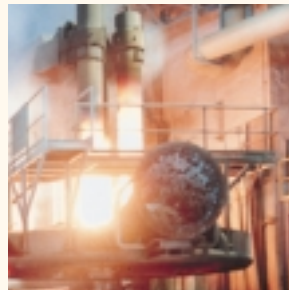
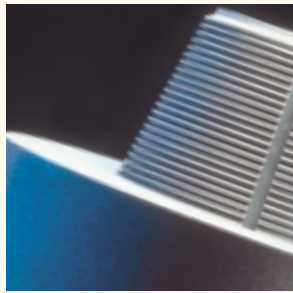


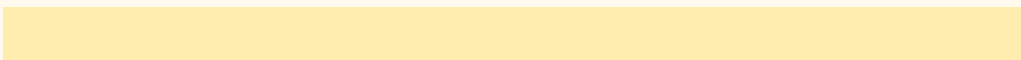
# ECGA

European Carbon and Graphite Association

## Annual Report



# 2000



# Foreword by Dr. Gerhard Rose, President of ECGA

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## Objectives and Highlights in 2000

In the course of the increasing European harmonisation of the EU member states and the growing globalisation the changes of the political, economic, ecological and legal framework conditions for Europe based industries have accelerated.

Industry federations such as the European Carbon and Graphite Association have to pay increasing attention to these changes, have to intensify contacts with authorities of all levels and with the companies themselves and have to endeavour to exercise their influence on various occasions.

During the past year undoubtedly one of the main focuses has been the EU's activities in the area of environmental legislation, in particular the development of the so-called BREF notes on the non-ferrous metal production within the framework of the IPPC Directive.

In particular with regard to the emission levels, we could influence the debate and achieve technologically and economically acceptable limit values, which will be recommended as Best Available Technique to the national authorities throughout the EU.

For the coming year 2001 the planned White paper on the EU's chemical policy will be a main issue.

Since the carbon and graphite industry as a small federation can only have a limited influence, we have located our offices with the larger well-known related industry federations (Eurometaux and Euromines). Our new Secretary General also has experiences in these industries, so that this union not only has a cost advantage, but results in an increased information exchange and a larger contact base.

In 2000 we produced a new association brochure describing our industry and the objectives of our association in order to facilitate internal and external communication.

We have installed a first website on the Internet containing a general part and will establish a further platform for internal communication providing up-to-date information for the members.

The growing globalisation has led us to take contact with the carbon and graphite associations in the USA and in Japan. For a start the information exchange will focus on environmental issues and standardisation of carbon and graphite products. All parties are interested in this information exchange.

Without the active participation of the member companies the work of the associations would not be possible. For the contributions during the past year we would like to thank all participating members.

Also in 2001 we will intensively continue this work for our industry.

European Carbon and Graphite Association  
Dr Gerhard Rose, President

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# The ECGA - representing the European carbon and graphite producers

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The ECGA, the European Carbon and Graphite Association, started in the early 1980's and reconstructed in its current form, was founded in 1995. Its members are the European producers of carbon and graphite products, ranging from graphite electrodes, cathode blocks and carbon electrodes for the steel, aluminium and silicon industries as well as specialty graphite products going into a large variety of applications.

The main objectives of the association are:

## The forum

Which provides a formal platform in which members evaluate the impact of European policies and legislation on the industry and define common positions and actions.

## The interface

Between the European carbon and graphite industry and the European authorities and international or intergovernmental bodies. It is committed to establishing a constructive dialogue with the EU institutions in order to ensuring early consultation in all those areas of policy and legislation affecting the industry and to asserting the industry's views and positions.

## The advocate

Of the European and graphite industry promoting the benefit and value of both the products and the industry to society, endeavouring to uphold the industry's interest and raising public awareness accordingly.

The association currently maintains 5 committees, 3 in its major markets of Steel, Aluminium, Silicon, one in the key area of Environment, Health and Safety and one on trade questions. These committees reviewed their objectives in 2000.

# Major markets - major committees

## 1. The Steel Committee

*Chairman: Dr Jäger, SGL Carbon*

One of the largest markets for the carbon industry is the graphite electrodes used in the production of steel in electric arc furnaces. The developments of the production and consumption of steel in Europe and worldwide, the technology development in the steel making industry are therefore a vital indicator for the development of the carbon and graphite industry.

### Total Steel Production

		WORLD		EUROPE	
		1984	2000	1984	2000
<b>CRUDE</b>	(mio t)	<b>594</b>	<b>847</b>	<b>157</b>	<b>180</b>
<b>ELECTRIC</b>	(mio t)	<b>178</b>	<b>283</b>	<b>47</b>	<b>76</b>
<b>Share</b>	(%)	<b>30,0</b>	<b>33,4</b>	<b>30,0</b>	<b>42,2</b>

Dr. Jäger ECGA 10.00/27.09.2000

source : IISI

*Table 1: Total steel production*

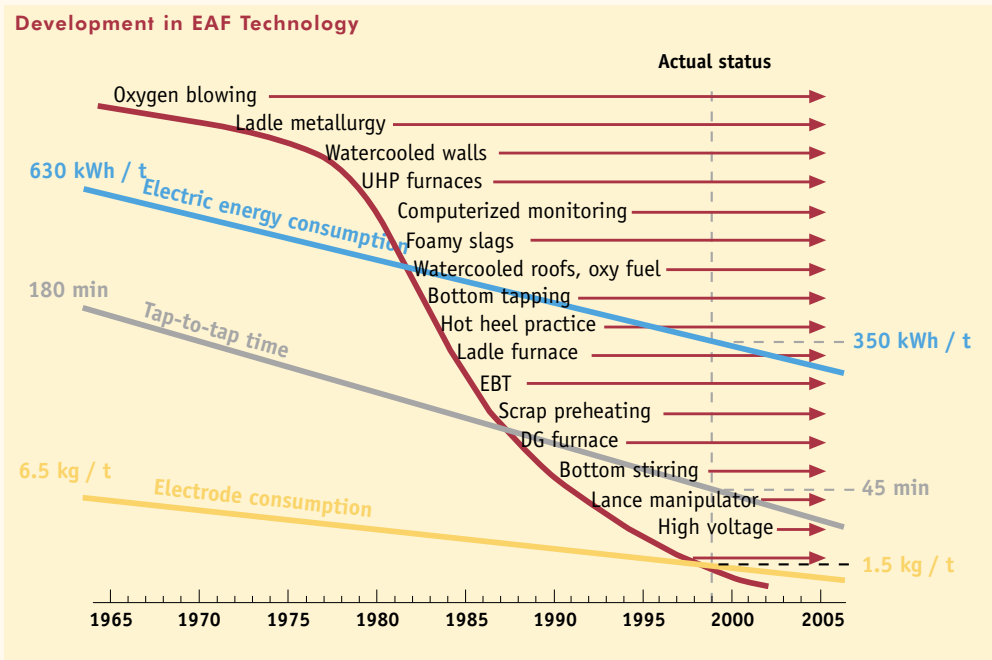
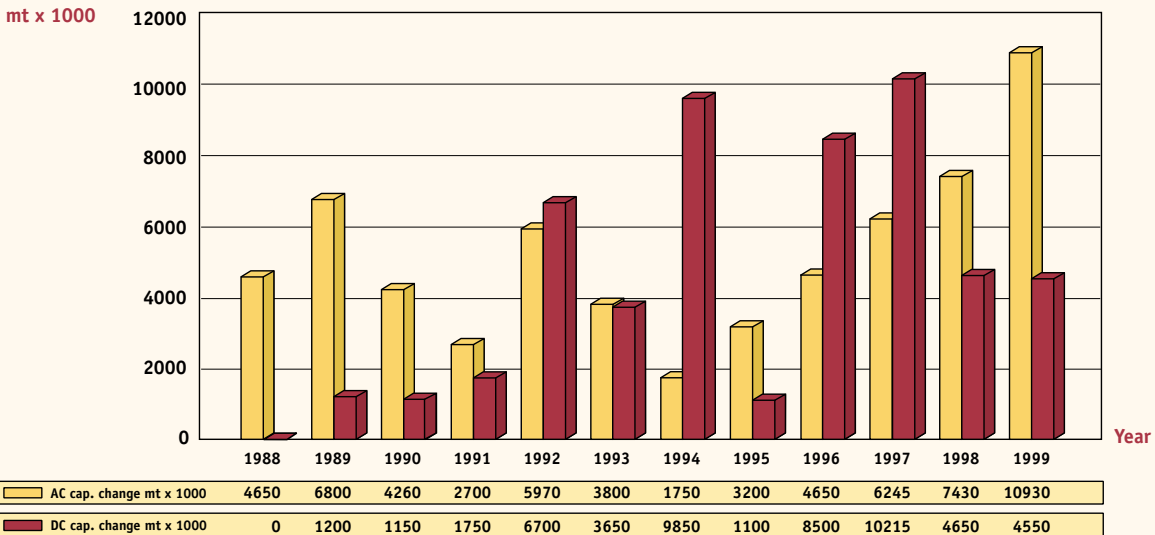
Worldwide, from '84 to '99 the total crude steel production increased by 1,9 % p.a. on average. But the electric steel share alone rose by 2,6 % p.a. indicating a clear tendency towards the electric steel.

Western Europe is still the biggest crude steel producer in the world with an actual share of roughly 22 %. In the last 15 years the annual production increased only by 0,9 % p.a. However, the annual electric steel production followed the worldwide tendency with an average increase of 2,6 % p.a. resulting in a crude / electrical steel share from 30 % for '84 to 40,7 % for '99. Whether the quality difference between crude and electric steel will have a further impact on this development will indeed also depend on the steel industry's customers and their demands as well as on future improvements in blast furnace technology.

Electric steel nowadays is produced in arc furnaces with alternating current (AC) or direct current (DC). The new DC furnace design with only one supersized graphite electrode in a central position was industrially developed in the middle of the eighties and became favourite for new projects up to the end of the nineties. Their major advantage is the reduction of flickers especially in countries with weaker networks. Originally existing problems with the bottom electrodes meanwhile can be regarded as solved and resulting lifetimes of up to more than 5000 heats indicate an excellent performance. Due to latest improvements in AC furnace

technology today the AC is regarded again as a good alternative for electric steel making. In line with the improvements in melting technology also better performing graphite electrodes are supplied to the markets resulting in lowered specific graphite consumption. The average in Western Europe is nowadays around 2,2 kg/t of liquid steel coming from 4,8 kg/t in '84. This indicates an average annual consumption reduction of 5,2%. Latest furnaces with AC as well as DC technology already achieve around 1 kg/t. Thus the influence of graphite electrode costs on total steel production costs in good-performing furnaces is in the range of 2% only. Scrap preheating combined with power on / off optimisations in steel plants may further influence the average graphite electrode consumption towards 1,5 kg/t.

**AC/DC worldwide nominal capacity change - 1988-1999**



The ECGA Steel Committee dealing with this market, its raw materials, steel production technology and its products evaluates the market situation on the basis of readily, publicly available statistical information and expert judgement.

It regularly invites outside experts from the steel industry or the steel consuming industries to assess the future developments. Its remit has been revised in 2000.

**1.** Collect, compile, and discuss information on the global graphite electrodes demand and the factors influencing it, both for the past and the future. In particular, this information has to refer to

- crude steel production by country
- steel production in electric arc furnaces by country
- new electric arc furnaces under construction or projected
- process technology and operational modifications in EAF steelmaking from the technical point of view (AC furnaces, DC furnaces, new technologies)
- future trends in EAF steelmaking
- specific electrode consumption (aggregated) in Europe
- impact of new regulations in customers' industries which may influence the share of EAF steel in the total steel production (economics, technology, environment, raw materials, energy,...) or the specific electrodes consumption.

**2.** In pursuing these objectives, the Committee and its members will always act in strict compliance with the European Rules on Competition.

**3.** Establish relations to other trade associations which can help pursuing the objectives of providing information on the development of customer markets, information on tendencies in raw materials, provided that

- the ECGA Board of Directors has given its approval prior to the first contact and
- the other association also complies strictly with the European Rules on Competition.

## 2. The Aluminium Committee

*Chairman: Dr Redlich, Erft Carbon*

Carbon cathode blocks and sidewall blocks form the cell furnace in which the electrolytic process producing aluminium takes place. The future development of the production of aluminium is therefore an important indicator for the carbon and graphite industry.

### Primary Aluminium Production 1984-2001

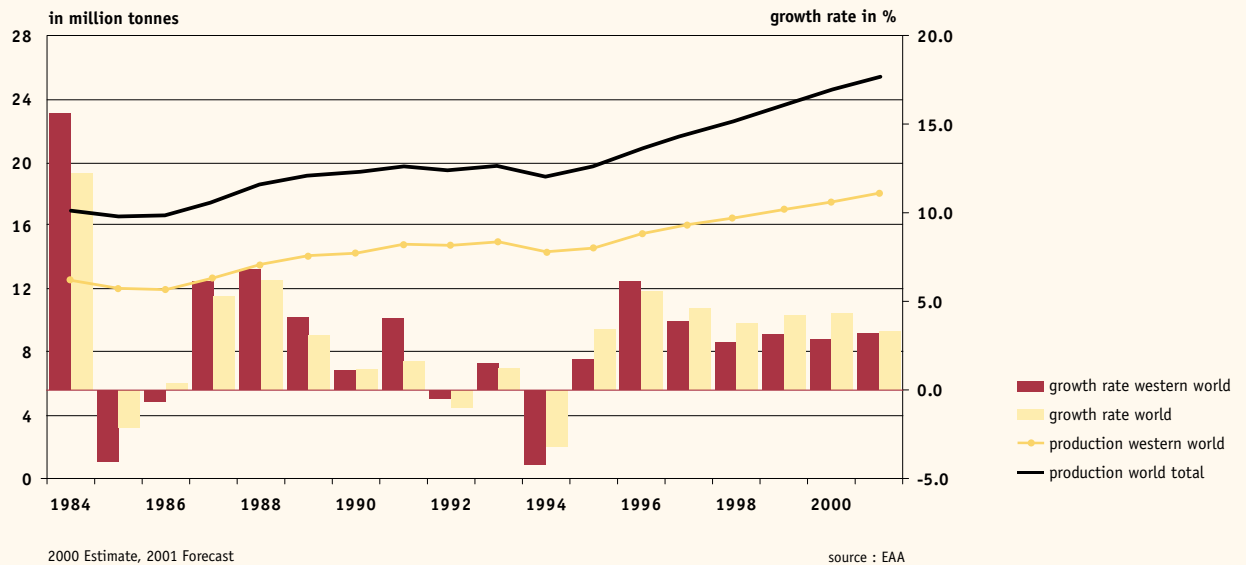


Table 1 : production

### Primary Aluminium Consumption 1984-2001

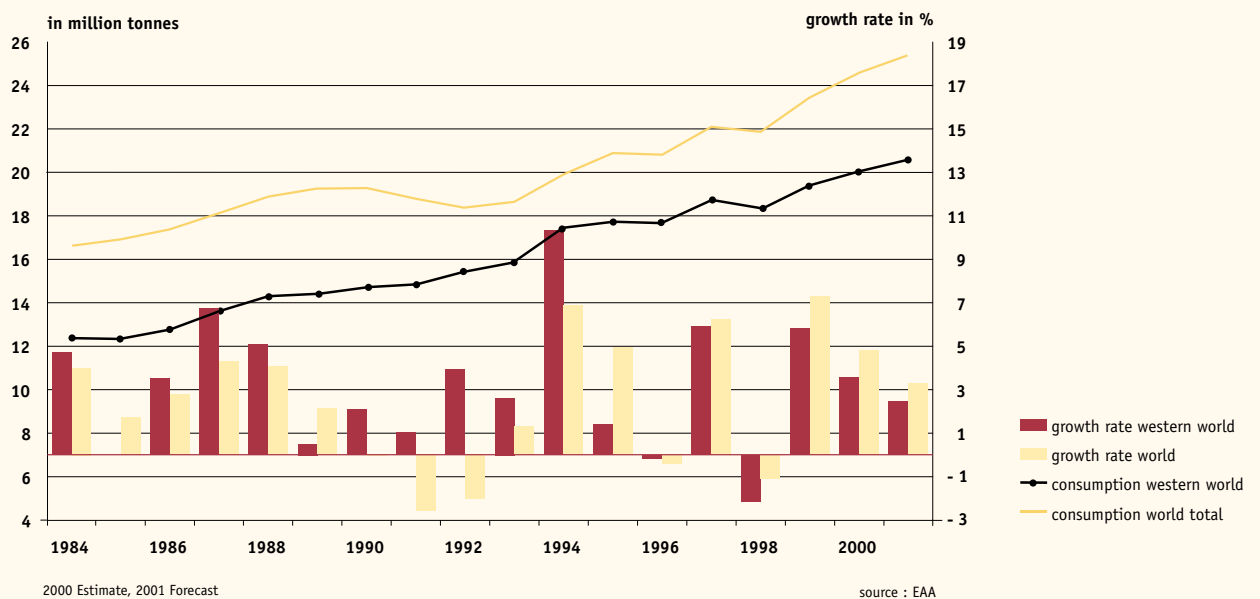


Table 2: Western World Primary Aluminium consumption forecast September 2000



After a sharp rise in 1999 the supply/demand situation in 2000 has remained stable. The areas for growing aluminium consumption are Europe and North America.

Looking at the world situation demand as well as production of aluminium is growing steadily, the capacity meeting the demand. The supply and demand chart dated September 2000 showed no substantial change related to former years. For the near future, only very few new smelter projects are foreseen.

Economic indicators suggest that in the future the Chinese market will be of growing interest. At this stage the Chinese smelters have very low capacities and it is reported that China will reduce its production in general since it does not have sufficient alumina supply to maintain production. At the same time it can be expected that with the growing industrialisation and increase in demand for consumer goods the demand for aluminium and its products will also rise.

The development of the market situation in the US could be another critical factor in the overall consumption of carbon blocks; in as much as some smelters intend to reduce their production.

### ***Competitive Technology : Anodes***

In 2000, Credit Suisse Bank has published a report which is called 'The Aluminium Revolution' indicating that the carbon industry in its current form will disappear in two to three years' time because of a new aluminium smelter technology using a new anode. However, the technology mentioned in the document currently is only operating on one (testing) cell.

Therefore the Committee felt that the predictions of the document could not be taken too seriously at this moment in time.

Although such technology would definitely provide cost savings for the aluminium industry, the question remains whether such technology would provide any environmental solution since the residues from the oil refineries would then be left without an industrial application.

The industry needs to monitor this development and needs to prepare itself for the moment when such technology becomes practically applicable and the carbon anode consumption consequently will dramatically decline.

With regard to the raw material supply situation for the sector, there are no changes for the coal tar pitch supply expected for the next years. The disastrous situation for the petroleum coke as predicted in 1990 has not come true, and no future dramatic changes are expected. Predictions from 5 to 10 years ago based upon the net carbon consumption have not come true. The specific consumption has decreased and the anodes are of better quality now. However, although there is no scarcity of pitch foreseen, it is expected that prices will go up. Concerning the anthracite market gas heating is fundamental. As the material is available, there is no critical situation either.

Like the other Committees the Aluminium Committee reviewed its objectives in 2000 and laid down a new working programme which would include the collection of vital and publicly available information for the assessment of the future use of carbon blocks and sidewall blocks for the aluminium electrolysis.

1. Collect, compile, and discuss aggregated information on carbon and graphite products' demand and the factors influencing it, both for the past and the future. In particular, this information has to refer to

- Primary aluminium production/capacities by country
- Aluminium consumption/stocks (aggregated)
- European export/import statistics, situation world wide
- Power situation
- Shut down and restart of aluminium capacities
- Competitive technologies

Where confidentiality is an issue figures will be gathered from the members by the Secretariat and the results will be redistributed after having been aggregated.

2. In pursuing these objectives, the Committee and members will always act in strict compliance with the European Rules on Competition.

3. Establish relations to other trade associations which can help pursuing the objectives of providing information on the development of customer markets, information on tendencies in raw materials, provided that

- the ECGA Board of Directors has given its approval prior to the first contact and
- the other association also complies strictly with the European Rules on Competition.

### 3. The Silicon Committee (Submerged Arc Furnace)

Chairman: Mr Sawatzki, ERFT Carbon

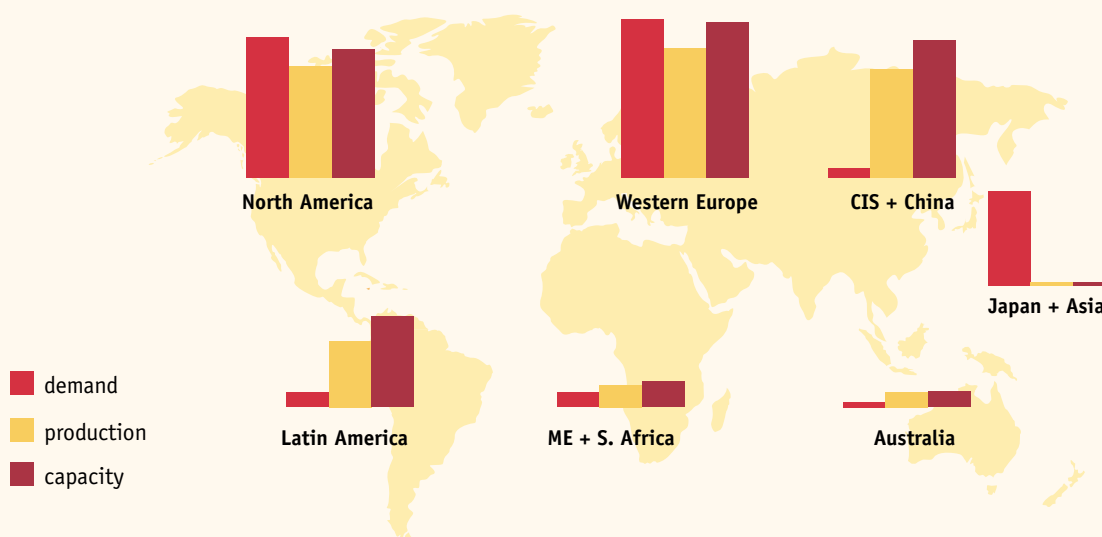
Electrodes  
in furnace



Carbon materials used in submerged arc furnaces are carbon electrodes and electrode paste.

Carbon electrodes are produced from anthracite, graphite and pitch. They are mainly used for the production of silicon metal and other products, like for example phosphorous.

The application of silicon metal is in the chemical industry for the production of silicones and in the aluminium industry as alloying metal for aluminium foundry alloys. For the future a higher demand of silicon metal is expected in the chemical industry rather than in the aluminium industry.



Graph: silicon metal production

SIMet Market 1999-2000

Starting from early 1990 the so-called composite electrode (an electrode with a graphite core surrounded by electrode paste) has partly substituted the use of the traditional carbon electrode.

Electrode paste is produced from anthracite and pitch in two different sizes:

- in briquette form of small size and
- in cylindrical form of larger size.

It is sold unbaked.

Its main application is for the production of different ferro-alloys, like FeSi, SiMn, CaC, etc.

Ferro-Alloys are used in the steel industry to produce different kinds of steel alloys.

Today the production of ferro-alloys in Europe has moved from West European countries to East European countries and China. Resulting from that also the production of electrode paste has increased in those countries.

### Submerged Arc Furnace Committee

In line with the Article 3 of the European Carbon and Graphite Association E.C.G.A. Articles of Association, the object of the Submerged Arc Furnace Committee is the following:

#### 1. Downstream analysis of the use of Silicon Metal:

- collecting information and statistics on the industrial applications of Silicon Metal (especially chemical applications and aluminium alloying) and other products using carbon electrodes and Søderberg paste.
- silicon Metal production figures: collecting information and statistics on Silicon Metal production and trade world wide, as well as other products using carbon electrodes and Søderberg paste.
- evolution of technologies: exchange of information on evolution of technologies used to produce Silicon Metal and other products using carbon electrodes and Søderberg paste.

2. The Committee and its members shall always act in strict compliance with the rules of competition laws of the European Union and of the various Members States.

3. Establish relations to other trade associations which can help pursuing the objectives of providing information on the development of customer markets, information on tendencies in raw materials, provided that

- the ECGA Board of Directors has given its approval prior to the first contact and
- the other association also complies strictly with the European Rules on Competition.

# The Environment, Health, Safety and Audit Committee

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*Chairman: Dr. Tillmanns, SGL Carbon*

*Co-chairman: Mr. M. Rouy, UCAR*

## Carbon and Graphite Production

The area of carbon and graphite production covers a wide range of products which basically can be separated into four major industrial activities

- production of prebaked anodes for the aluminium industry
- preparation of paste mainly for the aluminium, ferro alloys and blast furnace industry
- graphite electrodes mainly for the electrical steel furnaces and cathode blocks for the aluminium industry
- speciality carbon and graphite in its wide variety

Even if there exist a significant difference in the specifications and properties of the final carbon and graphite product, the raw materials used and the major production techniques applied, allow to handle the aspects of Environment, Health & Safety and Auditing within one EHS committee.

The key raw materials used are solid carbon like petroleum needle coke, anthracite, breeze and lignite coke as packing material and coal tar pitch or resins.

The production technique can be divided in following major subgroups :

- storage, milling & sieving and classification of solid carbon
- green production including storage of pitch, mixing and shaping of carbon artefacts like anodes, electrodes and cathodes and carbon specialities
- baking of carbon artefacts into so-called amorphous carbon products
- impregnation with pitch or resins for carbon specialities
- re-baking of impregnated carbon artefacts
- graphitization to convert the amorphous carbon into graphite
- machining

The major applied abatement techniques are particulate filters for solids, electrical precipitators, dry scrubbers, incinerators and for some special manufacturing processes wet scrubbers, biological filters and sorption units.

## Targets

The key target is to apply an integrated EHS orientated production technique to minimise the formation of any pollution which have environmental and occupational any relevant impact, before an abatement technique is applied.

In coincident with the latest European IPPC regulation the impact of the manufacturing process on the environment as a whole has to be considered under technically and economically viable conditions.

The key objective of the EHSA committee is to exchange information on the latest development on abatement techniques, legal regulations and safety and occupational health aspects. Furthermore the committee supports national expert teams in handling carbon & graphite related EHSA activities.

The major target is to represent the carbon & graphite industry in external administrative working teams preparing new regulations. The intention is to support the administrative organisations by the industrial expertise to lead the activities to a regulation or guideline considering technically and economically viable conditions beside of the impact of the industrial activities on the environment as a whole.

A second, but not less important area of activities, is the field of accident prevention. All accidents of common interest are discussed while the committee meeting and counter- and prevention-measures are considered and discussed. To support the activities an ECGA safety award is launched for the safety performance and the safety performance improvement. In general it can be stated that the carbon & graphite industry accident rate is approximately only 10 % in comparison with the average value for i.e. of the total German industry. This can be seen as a result of the historical and ongoing activities of the committee supporting their members in the area of health & safety.

## Special activities 2000

Areas of the committee activities in the recent time were mainly

### ***IPPC Integrated Production Pollution Control***

The year 2000 saw the completion of the IPPC (Integrated Pollution Prevention Control Directive) BREF note on the non-ferrous metals industry which included the BAT document on the production of anodes for the non-ferrous metals industry.

The Chairman of the Environment Committee Dr Tillmanns was the ECGA representative on the industry delegation for establishing this BREF (Best Reference) document, which will serve as a recommendation for member states in their implementation phase of the IPPC Directive. More than 18 months were spent with technical experts from national governments and the Commission owned IPPC Bureau in Seville to complete the whole document. Due to substantial input and discussions it was possible to achieve a BAT document which adequately reflects the situation of the sector in terms of technology and best practice.

However, it should be stated that this technical debate is now followed in 2001 by a national discussion about the implementation in which again technical, but this time also socio-economic argument will play a major role.

### ***The EU's proposal for an energy taxation and the competitiveness of the carbon and graphite industry***

Following the long EU debate about introducing energy taxation in order to tackle the climate change and CO<sub>2</sub> issue, ECGA members are actively supporting the overall industry position as represented by UNICE and the various national industry associations. It is expected that the proposal will be adopted at EU level during the course of the year 2001.

The **energy costs** for the processing in the carbon and graphite industry amount to an aver-

age of approx. 10% of the turnover, which represents costs of 200-250 million EURO for the European carbon and graphite industry. In addition, the sector has to cope with the increasing transportation costs.

As energy prices as such have risen increasingly lately in both areas already, the additional taxation industry could jeopardise the industry's competitiveness on the world market. A 50% cost increase of energy influencing transport and raw materials' costs would create a cost increase for the carbon and graphite industry of 5 to 9% of sales. Therefore the sector is carefully monitoring the developments.

### ***European Pollution Emission Register (EPER)***

Part of the IPPC Directive is also the establishment of an EPER, following the US legislation model. This EPER will require additional administrative efforts from industry.

The Commission presented its first proposal in 2000 and ECGA members still need to evaluate whether this will bring about major changes to them in compared to their national legislation which requires already a fair amount of reporting.

### ***EU Directive on End-of-Life Vehicles***

The End-of-Life Vehicles Directive discussed and adopted in 2000 was of concern to some of the producers of carbon brushes for the automotive sector since it attempted to eliminate certain metallic elements (lead) from the products in order to reduce these substances to go to the automotive waste. Various technical discussions at Commission, Member States and Parliament level took place to influence the debate.

This directive is expected to come into force by 2001, after which the EU member states will have 18 months to implement it in their national legislation.

### ***Proposed EU Directive on Waste of Electric and Electronic Equipment***

In 2000 the EU was preparing two proposals, one on the Restriction on Substances (ROS) and the actual waste and recycling proposal (WEEE).

Since both proposals could have impact on the graphite applications in electronic and electrical applications, and might well be followed by a third directive on the design of electric and electronic equipment in 2001, the matter was followed closely.

### ***Health and safety matters***

In health and safety matters the ECGA Committee is still collecting its safety statistics in order to monitor the performance in the industry and to be able to present this in a consolidated form in a few years.

In 2000 ECGA members have reconsidered to take up again the yearly ECGA safety award and are establishing the regular procedure again.

This would facilitate the members' administrative obligations.

In view of the Commission's plans to redesign the EU's Chemical Policy these safety data sheets might have to be extended by additional information.

Also the decision was taken to update the ECGA safety data sheets in 2001m available to all members on the ECGA website.

The wide field of activities of the committee can only be successfully covered by the support of all member companies. Therefore the committee likes to thank here all the colleagues and companies which have supported these.

In line with the Article 3 of the European Carbon and Graphite Association E.C.G.A. Articles of Association, the object of the Environment, Health and Safety Auditing Committee is the following:

**1. Commitment:**

- Improvement of the performance on health & safety aspects
- Reducing the impact on the environment as a whole under technical and economical viable conditions

**2. Objectives:**

- Represent the position of the carbon & graphite industry according to commitment at national and European regulators and administrative organisation
- Represent the carbon and graphite industry to public regarding EHS aspects
- Establishment of a common information and reference database for internal use and for customers restricted to EHS aspects
- Exchange of experience on environmental, health & safety affairs and audit tools to improve the performance
- Support member companies and national working teams on EHS affairs
- Co-operate and communicate with other associations

**3. Instruments:**

- EHS committee meetings approximately twice a year
- Establishment of small “ad hoc working teams” to take care of individual topics
- Support of national working teams
- Common information and reference EHS database
- Internet representation

**4.** In pursuing these objectives, the Committee and its members will always act in strict compliance with the European Rules on Competition.

**5.** Establish relations to other trade associations which can help pursuing the objectives of providing information on the development of customer markets, information on tendencies in raw materials, provided that

- the ECGA Board of Directors has given its approval prior to the first contact and
- the other association also complies strictly with the European Rules on Competition.



# The Trade Regulations Committee

The Trade Regulations Committee is looking at matters, which concern the trade of carbon and speciality graphite products around the world. Part of the discussions therefore concerns updates and new legislation issued in the various parts of the world. Since part of the speciality graphite products is of such a purity that they could possibly be used for the nuclear industry, these products come under specially regulated trade.

Official journal C 241 of the European Communities shows the latest changes to the Council Regulation No 1334/2000 of June 22, 2000. The actual legislation was issued in the Official Journal L 159 dated June 30, 2000. 1C107 indicates clearly the characteristics of the speciality graphite.

Europe applies three different licences for the export:

- global licence: for defined countries and products for one company
- individual licence: per contract per company
- general EU licence: each country is entitled to issue a national general licence

The member countries however issue the licences within a different time span.

There is also a big difference between the American and the European legislation on dual use goods: although the wording is the same, the interpretation differs. This also holds true for Japan. In Japan nuclear graphite is graphite used for nuclear purposes and thus subject to control. In Europe however the same graphite is always under (simplified) control whether it will be used for nuclear purposes or not. These different interpretations might result in distortion of competition.

In line with the Article 3 of the European Carbon and Graphite Association E.C.G.A. Articles of Association, the object of the Trade Regulations Committee is the following:

1. Collecting information on existing and developing trade regulations of, within and outside of the European Community of relevance for the sector.

2. To exchange experiences with the implementation of such regulations.

3. To co-ordinate lobby activities with regard to the development of new or the updating of existing legislation in order to maintain the European sector's competitiveness.

4. In pursuing these objectives, the Committee and its members will always act in strict compliance with the European Rules on Competition.

5. Establish relations to other trade associations which can help pursuing the objectives of providing information on the development of customer markets, information on tendencies in raw materials, provided that

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# International relations

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In November ECGA met with the American (NEMA) and the Japanese Carbon Associations in the US on the occasion of a NEMA meeting in Washington DC.

Following previous correspondence first views were expressed about a possible information exchange between the three associations.

Environment, health and safety matters are high on the agenda of all three associations in the context of growing globalisation and increasing co-operation of governments around the world it seems appropriate to intensify the information exchange in this area.

At the same time world wide standards start to play a larger role and to this end a comparison between the various standards and the possible development of a world wide standard should be explored.

In the long run it could also be explored whether the development of highly aggregated statistical data could be useful.

This first meeting concluded with the proposal to convene a steering committee (chairmen of relevant committees and Secretary Generals of the three organisations) in order to discuss the further procedure and to make an agenda for another meeting.

It was agreed to start the information exchange on two main areas: EHS matters and standardisation.

A follow-up is expected in spring 2001.

# List of members

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**from January 2000 until December 2000**

*In alphabetical order*

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# ECGA

**European Carbon and Graphite Association**

**European Carbon and Graphite Association asbl**

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