

EPPSA Annual Report 2013



European Power Plant Suppliers Association

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EPPSA

Introductory Statement

■ The European Power Plant Suppliers Association (EPPSA) is the voice, at European level, of companies supplying power plants, components and services. EPPSA members, located throughout Europe, represent a leading sector of technology with more than 100 000 employees.

EPPSA actively promotes awareness of the importance of flexible and efficient, state-of-the-art thermal power generation and its crucial contribution to ensuring a clean, secure, and affordable energy supply.

EPPSA believes increased investment in Research, Development and Demonstration is a key factor in driving EU competitiveness as well as ensuring an affordable low emission power supply.

Virtually all thermal power plants in the EU are built by members of EPPSA or equipped with their components, and provide more than 50% of Europe's electricity. EPPSA members provide the most advanced thermal power technologies in the world.

“The level of energy cost
is of the essence
for the industry’s
competitiveness.”

Antonio Tajani,
Vice-President of the European Commission

Antonio Tajani,
Vice-President of the European Commission,
Commissioner for Industry and Entrepreneurship



■ The economic crisis has proved that industry is a cornerstone of the European Economy. Member States with a strong industrial base were able to cope with the crisis in a more successful manner. However, some 4 million jobs in industry have been destroyed since the beginning of the crisis in 2008, accompanied by a drop of the sector's GDP share to only 15.1% in 2013 and significantly decreased private and foreign investments. As a result, de-industrialisation has been accelerated and the EU lost ground in terms of competitiveness with other economic regions.

In order to boost economic growth and employment and to restore competitiveness, the European Commission launched a strategy on the re-industrialisation of Europe in 2012. The strategy aims at increasing the share of manufacturing of GDP from 15% to 20% by 2020. Despite the Commission's efforts and some tentative signs of recovery, the European industry is still facing several issues hampering its striving towards increased competitiveness. In addition to access to finance, internationalisation and trade, the level of energy cost is of the essence for the

industry's competitiveness. Already the highest among competing market in the world, energy costs in Europe have further increased. They are now around double than those of the United States and more than three times higher than in China. As a result, Europe's competitiveness is seriously impaired. Numerous companies, foremost from energy-intensive industries, have already relocated to outside Europe implying loss of both jobs and technical expertise.

The re-industrialisation of Europe is only feasible if both the EU and Member States implement necessary reforms in a consequent manner. Therefore, in terms of reducing energy costs, we must reshape the European energy environment towards a common market for the purpose of decreasing energy costs for both industry and households. Lower price levels are capable of boosting competitiveness significantly. Moreover, new market instruments are needed to ensure that the three EU energy objectives – competitiveness, sustainability and affordability – are met. In this context, the deployment of all efficient, clean and innovative energy technologies is a key factor.

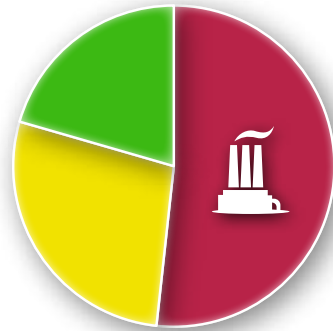
A second, but not less important aspect for Europe's re-industrialisation is increased investment in research, development and demonstration. We need to intensify our efforts to encourage and foster public and private investments. Thus, we can develop innovative technologies, maintain technological leadership and improve Europe's competitiveness. Despite the increased funding for R&D in the EU's 2014-2020 budget, emphasis has to be laid on mechanisms that spur applied research which is of supreme importance for the European industry.

I am very optimistic about the re-industrialisation and restoration of competitiveness in Europe. I do believe that, with further reforms and integration of Member States and EU efforts, we can overcome the crisis even more quickly. I would like to thank EPPSA for its continued endeavours in promoting efficient energy technologies, research and demonstration as well as for its contribution to Europe's on-going re-industrialisation.

“Thermal power plants
contribute to grid stability and
affordable energy costs.”

Emmanouil Kakaras, EPPSA President

Emmanouil Kakaras,
EPPSA President



2010

■ Achieving the European Union's long-term climate goals requires a well-balanced energy mix that enables the deployment of all efficient, clean and innovative energy sources.

The current European energy framework reinforces the integration of renewable energy sources (RES) into the system and thus restrains both grid stability and security of supply. Nonetheless, intermittent solar and wind energy are supported by thermal power plants stepping in and providing flexible back-up and balancing power.

State-of-the-art flexible and efficient thermal power technology is capable of meeting the European energy system's requirements today as well as in the near future and can contribute to both grid stability and affordable energy costs. However, the energy-only market is disrupted and prevents the deployment of the most efficient, flexible and clean thermal power technologies. This, in turn, undermines the European Union's energy goals in sustainability, competitiveness and security of supply.

Moreover, due to the lack of investments, the inadequate deployment of state-of-the-art technologies entails the risk of losing technological leadership and engineering skills as well as harming Europe's global competitiveness. Against the background of the future role of thermal power, the described development is highly alarming and demands urgent implementation of new investment incentives: according to the European Commission, fossil fuels will account for up to 30.6% of Europe's energy mix in power generation by 2050, making investments in flexible, clean and efficient technologies crucial for achieving the EU's decarbonisation goals.

Paradoxically, even though generation costs for electricity are low, retail prices appear, provoked by national public intervention schemes, to be high. In fact, wholesale electricity prices will, according to the European Commission "Delivering the internal electricity market and making the most of public intervention" [C(2013) 7243 final], vary from €100 to €200 per MWh.

EPPSA believes that sufficient deployment of state-of-the-art thermal power technologies is key for both ensuring Europe's competitiveness and, in combination with investments in Research, Development and Demonstration, boosting Europe's ongoing re-industrialisation. Moreover, the energy trilemma of affordability, sustainability and security of supply can only be solved if thermal power is enabled to play its key role as provider of flexible back-up power in complementarity to the highest possible share of RES in the European energy system. Therefore, EPPSA encourages the European Institutions and the national governments to develop market-based mechanisms that incentivise the deployment of all flexible, clean and innovative energy technologies and support the diversification of Europe's energy generation mix.

A handwritten signature in blue ink, appearing to read 'E. Kakaras', with the full name 'E. KAKARAS' printed below it.

EPPSA believes

- › in a balanced energy mix
- › that electricity must be affordable for consumers and industries
- › in Europe's technological excellence

The graphic features a blue gradient background with a stylized image of a power plant on the left. The text 'EPPSA Key Messages' is prominently displayed in the upper left. 'EPPSA' is in white, 'Key' is in white, and 'Messages' is in a large, bold, green font. A small grey box with the number '09' is located in the bottom right corner.

EPPSA Key Messages

09

To meet the tremendous growth in demand for electricity and ensure the security of supply, all available sources are needed. There is not one, ideal energy source.

Electricity in the EU must be affordable for consumers and industries to remain at the forefront of competitiveness in a global dimension.

Increased investment in Research, Development & Demonstration (R, D & D) in more environmentally friendly technologies, inter-alia, Carbon Capture and Storage (CCS) technologies, is vital. Improved flexible, efficient and clean fossil fuel power plants need rapid implementation to preserve scarce natural resources and achieve CO₂ reduction targets. Funding, a comprehensive legal framework and public support are needed to make demonstration plants happen and keep Europe a global leading knowledge-based economy through centres of R, D&D excellence creating skills and jobs.

“Growing from 7 to 20 members
in the last 10 years
is a remarkable achievement.

It shows the importance of
the thermal power generation industry for
Europe’s continuous growth.”

Patrick Clerens, EPPSA Secretary General

Communications Activities

■ Technology Evening 2013

The seventh edition of the Technology Evening was held under the motto: **Conventional Power – Vital for Grid Stability**. This year's event was important for EPPSA as it was celebrating its **10th anniversary** and the first under the chairmanship of **Professor Kakaras!** The occasion brought together some 150 key players from the European energy policymaking and generation industry. In his first opening speech as EPPSA President, Professor Emmanouil Kakaras (Vice-President, Research & Development at Hitachi Power Europe) highlighted that the key elements required for the good functioning of the European energy system include thermal power generation. Emphasis was given on the benefit that all energy sources can contribute to ensure Europe's sustainable, secure and clean energy supply.

Mr Niels Ladefoged, responsible for energy in the Cabinet of Commissioner Hede-gaard (Climate Action), went on explaining the Commission's viewpoint on the inclusion of thermal power generation from the environment and climate objectives' perspective. "Balancing resources in an electrical system with high share of variable generation" was the title of the next intervention. Christophe Druet, Elia Group, emphasised the need for highly flexible generation assets to maintain the balance between load and generation. Professor

of Power Plant Engineering and Carbon Capture at the University of Edinburgh, Jon Gibbins presented the issue from an academic point of view with possible solutions, focusing on thermal power generation to take up this role.

■ EPPSA Power Plant basics – "How does it work?"

Back in 2007, EPPSA launched a series of sector-specific group workshops designed to promote awareness of the fundamentals of power generation at a European policymaker's level. This year again, EPPSA held meetings on power plant basics at several of the European Commission's Directorates-General (DGs) as well as at the European Parliament. These workshops aim to explain how power plants function as well as the physical constraints under which they operate.

■ Power Plant Flexibility 2013

"Maximising your plant's potential through effective maintenance and operational strategies" was this year's motto at the Power Plant Flexibility conference held in Vienna in March 2013. This industry-led, technical conference covers the current and most pressing issues that all power operators face within the changing power market in Europe. The conference also featured new technologies for

enhanced power plant flexibility and in depth analysis of the European energy market. EPPSA Secretary General, Mr Patrick Clerens, opened the conference with a presentation on The European Power Market and the Impact of EU Policy on Power Plant Flexibility.



EPPSA's 10th anniversary



EPPSA's 7th Technology Evening



Mr N. Ladefoged, European Commission (DG Clima)

EPPSA President E. Kakaras at VGB Congress 2013



EPPSA team at Power-Gen Europe 2013



Mr C. Druet (Elia) at EPPSA Technology Evening 2013



Networking at the Technology Evening

■ Power-Gen Europe 2013

EPPSA was, once again, invited to chair a session on the EU Strategies for the European Power Sector at this year's Power-Gen Europe. The theme **Keeping Europe's Power Flowing** guided the insightful and thought-provoking multiple track conference sessions that cover strategic and technical topics chosen and presented by leading practitioners from the power industry. EPPSA was also present with its booth on the exhibition floor.

■ Green Week 2013

The 2013 edition of Green Week, the biggest annual conference on European environment policy, took place from 4 to 7 June in Brussels. This year's theme was **Air Quality** and spread over three days of conferences and exhibition. EPPSA's chair of the Flue Gas Cleaning Working Group, Dr Harald Reissner, was invited to hold a presentation on **Air Quality Control Systems for Large Combustion Plants – Have we already crest Mount Olympus fulfilling lowest emission values?** as part of the session addressing the regulation of emissions in the Large Combustion Plants (LCP) Directive to the Industrial Emissions Directive.

■ VGB Congress 2013

This year's VGB Congress was held in Maastricht under the title **Security of Supply: Power Generation at the Crossroads?** EPPSA President, Professor Emmanouil Kakaras was invited to hold a presentation during the plenary on the "Solutions from the European power plant suppliers' perspective" where he highlighted the different aspects of the current energy system in the EU, its problems and a possible solution to think about... In order to support and represent its members, the EPPSA Secretariat travelled to Maastricht and held an information stand on the exhibition floor.

■ EPPSA Publications

In September 2013, EPPSA published its brochure: **Energy Supply for Europe – Facts & Perspectives**. This brochure is aimed at introducing key facts on the current power generation in the European Union and the need for, inter alia, a balanced energy mix, security of supply and Research, Development and Demonstration in clean technologies. It also calls on the shared responsibility from EU policymakers, industry and more importantly, citizens. "We are in it together!"

All EPPSA publications, presentations and information are available on the website, www.eppsa.eu.

Medium Combustion
Plants Directive

Large Combustion Plants
BREF Review Process

Strategic Energy
Technology-Plan

International Coal
Dialogues

Policy

Activities



European Technology
Platform – Zero Emissions
Fossil Fuel Power Plants

ENTSO-E – TYNDP

Public
Consultations

EPPSA
Collaborations



EPPSA Secretary General, Patrick Clerens, chairing the EU Strategy Session at Power-Gen 2013



LCP BREF/FGC Working Groups

■ Large Combustion Plants (LCP) BREF Review Process

The Large Combustion Plant Best Reference Document (LCP BREF), part of the Industrial Emissions Directive, have a major impact on permits given to new power plants as it will become a binding legal document for permitting authorities involved in the construction or retrofitting of power plants in the European Union. Seen as a major stakeholder in the European power sector for conventional plants, the association has been involved in the process since its first version in 2006. From 2011 onwards, a review has been taking place and EPPSA has naturally been part of it when invited to the kick-off meeting held in Seville, Spain. In 2012, EPPSA continued its efforts to support the Commission with the questionnaires sent to a large number of conventional power plants in the

European Union and with expert input on specific points. In 2013, the association continued its involvement to the LCP BREF drafting with the contribution of its own Emission Limit Values associated with Best Available Technologies (BAT-AELs).

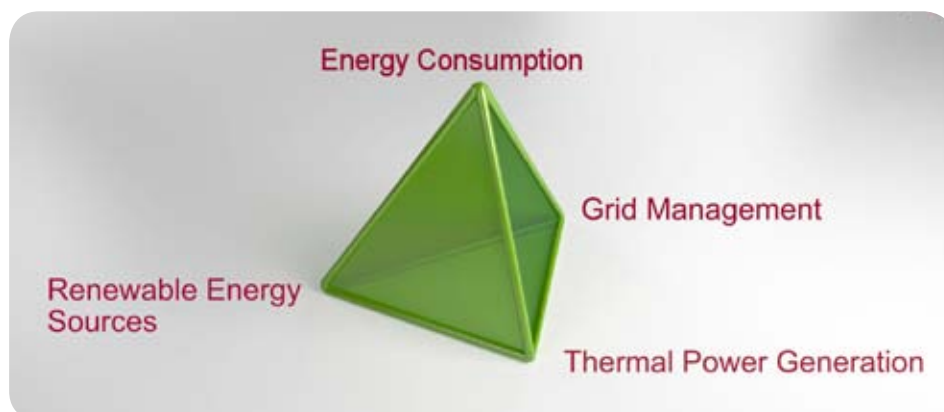
■ Medium Combustion Plants

In its drafting of the “analysis of the impacts of various options to control emissions from the combustion of fuels in respective installations with a total rated thermal input below 50MWth”, the European Commission detailed assessment of the environmental, economic and social impacts of a number of defined options to control emissions from the combustion of fuels in installations with a total rated thermal input below 50MWth. Results of this new study will feed into the current review of the EU Thematic Strategy on Air Pollution and Related Policies. Seen

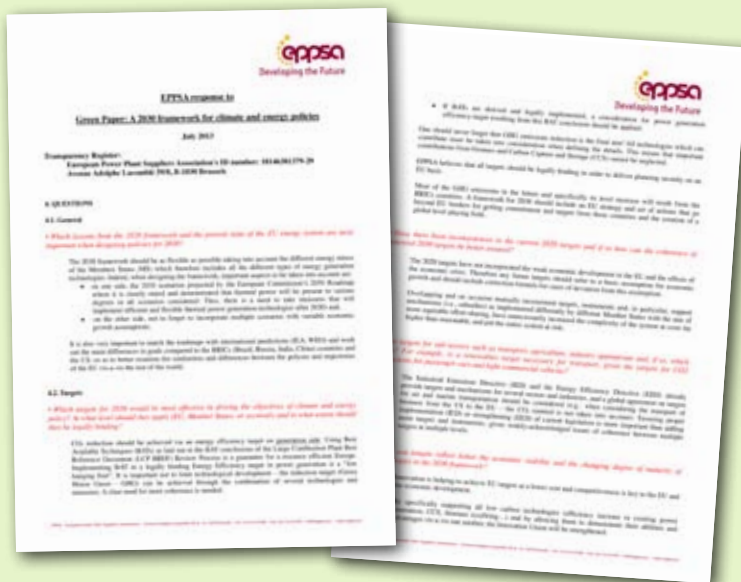
as a key source of information for this type of topic, EPPSA was requested to give its input which was coordinated within the Flue Gas Cleaning Working Group.

■ Strategic Energy Technology Plan

Established in 2007, the SET-Plan develops an energy technology policy for Europe. It's a strategic plan to accelerate the development and deployment of cost-effective low carbon technologies. The plan comprises measures relating to planning, implementation, resources and international cooperation in the field of energy technology. In addition, it supports the Horizon 2020 Framework Programme for Research (2014-2020). Within the SET-Plan, EPPSA participates in the on-going efforts to draft the Integrated Roadmap which combines all the different technological needs to achieve the set goals.



Animated Triangle Elements of Grid Stability



■ International Coal Dialogues

The European Commission has established bilateral working groups with several major coal producing/using countries. The working groups bring together policy makers, industry and academia to discuss policies, best practices and technologies enabling the efficient use of coal and minimising its environmental impact. EPPSA strongly co-operates with the European Commission in this domain in order to deliver clean coal power generation to countries with a need for modern technology. EPPSA provides its members with information regarding ongoing EU Energy dialogues, especially the Clean Coal working groups. The association was invited to participate to the 7th EU-India Clean Coal Working Group meeting from 17 to 19 June 2013 organised by the DG Energy.

■ ENTSO-E Ten Year Network Development Plan

The European Network of Transmission System Operators for Electricity (ENTSO-E) was mandated by the European Commission to develop a biannual Ten Year Network Development Plan (TYNDP) from 2012 onwards. The TYNDP is designed to increase information and transparency regarding the investments in electricity transmission systems which are required on a pan-European basis and to support

decision-making processes at regional and European level. Seen as a prominent stakeholder in the EU energy scene, EPPSA was invited to participate in the Long-Term Network Development Group (LTNDG). In addition, EPPSA is involved in the currently developed Network codes.

■ European Technology Platform – Zero Emissions Fossil Fuel Power Plants (ETP ZEP)

EPPSA has been actively supporting the Zero Emissions Fossil Fuel Power Plants Technology Platform since its creation to which it gave an important contribution in 2004. Since 2005, EPPSA also supports the ZEP Platform financially. EPPSA and its members attend the ZEP General Assembly, the Coordination Group and the ZEP's Advisory Council held in Brussels.

■ EPPSA Collaborations

EPPSA has, in 2013, started to collaborate with research facilities in order to bring together industry and research centres to foster the development and the dissemination of power plant technologies. By conducting this technology research, EPPSA members promote efficiency and competitiveness in the European energy market. The association is looking forward to the years to come and the fruitful collaboration between the research facilities and its members.

■ Public Consultations

EPPSA exists to represent the interests of its members to the European institutions and the wider energy community, and thus a key role of the association is responding to the latest developments in European policy. In the last year, EPPSA has responded to the following public consultations:

07.02.2013: Consultation on generation adequacy, capacity mechanisms and the internal market in electricity

04.03.2013: Consultation on options for revision of the EU Thematic Strategy on Air Pollution and related policies

15.03.2013: Consultation on the Communication on energy technologies and innovation

23.03.2013: Consultation on Unconventional fossil fuels (e.g. shale gas) in Europe

26.06.2013: Consultation on the 2015 International Climate Change Agreement: Shaping international climate policy beyond 2020

02.07.2013: Consultation on the Green Paper on a 2030 framework for climate and energy policies

02.07.2013: Consultation on the Communication on the Future of Carbon Capture and Storage in Europe

All EPPSA publications, responses and information are available on the website, www.eppsa.eu.

Vice-President
Michele Passini



President
Emmanouil Kakaras



Vice-President
Rainer Redinger



Technical Chair
Klaus-Dieter Tigges



Public Relations Chair
Annette Titzmann



Secretary General
Patrick Clerens



Treasurer
Pierre Melin

Organisation Chart

General Assembly

Members



Massimo Danieli
ABB Group



Leif Timmermann
Alstom Boiler Deutschland



Martin Pogoreutz
Andritz



Massimo Penati
Ansaldo Caldaie



Georg Gasteiger
Bilfinger Power Systems



Carlo Trifone
BWE



Stéphane Crévecœur
Carmeuse



Franz Bartels
Clyde Bergemann



Pierre Melin
CMI Energy



Jill Duggan
Doosan Power Systems



Mervyn Sambles
Fluor



Kari Niemelä
Foster Wheeler Energia



Emmanouil Kakaras
Hitachi Power Europe



Bob McCabe
Howden Group



Paolo Magaldi
Magaldi Power



Karel van Buuren
NEM



Giuliano Cavagnoli
Nooter/Eriksen



Michele Passini
STF



Marco Derksen
Stork Thermeq



Rainer Redinger
TLT-Turbo



EPPSA Technical Committee

■ To bear on the latest developments in European energy and environment policy related to power generation, the Technical Committee brings together the industry's experts in thermal power plant engineering. Chaired by Dr Tigges from Bilfinger Power Systems, EPPSA's Technical Committee, working closely with the Public Relations Committee, provides knowledge for the content for the association's position papers and communication's materials. The Technical Committee is also responsible for the different working groups dealing with the technicalities for the association:

This year again, the large combustion plants BREF Working Group worked on the reference document on Best Available Techniques for Large Combustion Plants as its revision by the European Commission was launched mid March 2011 and will continue through 2014.

In 2012, Dr Reissner from Andritz Energy & Environment took the lead of the Flue Gas Cleaning Working Group, a Working Group dealing with the classical emissions to air, e.g. sulphur, nitrogen and dust, but also looks at mercury and carbon dioxide capture-related issues. The Working Group focused its attention on the association's

ongoing work on monitoring the evolution of the debate on these topics both at a European and International level. Because of its expertise, EPPSA was contacted in order to deliver technological solutions and qualified information on mercury and other emissions and by-products. The Flue Gas Cleaning Working Group worked hand-in-the-hand with the LCP BREF Working Group to increase the impact of its documents towards the European Institutions. The Working Group is also elaborating papers on the latest development in Mercury Removal Technologies and Best Practices in Flue Gas Cleaning Refurbishment.

In order to remain in line with the work at European level, the association's Electrical Systems & Markets Working Group concentrates on the latest developments at European level in the grid infrastructure and how this impacts power plants. The main topics dealt with are security of power plants and primary response reserves, including requirements and standards for power plants based on the current ENTSO-E Network Codes development, impact of grid connection standards on power plants, impact of market mechanisms and rules on power plant control and optimisation, critical Infrastructure IT security and more.

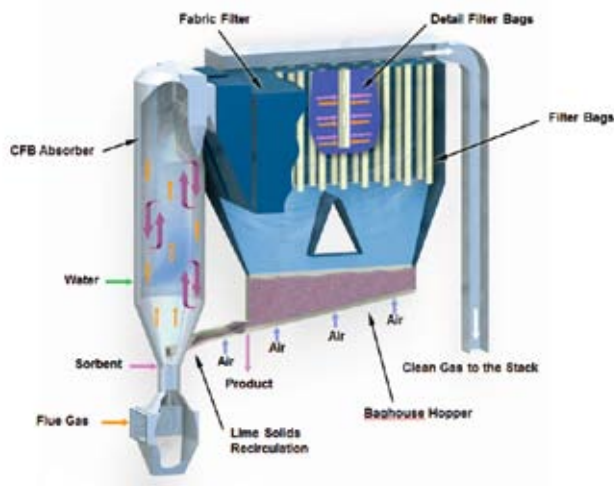
Technical Committee

Over the years, the European manufacturing industry has increasingly disclosed cases of IPR infringements of their technologies from third countries. In order to have a coordinated response to these illegal practices, EPPSA's Intellectual Property Rights Working Group brings together the expertise of the members' IP managers.

Keeping Europe and more precisely European industries at the technological forefront of the global industry is a chal-

lenge, albeit a feasible one, that needs to be addressed. By ensuring sustained investments in power generation in the long term, Europe will be covering the leap forward that is needed in order to remain competitive and ensure the security of energy supply needed to push its industry. These crucial investments can, furthermore, guarantee existing employment while boosting the creation of future jobs.

Example of CFB scrubber process flow schematic





EPPSA Public Relations Committee

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■ The Public Relations Committee plays a vital role in the shaping of EPPSA's goals and strategies as well as formulate EPPSA's public approach regarding all matters, including EPPSA events and promotional materials. Chaired by Ms Titzmann from Alstom Germany, the Public Relations Committee is composed of a blend of communications experts with completely different backgrounds including marketing and sales, public relations and engineering. This is why the committee members are ideally qualified to define how to bring the message across as it remains one of the most important tasks for a Brussels-based association. The Secretariat develops its contact lists by networking the European circles, but this is only partially efficient to achieve the set targets if the means to deliver the message are not of the same quality. The content is important, but often the way of presenting is at least as crucial.

Since EPPSA's move to Brussels in 2005, through its various Taskforces, the Committee developed and continues to revise EPPSA's communications strategy and the association's key messages. One of the main tools to accomplish this is the EPPSA Annual Event.

Designed to educate policymakers and industry alike, the event combines informative presentations with a relaxed networking atmosphere. Moreover, it allows the association to display innovative technologies currently under development by equipment suppliers and what EPPSA member companies have to offer. This comes hand in hand when working in the close synergy with their colleagues of the Technical Committee. This year, again, the Technology Evening held under the motto: Conventional Power – Vital for Grid Stability was a key event on the Brussels scene.

The Public Relations Committee plays an important role in bringing members together to provide guidance and address concerns in order to find the best ways to convey EPPSA's messages to the European Institutions, key stakeholders and the general public.

It is the Public Relations Committee that is ultimately responsible in deciding which events EPPSA should take part in. Events like the Hannover Messe, Power-Gen Europe and the VGB Congress proved to be invaluable means to reach a wider audience and promote the association's message of sustainable, clean and secure energy from thermal power generation.



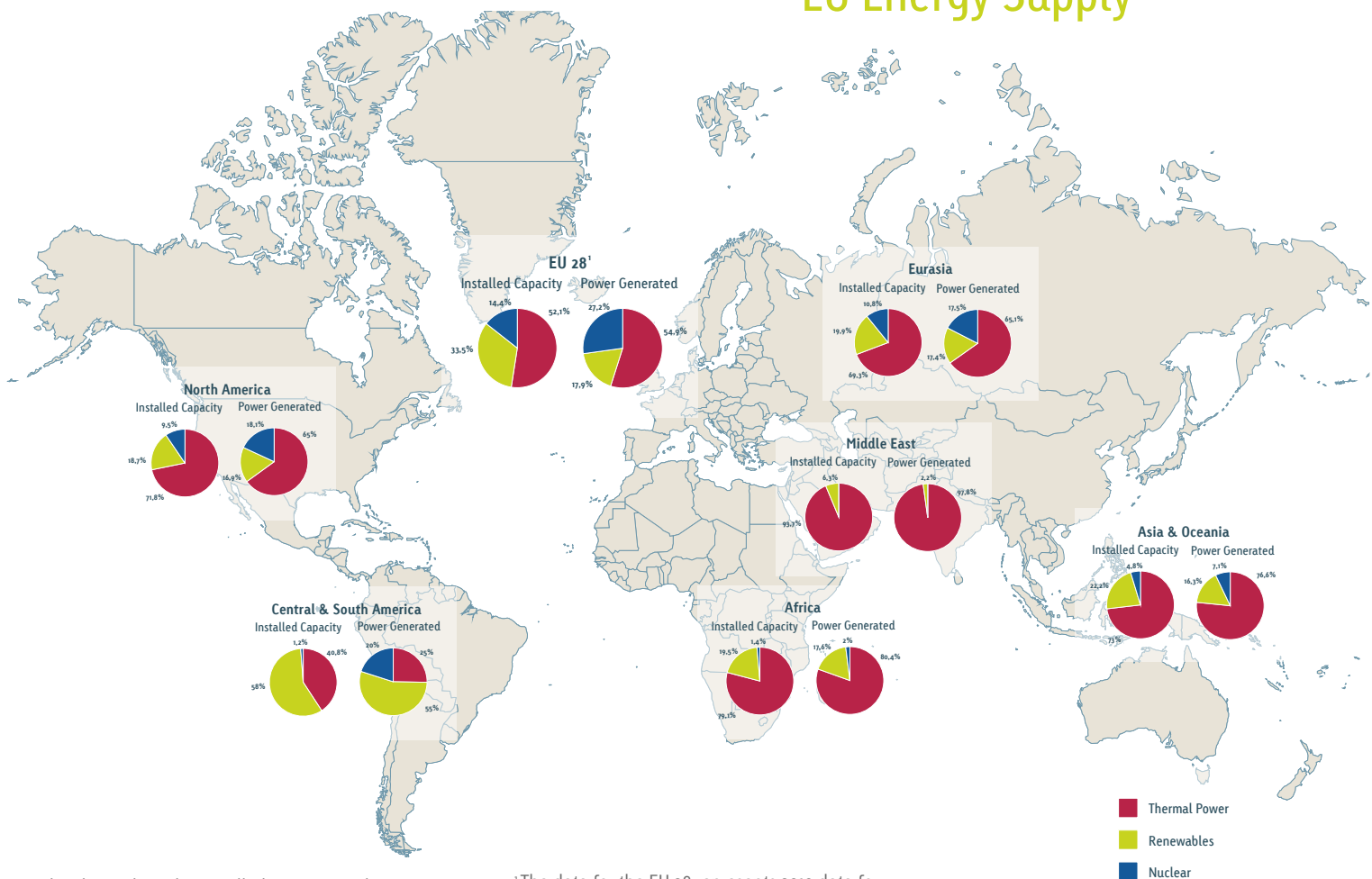


Public Relations Committee

Thermal Power Generation:

The Backbone of Global and EU Energy Supply

21



The charts show the installed capacity and power generated by generation type for the year 2010, as percentage shares of the total for that year.

¹The data for the EU 28 represents 2010 data for the EU 27 plus Croatia, which at that time was not yet a member.

Sources: Eurostat, 2013
U.S. Energy Information Administration (EIA), 2013



■ Patrick Clerens has been the **Secretary General** of EPPSA since its establishment in Brussels in January 2005. Building upon his prior experience as EPPSA's Brussels Representative since 2003, he liaises between member companies and the EU institutions on issues related to energy and clean fuel technology. Mr Clerens studied law at the University of Saarbrücken and the University of Mainz. Since 1991, he has worked as a consultant for a private company specialising in European Affairs in Brussels.

EPPSA Secretariat

■ EPPSA's Secretariat is the bridge between the member companies and the EU institutions. It consists of on the one hand the Secretary General and on the other hand the Policy Officer, supported by a Policy Assistant. Together, they monitor EU legislation concerning energy and funding opportunities. The secretariat promotes the awareness of the positive implications of technologies in conventional power generation.



■ Nicolas Kraus joined EPPSA in September 2011 where, as **Policy Officer**, he is in charge of coordinating the legislative, lobbying, communications and public relations activities of the association. Prior to joining EPPSA, Mr Kraus worked in the Business Development Department of the Byblos Bank and a pharmaceutical supplier in the Middle East, representing leading European companies specialising mainly in the fields of pharmaceuticals equipment, diagnostics and paper. Mr Kraus completed his studies of Business Management Administration and Business Policies at the Henley Business School [UK].

■ Alexander Scheibe is the current **Policy Assistant** at EPPSA and responsible for all facets of the association's public relations and interaction with the members. He joined EPPSA after completing his Masters in Public Policy at the Willy Brandt School of Public Policy.





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ABB



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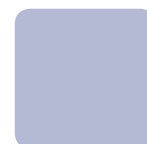
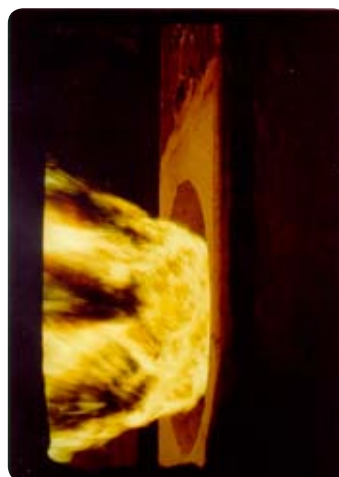


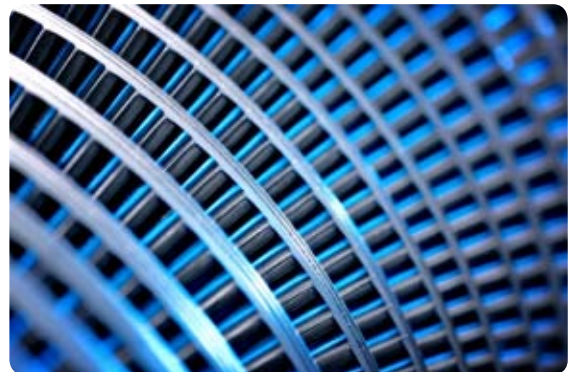
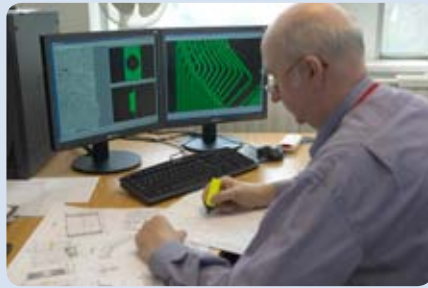
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