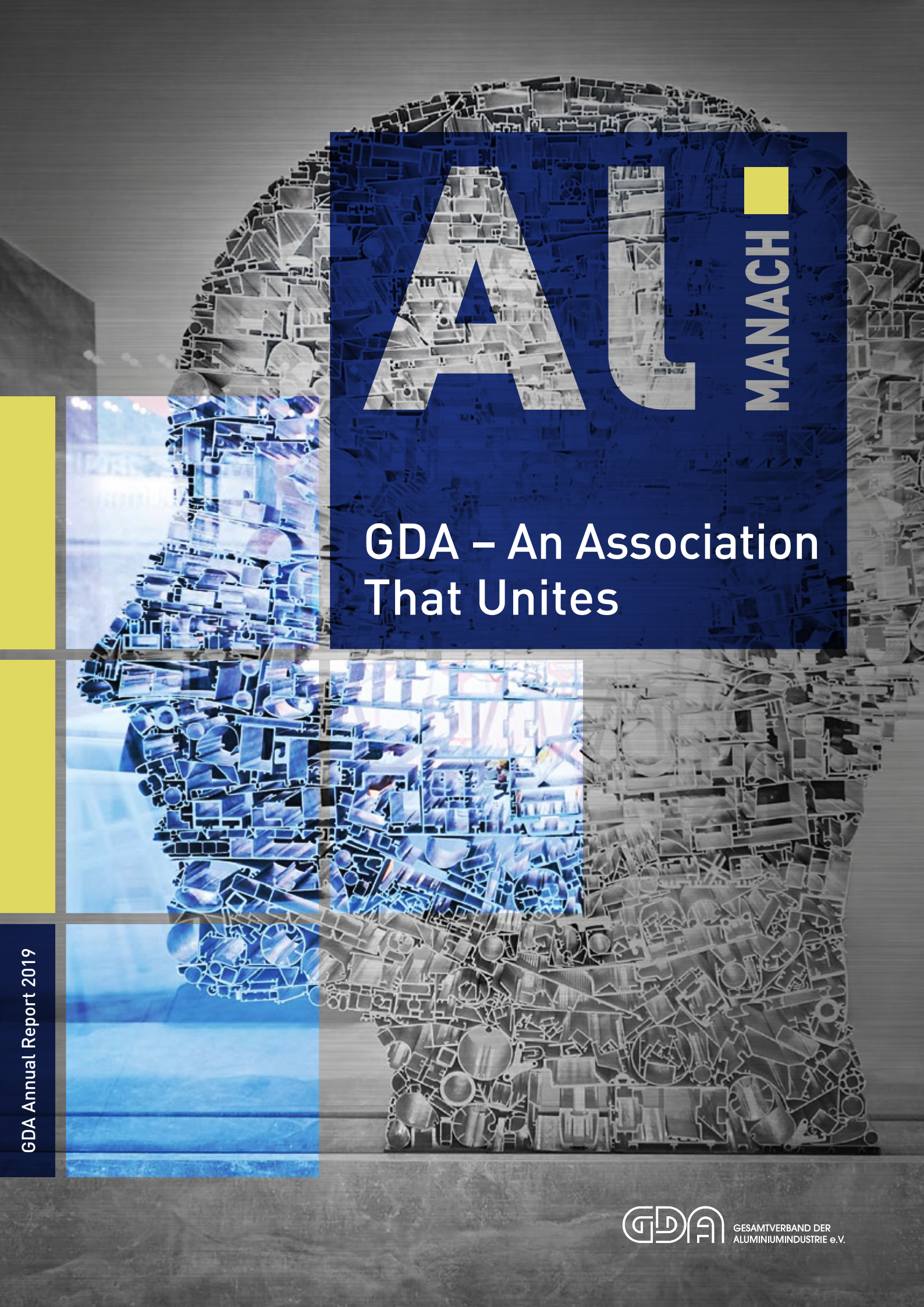

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GDA – An Association That Unites

GDA Annual Report 2019

GESAMTVERBAND DER ALUMINIUMINDUSTRIE e.V.

GDA ■ CONTENTS

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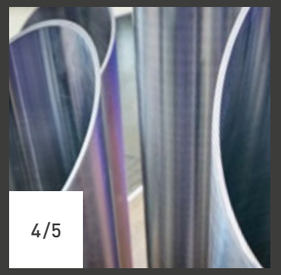

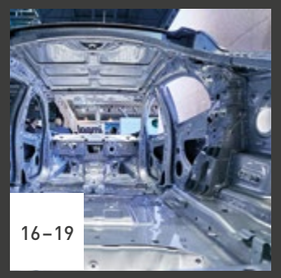

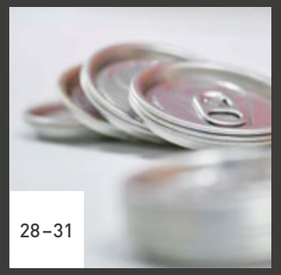

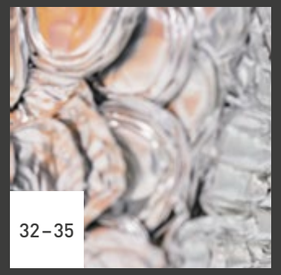

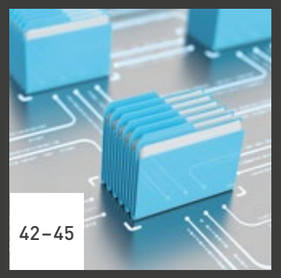

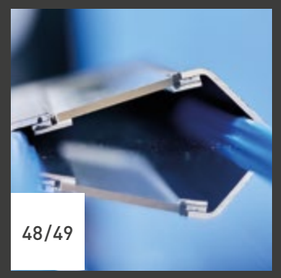

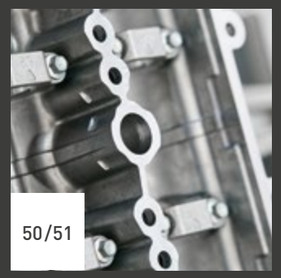

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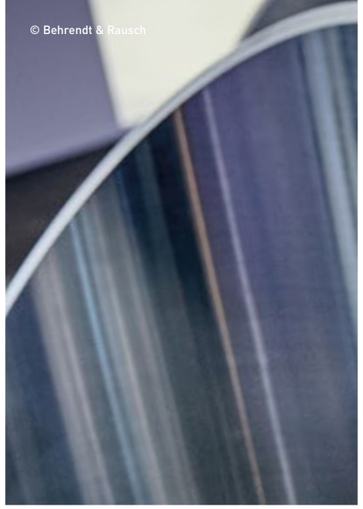
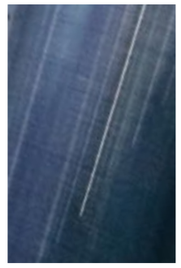


Dr Ing. Hinrich Mählmann,
President of GDA



Marius Baader,
Executive Director

Christian Wellner,
Executive Member of the Managing Board of GDA

GDA – an association that unites

Nothing is more constant than change. This sentence has been valid for 2500 years and is probably truer today than ever before.

Change is also pending at the top of Gesamtverband der Aluminiumindustrie: Christian Wellner is retiring on 30 September 2019. He has played a decisive role in shaping GDA for 37 years - 30 of them at the top. Marius Baader has been on board as an additional managing director since 1 April. He will take over the baton from Christian Wellner on 1 October.

Although a generational change will be taking place at the top of the association, it will not be accompanied by a paradigm shift. GDA's organisation is optimally structured and its reputation is excellent. Its proximity to its member companies, the technical expertise of its employees and its good network create perceptible added value for the sector.

GDA supports its member companies on a wide range of issues and provides extensive information that covers its own industry as well as customer industries. As a partner in dialogue, GDA is on an equal footing with its stakeholders. One of the association's central tasks is constant discussions with GDA member companies and representatives from politics, the media, science and the public. GDA can draw on its extensive knowledge of materials and its in-depth information on current topics. GDA is the voice of the aluminium industry in Germany.

It also has an impact in Europe and further afield. The focus is on the image of the material, the authority to interpret sustainability and resource efficiency as well as the pre-competitive standardisation of technical factors. A strong voice for our industry that carries weight, created in a large number of committees and working groups and interaction with the relevant stakeholders.

GDA is clearly focused in its orientation. That is because successful work by an association requires constant adaptation to the changing requirements of the members as well as to the changing environment. Global megatrends and the resulting changes require flexibility and openness. Climate change, the desire for sustainable production and sustainable products, increasing protectionism and trade conflicts that are clearly escalating are changing the well-known dogmas of our economy. Digitalisation will change our industry, but above all it will change our customer industries. The increasing shortage of skilled workers is also becoming a growing concern for companies. All this shows the complex challenges to which we must respond. GDA is, and will remain, the platform where these issues can be found.

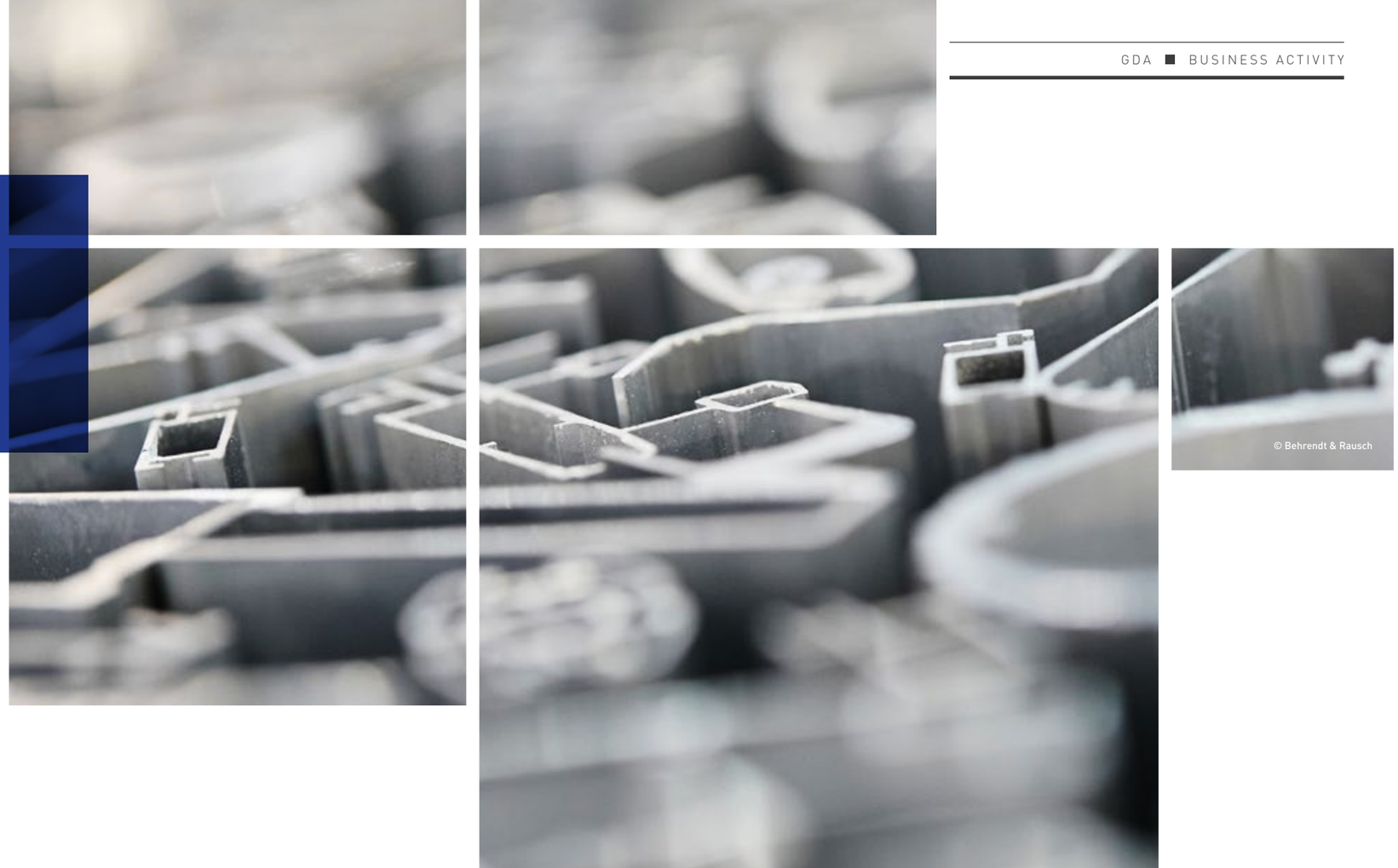
Companies in the aluminium industry can only face the changed framework conditions together. With GDA, as the most important European aluminium association, our industry has a high-quality network of partners – nationally and internationally. One of the association's central tasks is to expand this network, even beyond the boundaries of the industry.

Our aim is to retain the power of interpretation over the material and the challenges of our industry. In doing so, strengthening communication and PR activities is the most important step. The core and permanent task is to sharpen the independent political profile of the aluminium industry through, and with, GDA. We need common answers to today's global challenges. Only a cohesive and capable aluminium industry is in a position to defend the values and economic interests that unite us.

What applies to us as an association also applies in politics. Europe and European industry will only master the tasks of the future within a strong EU community. Industry's efforts have to be supported by a coherent industrial, economic, climate protection and trade policy. German industry expects concrete, consistent initiatives from the EU to further develop Europe as a business location in a digitalised and globalised world.

Network, shape and act proactively: this guiding principle is intended to help us achieve more together. GDA's Annual Report 2019 highlights the associations co-operation and networks under the title 'GDA – an association that unites' and documents the key areas of work during the past year. The GDA team writes about its experience in working with partners from the aluminium industry, customers, suppliers, universities and institutions, and shows how the association is positioned for the future in its important fields of activity. ■

GDA ■ BUSINESS ACTIVITY



The aluminium industry at a glance

Numerous risks and challenges in 2018.

The most important risks and challenges that confronted the aluminium industry in 2018 were the supply of raw materials, US import tariffs on special aluminium products and the resulting negative effects of trade diversion. The manufacturers of aluminium and aluminium products in Germany reported falls in output across the board.

Despite this, turnover in the German aluminium industry increased 2.7 per cent to 21.6 billion euros. While export business stagnated at 9.4 billion euros, domestic business grew to 12.2 billion euros. The main reason for the increase in sales was a 2.5 per cent year-on-year increase in metal prices on the London Metal Exchange (LME), from an average of 1,742 euros to 1,785 euros per tonne of aluminium. One of the reasons for this rise was the increasing uncertainty in the supply of raw materials caused by the US-Russia sanctions.

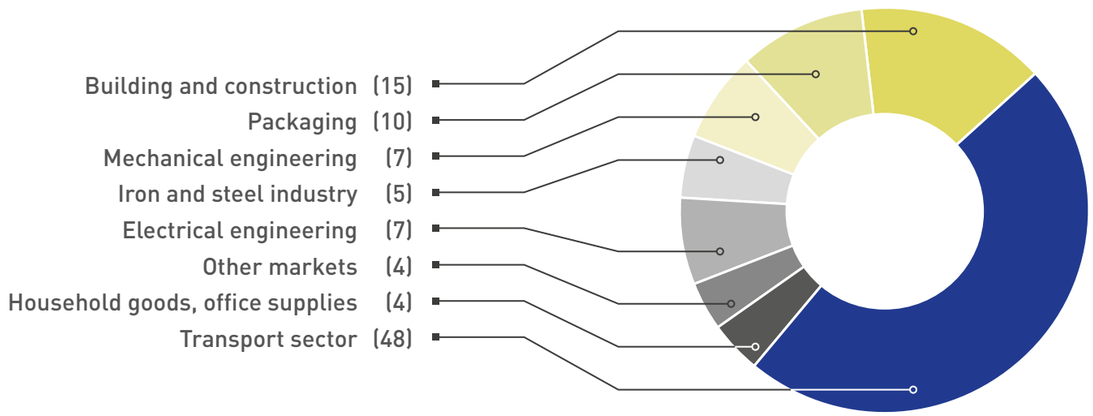
In 2018, around 66,000 people were directly employed in the 251 plants of the German aluminium industry. Compared with 2017, this represented growth in employment of 3.8 per cent. In addition, the aluminium industry generates employment in related branches of the economy and can thus be described as an employment-relevant industry in Germany.

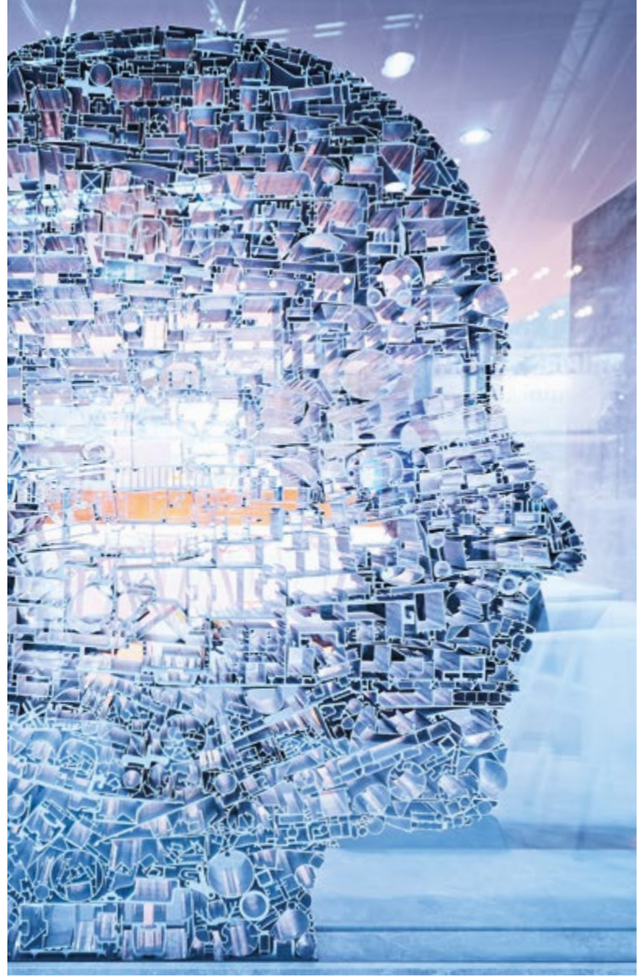
The structure of the markets for aluminium products hardly changed in 2018. There was only a slight shift between the mechanical engineering and iron and steel industries. The importance of the mechanical engineering market has risen to seven per cent, while the relevance of the iron and steel industry has fallen to five per cent. The shares of the transport (48 per cent), construction (15 per cent), packaging (10 per cent), electrical engineering (7 per cent), household goods and other end-users (4 per cent each) sectors remained unchanged from the previous year.

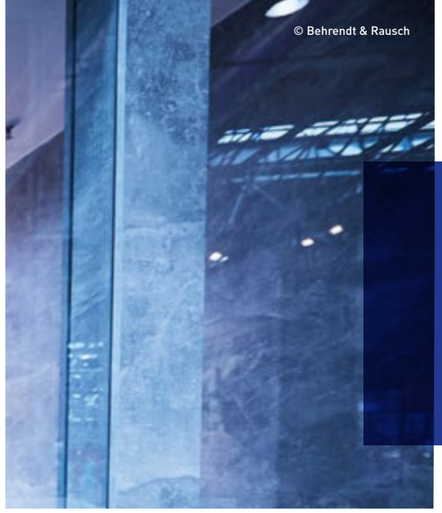
The aluminium industry is highly dependent on imports of raw materials. This was clearly evident last year, when the supply of aluminium oxide to the primary smelters was subject to a high default risk as a result of the sanctions against Russia. The sanctions also led to a high degree of uncertainty in the supply of raw aluminium. Measured in terms of net imports, the potential shortfall in supply here is around two million tonnes.

Sentiment in the aluminium industry in Germany is cautiously optimistic. This is due to the continuing high risks in 2019: Brexit, ongoing trade disputes, dampened global economic development, imminent punitive tariffs on cars and the development of the markets in China are just some of the challenges. ■

Main markets for aluminium in 2018 (in %)







Author:
Dr Andreas Postler, GDA
Head of Economics and Trade Policy

Negative effects of trade diversion hit Europe hard

Aluminium imports into the USA from Europe have been subject to an import duty of 10 per cent since 1 June 2018. Other countries and regions are also affected by this measure.

According to prevailing opinion, the US customs duty on aluminium violates the rules of the World Trade Organization (WTO) and will lead to negative trade diversion effects in Europe. The German aluminium industry rejects these import restrictions on aluminium products which the US has prepared unilaterally. They are the wrong answer, can make products in the USA more expensive and can disrupt international value chains. The US administration's assessment that European or even German aluminium supplies could threaten the national security of the USA must be rejected unequivocally. Chinese overcapacity in the production of primary aluminium and semi-finished aluminium products is a problem for the global economy that can only be solved meaningfully under the umbrella of the WTO.

Effects of diversions from China into the EU

The US protection measures already led to a significant decline in Chinese exports to the USA last year: While exports of rolled products to the USA accounted for around 25 per cent of total exports of rolled products before the introduction of the punitive tariffs, they fell to five per cent once the import tariffs had come into force. According to a study conducted by the University of Duisburg-Essen in 2018, this could lead to 30,000 tonnes of aluminium products from China being diverted to the European Union both in 2018 and in 2019.

Potential negative trade diversion effects can manifest themselves in various ways. First, there may be a straightforward redirection if the prices of European products in the USA become relatively more expensive compared with domestic products. This effect has not yet materialised, though. The US administration's protective measures have led to an increase in domestic price levels in various product segments, which has more than compensated for the negative price effect. Consequently, the volume of exports by European producers to the USA increased in 2018. According to the European statistics authority, the increase for the manufacturers of rolled products alone amounted to 87,000 tonnes. This is possibly only a short-term effect. The production of various products that are exported from Europe to the USA has already been promoted because it increases profitability. Thus, the danger of a negative direct effect due to trade diversion still exists.

In addition to direct effects, there are the indirect effects of trade diversion as the volume of trade increases in the rest of the world. Negative effects can in turn be felt in different ways. Of particular relevance here are trade diversion in Europe (1) and trade diversion in export markets (2).

1 Trade diversion of Chinese exports to the European Union is clearly visible in the import statistics. In the market for rolled products, compared with 2017 the import volume increased by 157,000 tonnes to 297,000 tonnes in 2018. This corresponds to an increase in imports of 113 per cent. In addition, imports from Turkey (up four per cent), Egypt (up one per cent), Serbia (up 31 per cent), South Africa (up three per cent) and South Korea (up 47 per cent) increased, in some cases significantly. These are countries that saw themselves exposed to a marked increase in Chinese exports following the introduction of the US punitive tariffs. This means that it cannot be ruled out that a part of these quantities was traded through to Europe. This would reinforce the negative effects of trade diversion from China.

2 A diversion of Chinese exports into the export markets of the European aluminium industry is also likely. As far as the European Union is concerned, there was a decline in exports of rolled products to Turkey (down five per cent), South Korea (down five per cent) and Serbia (down 16 per cent). Exports to Egypt also declined. Given China's increased exports to these countries, one can expect European manufacturers to face increased price competition together with the loss of export opportunities.

With its protectionism, the USA has averted damage from the domestic aluminium industry and stimulated production activity. Other countries must bear the costs of the trade diversion. This has led to trade backlashes which increase the risk of market isolation and ultimately lead to a trade war. However, the real problem, namely Chinese overcapacity in the production of primary aluminium and aluminium semis, has not been solved. This can only be tackled by the international community under the auspices of the WTO. The right way would be more international co-operation instead of attempts at unilateralism! ■

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Skilled workers as guarantors for innovation and competitiveness

Skilled workers stand for competitiveness, employment and prosperity. Satisfying the demand for skilled workers is therefore one of the major challenges facing society.

Author:
Jörg Schäfer, GDA
Head of Recycling and Sustainability;
Head of Metal Powder

In certain regions and industries today, companies cannot fill job vacancies with suitable personnel. Bottlenecks are also noticeable in the aluminium industry. This situation must be dealt with in order to ensure that the aluminium industry has good prospects for the future. It is not only the material that has the potential to achieve great things in innovative products: the industry also offers many modern jobs and training places. This makes the aluminium industry an attractive employer, especially for experts in technical professions.

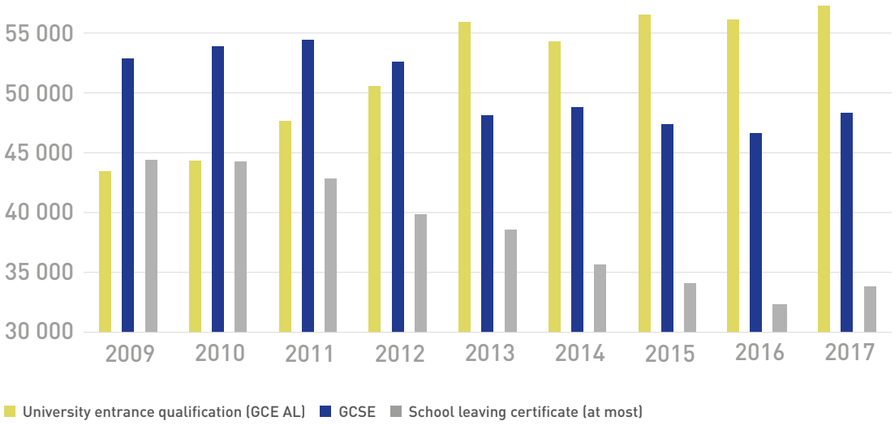
Ensuring that there will be enough skilled workers to meet future demand is not something the industry can master on its own. It is an issue that concerns everyone. It involves, in particular, politicians, who create the framework conditions for young people through pre-qualification at school. But it also demands involvement by society itself because it is society that judges the image of jobs and qualification levels and has created the current situation.

The aluminium industry as an attractive trainer

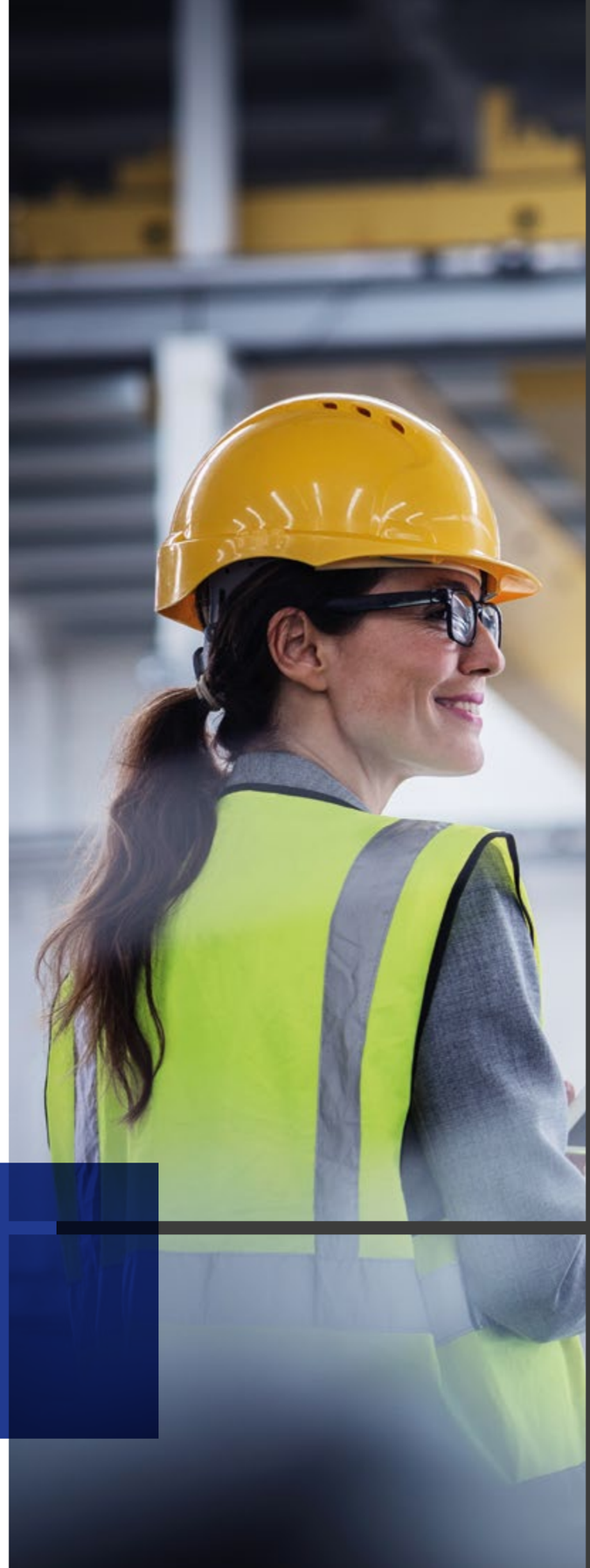
DAn in-house apprenticeship is a suitable means of securing skilled workers. It is still important for a company to invest in its junior staff. This is the way to train qualified and loyal employees: those who stay at a company gain important experience, pass it on to others and thus safeguard the company's continuity. A survey of applicants conducted by the Federal Institute for Vocational Education and Training (BIBB) shows how much importance applicants attach to loyalty, whereby for young people the top priority is the company's potential for being an employer in the long term. It manifests itself in a good working atmosphere and the chances of being hired. Job security is thus a top priority. The image of a company, above all locally, as well as the perception of the sector also plays a considerable role. It is therefore not surprising that a company's reputation is ranked third in the applicant survey, directly behind aspects such as the accessibility of a company and the possibility of having a regulated life in which the leisure time can also be planned. A company has an advantage if it can be reached quickly by bicycle or public transport. Among young people, being able to plan leisure time is apparently also becoming more and more important; this is more often referred to as 'work-life balance' and describes the situation in which work and private life are in harmony. This requires a rethink. There has been no discussion of this for generations: the workplace has determined a person's private life. The interviewees attach comparatively little importance to characteristics that typify large companies in particular. Although flexible working hours are still relatively important to them, it is not very important for them that they learn together with a lot of trainees. Material incentives such as an iPhone as a starting gift are also less crucial for applicants when choosing a job.

Long-term employers, good framework conditions during training, image and networking – all of these can be found in the companies of the aluminium industry. It is not unusual for employees who retire today to have only known one industry or their company. Nevertheless, the lack of skilled workers cannot only be solved by the aluminium industry or the local company having an exemplary character. Pre-qualification at school is also decisive.

Demand for Training Places: The labour market in Germany now has more school-leavers with a university entrance qualification than with other certificates of secondary education



In NRW, the number of applicants with a university entrance qualification has been high for several years.



GDA ■ LABOUR MARKET

It starts with the school leaving certificate

There have been a lot of socio-political changes in recent decades. According to statistics from the Federal Institute for Vocational Education and Training (BIBB), the labour market in Germany now has more school-leavers with a university entrance qualification than with other certificates of secondary education, as the following chart illustrates.

According to this, the education of young people in schools reveals a trend that is more theory-oriented than practice-oriented. In the case of school leavers with a university entrance qualification, in-company training is competing with higher education. At least in theory, training at a university promises better career opportunities. Furthermore, it supposedly benefits a person's standing. This has a decisive effect on the labour market – especially when filling apprenticeships. Given this situation, a university entrance qualification as a school-leaving qualification, at least for conventional technical training, is not necessarily optimal from the point of view of a manufacturing company in the metalworking industry. Such a relationship does not counteract the shortage of skilled workers: it even intensifies it.

Politics and industry should work together on this point to find a solution. After all, competitiveness is also defined at the workbench or by the expertise that a skilled worker has acquired over many years, for example in a foundry.

In the fight to find skilled workers, there is no need for the aluminium industry to hide, but nevertheless a policy designed to promote access to higher education does not go far enough. Added to this is the social dynamic, which demands physical labour to maintain prosperity, but does not appreciate it. Such issues must also be discussed in addition to the contents of the training and the opportunities for further training in companies. However well-established the industry may be, it will still be faced with the situation of the pre-qualification of school leavers. That is why politicians and society are called upon to face up to the discussions on the subject. GDA is ready for dialogue. ■

GDA ■ INTERNATIONAL CO-OPERATION

Acting together at national and international level

Christian Wellner, Managing Member of the Executive Committee of GDA, discusses co-operation within networks and with international associations

What goals and tasks does GDA pursue when it comes to international co-operation?

Christian Wellner: In Europe, the legal framework, such as laws, regulations and directives, is becoming increasingly influenced by EU institutions. This means our association's activities cannot be limited by national borders. We are an association with a defined membership, whose interests we represent everywhere, not only at a national but also at an international level. To achieve this, we maintain a regular, open and transparent dialogue to position the industry and the sector with institutions and organisations and in the important markets. GDA is an association with ambitious goals. To achieve these goals, we use our international networks with the various national aluminium associations, European Aluminium (EA) at European level or international organisations such as the International Aluminium Institute (IAI).

What are the main issues for which there is co-operation at international level?

Christian Wellner: Lobbying for the metal and the industry in the EU is at the top of the priority list at European level. Political decision-making is increasingly moving in the direction of Brussels, which is why we have a presence there together with EA. This means the aluminium industry is well represented there. Internationally, there are many topics such as aluminium and health or sustainability and standardisation that we discuss together at a global level. Trade policy is becoming increasingly important. The US trade restrictions on aluminium vis-à-vis Europe and the trade policy distortions between the USA and China have shown that the world trade order is a very fragile matter. That is why GDA, has initiated measures at EU level, together with WVMetalle and EA, in order, if necessary, to be able to introduce protective measures against diversionary effects quickly.

At which levels does the co-operation take place?

Christian Wellner: Like the economy and politics, the aluminium industry is characterised by increasing networking. This networking is reflected, for example, in the growing number of international meetings. An exchange takes place on defined topics at the regular meetings at management or expert level. This is where the representatives of the major national associations in Europe meet. The International IAI meetings are attended by representatives from important aluminium countries such as Japan, China, the USA or emerging economies such as Brazil. The topics discussed there are often determined by current events. At European level there are also meetings at company level. Here and there we have the opportunity to discuss relevant topics openly.

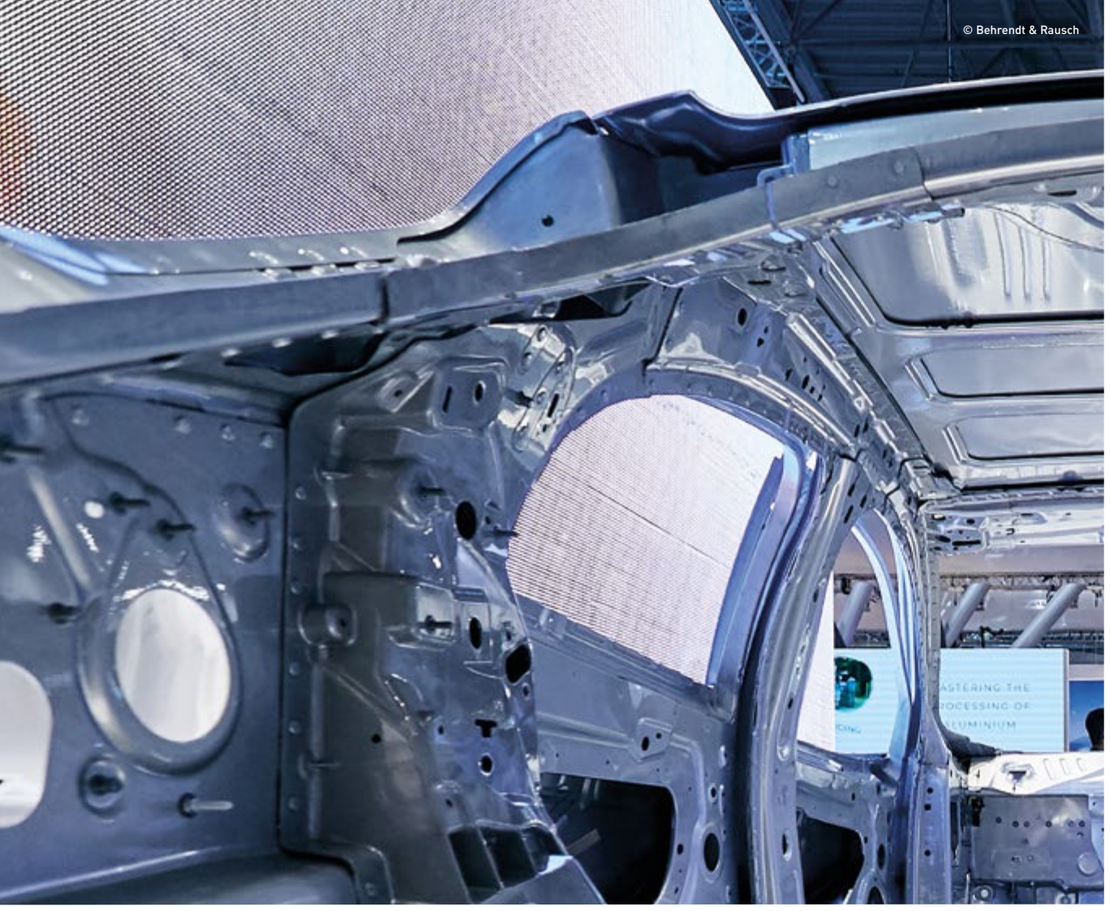
How do the national aluminium industries benefit from the co-operation between the associations? ?

Christian Wellner: At the meetings at European and international level the focus is on the exchange of experience. This gives us ideas and impulses which we can then use in our work for our member companies. Joint projects and working groups offer our member companies improved market opportunities when competing nationally and globally. In addition, our member companies have access to an extensive network of service providers and partner associations.

In your opinion, what are the key tasks for future co-operation within the networks?

Christian Wellner: The increasingly complex tasks make future co-operation between aluminium associations unavoidable. Positioning the material and improving its image remain key tasks at national and international level. When it comes to important aluminium-specific topics such as certification or health, we must speak to institutions with a single voice and coordinate our position intensively. Sometimes it is also important to distinguish ourselves from other materials. However, it is just as important to have a presence in the individual countries. Germany is the most important market in Europe and the most innovative in the world. GDA is the voice of the aluminium industry. It must be used to an even greater extent than before so that the aluminium industry can continue to position itself against the competition in the future.

Our industry is an excellent example and argument for global trade and its benefits for all involved. The aluminium industry has always been a global industry, with globally networked trade flows and companies that can supply and offer their products across all borders. With our national and international network partners, we want to maintain and expand this status, but not lose sight of our own interests. ■



Author:
Marius Baader,
Executive Director at GDA

New mobility – only with aluminium!

Mobility is undergoing a rethink – electrically, digitally and sustainably. New modes of transport are taking over the inner cities and new drive technologies are gathering speed rapidly. And aluminium is an indispensable part of this new mobility.

GDA ■ EAC 2019: ALUMINIUM UND MOBILITY

The Jaguar I-Pace's aluminium monocoque architecture gives the car's body the highest torsional rigidity of any Jaguar coupled with maximum performance.

The theme of GDA's European Aluminium Congress in 2019 is 'Aluminium and Mobility'

Transport is the most important customer sector for the German aluminium industry accounting for 48 per cent of all aluminium used. With this in mind, the topics of this year's European Aluminium Congress may not come as a surprise. But there is more than just an appreciation of the status quo behind the choice of this year's focus. Mobility will change fundamentally in the coming years. Not only will the powertrain be rethought, other modes of transport will be added, there will be a shift in customer expectations, and the classic business models of the entire supply chain will change. At the congress, GDA wants to continue its dialogue with partners in the supply chain, integrate new players, strengthen existing contacts and establish new ones.

The automotive industry as role model

The automotive sector is and will remain a heavyweight among the aluminium industry's customer industries. Like no other industry in the past, this sector has shown the progress that can be achieved if there is a clear focus on research and development. The improvements in quality, efficiency, performance and safety with every new model generation are impressive. One point of view is that the innovative achievements with respect to both product and process are a role model and benchmark for many industries.

On the other hand, the industry's biggest quantum leap probably took place more than a century ago: Henry Ford used an assembly line in car production for the first time and the use of handicraft processes ended abruptly. Ford thus laid the foundation stone for a supply chain based on the division of labour that still exists today and enabled the car to embark on its triumphal march, which still appears to be unbroken: automobility has become a mass phenomenon. Since Henry Ford, we have experienced enormous, but ultimately only incremental improvements with every new model generation. The real disruption is yet to come.

Megatrends changing the world (of mobility)

The entire transport sector will be unable, and unwilling, to ignore global megatrends such as advancing urbanisation, globalisation, neo-ecology and digitalisation. The strong political focus on climate protection and thus CO2 emissions, which is shaping clear demands for the mobility of the future around the globe, will change the car and other modes of transport as we know them today.

Climate protection will revolutionise drive technology. Electromobility will be the decisive drive type, or at least that is the way it looks at the moment. CO2 regulation in the European Union is nothing more than accomplishing a rapid increase in the use of battery electric vehicles (BEVs).

E-mobility is shaking up the market

The German Association of the Automotive Industry (VDA) is therefore expecting the BEV's share of new registrations in Europe to be at least 40 per cent by 2030. In its 'Structural Study BWe mobil 2019', the State Agency for New Mobility Solutions and Automotive Baden-Württemberg (e-mobil BW) presents various scenarios which assume a BEV share of 15 per cent in the 'business as usual' case up to 51 per cent in the most progressive approach for new registrations in the European Union. The shift in the model range will not be limited to Europe but will have to take place globally. In addition, plug-in hybrid technology (PHEV) will be used to provide the combustion engine with an electric drive. It is still unclear, however, whether the ramp-up curves will be as steep as suppliers in particular are expecting.

Lightweight construction as a key technology

This opens up new opportunities for aluminium as a material. Lightweight construction will also play a decisive role in electromobility. The calculation is simple: the lighter the car, the smaller the battery system. New market opportunities are also opening up for individual components, such as battery housings. However, this will be countered by a decline in the components for the conventional combustion engine.

Mobility of the future: how an entire industry is undergoing change

Climate protection is not the only driver of change, though. The megatrends are giving rise to further questions about the basic business model in the mobility sector: OEMs, who now want to see themselves more as mobility providers than as vehicle manufacturers, are already seeing today that certain basic beliefs are not of an eternal nature. In the future, mobility in large cities will be spread across more modes of transport, including new ones. Ownership of a vehicle over its entire life cycle no longer seems as attractive as it did in the past. Customers consume mobility, in other words the most efficient, most convenient and fastest possible way to get from A to B. At least in some conurbations around the world, this is no longer the same as buying and owning a car. Offers such as car sharing, ride sharing and concepts for 'last-mile mobility' are being tested and launched onto the market.

Even if all the madcap visions of mobility emerging from Silicon Valley will not become established everywhere straight away and permanently, one thing is clear: the growth of the global automotive markets is finite. And an automotive industry that benefits strongly from economies of scale must rethink its business model. We have been seeing clearly for some time that it is already doing this. However, we must not allow the OEMs to be the end of the line when it comes to such considerations: lower growth, stagnation or even a decline in sales figures present the entire supply chain with new challenges and requirements.

EAC 2019: platform for dialogue with partners, customers and suppliers

This year's European Aluminium Congress 2019 is dedicated to changes in mobility because the changes taking place are offering opportunities for the material. There is further potential not only in lightweight construction but also in new vehicle concepts for urban areas. Electric scooters, e-bikes, kickboards, people movers and not least air taxis must also be light, efficient and sustainable. The aluminium industry is making a decisive contribution here. The highly complex geometries that can now be achieved with modern manufacturing processes are making new applications possible. The almost infinite recyclability of the material meets the high demands of a sustainable product. The industry's innovative spirit is not waning. #EAC19 is therefore the ideal platform for GDA, in its role as the German aluminium association, to continue its dialogue with partners, customers and suppliers in order to jointly enhance the potential use of aluminium. The word 'association' has the same Latin origin as the verb 'associate' and the EAC offers excellent opportunities for partners, customers and suppliers to do this as well in 2019. ■

Author:
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Head of Transportation, Engineering, Standardisation

Aluminium and the car belong together

The use of aluminium in cars continues to offer excellent growth potential. Effective lightweight construction in cars is inextricably linked with aluminium.

Automotive Rolling working group

GDA's Automotive Rolling working group was formed in 2011 and deals with the development of standards (e.g. VDA recommendations), specifications and testing procedures for aluminium flat products for use in carmaking. The work is carried out jointly by experts from both the aluminium rolling mills and the car industry (Audi, BMW, Daimler, Ford, Opel and VW) with the involvement of university institutes and it relates to the common definition of standard alloys and their properties.

In addition, test methods for determining mechanical, forming and surface properties are being developed or being developed further. To this end, regular interlaboratory tests are carried out with all the participating laboratories to validate the quality and uniformity of the test results and the data measured.

The development of the first AUDI A8 and its all-aluminium body using the revolutionary Audi Space Frame (ASF) construction at the beginning of the 1990s marked the start of intensive co-operation between the automotive and aluminium industries to jointly develop the wrought and cast semi-finished aluminium products needed to meet the more-demanding requirements of this body construction in series-production vehicles.

The use of aluminium in vehicle construction has developed rapidly since 1995, especially in the bodywork in recent years. In addition to all-aluminium vehicles from other manufacturers such as Jaguar's Land Rover, a multi-material method of construction is often used in medium-class vehicles, where the number of units produced is larger. These can be aluminium-intensive car bodies with some steel components in the rear section or designs with a body structure in composite construction and an outer skin and doors and closures in aluminium.

Aluminium boosts potential for lightweight construction

There is no doubt that lightweight construction is needed to comply with the limits on CO2 emissions. Even though the strategies of the individual OEMs for lightweight construction are quite different, aluminium makes a significant contribution to enhancing the potential for lightweight construction in every case. Lightweight construction is particularly important for electrically powered vehicles, as the weight of the vehicle has a major influence on the achievable range with an acceptable battery weight.

In e-mobility, the effects of lightweight construction are smaller than with internal combustion engines. The reason lies in the significantly higher efficiency (about 75% overall efficiency compared with about 26% (petrol engine) or 33% (diesel engine) system efficiency with an internal combustion engine drive) and the possibility of recuperating energy with an electric drive. Nevertheless, consistent lightweight construction in e-vehicles facilitates low vehicle weight and guarantees better vehicle dynamics and enhanced driving comfort.

The future belongs above all to electric sports utility vehicles (SUVs), the number of which will increase significantly this year. Here, lightweight construction with aluminium helps achieve a total vehicle weight of less than 3.5 tonnes and keep axle and wheel loads to within a technically reasonable range for passenger cars. Aspects such as increased tyre and brake abrasion and the resulting fine dust also play a role here.

New solutions and applications using aluminium materials

Aluminium-based materials include a broad range of different alloys, some of which are especially customised, for the many different applications in the automotive industry; they

are available as sheet, extruded profiles, forgings and castings. This diversity of available alloys and semi-finished products has significantly contributed to the advance of aluminium in the automotive industry and is constantly being developed even further for the future.

This applies in particular to e-mobility, since the achievable range of battery-operated vehicles is an important measure of customer benefit, and satisfactory results can only be achieved through consistent lightweight construction. Here, too, aluminium offers a wide range of solutions, be it as sheet or profiles, e.g. for the battery box, in order to integrate the heavy traction battery safely into the body structure and at the same time ensure maximum protection in the event of a crash.

New manufacturing processes such as additive or generative manufacturing, including those using aluminium powder as the starting material, also open up new possibilities in the production of prototypes and small series. At the moment, technical and economic development is making rapid progress here, but it must also be said that these processes are still a long way away from cost-effective mass production.

With aluminium alloys, one can detect a tendency towards use of higher strengths. There is still considerable potential for the use of higher-strength aluminium alloys in cars. Users are focussing their attention increasingly on higher-strength alloys of the 6000 series and high-strength alloys of the 7000 series in particular, and these are currently the subject of extensive research. For example, hot or semi-hot forming processes including hot stamping of hardenable alloys are being investigated; this involves forming at the solution annealing temperature and simultaneous quenching of the formed component in the cooled forming tool. These processes not only offer the advantage of higher component strength, but also enable significantly more complex component geometries to be produced.

These intensive developments in materials and processes mean that aluminium is also expected to play an important role as a lightweight construction material in the future.

Lightweight Construction Initiative

At the political level, lightweight construction has also come to the fore as a result of the Initiative for Lightweight Construction launched in 2016 by the Federal Ministry for Economic Affairs and Energy (BMWi). With its initiative, the BMWi is supporting the cross-technology and efficient transfer of knowledge between the various nationwide players in lightweight construction. The aim is to maintain, bundle and strengthen lightweight construction expertise in Germany in international competition across materials and industries and to develop the political framework conditions for this. It serves as a central point of contact for all relevant questions from entrepreneurs nationwide. GDA has been an active partner here from the outset and has a seat on the initiative's advisory board. ■

AK Strangpressen Automotive

Since it was set up in 2008, the GDA Automotive Extrusion Press working group has developed, self-financed and implemented six test programmes (UP 1 to UP 6). These programmes are aimed at gaining a better understanding of the extrusion process and, in particular, of the effect of extrusion parameters on crash-resistant extrusion profiles, in order to use the results to open up further lightweight construction potential and areas of application in automotive body structures.

The test programmes cover die trials at institutes (e.g. the Institute of Forming Technology and Lightweight Construction (IUL) of TU Dortmund or the Extrusion Research and Development Center (FZS) of Technische Universität Berlin and on industrial presses, simulations of the extrusion process and the determination of representative characteristic material values for the strength classes and tempers investigated, and the preparation of a material card.

The seventh test programme (UP 7) is currently being carried out. With e-mobility in mind, the project aims to investigate the crash properties and energy absorption of extruded profiles in the transverse direction. These properties are important, for example, for a battery box made from profiles. Simulations will be carried out and verified using tests on extruded test profiles. UP 7 started in February and should be completed by the end of 2019.

Continuous Casting working group (WG CC)

The Continuous Casting working group (WG CC), which was founded in 2011 as a European GDA working group, has grown steadily and now has a global presence. The members include users of the continuous casting process, suppliers of plant and equipment, and university and research institutes. It includes companies and institutes from, among others, Germany, France, Greece, Italy, Luxemburg, Norway, Poland, Turkey, Czech Republic, USA and Canada. The aim is the pre-competitive development of continuous casting, improved understanding of the process and the optimisation of plant components with respect to safety and availability.

Three subprojects covering the simulation of the strip casting process (phases 1, 2 and 3) have already been completed successfully; preparations are currently underway for phase 4, which is expected to start at the end of 2019.

Knowledge and technology transfer between industry and universities

Close co-operation with universities and their institutes as well as with other associations and research clusters has been one of GDA's core tasks for many years. Such co-operation can take many forms and is adapted to the prevailing requirements.

Continuity is usually achieved through (mutual) memberships, which then enable active and creative co-operation in the relevant committees of the partner organisation. This then ensures that GDA can accompany and provide support for aluminium topics that are dealt with there, whether it be research on materials or joining processes or standardisation at national or European level.

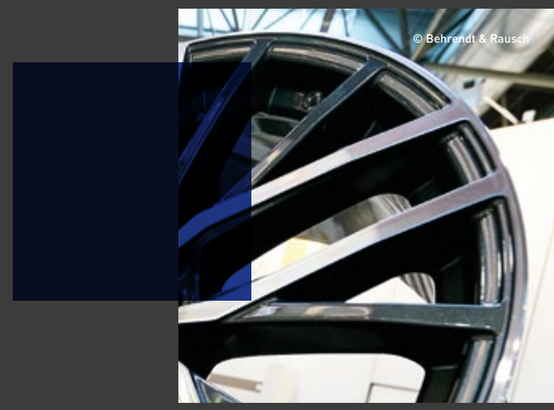
Some examples of this form of co-operation include the memberships of the organisations AMAP GmbH (Advanced Metals and Processes), DIN e.V. (German Institute for Standardisation), DVS e.V. (German Welding Society), EFB e.V. (European Research Association for Sheet Metal Processing); others cannot be listed here for reasons of space.

Among other things, project ideas for research projects are developed within these organisations. Projects related to aluminium are initiated or supported by GDA; if a project is approved by the funding agency, GDA actively supports it until its completion in many cases by participating in the committee that accompanies it.

University institutes in particular are also active within GDA's technical working groups. Here, research topics and questions are developed by the working groups, which are then jointly and pre-competitively processed in self-financed projects with the help of the institutes' expertise, often with the participation of customer industries, especially in the automotive sector. ■

For many years, in some cases for more than ten years, the following institutes have been actively taking part in GDA's working groups for the transport sector:

- AIT – Austrian Institute of Technology, Ranshofen, Austria
- FZS – Forschungszentrum Strangpressen der TU Berlin
- IBF – Institute of Metal Forming at RWTH Aachen University
- IFE – Institute for Energy Technology, Kjeller, Norway
- IUL – Institute of Forming Technology and Lightweight Construction at Dortmund University
- LWK – Department of Material Science at Paderborn University



Aluminium makes a significant contribution to increasing the potential for lightweight construction.

Author:
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Head of Surface Technology,
Corrosion and Construction

Green building with aluminium

Sustainable, future-oriented building means more than just having a roof over one's head. Ultimately, the aim is to design buildings in such a way that they not only meet today's economic, ecological, social, cultural and urban planning requirements but meet those of the future even more so.

Sustainability is a term that has been overused in the recent past and it often sounds like a worn-out cliché – whether it be in politics or in business. In the building and construction sector, however, sustainability is an aspect that determines the day-to-day business. Building owners want to increase the quality and value of property via sustainable planning and management, and in the interests of their investment they try to maintain the value of a property over a long period. The use of sustainable and resource-conserving materials and recycling is thus already at the forefront of project planning.

Green building is a central aspect in the aluminium industry and in the work of our association at national and international level. GDA's aim is to support ecologically compatible building and construction solutions; this means using energy and resources sparingly and ensuring that the building products and materials used are largely reused or recycled after use.

At international level, the issue of sustainability is not as important as it is in Germany. GDA therefore endeavours to make its network of experts and its sustainability expertise available to other associations, organisations and quality associations. This guarantees a lively transfer of knowledge. In economically uncertain times, this exchange benefits all parties.

GDA's Building and Construction platform

Leading system houses for windows and façades work together on GDA's Building and Construction platform. GDA is also represented on international and national committees that deal with building standards and building legislation. The close cooperation with GSB International, which is an important point of contact for high-quality surfaces, should also be emphasised. This guarantees an active transfer of knowledge.

Demand for aluminium as a building material is growing

Despite the uncertain economic conditions, aluminium is enjoying great popularity as a material in the building and construction sector. Fast-growing emerging countries have also discovered aluminium as the building material of choice. In these countries, the issue of sustainability is coming increasingly to the fore and the aspect of the longevity of a building is recognised as an enormous benefit.

An impressive façade serves as a showpiece, especially when it comes to company buildings. First impressions count and the surface of the façade is what one notices first. The trend is towards ever more colourful façades. It is precisely these façades that need to last in order to be an eye-catcher for a long time. Here, aluminium is the material of choice and of the future. There is no alternative to GDA's co-operation with GSB at this point. For a long time, GSB and its member companies have been regarded as a major player and trendsetter in the field of high-quality surfaces. GSB is the point of contact for GDA and the system houses for all issues relating to surfaces in architecture, whether it be solar radiation, corrosion problems under a marine environment or the replacement of environmentally hazardous substances in surface technology. Corrosion protection is a topic of such great importance that GDA's Corrosion Protection working group offers the leading corrosion protection experts in the aluminium industry a unique exchange platform that is designed for this purpose. As with all other GDA co-operation, this is based on short lines of communication, joint research and development projects, and an active and unbureaucratic exchange of information and ideas.

Effective co-operation in questions relating to cleaning

An impressive façade can only fulfil its function in the long term, though, if it is properly maintained and cleaned. It is necessary to use cleaning agents and processes that are adapted to the specific surface. Here, membership of the quality association for the cleaning of metal façades (Gütegemeinschaft zur Reinigung von Metallfassaden, GRM) and active participation in its work has ensured effective co-operation.

Recycling keeps aluminium in the material loop

The recycling system for aluminium guarantees that high-quality aluminium profiles are produced again from used material

The new 'Postsite' office complex is located at the railway station in Aalst, Belgium. In particular, the coloured sunshades create a dynamic atmosphere and give the complex a strong and recognisable identity.

and that the recyclable material remains within the European Community. GDA's aim is to highlight the resource efficiency of aluminium products that results from high recycling rates and reuse. The main idea is to focus on closing material loops. GDA discusses these issues on its Building and Construction platform and in its Recycling division.

GDA is supporting sustainability in building with its network activities

Sustainability in the building and construction sector is viewed differently by the various market participants. Planners and architects have a different view to that of investors or public clients, each of whom weights the individual aspects of sustainability differently. GDA's various network partners make it possible to adapt to these views throughout the entire process chain and to have a reliable point of contact within GDA for all parties involved. With the work in its divisions, GDA supports the objective of closing material loops and achieving high recycling rates. In Germany, the different stages of the value-creation chain are quite well developed but must be further optimised in detail. Here it is necessary to co-operate with other organisations and initiatives, such as the Aluminium und Umwelt im Fenster- und Fassadenbau (A/U/F) recycling initiative (A/U/F is the German abbreviation for 'Aluminium and the Environment in the Construction of Windows and Façades'). ■

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Head of Packaging
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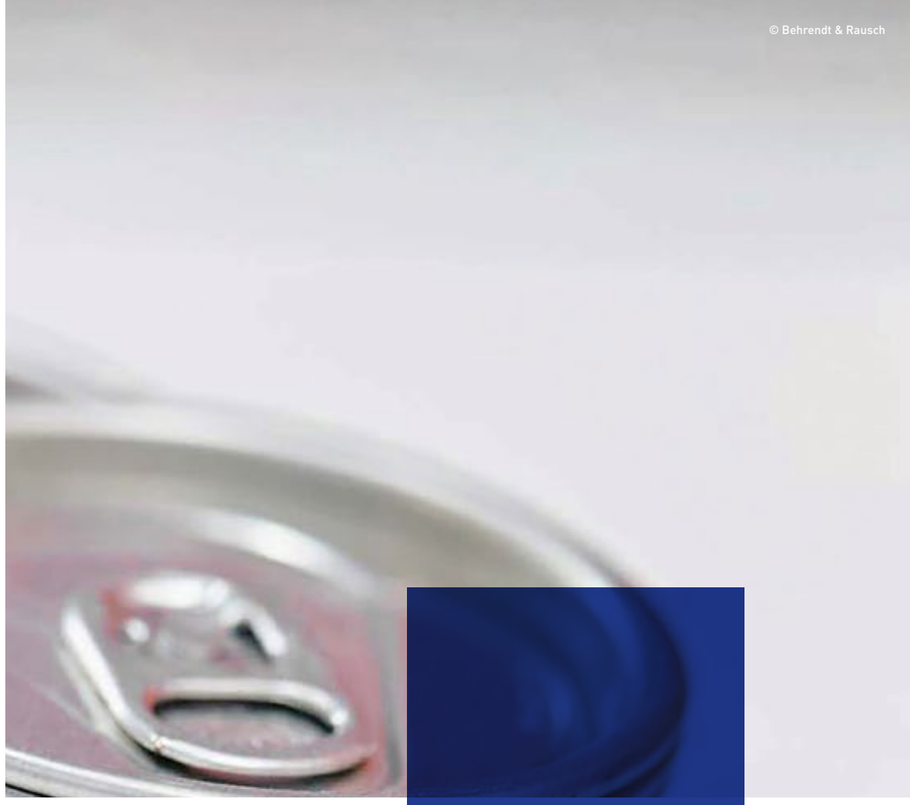
Impact Extruded Parts

Tackling challenges jointly

According to Henry Ford: ‘Coming together is a beginning. Keeping together is progress. Working together is success.’



GDA's packaging division has committed itself to this guiding principle and in recent years has consistently focused on expanding mutual co-operation within the supply chain. Complex challenges across supply chains in the aluminium packaging industry can only be solved today through open, continuous dialogue and efficient co-operation within the value chain.

GDA plays a key role as a link with industry at both national and international level, the latter within the framework of its European and international packaging working groups (european tube manufacturers association, etma, and International Organisation of Aluminium Aerosol Container Manufacturers, AEROBAL). This is because it is the association that brings together the relevant stakeholders for joint activities in the value creation chain.

There are many examples which illustrate how GDA sees a fruitful exchange of information and the implementation of joint events and projects as the cornerstone of the industry's success.

Constructive exchange of views

For several years, GDA has organised the Sustainable Aluminium Packaging Summit annually. At this event, the packaging-relevant aluminium supply chain comes together with customers from the beverage, food and cosmetics industries to discuss key topics such as sustainability, changing customer requirements, relevant legislative developments and current market trends. This constructive exchange of views promotes a better mutual understanding of the respective challenges in the supply chain and makes a valuable contribution to the development of market-oriented and future-oriented corporate strategies. Joint works visits to collection, sorting and recycling facilities also give participants a deeper insight into the treatment of aluminium packaging at the end of its life cycle.

Supply Chain Meeting

At the GDA Supply Chain Meetings, which have also been held for several years, paint manufacturers, packaging producers and customers are brought together to identify at an early stage possible market risks from substances that are the subject of critical discussion and to control substitution processes efficiently. More and more substances are being put to the test for environmental and food law reasons in Europe (e.g. REACH or EFSA). Here it is important to stay on the ball in a regulatory jungle that is becoming increasingly difficult to understand, to maintain an overview and to use early warning systems. For this purpose, a guideline was developed by the group that is intended to implement changes to formulations or new developments of paints in the supply chain as quickly and cost-effectively as possible within the framework of a structured procedure. In this context, the exchange of views from experts engaged in the various processing stages is the guarantee for obtaining holistic solutions.

Unique networking platform

The World Tube Congress, which the European tube manufacturers association holds every three years and organised again in 2019, has been expanded to become the leading international event in the tube industry. It brings together the producers of equipment, raw materials, coatings, tubes and closures and their customers. A high-calibre conference programme highlights the current European and international trends with respect to consumers, packaging, digitalisation and sustainability, enabling participants to gain a better understanding of current and future challenges and market trends. In addition, it offers the participants a unique networking platform at an international level, where existing contacts can be nurtured and new contacts made.

National and European quality standards

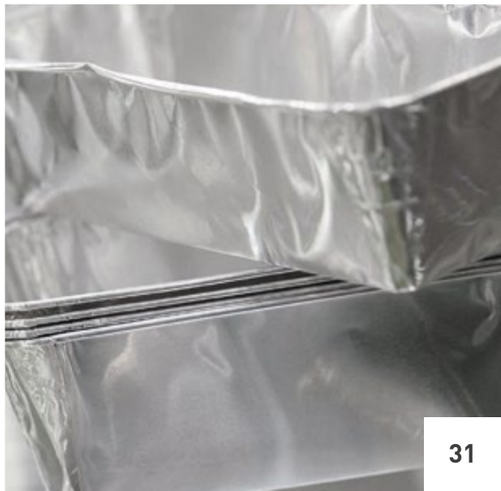
The vertical co-operation approach is also effective at the product level. Together with customers from the cosmetic and pharmaceutical industries, German and European working groups (etma, DIN and CEN) set acknowledged standards in the field of tubes. In this context, industry experts develop DIN/CEN product and testing standards, association recommendations or special defect-evaluation lists. National and European quality standards are developed in this way and existing standards and recommendations are kept up to date. For example, aluminium tube manufacturers successfully co-operated with renowned pharmaceutical manufacturers in 2018 and 2019 to revise the defect-evaluation list for aluminium tubes. The European CEN tube standards developed within the etma framework enjoy high recognition worldwide and ensure a common understanding of quality and reproducible testing methods in the supply chain.

These supply chain activities are flanked by active communication measures that also focus on the entire value chain. Through contacts that have been continuously built up over decades, information about innovations and trends in the tube and aerosol can industry is fed into the entire supply chain in a targeted manner via the etma Tubes & Trends newsletter and the AEROBAL CANS magazine, for example, in order to substantiate the innovative strength of the industry and fuel new ideas for joint market success.

Close co-operation brings success

These examples document the GDA packaging division's firm conviction that increases in efficiency and continuous improvement within the supply chain are only possible through close, cross-stage co-operation with customers and suppliers and will continue to be so in future. GDA's national, European and international activities have led to a close-knit, international network that is the ideal prerequisite for bringing together the relevant value-adding players and jointly developing solutions for the challenges faced in the value-added chain. ■

Aluminium's good formability makes it possible to produce lightweight containers in a wide variety of shapes.



Author:
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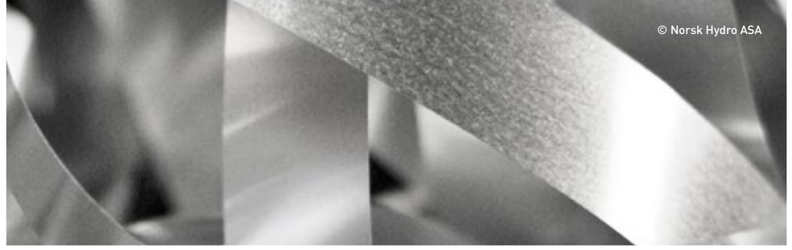
Recycling, Sustainability,
Metal Powder

Finding a common denominator

In order to make even more intensive use of scrap as a source of raw materials in Germany, German aluminium companies have been investing massively in the expansion of recycling capacities for years and are making use of plant technology that sets the benchmark worldwide.



Aluminium's high intrinsic material value makes it worthwhile economically to recycle all reusable aluminium at the end of its service life.

The aluminium industry has a wide range of furnace types and burner systems at its disposal to remelt the aluminium scrap collected. The material used plays the main role in determining the correct configuration. This is because the coordination between material input, burner system and furnace is decisive for best results regarding energy input and yield. Although the desired alloy defines the composition of the scrap, not every furnace type is designed for every type of scrap and not every burner is suitable for every type of furnace.

The coordination of the three aspects mentioned is also discussed within GDA, above all against the background of legislation, which is an added requirement for companies in the aluminium industry. This concerns the implementation of environmentally specific limits regarding emissions that pollute water, the soil and the air.

Types of scrap

A distinction is made between old and new scrap. Old scrap includes, for example, packaging (painted), shredded scrap from the construction and vehicle sectors or collected beverage cans.

'Old scrap denotes the end of a useful life.'

New scrap, such as process scrap, is colloquially referred to as 'clean scrap'. It includes production residues from foundries and the processing industry, such as swarf and chips.

'New scrap is characterised by its analysis, origin andtraceability.'

Some forms of scrap cannot be defined as either old or new scrap. The definition or subdivision of old or new scrap refers to recognition features (such as origin and analysis) and/or life cycle phases. Dross is a product of melt cleaning, i.e. a by-product. It is returned for processing because of its high metal content: it can contain up to 80% metallic aluminium.

Types of furnace

There is a variety of different furnace types available, ranging from single-chamber to multi-chamber furnaces and rotary-drum or tiltable rotary-drum furnaces. For example, single-chamber furnaces are used for clean scrap and multi-chamber furnaces are ideal for slightly contaminated scrap. On the other hand, rotary-drum or tiltable rotary-drum furnaces are suitable for scrap that contains impurities such as organic materials and oxides. To a great extent, the chemical composition of the scrap is already known. Primary aluminium or alloying elements are added to obtain the target alloy.

Burner systems

The recycled aluminium industry uses a large number of burner systems such as fuel-oxygen, regenerative, recuperative, cold-air and low-NOx burners. The burner systems have markedly different specific properties.

Fuel-oxygen burners generate a sufficiently high rate of heat transfer and are used, for example, to melt dross and aluminium scrap. Recuperative burners rely on heat transfer using the combustion gases. Regenerative burners are always used in pairs. With this system, one burner is used to burn the fuel in the combustion chamber. The second burner, which is usually found on the opposite side, sucks in the furnace chamber atmosphere and exhausts the hot gases via a heat-storage medium. After defined cycle times, the system switches over and the cold combustion air that is drawn in is then preheated via the hot storage medium and fed to the burner. With low-NOx burners, the flame temperature in the flame head is reduced by recirculating exhaust gases from the combustion chamber; the flame cools down. As a result, significantly less nitrogen oxides (NOx) are produced than with conventional burners. This means that the burner systems have an effect not only on energy consumption, but also on emission levels.

Combination of scrap quality, furnace type and burner system

The combination of the respective systems depends on the economic and technical benefit for the particular company. Single-chamber furnaces tend to be used in combination with regenerative burners when new scrap is used. In the case of multi-chamber furnaces, a combination of fuel-oxygen burners and regenerative burners is often used for remelting new scrap with low levels of contamination. Rotary-drum furnaces and tiltable rotary-drum furnaces with fuel-oxygen burners are used to produce cast alloys.

Best available technologies

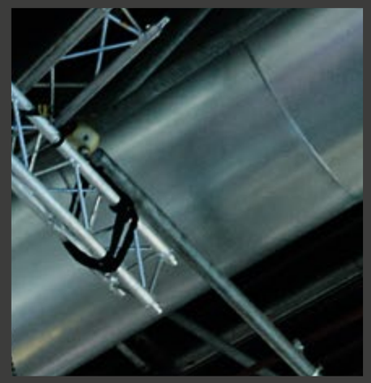
An added challenge is implementing the specified emission limits regarding the pollution of water, the soil and the air. The emission levels are documented as Best Available Techniques (BATs) or Best available techniques Reference documents (BREFs). In principle, BATs achieve a high general level of environmental protection and are economically and technically feasible. The legal system in Europe functions down to the local level and has a considerable influence on national legislation. The aluminium industry itself pursues ambitious goals. Nevertheless, it is important to respond to legislation and to be well prepared. ■

Burner Technology working group

The task of the Burner Technology working group of GDA's Aluminium Recycling division is to analyse the state of the art regarding emission limits and the best available technologies and to introduce them into BREF legislation at European level.

The following tasks are being pursued:

- → determine the state of the art
- → analyse the current use of burner systems
- → compare legal regulations covering protection against immisions
- → deduce the potential for technical improvement
- → An improved means of demonstrating impact and reducing duplication



Author:
Georg Grumm, GDA
Head of Information and Communication

GDA's ten most important communication channels

GDA's continual communication activities ensure that the various trade and business media carry reports on the metal, the companies in the aluminium sector and the association.

'Those who communicate enjoy more popularity' – GDA's experience has been favourable in this respect time and time again in the past. That is why continual dialogue with GDA member companies and representatives from politics, the media, science and the public is one of the association's key tasks and one in which GDA can draw on its extensive knowledge of materials and information on market-relevant topics.

The task of communication and public relations work for aluminium is to reduce information deficits and to provide information on the technical and ecological capability of the aluminium industry. The aim is to position aluminium as an innovative material for solving problems relating to customers and the environment.

Many topics can only be tackled by the industry as a whole. These include the metal's image-building, discussions on sustainability and resource efficiency, and co-operation with customer industries. In this way, matters that concern GDA are promoted jointly, both nationally and internationally. The association's success thus also depends on its communication with the various target groups and the communication channels it uses for this purpose.

GDA Website

GDA is relying increasingly on online media for communication, both internally and externally. Digital communication channels open up new possibilities for

preparing and offering news and content very selectively to specific target groups. Greater consideration of mobile devices is just as much a part of the conc-ept as focusing on more self-service and a more transparent calendar of events.

On its website at www.aluinfo.de, GDA offers comprehensive information on aluminium as a material; the range of services includes a knowledge shop, technical advice, a directory of products and suppliers as well as basic information on important industry topics and markets. Statistics, presentations and reports from the working groups are available exclusively to GDA members and their employees in the extranet area of the website. There are also online presentations that accompany GDA events such as the ALUMINIUM Conference or the European Aluminium Congress.

alles über alu online platform

GDA offers 'everything about aluminium' at www.allesueberalu.de and the associated social media. The platform's strategic target group is the consumer: the topics covered are presented in a clear and varied manner, while the content is presented factually and objectively.

Sensitive topics are not excluded and are presented in detail on the website and in the profiles of the social media. Issues dealing with both health and sustainability in connection with aluminium are examined widely. The 'Future and Technology' section also contains articles, videos, infographics and interviews on trend topics such as e-mobility, smartphones and 3D printing.

Social media

Online platforms such as Twitter, Facebook, XING or LinkedIn are becoming more and more popular because of their speed, the accessibility of different target groups and the low costs as well. GDA also uses the various platforms for internal and external communication with selected target groups. It sees its online activities there as a communication platform for conducting an up-to-date dialogue with member companies, their employees, trade associations and market working groups. It also uses its presence on the social media as an advertising and marketing platform for its events such as seminars and congresses.

Classic press work

An important part of GDA's strategy is, and remains, providing information proactively. It continually informs specialist and business editors of local and national media (print, online, radio and TV, etc.) with interesting facts and news from the industry. The media work includes press releases, user reports, interviews and background briefings. In addition, GDA articles are placed in the press. The aim is to achieve in-depth reporting on aluminium and greater media transparency.

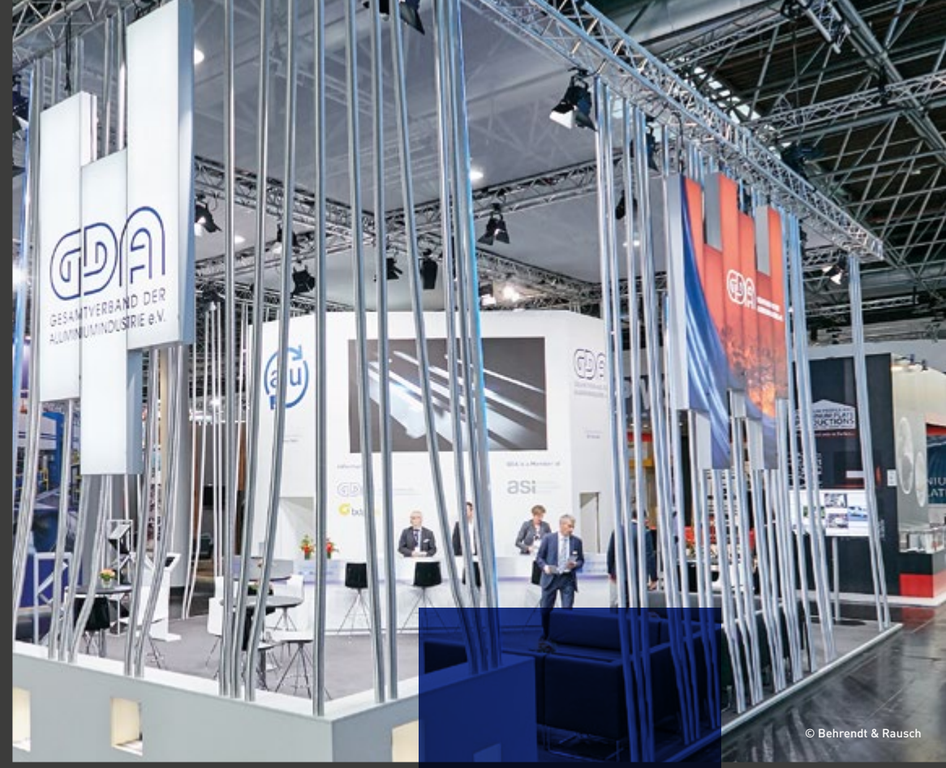
Public Relations working group

The exchange of experience on professional corporate, industry and materials communication is the focus of GDA's Public Relations working group. The group is made up of experts from the communication and marketing departments of GDA member companies. It aims to optimise communication work for aluminium as a material, improve co-operation between the PR experts of the companies in the sector and develop strategic concepts for future materials communication.

Participation at trade fairs

GDA has its own stand at trade fairs such as ALUMINIUM and interpack, where it provides information on the services it has to offer and gives advice on the use of aluminium in a company-neutral and productindependent manner.

At the same time, the GDA stand serves as a communication and industry meeting place for visitors and exhibitors from the industry. The trade fair themes are always geared to the latest developments and at ALUMINIUM 2018 they were lightweight construction, digitalisation and urbanisation, resource and energy efficiency, and demographic and climate change.



Exhibiting at leading trade fairs such as ALUMINIUM is an important and integral part of GDA's communication activities.

Congresses

The European Aluminium Congress and the ALUMINIUM Conference, which is held biennially at the same time as the ALUMINIUM trade fair, act as forums for the transfer of knowledge. Both events bring together top-class experts from all over the world. The expert presentations give a broad and intensive overview of the future opportunities for aluminium in the various user markets.

GDA aktuell

With GDA aktuell, GDA produces a classic information medium. It reports on the association's current activities three to four times a year and the recipients are the member companies. GDA aktuell is designed as a print journal and can also be accessed in the members area of the GDA website.

Sector dialogue

As early as 2008, GDA and the IG Metall trade union launched a joint series of discussions with the aim of promoting the efficient use of resources. The target group of the event were interested managers and personnel officers from the aluminium industry, works councils and trade unionists.

The discussion was initiated by Network Resource Efficiency, an initiative of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB); IG Metall and GDA are among the founding members of this initiative. GDA and IG Metall have been holding discussions ever since. During the period 2016 to 2018 they continued their dialogue with joint events covering 'Industrial policy and qualifications', 'Industrial policy requires future-proof framework conditions and good jobs' and 'Perspectives for Germany as an industrial location'.

The German aluminium industry needs to have a high level of acceptance by the public. This requires supplying honest information and talking openly about the opportunities and risks of the industry. The 'Social Partnership for Sector Dialogue' contributes to this.

Networks and personal contact

Continual dialogue with GDA member companies and representatives from politics, the media, science and the public is one of association's key tasks and one where GDA can draw on its extensive knowledge of materials and information on market-related-topics. Dialogue with critical groups is also of particular importance in the complex field of aluminium-related issues. Here, GDA has developed an extensive network of relationships with decision-makers, opinion formers and multipliers. ■

Author:
Arne Regenbrecht, GDA
Social Media Manager

alles über Alu: GDA's new consumer platform

What is written and filmed by users on the Internet also has consequences for the aluminium industry. The new '**alles über Alu**' (everything about aluminium) platform is deliberately aimed at consumers to improve aluminium's reputation as a material.

Deodorants without aluminium? What does aluminium have to do with Alzheimer's and breast cancer? Aluminium and sustainability, do the two go together? Many consumers are unsure and ask themselves these and other questions when they think about the light metal. There are numerous answers on blogs, in YouTube films and on news portals, but these are rarely serious, scientifically supported and easy to understand. Public opinion and consumer behaviour are shaped by the fears of health risks and dangers for the environment described there. This in turn can change political decisions at the expense of the aluminium industry. For example, regulations for fewer uses of aluminium, which have already been discussed several times at regional level in Hamburg and Munich in the past, combined with growing consumer awareness of sustainable and harmless products, can thus indirectly lead to manufacturers of rolled and extruded aluminium products also suffering drop-offs in sales in the long term.

To counteract such public opinion that takes on a life of its own, the www.allesueberalu.de platform with its associated social media pages was created in 2018 in co-operation with GDA's Public Relations working group. The platform offers information on all aspects of aluminium as a material, with a deliberate focus on end-users: topics of interest to them are presented in a clear and diversified manner in a language they will understand, while at the same time the content is presented factually and objectively. With their technically sound knowledge, independent scientists and industry experts add credibility to the information platform in the eyes of the consumer.

Sensitive topics are not excluded and are dealt with in detail by the website and the profiles on Facebook, Instagram, Twitter and YouTube. Health or sustainability aspects in connection with aluminium are examined over a broad range: aluminium foil, grill trays and deodorants, Alzheimer's and breast cancer, red mud landfill, bauxite mining, energy consumption in the production of aluminium from bauxite, packaging and recycling. Topics relating to trends and innovations such as e-mobility, smartphones and 3D printing can be found in the 'Future and Technology' section. This is intended to draw the critic's attention to the more positive areas of aluminium use.

Engaging in critical dialogue

The ambitious goal of the 'alles über Alu' platform is to change an aluminium critic into a neutral user, and in the best case into an aluminium fan. It can be assumed that this will not always succeed and that sometimes critical dialogue will have to be conducted in keeping with the 'alles über Alu' concept. After all, it gives users the opportunity to inform themselves objectively, something that is denied them by many unserious sources.

Professional design of the contents

The contents of the 'alles ueber alu' platform are presented in different formats: besides articles it provides information about interviews, info boxes and graphics, photos, galleries and videos. In detailed project work and in collaboration with a production team, a total of three professional films were produced covering each of the themes dealt with so far: as part of the 'Healthy Living' theme, a video was created in which Dr Christoph van Thriel from the Leibniz Research Centre for Working Environment and Human Factors comments objectively on his research into the possible influence of aluminium on the development of Alzheimer's. Impressive images and information about red mud can be found in another video that was shot at Aluminium Oxid Stade GmbH Stade, which is intended to dispel the user's fear of the waste from the production of aluminium oxide and hydroxide and its use in landfill. A third video explains to consumers in an understandable manner just how innovative, flexible and modern aluminium can be as a material, with moving images of the use of 3D printing at the SLM Solutions Group AG in Lübeck.

New topics and content are constantly being developed and published, and additional attention is being generated via the growing social media pages on Facebook, YouTube, Instagram and Twitter. It is intended to identify new fields of interest via the interaction with readers there and via a contact form on the homepage, which allows questions to be asked and comments to be made.

Information platform for the aluminium industry

The platform is not only aimed at end users, politicians, journalists and other critics, but is also a point of contact for all the employees of companies in the aluminium industry. GDA recommends referring to www.allesueberalu.de both internally and externally, such as through a link on the company website, in newsletters, in e-mail signatures or by sharing contributions in social networks, which will lead to potential being used to a greater extent. Common communication about the material strengthens the public's perception of aluminium and thus has greater positive effects for the entire industry. ■

Author:
Dr Karsten Hein, GDA
Head of Technical Literature,
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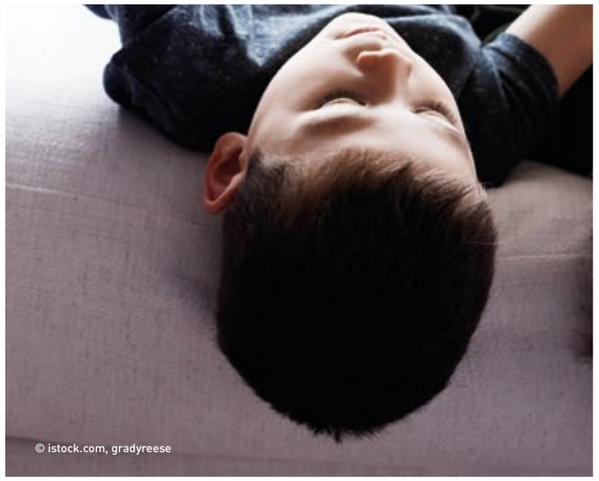
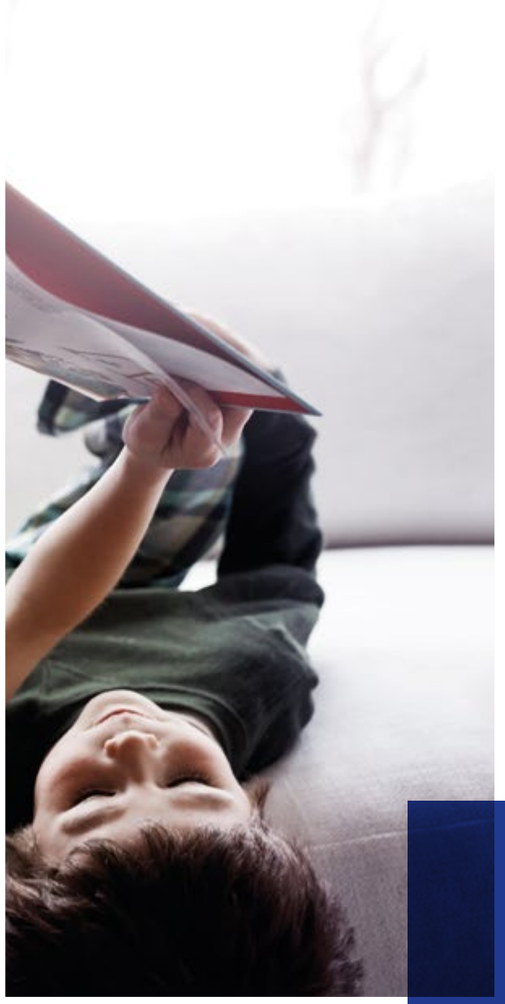
Image building using educational media

Education is one of the central resources for Germany being a location for production, innovation and knowledge. At the same time, education must adapt to changes in society and new global challenges.





Every child and every young person should have the best possible educational opportunities regardless of its cultural, social or financial background.

An issue to which GDA Gesamtverband der Aluminiumindustrie is particularly committed is the competent and target-group-oriented processing and comprehensible dissemination of knowledge on aluminium as a material. For historical reasons, this is something that is hardly communicated by state institutions and is only marginally dealt with in curricula. GDA has therefore set itself the task of gathering and processing information and knowledge about the material and making it available to member companies and interested parties from teaching and research.

Knowledge management via a database

One can distinguish between two different forms of knowledge transfer.

On the one hand, GDA has been dealing with information on aluminium for decades. Specialist knowledge is generated and made available to experts. GDA's staff use specialist publications to constantly obtain information about the state of the art in research and technology relating to the metal. National and international journals are evaluated with respect to relevant topics. The journal articles are stored in abstract form in a database so that information can be retrieved later. GDA's literature database now contains over 44,000 summaries of articles about aluminium. The articles can also be researched externally via the Internet.

GDA's digital 'periodical' Aluminium-Literaturschau (AL) presents new entries to the literature database twice a year and is sent as a PDF document to over 1,000 e-mail addresses. The target group are GDA member companies and interested parties from other industries or research institutions.

The way knowledge is generated, stored and shared has changed fundamentally in the digital age. Due to the possibilities for storing it digitally, it is now easily searchable, quickly accessible and easier to update. During the relocation of the association, it was decided to scan the technical articles on aluminium that had been collected over decades in full text and thus make them available digitally. The contractor is the Düsseldorf specialist SAGA. The company combines ground-breaking scanning technology with innovative services for digitalisation.

Preparatory measures such as ascertaining the quantities of data involved, conducting inventory checks and creating test scans were carried out and then the contents of the library and the archives were collected – on schedule for the relocation of GDA. The digitalisation of the GDA library is now in full swing. The provider, SAGA, holds almost the entire library and archive stock. Processing consists of separating the bound annual volumes of the journals, scanning the articles, creating documents and giving them a name. The resulting files are digitally searchable and open up completely new opportunities for research. The indexing of old and current texts now takes place on a completely different scale.

Educational media as image media

Specialist information can be stored in a database in a matter of fact manner and filtered. However, general information on the metal should also be available and used by as broad a target group as possible. So far, the pure management of specialist information has been described here. The transfer of knowledge beyond the boundaries of the association and its member companies also contributes to image-building though.

Disseminating information about aluminium not only raises the general level of knowledge about the metal but also creates a certain 'image'. The English word 'image' corresponds to the German word 'Ruf'. Which Ruf, image or overall impression people (or groups like consumers) have of the metal and the aluminium industry depends above all on how the association and the industry portray themselves, present themselves and, not least, on the information they disseminate about themselves and the metal.

Over the years, GDA has developed educational media based on ever-newer concepts, thus imparting specialist knowledge of the material to pupils, teachers, interns, trainees and people with a general interest. These included a teaching case with examples of applications of the metal and a teaching DVD with illustrations and films covering aspects from the chemical basics through to the production process. The most successful project to date has been the Aluminium überall (Aluminium Everywhere) brochure, the third edition of which has already sold more than 17,000 copies. It covers all aspects of the metal, from bauxite mining to aluminium extraction and recycling of the valuable material.

WAS IST WAS – aluminium for young readers

Nuremberg-based Tessloff Verlag is the publisher of the popular WAS IST WAS books, which are aimed at children and adolescents. The publishing house and GDA are currently working on an exclusive brochure on aluminium in the proven and well-liked WAS IST WAS style. The aim is to convey in an informative, child-friendly and picture-based way where and to what extent the metal can be found in everyday life and in the household. The purpose of the brochure is to portray aluminium's perceived value and irreplaceability.

In addition, the WAS IST WAS brand is intended to promote the material's image. The aim is that young readers understand that aluminium is a part of their everyday lives, just like the well-known WAS IST WAS series has a firm place among non-fiction books for young readers. The publishing house is contributing its expertise in conveying specialist knowledge and enabling the reader to gain a comprehensive and neutral picture of all aspects of the material. ■

GDA ■ D-A-CH

Co-operating successfully within the 'Allianz für Aluminium': (from the left) Christian Wellner (GDA), Roman Stiftner (WKO) and Marcel Menet (alu.ch).

Aluminium without borders: united by a common metal and a common language

For more than eight years GDA has been co-operating on joint projects with alu.ch, the Swiss aluminium association, and the non-ferrous metals trade association of the Austrian Economic Chambers (WKO, Wirtschaftskammer Österreich, Fachverband NE-Metallindustrie) within 'D-A-CH Alliance for Aluminium'.

Austria, Switzerland and Germany can all look back on a long aluminium tradition. The three countries represent almost 100 million inhabitants, of whom around 95 per cent speak German as their mother tongue. The aluminium companies from the D-A-CH countries supply technologically sophisticated products to user markets worldwide.

In many areas, the challenges facing the sectors' companies and trade associations in the D-A-CH countries are no longer national issues. Climate change, energy and resource efficiency, sustainability, mobility of the future or a shortage of skilled workers are issues that affect all regions in Europe and do not stop at national borders. This is where the transnational co-operation of the three associations within 'D-A-CH, Alliance for Aluminium' comes in; the alliance's main aim is to achieve synergy potentials through joint projects. The D-A-CH co-operation places enormous importance on strengthening the representation of member companies' interests. At the same time, it is particularly important to have a strong common voice and communicate the benefits of aluminium as a material more intensively.

Strong network

A discussion of cross-border topics or project progress takes place at regular meetings at management or expert level. A strong network has now developed in which the individual D-A-CH associations benefit from the experience and activities of the others. Ideas and suggestions are always welcome. The co-operation is closely aligned to the needs of the member companies, which are continuously informed about the co-operation and projects involving D-A-CH. This results in new suggestions and ideas for joint activities.

Several member companies are represented in two or even all three national organisations of D-A-CH. The use of a common language in important documents facilitates identification with the national associations and duplication can be avoided. This increases efficiency and effectiveness.

Successful project work

Various projects have already been implemented in the past. The first major project with a model character was the preparation of the D-A-CH brochure Planning for the Future – Building with Aluminium in 2011. In addition, the three associations regularly co-operate on public-relations work and in various joint activities, for example in the preparation of joint statements on current topics. The EAC European Aluminium Congress, which will be held at the end of November 2019 and has gained recognition far beyond the German-speaking countries, is being prepared jointly for the third time.

Another key aspect of the co-operation in the D-A-CH region is the involvement in the European aluminium association. The common interests of the D-A-CH region will thus also be given greater weight at European level in Brussels to the benefit of the member companies.

Target-group specific communication

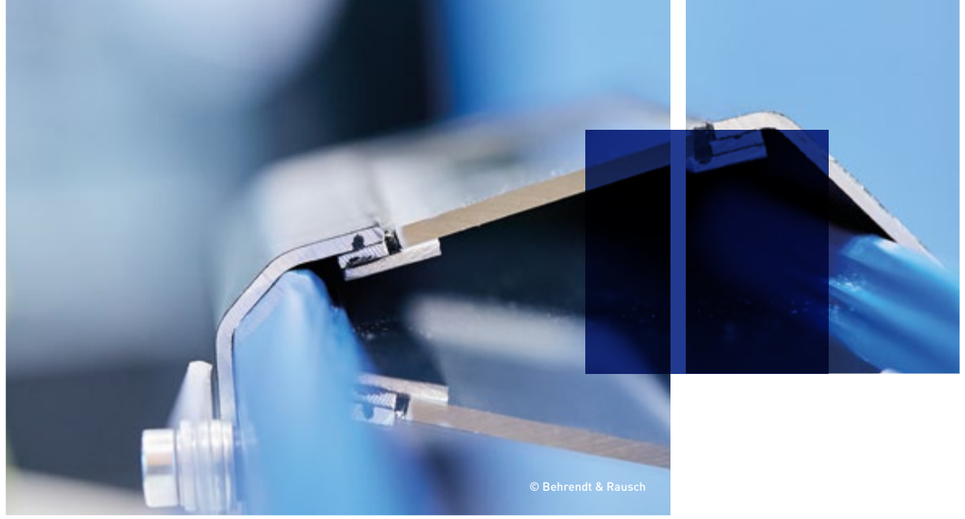
In addition, co-ordination of communication and public relations activities is an important aspect of the D-A-CH co-operation. The aluminium industry is widely accepted by society, but it must also realise that various social groups are critical of the material, its products and the conditions under which it is produced. For this reason, communication and efforts at persuasion involving stakeholders is a further aspect of the co-operation in the D-A-CH region. Communication involving defined topics will continue to be co-ordinated by the three associations in future.

Future co-operation

Innovation is the main driving force for member companies, therefore co-operation in the field of research and science should be further intensified in order to strengthen the network. Additive manufacturing, lightweight construction and Industry 4.0 are further areas in which the three associations are already exchanging information at expert level. In addition, China and its exports to Europe remain a topic on the future agenda of the D-A-CH co-operation. ■

Business activity in the aluminium sector 2018/19

Economic risks have increased, which is why the German aluminium industry's expectations for 2019 are slightly subdued.



Raw aluminium: recycled aluminium's share continues to increase

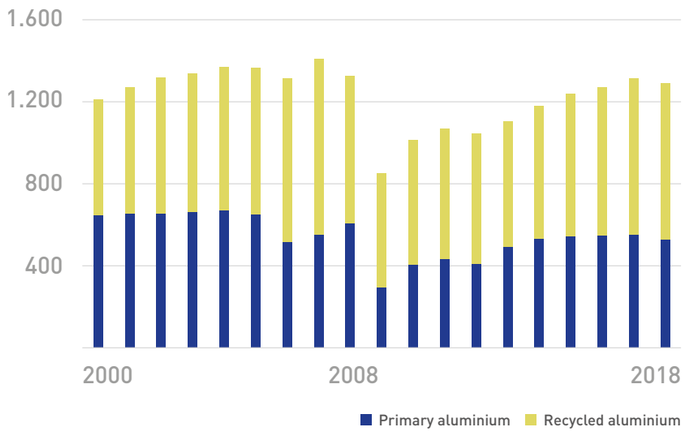
In 2018, production of raw aluminium totalled 1.29 million tonnes, 1.7 per cent down on the previous year's level. Production amounted to 528,900 tonnes of primary aluminium and 761,700 tonnes of recycled aluminium. The production of recycled aluminium shrank minimally by 0.2 per cent, while primary production recorded a much steeper decline of 3.8 per cent. As a result, recycled aluminium's share of the total increased from 58 per cent to 59 per cent.

Aluminium semis: slight decline in production

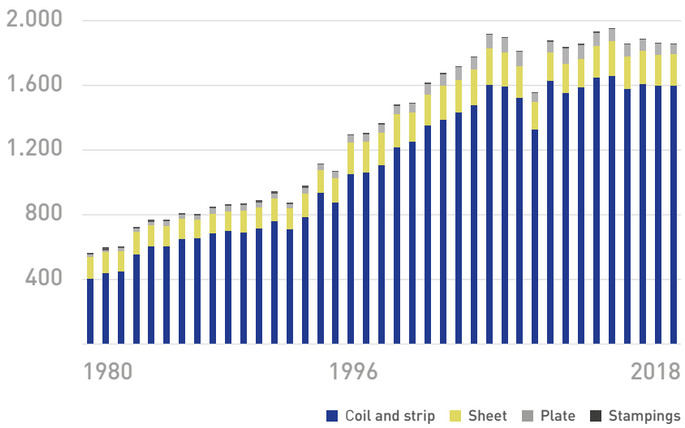
Semi-finished aluminium products include rolled products, extrusions, wire, forgings and conductive material. German semis production totalled around 2.46 million tonnes in 2018. This corresponds to a decrease of 0.3 per cent on the previous year. Rolled products and extrusions are the largest product sectors by volume.

Production of rolled products fell 0.3 per cent, or 6,200 tonnes, to 1,854,900 tonnes. Output of coil and strip with a thickness over 0.2 mm increased 0.2 per cent, or around 2,900 tonnes, compared with the previous year to 1,599,600 tonnes. Production of aluminium sheet (having a thickness from over 0.2 mm to 5.99 mm) totalled 190,900 tonnes. This represents a decline of one per cent or 1,900 tonnes. There was also a production decline in the aluminium plate sector (down 2.4 per cent / 1,600 tonnes).

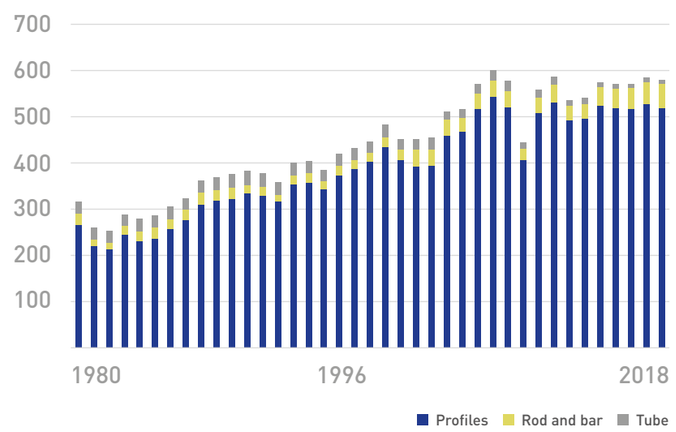
Production of Primary and recycled aluminium in Germany from 2000 to 2018 (in 1000 tonnes)



Production of rolled products in Germany from 1980 to 2018 (in 1000 tonnes)



Production of extruded products in Germany from 1980 to 2018 (in 1000 tonnes)



Outlook cautiously optimistic – risks high

The expectations of the German aluminium industry for 2019 are fundamentally positive. Economic developments in the industrial and consumer goods industries as well as in the construction sector are still on the upswing. However, the list of economic risks for 2019 is long: the incalculable effects of Brexit, continuing trade conflicts (e.g. imminent US punitive tariffs on cars) and the current weak market for the sales of passenger cars in China. The outlook is therefore cautiously optimistic with risks continuing to be high.

In the medium to longer term, however, the outlook for the aluminium industry is positive. New and innovative products are expected to come onto the market in the near future and further increase the intensity of aluminium use for various products.

Extruded products are divided into profiles, rod and bar, and tube; total production amounted to 579,000 tonnes in 2018. This corresponds to a decline of 0.8 per cent compared with the previous year's level of 583,700 tonnes. At 518,200 tonnes, the volume of profiles produced was 9,100 tonnes lower than in the previous year. This corresponds to a decline of 1.7 per cent. The development of rod and bar and tube production was more volatile: rod and bar production increased by 10.3 per cent to 51,600 tonnes, while tube production fell by 4.2 per cent to 9,200 tonnes.

Shaped aluminium castings: small increase in production of die-castings

The production of shaped aluminium castings is subdivided into die-castings, chill castings, sand castings and other casting processes. Aluminium die-castings is the most important segment in quantitative terms, accounting for around 60 per cent of German production of castings. Vehicle construction is the main user industry for aluminium foundries.

Total production of castings in 2018 was 1,020,000 tonnes. This is a decline of 2.4 per cent compared with the previous year. Die-casting production rose slightly: up 0.8 per cent. By contrast, there were year-on-year declines in the production of chill castings (down 7.8 per cent), sand castings (down 4.3 per cent) and other casting processes (down 4.4 per cent).

Aluminium conversion: powder production increases

There was a decline in production by German aluminium converters in 2018, from 346,500 tonnes to 340,100 tonnes. This meant that compared with the previous year the production volume fell 6,400 tonnes or 1.8 per cent. Aluminium conversion is divided into three sectors: foil and thin strip, tube and aerosol and other cans, and metal powder. In the foil and thin strip segment, which is the largest in terms of volume, output fell 6,000 tonnes or 2.2 per cent to 262,900 tonnes. In the tube and aerosol and other cans segment, production fell 2,400 tonnes to 42,200 tonnes (down 5.4 per cent). In the aluminium powder segment, there was an increase of 2,000 tonnes in absolute terms and 6.1 per cent in relative terms. ■

Statistics

Production

Semi-finished aluminium products (tonnes)	2017	2018
Rolled products	1,861,100	1,854,900
Rods and bars	46,800	51,600
Profiles	527,300	518,200
Tubes	9,600	9,200
Wires	18,500	19,700
Forgings	N/A	N/A
Conduction material	4,100	5,900
Total	2,467,400	2,459,500

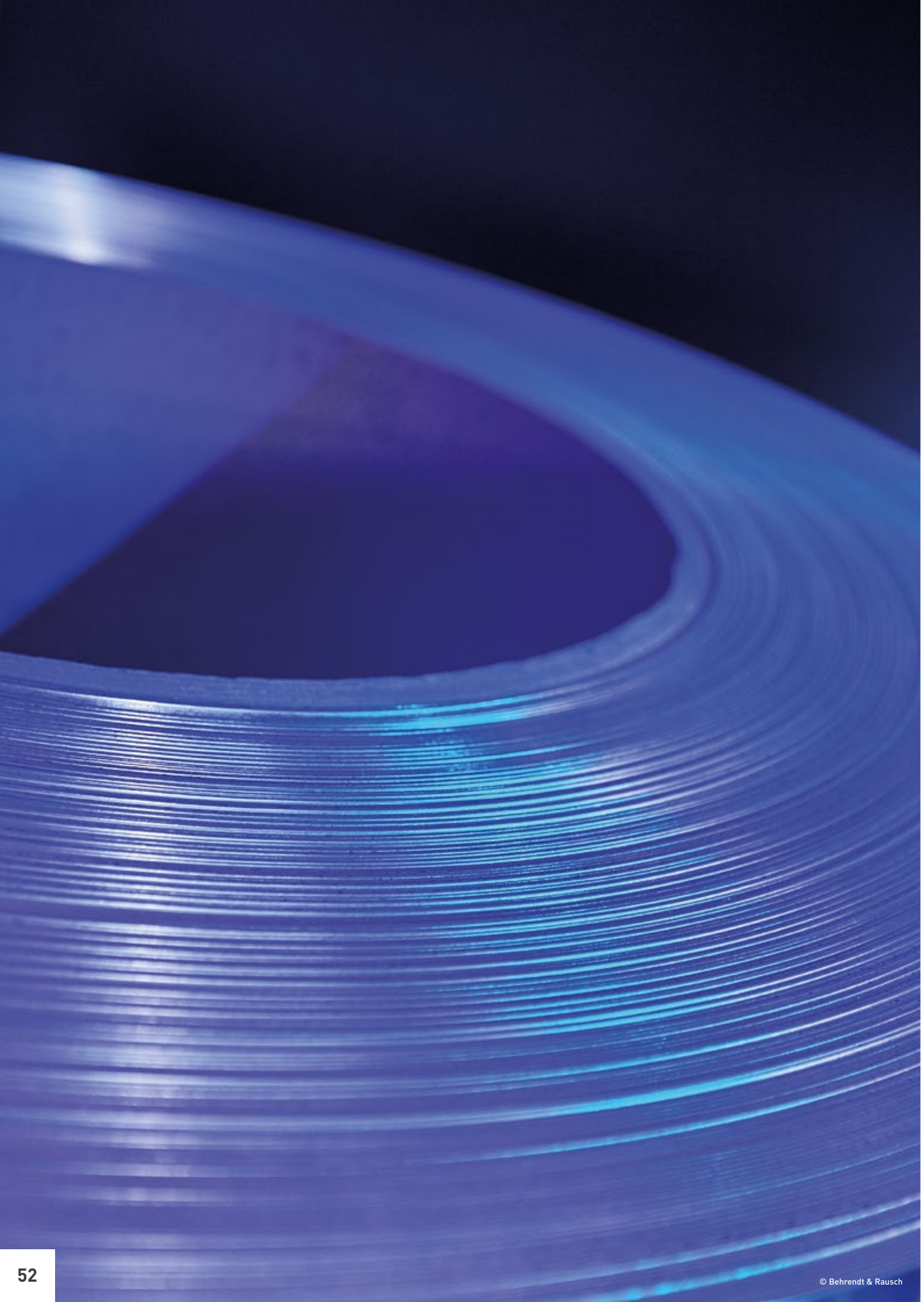
Aluminium castings (tonnes)	2017	2018
pressure die-casting	611,800	616,700
Permanent-mould casting	325,700	300,300
Sand casting	98,500	94,300
other casting processes	9,100	8,700
Total	1,045,100	1,020,000

Further processing of aluminium (tonnes)	2017	2018
Aluminium foil	268,900	262,900
Tubes, Cans and Impact Extrusions	44,600	42,200
Aluminium powder	33,000	35,000
Total	346,500	340,100

Foreign trade

Raw aluminium (tonnes)	2017		2018	
Country	Import	Export	Import	Export
EU 28	1,461,000	349,100	1,385,700	348,500
EFTA	456,400	110,900	418,900	97,600
Eastern Europe	234,700	2,300	300,100	2,700
Rest of Europe	0	100	0	0
Europe total	2,152,100	462,400	2,104,700	448,800
North America	12,000	1,100	24,200	800
Central and South America	7,000	100	9,600	0
Africa	87,500	0	70,300	0
Asia	282,800	13,300	285,300	9,100
Australia/New Zealand	300	0	800	0
Rest of the world	96,900	0	89,600	0
Total	2,638,600	476,900	2,584,500	458,700

Aluminium semis (tonnes)	2017		2018	
Land	Import	Export	Import	Export
EU 28	1,064,900	1,451,800	1,065,100	1,493,900
EFTA	292,600	80,500	273,500	84,800
Eastern Europe	169,100	85,900	169,500	84,000
Rest of Europe	0	0	0	0
Europe total	1,526,600	1,618,200	1,508,100	1,662,700
North America	33,000	79,100	12,600	87,800
Central and South America	100	67,800	0	71,300
Africa	20,100	29,200	23,000	29,300
Asia	80,800	110,700	112,600	83,800
Australia/New Zealand	100	7,500	0	5,000
Rest of the world	0	0	0	0
Total	1,660,700	1,912,500	1,656,300	1,939,900



Services from GDA: quick, competent, informative

GDA rigorously pursues a policy of being a modern trade association for its members, customers and those with an interest in the sector, offering the aluminium industry and its partners a comprehensive range of services.

GDA's comprehensive range of services covers education and training, technical advice, information such as statistics and the library, and specialised events. The services offered are aimed at GDA members, establishments of further education and the public at large. The following list is an overview of the services offered.

... supports rapid searches for information on manufacturers of aluminium products via its **products and manufacturers database.** A simple system and online search form helps the user find innovative companies and optimal solutions.

... is actively engaged in the area of **schools and education and training.** The future of work does not begin in the production facilities. When it comes to determining future direction, important steps are already taken during school education. GDA develops teaching materials, such as folders or DVDs, and provides information on practical training and works visits in the aluminium industry.

... offers comprehensive information on aluminium as a material **on its website at www.aluinfo.de.** The extranet section is for GDA member companies and contains statistics, presentations and reports from the working groups, and can be accessed exclusively by GDA members and their employees.

GDA ...

... answers practically any question relating to aluminium via its **library.** GDA's library is the largest German library dedicated to aluminium. The library's archives contain one of the most extensive collections of information on aluminium – all well documented and edited.

... provides specific advice on the processing and application of aluminium, including topics such as standardisation, alloy designations and alloy data, via its **Technical Advisory Service.**

... provides information on the current economic and business situation in the German and European aluminium industries together with the latest **statistics.** Statistical data on indices, employment, turnover, production or foreign trade help analysts and market players asses market developments.

... publishes its information **online.** Anyone interested can download technical information sheets, technical papers, brochures and fact sheets directly.

GDA – Gesamtverband der Aluminiumindustrie e. V.

Gesamtverband der Aluminiumindustrie e. V. (GDA) with headquarters in Düsseldorf, Germany, was established in its current form in 1992 in Dresden. It is an association of aluminium companies that produce raw aluminium or aluminium products, including composites with other materials. As an industrial sector association, GDA represents the interests of an efficient aluminium industry and the jobs it offers with the aim of:

- conveying the economic, ecological and technical benefits of aluminium
- implementing the ecological, economic and social aims of the aluminium
- continuing determinedly to pursue the implementation of sustainable, future-oriented development in the aluminum industry.

As the representative of the aluminium industry, GDA strives to maintain an open dialogue with the general public in order that customers and consumers have a more transparent view and better understanding of aluminium and the products of its member companies. To this end there is a continual exchange of experience and ideas within the association; this ensures that the interests of all member companies are represented effectively, also externally.

GDA and its specialist trade associations have made it their job to represent the common interests of all of their members and thus the whole sector in all areas of the economy relating to aluminium. This involves the collection and processing of market information and planned legislation at national and international level. In addition, the association carries out media and public relations work for its member companies. GDA is also co-operation partner and promotional supporter of the world's largest aluminium trade fair ALUMINIUM. ■

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OTTO FUCHS KG

Dietrich H. Boesken (Ehrenpräsident)
Boesken GmbH

Oliver Höll (Vizepräsident)
ALLTUB GROUP

Roland Leder (Vizepräsident)
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Hydro Aluminium Rolled Products GmbH

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TRIMET Aluminium SE

Bernd Schäfer
apt Sedant Holding GmbH

Christian Wellner
(Geschäftsführendes Präsidialmitglied)
Gesamtverband der Aluminiumindustrie e. V.

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Hydro Aluminium Rolled Products GmbH

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Constellium Rolled Products Singen GmbH & Co. KG

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ALLTUB GROUP

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Real Alloy Germany GmbH

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Novelis AG

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Aleris Rolled Products Germany GmbH

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ECKART GmbH

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