. Seats on Council are allocated according to the number of Full Members in each of the sectors making up the EPMA’s spectrum of interest; at the same time, consideration is given to ensuring an equitable geographical spread of Council members across Europe.

The 24th General Assembly elected a new Council and Executive Board for the period 2013-16. Currently these are.

Representing PM Parts Sector
Dr Alessandro De Nicolo (GKN Sinter Metals, Italy) (replaced Mr Rainer Link in November 2014)
Mr Peter Kjeldsteen (Sintex A/S, Denmark)
Dr Michael Krehl (PMG, Germany)
Dr Cèsar Molins (AMES SA, Spain)
Dr Harald Neubert (Miba Sinter GmbH, Austria)

Representing Powder Sector
Mr Greg Lavallee (Rio Tinto, Germany)
Dr Pierre Blanchard (Erasteel, France)
Mr Per Engdahl (Höganäs AB, Sweden) (replaced Mr Ulf Engström in February 2014)
Mr Jim Shaul (Hoeganaes Corporation, Germany)

Representing Equipment Sector
Mr Ingo Cremer (Cremer Thermoprozessanlagen GmbH, Germany)
Mr Thomas Lambrecht (Dorst Technologies, Germany)

Representing Refractory and Hard Material Sectors
Dr Lorenz Sigl (Plansee SE, Austria)
Dr Henk van den Berg (Kennametal Shared Services GmbH, Germany)

Representing PM Semi Sector
Mr Martin Blömacher (BASF AG, Germany)
Dr Bruno Vicenzi (MIMitalia, Italy)

Representing MIM Sector
Mr Martin Blömacher (BASF AG, Germany)
Dr Bruno Vicenzi (MIMitalia, Italy)

Representing Hot Isostatic Pressing Sector
Ms Jody Turin (Bodycote AB, Sweden)

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

Executive Board (2013-2016)
Seven Council members have been elected to the EPMA Executive Board for the period.

President
Mr Philippe Gundermann

Vice Presidents
Mr Ingo Cremer
Dr Michael Krehl
Dr Harald Neubert
Mr Thomas Lambrecht
Dr Cèsar Molins

Treasurer
Mr Peter Kjeldsteen
• EPMA Secretariat

Day-to-day management is in the hands of the Executive Director and his staff.

Jonathan Wroe
Executive Director

Olivier Coube
Technical Director

Joan Hallward
PM Training Courses Coordinator

Andrew Almond
Marketing & Exhibition Manager, Promotion

Rachel Burton-Pye
Graphic Designer / Promotion

Kate Blackbourne
Congress Manager

Dianne Ramsey
Accounts, PM Publications

Tammy Harris
Website Administrator

Karen Powell
Membership / Project Administrator

Outlook for 2015

At a time of continuing political and economic uncertainty recovery from the crisis has still not been achieved in many countries which has a direct impact on many the PM industry. The health of the different sectors is also of course depending on continued growth in end user markets particular in the USA and Far East but it pleasing to see the recovery of European automotive production albeit from very low levels. From the EPMA point of view, we continue to make significant changes to the way we work and our support infrastructure and these will stand us in good stead in the years to come. The range of R&D projects that we support and deliver at both industry and European level deliver is a real success story.

On that note the prospects for Euro PM2015 are positive with the exhibition space already 80% booked and a full topic programme of high quality oral and poster papers under preparation in the five themed areas for this year’s event. We will be organising the second of our ‘Young Engineers’ Day’ designed to introduce undergraduate students to the world of PM as a potential career opportunity. More details will be available shortly via the new Euro PM2015 event website. We will as usual be organising and assisting a range of other events including the PM Summer School, the PIM Short Course and the Winterev workshop. 2015 will be a busy year as we continue to revise and develop relevant services for members wherever we can.
Annual Report 2014

• Highlights of 2014
• EPMA Membership 2014
• EU: Influencing Regulations and Legislation

• Sectoral Groups
• Working Groups

• Highlights of 2014

• 25th Anniversary of Association
• Hardmetals Short Course held in Vienna

Once again EPMA’s unique role as a “cross material” industry orientated organisation is acknowledged by both members and outside agencies. The Secretariat continues to deliver a wide range of services as can be seen from this report. In addition to promotion and project management work, we are active in benchmarking, statistics collection, production of brochures and guides, plus support to our working and sectoral committees.

A significant effort has been made in developing the underlying architecture and content of our IT systems to enable us to communicate more effectively with our members and the wider PM community. A new customer database has been installed and new systems for managing our congress abstracts and papers implemented. The latest stage in this major overhaul is the recent launch of a revised EPMA website which incorporates a number of advances that will give better and more flexible access for members and simplify the way visitors navigate the site.

• Membership

Overall membership remained stable at 306 with corporate members improving by five to 181 companies. The Membership totals by year are shown below. Corporate members are based in thirty countries worldwide.

Membership Subscription Rates
It was agreed at the December 2014 Council meeting that 2015 membership rates should again be frozen at 2008 levels; Therefore for 2015 the membership fees will remain unchanged for the seventh successive year reflecting the good financial position of the Association.

As had been previously agreed in order to support micro and new start-up companies a third sub-category of full member was created at the start of 2014. Full members are now divided into Large companies, that is those with PM related turnovers greater than €10million, SME companies with PM related turnovers between €3 and €10million and Micro/Start up companies with PM related turnovers less than €3million. During 2014 eight new members joined in the micro category. Full details of the fees are available on the EPMA website.

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<th>Total Membership Numbers and Income 2005 - 2014</th>
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<th>EPMA Membership 2014 by Category - total 305</th>
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<td><img src="image" alt="Pie chart showing membership by category." /></td>
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• Successful Euro PM2014 in Salzburg
• Summer School #13 in Krakow

A completely redesigned home page includes an interactive banner providing quick access to the Member Directory and features a Twitter feed showing the latest EPMA news and a showcase of new EPMA members. There is also now a link to the new EPMA You-tube archive with over 40 videos relating to our activities and PM products. Thanks to the hard work of the team it is envisaged the newly updated EPMA.com website will continue to be developed and expanded over the coming months.
Annual Report 2014

- Highlights of 2014
- EPMA Membership 2014
- EU: Influencing Regulations and Legislation

- EPMA Membership

New members in 2014
EPMA was pleased to welcome the following into membership during the year.

Full Members

- AISI SA
- Electro Optical Systems Finland
- Indutherm Ermärmungsanlagen GmbH
- Polmo Lomianki
- RHP Technology GmbH
- RTE Technology GmbH
- SAFINA a.s.
- SARNES GmbH Co KG
- Tribotecc GmbH

Associate Members

- AVL LIST GmbH
- Birmingham University AMPLab
- Electronic Tough Carb
- GE Marmara Technology Centre
- Ipsen Inc.
- Manchester University - Materials School
- Nuovo Pignone Srl
- Tecnalia Research & Innovation
- ZF (China) Investment Co. Ltd

Individual Members
Prof. Aloisio Nelmo Klein, Santa Catarina Federal University (UFSC)
Dr. Vladislav Kruzhanov, PM Consultant
Dr. Christian Kukla, Montanuniversitat Leoben
Prof. Hideshi Miura, Kyushu Univ, Dept. of Mechanical Engineering
Dr. Marleen Rombouts, VITO
Annual Report 2014

• Highlights of 2014
• EPMA Membership 2014
• EU: Influencing Regulations and Legislation

• EU: Influencing 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 December 2014 the EPMA issued its 102nd 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 the Lead Specific Concentration Limits issue, which may have consequences on the PM industry and supports Eurometaux, who defend the metal industry in this special case.

• Sectoral Groups

European Hard Materials Group (EHMG)

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

The EHMG activities of 2014 were mainly the organisation and coordination of several Club Projects, the preparation and run of the Hardmetals short course, the preparation of a General Open Meeting and a Special Interest Seminar on “Special interest seminar: Simulation and Modelling in Hard Materials” for the next Euro PM2014.

A special Roadmap EHMG session was organized on the 27 Feb in Salzburg after the Technical Programme Committee meeting.

European MIM Group (EuroMIM)

Chairmen: Dr Frank Petzoldt (Fraunhofer IFAM), Dr Bruno Vicenzi (MIMItalia)

The EuroMIM group covers over 75 organisations from across Europe and from all parts of the MIM supply chain. The current co-chairmen are Bruno Vicenzi from MIMItalia and Frank Petzoldt from IFAM Bremen, supported by Lars Nyborg, Chalmers University of Technology and Keith Murray, Sandvik Osprey Ltd. Current activities can be divided into four parts:

Promotion of European MIM
A new feature was the inclusion of a “YouTube Channel” for videos related to the MIM Process.

Standards and Legislation
EuroMIM was active with other groups to provide inputs the ISO TC119 subcommittee including the standard on MIM materials which was published during 2012.
Technology and Quality Development
During the past seven years we have undertaken an annual benchmarking exercise for MIM parts makers across Europe. We also have introduced in 2014 an additional survey for the sector which adds a wider number of companies.

Roadmap
The EuroMIM meeting in Salzburg attracted over 50 attendees and provided feedback and information for the new EPMA roadmap. Some of this data will be used to develop a Club Project proposal in 2015.

European Structural Parts Group (ESPG)
Chairmen: Mr Peter Kjeldsteen (Sintex), Dr Cesar Molins (AMES)
The ESPG held a special breakfast ESPG Parts Makers meeting on the 6 June 2014 in London and an ESPG General and Parts Makers sessions in September 2014 during the Euro PM2014. The ESPG organized also a special Roadmap meeting on the 24 January 2014, kindly hosted by AMES, which lead to a 6 page recommendation document for the Roadmap Steering Committee.

PMRADNET
This group comprises the 13 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 the lecturers for the PM Summer Schools and the Sintering Short Course.

European PM HIP Group
Chairmen: Mrs Adeline Riou (Erasteel), Dr Susan Davies (Bodycote)
The group now covers over 40 organisations from across the supply chain. Four sub groups cover: the promotion of PM HIP technology, conferences and seminars, R&D/benchmarking activity plus the development of international standards for the PM HIP sector. There have been regular conference calls plus a group meeting in Salzburg.
We are continuing the successful series of one day end user workshops working with local organisations and in 2014 two events were held in Germany and the UK.
• Highlights of 2014
• EPMA Membership 2014
• EU: Influencing Regulations and Legislation

• 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 24 questions covering all the productivity benchmarks for the PM industry such as Delivery Achievement, Productivity, Energy usage, Overall Equipment Effectiveness, Wage, Absenteeism etc... The 2014 exercise saw a total of sixteen sites participating in the programme.

We also maintain the service advertising EPMA member quality accreditation on the EPMA website, which remains a popular area amongst the 120,000 visitors per year to the site. EPMA also provides, through the members’ area of the website, information on REACH (Documents to Download, Letters to suppliers, Letters to Customers, Workshop contents, useful links etc).

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 member of the Eurometaux Energy and Climate Change Policy Department and an associate member of the Industrial Federation of Industrial Energy Consumers IFEC 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.

Research Education Training (RET)

Chairmen: Prof José Torralba (UC3M), Dr Pierre Blanchard (Erasteel Kloster AB)

On behalf of the RET the EHMG ran a third Short Course on “Hardmetals” in Vienna on 10-11 April 2014, which attracted 46 participants and 18 lecturers.

The RET has also been mandated to coordinate a new Roadmap “Vision 2025: Future Developments for the European PM Industry” with the support of the Sectoral Groups. On this purpose a Roadmap Steering Committee was formed to support the RET in this task.

European PM Industry Roadmap - Vision 2025

For the last 18 months EPMA has been working on the development of the revised PM Roadmap called ‘Vision 2025’. Thanks to the help of our steering committee and with a lot of input from members, we have now completed work on this extensive project and the new Roadmap has been circulated.

Designed mainly to be a tool to aid in the promotion of the PM industry to government and third parties we also hope that it gives some useful insight into key trends and development areas for the different sectors of our industry.

Available as a download from the EPMA website we have also circulated copies to our contacts in government and funding agencies, both directly and via social media platforms. We encourage you to use the document and the information within it, both internally, and as a support in developing future R&D proposals.

We believe that the new Roadmap will contribute positively to the promotion and development of the industry in the coming years.

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• PM Summer Schools

Since it was agreed by the EPMA Council in 2009 that the EPMA would organise a Summer School, whose costs would be underwritten by the Association’s reserves, we have held successful events in Kosice, Madrid, Dresden, San Sebastian and Trento.

The very positive results from these events meant that we held a sixth event in 2014 at the University of Kraków, Poland. Thanks to the input from our 21 guest lecturers and the support of Professors Jan Kazior and José Torralba, the event was again a great success. Participants: 35 from industry, 12 from academia and 6 from research institutions, came from 13 countries throughout Europe and worldwide. They had an opportunity to visit the University of Kraków laboratories where they had some hands-on experience with: “Powder Properties”, “Powder Compaction” and “Microhardness Testing”. Participants also visited the Sandvik plant in Katowice.

The Summer School Gala Dinner was held in the Tetmajerowska Restaurant in Kraków where the now indispensable Summer School Singing Contest rounded off a very enjoyable evening. Thanks to the on-going, high level of demand from members, academia and end users we are holding another Summer School this year. It will take place in Sheffield, United Kingdom, 8-12 June 2015, hosted by Mr Denzil Lawrence of AMRC and Professor Iain Todd of the University of Sheffield and coordinated, as usual, by Professor José Torralba of the Universidad Carlos III de Madrid.
• **Hardmetals Short Course**

Following on from the successful Sintering Short Courses in 2012 and 2013, the EPMA held a Short Course on Hardmetals in Vienna, 9-11 April, focusing on the practical capabilities and applications of hardmetals as applied to the PM process. Forty-six engineers and scientists from throughout Europe joined with eighteen speakers drawn from both industry and academia to focus on hardmetals as applied to the powder metallurgy process. Lectures included: an Overview of Hard Materials & a History of Hardmetals, Raw Material Sources, Direct and Indirect Shaping, Sintering Process & Equipment, Chemical and Physical Vapor Deposition, Process Simulation and Machining amongst others. Participants also had the opportunity to discuss and explore problems and case studies with the finest experts in the field.

![Participants and Students](image1)

![Sintering Short Course, Vienna](image2)

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**EURO PM2015 Congress and Exhibition**

**Euro PM2015 Congress and Exhibition**

**4 - 7 October 2015**

Reims Congress Centre, Reims, France

• **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 and Bioavailability. During the last four years some 9 projects valued at over €370,000 have been successfully completed some of them now entering a second or even third phase.

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 in providing information is essential for the growth and success of this long standing and valuable project. New data was uploaded during the year and a further improvements made to the operation of the website.

• **Member Funded Club Projects**

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The EPMA continues to coordinate several Club Projects in order to improve the synergy of the PM community. EPMA Club Projects are open to Corporate EPMA Members. All Projects and Project proposals are presented in detail on the EPMA web page: www.epma.com/projects

Two Club Projects are now completed (“Simulation of Fatigue Crack Growth in Hardmetal at a Mesoscopic Scale – SIMUCRACK Phase II” and “Resistivity of Hardmetals RoH”) with their final meeting in October and November. During these meetings achievements were reviewed together with the industrial partners and the R&D contractors and possible follow up projects were also discussed.

A third Club Project (“Ultrasonic fatigue testing of hardmetals in the gigacycle regime: Stage 2a”) has now reached its final term and the progress was presented during a final meeting on the 10 March 2014 in Reims, France.

In the meantime two other Club Projects have started: A new club project on Kinetic Simulations in Hardmetals – Evaluation of Mobilities by Coupling Experiments and Simulations “Kinetic” in partnership with the Swerea KIMAB and the KTH Royal Institute of Technology and supported by 7 Industrial Partners (Ceratizit, Hilti, WTP Materials Engineering, Sandvik Hyperion, Sandvik Coromant, Kenametal, Element 6).

Project on Harmonisation of Safety Data Sheets (SDS) for Fe Base Metal Powders and Metal Powder Mixes for Uses in PM Processes “SDS” in partnership Powder Metallurgy Solutions (Dr. Volker Arnhold), Germany and supported by 8 Industrial Partners (Hoeganaes Corporation Europe S.A., Höganäs AB Sweden, Höganäs Belgium, POMETON, GKN Sinter Metals, Miba Sinter group, PMG, AMES).

Three other Hardmetals project proposals are in the finalisation stage and should be shortly presented.

Furthermore two sinter steel project proposals were presented to the PM community at the last ESPG meeting during the Euro PM2014:

Project 1 - Correlation study of mechanical properties/ microstructure/fracture behavior of industrial parts and standardized tensile specimens “MicroTest” in partnership with the Instituto IMDEA Materiales, Madrid.

This project’s aims are to study the mechanical properties and the fracture behaviour (hardness and tensile features) in correlation with the microstructure using real parts. These will be produced in industrial conditions and standard specimens obtained in the same industrial conditions.

Project 2 - Anisotropy of dimensional change on sintering of uniaxially cold compacted parts “AnDiC” in partnership with the Department of Industrial Engineering, University of Trento.

This project aims to investigate the influence of the geometry of the parts, the material and the green density on anisotropy of dimensional change on sintering of uniaxially cold compacted greens. The expected benefits for the industrial partners are the development of a design procedure and a knowledge database in order to evaluate the influence of density and sintering temperature in standard and non-standard process conditions.

Toughness of PM HIP Steel stage 2

The second stage of the project started September 2014 and comprised of six members of the PM HIP group with the work being contracted to RWTH Aachen. Stage 1 which collected data of toughness and fracture toughness for PM-HIP material and chemically identical, conventionally produced material.

The second stage involves the generation of toughness data relating to certain selected grades of material and is anticipated to be completed in mid 2015.
EPMA was involved in three EU part funded projects.

1. DIRA-GREEN

Firstly DIRA-GREEN, where the EPMA was involved as a Dissemination Partner. This three year Project with a budget of €3m was completed in October 2014, it was part funded by the European Commission in the 7th Framework Programme. The coordinator was ATEKNEA, an EPMA Member R&D Centre based in Budapest. The main aim was to develop an effective non-destructive technique for Powder Metal (PM) parts using Digital Radiography, that would enable the online quality assurance of ‘green parts’, by monitoring porosity and identifying microscopic cracks. The Consortium consisted of technical and end-user SMEs supported by associations both from the PM and the NDT sector while the development was carried out by research centres and a university. A functional prototype has been completed and a training seminar was held by partners of the consortium at the Euro PM2014. More information can be found at the project website www.diragreen.eu

2. EFFIPRO

The second project is EFFIPRO, which was launched in September 2013. This Project is also part funded by the European Commission in the 7th Framework Programme. The objectives of this three year Project are 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 will directly impact on the cutting tools industry as tools with enhanced properties and a longer lifetime will be obtained using a highly efficient process. Two types of parts will be machined, one for the aerospace sector and the other for the automotive sector. For this Project, the EPMA has joined a Consortium of eight members including: The University of Seville (USE), Fraunhofer IFAM, AMES Group (Aleaciones de Metales Sinterización), MIRTEC S.A., KYOCERA UNIMERCO, Airbus Group and TECNALIA as the Project Leader. The EPMA’s main responsibility is for the dissemination and training activities. More information can be found at the project website www.EFFIPRO.org

3. Metallurgy Europe EUREKA Cluster

The EUREKA Cluster Metallurgy Europe (ME) is a new trans-national effort to coordinate and perform cutting-edge metallurgy research with more than 200 supporting organisations (including 33 EPMA Members). The most relevant activities of the Cluster will be to devise, select, create and execute a large-scale research programme that will allow European industry to make great strides. A jointly-devised Technical Roadmap has defined research areas that cover 13 different technology areas including PM and AM and address a number of market segments.

The potential value of the projects is estimated at €1 billion over 7 years. The Metallurgy Europe proposals that are selected will be given the “Eureka Cluster label” and passed onto national funding bodies for financial consideration. This is likely to result in a higher chance of funding as the national authorities will be closely associated with the Cluster through a Public Authority Board.

The EPMA is a member of the Industrial Board (IB) of the Metallurgy Europe consortium and will support any initiatives for large PM projects within Metallurgy Europe.
• **Euro PM2014 in Salzburg**

Over 850 participants from 46 countries attended Euro PM2014 Congress & Exhibition in the historic trading city of Salzburg, Austria 21 – 24 September, making it the best attended Euro PM Event to date. The event attracted a strong international audience from all sectors of the PM industry, with over 200 Oral and Poster presentations, and for the first time, proceedings were included in the delegate package for all full delegates.

Dr Peter Prenninger (Central Research Coordination, AVL List GmbH, Austria) gave an interesting and thought provoking plenary presentation on the '3 Automotive Wishes from the Genie in the Powder Metallurgical Bottle' where he presented possible industrial areas where PM can provide further advantages.

For the first time in 2015 we saw the launch of the Peter Brewin Poster Award for the best poster at the event as selected by the Co-Chairmen & TPC Chairmen. The winning poster was presented at the Special Interest Seminar on Additive Manufacturing.

The 2014 EPMA Distinguished Service Award was presented to Jan Tengzelius of Höganäs, Sweden, for his outstanding contribution to the European PM industry.

The winner of the 2014 EPMA PM Thesis Competition in the Diploma/Masters category was Dr Annabel Braem from KU Leuven.

This year’s event also included a sell-out exhibition encompassing stands covering companies from all parts of the PM supply chain with more PM Parts Makers and PM End Users visiting the exhibition than in previous years.

A full social programme included a special reception held in the magnificent Bishops Residenz to mark the EPMA’s 25th Anniversary and the Congress Dinner, held at the centrally located Stieglkeller Restaurant.

We would also like to thank the Congress Co-Chairmen Prof Lorenz Sigl and Prof Herbert Danninger, as well as Technical Programme Committee and delegates for their support, which is much appreciated.
Annual Report 2014

• Euro PM2014
• Distinguished Service Awards
• Euro PM2014 in Pictures

• Other Activities in 2014

• Euro PM2014 in Pictures

Winners of the EPMA Keynote Awards 2014

EPMA Thesis Competition Winners 2014

Young Engineers 2015

Delegates at the Welcome Reception

Peter Brewin Poster Award winners Martin Östlund and Tomas Berglund

Delegates Networking in the Exhibition Hall
EPMA Attends AVM Summit 2014, London, UK

In January the EPMA attended the AVM Summit Europe, a dedicated conference aimed at the aviation maintenance market. The 2014 AVM Summit Europe took place at the Olympia Exhibition Centre, UK and comprised of three conference tracks Aviation Electronics, Commercial MRO and PMA Parts. The AVM Summit Europe Exhibition ran in parallel to the conference sessions, which included many of the leading aerospace technologies providers, which mirrored the conference elements. Even though this event was right at the start of the calendar year, this show was a positive event to attend, as it helped to provide information to the PMA Parts sector and enabled networking and discussions regarding the potential of Additive Manufacturing in the airline industry.

EPMA to Exhibit for the first time at AIRTEC

In October EPMA exhibited at the 9th AIRTEC Exhibition Center Frankfurt, Germany. During the three day event, over 500 exhibitors from 30 nations represented the whole aerospace industry supply chain. Amongst the visitors were many market leaders and numerous SMEs from Europe, the United States and Asia. The majority of the visitors attending this event, originated from the design, engineering, materials (composites, metals, ceramic), production, electronics, sensors, testing, avionics, components, systems and life cycle support fields.

EPMA Exhibits at Euromold

In November the EPMA attended the 21st EuroMold, which took place at the Frankfurt Exhibition Centre. During the 4-day event approximately 1,000 exhibitors from some 32 countries met around 50,000 international visitors from all areas of industry, making EuroMold one of the largest international trade fairs the EPMA has exhibited at in recent years. The EPMA not only represented the PM Industry, but took this opportunity to highlight the EPMA’s recently formed EAMG Sectoral Group, with a presentation from Adeline Riou, EAMG’s Co-Chair.

EPMA Supports Advanced Engineering UK’s 2014 Performance Metals Engineering

In November the EPMA supported the Advanced Engineering UK’s 2014 Performance Metals Engineering event with two presentations on powder metallurgy by Dr Volker Arnold and Mr Keith Murray. During the 2-day event, held at the NEC, Birmingham, 11 – 12 November, two of the PM industries luminaries presented papers on progressive and interesting PM topics. Both presentations were well attended, with collaborative work underway again with the 2015 Advanced Engineering UK’s Performance Metals Engineering event.
• **Other Activities in 2014**

**Young Engineers Event at Euro PM2014**

This special 2-day programme was held for the first time at Euro PM2014 as part of EPMA’s commitment to help promote and develop the industry. Four universities took part in this year’s pilot scheme (University of Leoben, TU Vienna, TU Dresden and University of Trento).

The students undertook a special two day parallel programme of lectures on the PM process, question and answer sessions with industry experts and discussions with young graduates working in PM. They also had tours of the exhibition and a visit to the MIBA Academy to give them an understanding of the scale and actuality of the industry.

**World PM2016 Congress and Exhibition Launch**

The formal launch of World PM2016 Congress & Exhibition took place at the PM2014 World Congress, May 2014, Orlando, Florida.

A packed luncheon audience of delegates and exhibitors were the first to watch the new promotional video showcasing just some of the delights of what Hamburg will provide while enjoying a German themed lunch.

Addresses were also made by EPMA President Philippe Gundermann, who conferred what to expect from a European organised World PM Congress and by Dr Michael Krehl from PMG Holding GmbH, who is the World PM2016 Chairman, also gave the audience a brief presentation of Hamburg, being one of the major European Ports, and its historical significance for trade and industry.

The World PM2016 Congress & Exhibition will take place at the Congress Centre Hamburg (CCH) 9-13 October 2016 in Hamburg, Germany.

We would also like to thank the MPIF for their assistance in the co-organisation of the launch.
# Financial Statements

EPMA is governed by Belgian Law of 25 October 1919, as amended by that of 6 December 1954. The Association, “un Association internationale poursuant 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 2014, with those of 2013 for comparison.

**ACKNOWLEDGEMENTS:** Accounts prepared and audited by Turner Peachey Chartered Accountants, Shrewsbury, UK.

<table>
<thead>
<tr>
<th>Income</th>
<th>2014 (€)</th>
<th>2013 (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership fees</td>
<td>373,935</td>
<td>381,646</td>
</tr>
<tr>
<td>Publications and promotions</td>
<td>4,955</td>
<td>5,592</td>
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<tr>
<td>Conferences, seminars and courses</td>
<td>735,694</td>
<td>711,501</td>
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<tr>
<td>EU and other projects</td>
<td>287,368</td>
<td>166,651</td>
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<tr>
<td>Summer School</td>
<td>30,075</td>
<td>29,900</td>
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<tr>
<td>Bank Interest Received (gross)</td>
<td>5,473</td>
<td>3,810</td>
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<tr>
<td><strong>Total Income</strong></td>
<td><strong>1,437,500</strong></td>
<td><strong>1,299,100</strong></td>
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<table>
<thead>
<tr>
<th>Expenditure</th>
<th>2014 (€)</th>
<th>2013 (€)</th>
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<tbody>
<tr>
<td>Salaries social charges and pensions</td>
<td>375,821</td>
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<tr>
<td>Office overheads</td>
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<td>57,896</td>
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<td>Subsistence and travel</td>
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<td>Publications</td>
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<td>Conferences, seminars and courses</td>
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<td>Professional and membership fees</td>
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<td>32,928</td>
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<td>Council and meetings expenses</td>
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<td>Promotions</td>
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<td>Bank and credit card charges</td>
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<td>Taxation on interest received</td>
<td>903</td>
<td>491</td>
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<tr>
<td>Exchange rate differences (note 4)</td>
<td>(21,387)</td>
<td>29,201</td>
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<td>Printing, stationery, postage and sundries</td>
<td>7,810</td>
<td>6,133</td>
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<tr>
<td>EU and other projects</td>
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<td>208,861</td>
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<tr>
<td>Summer School</td>
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<td>41,696</td>
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<tr>
<td>Depreciation</td>
<td>7,298</td>
<td>6,998</td>
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<tr>
<td><strong>Total Expenditure</strong></td>
<td><strong>1,394,866</strong></td>
<td><strong>1,249,962</strong></td>
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</tbody>
</table>

**Surplus of income over expenditure** | **42,634** | **49,138** |

Expenditure relating to 2015/2016/2017 | 46,090 |

Expenses relating to 2014/2015/2016 | 50,288 |

**Net Surplus of income over expenditure**
(expenditure over income) | **(3,456)** | **(1,150)** |
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>€</td>
<td>€</td>
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<tr>
<td>FIXED ASSETS</td>
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<td></td>
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<tr>
<td>Equipment</td>
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<td>21,211</td>
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<td>CURRENT ASSETS</td>
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<tr>
<td>Debtors</td>
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<td>479,038</td>
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<tr>
<td>Bank accounts</td>
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<td>1,047,515</td>
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<td></td>
<td><strong>1,526,553</strong></td>
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<td>CURRENT LIABILITIES</td>
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<td>Creditors</td>
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<td>907,155</td>
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<td></td>
<td></td>
<td><strong>928,366</strong></td>
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<tr>
<td>REPRESENTED BY:</td>
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<tr>
<td>Accumulated fund at</td>
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<tr>
<td>1st January</td>
<td></td>
<td>931,822</td>
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<tr>
<td>Adjustment for Swiss VAT</td>
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<td></td>
</tr>
<tr>
<td>Less: Surplus of expenditure over income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add: Surplus of income over expenditure</td>
<td></td>
<td>-3,456</td>
</tr>
<tr>
<td></td>
<td><strong>928,366</strong></td>
<td><strong>931,822</strong></td>
</tr>
</tbody>
</table>
NOTES TO THE FINANCIAL STATEMENTS -
YEAR ENDED 31 DECEMBER 2014

1. FIXED ASSETS

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Equipment brought forward</td>
<td>20,999</td>
<td>22,682</td>
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<tr>
<td>Additions during the year</td>
<td>7,671</td>
<td>5,315</td>
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<tr>
<td>Disposals during the year</td>
<td>(395)</td>
<td>-</td>
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<tr>
<td></td>
<td><strong>28,275</strong></td>
<td><strong>27,997</strong></td>
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<tr>
<td>Less: depreciation @ 25%</td>
<td>7,064</td>
<td>6,998</td>
</tr>
<tr>
<td></td>
<td><strong>21,211</strong></td>
<td><strong>20,999</strong></td>
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</table>

2. DEBTORS

<table>
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<tbody>
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<td>Sales ledger balances</td>
<td>479,038</td>
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<tr>
<td>Other debtors</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td><strong>479,038</strong></td>
<td><strong>404,624</strong></td>
</tr>
</tbody>
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3. CREDITORS

<table>
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<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM conference amounts due</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Purchase ledger balances</td>
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<tr>
<td>Membership fees received in advance</td>
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<td>PAYE owed to inland revenue</td>
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<td>Taxation</td>
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<td>Other sundry creditors</td>
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<td>EU and other projects</td>
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<td>VAT</td>
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<tr>
<td></td>
<td><strong>619,398</strong></td>
<td><strong>610,512</strong></td>
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</tbody>
</table>

4. EXCHANGE RATES

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 2014, which was £1 to €1.287045 (2013 £1 to €1.203104) and differences arising are shown in the Income and Expenditure account as ‘exchange rate differences’.

5. EXPENDITURE IN ADVANCE

Expenditure of €46,090 has been included in the accounts this year which relates to 2015/2016/2017. This has been shown as a separate item in the profit and loss account.
www.epma.com