

Composites Market Report 2013

Market developments, trends,
challenges and opportunities

The global **CRP** market - Bernhard Jahn (CCeV)
The European **GRP** market - Dr. Elmar Witten (AVK)

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The global CRP market 2013

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Carbon Composites e.V. (CCeV) is an association of companies and research institutes in Germany, Austria and Switzerland for the entire value-added chain of high performance fibre composite materials. It plays an important role in networking scientific research and businesses.

CCeV sees its role as a network of competence for promoting the application of fibre composites with a focus on "marketable high performance fibre composite structures". The emphasis is on fibre composite structures with plastic matrix materials, familiar to the wider public in many applications, as well as on fibre composite structures with ceramic matrices, which have higher resistance to temperature and wear, and high performance fibre composites for the construction industry.

General

This assessment of the carbon fibre market has become a fixture in the composites market report produced jointly by Carbon Composites e.V. (CCeV) and the AVK, a development welcomed by readers and members alike. The section of the market report focusing on carbon fibre draws on information and figures supplied by members of CCeV [SGLG]; [TohoT]; [Toray], among others. These members are responsible for around 40% of global carbon fibre production in 2012 – a total annual production capacity of approximately 44,000 t according to the latest figures.

The global carbon fibre market

Additional sources of information were included for the production of the Market Report 2013. Thus it was possible to refine last year's data and offer even greater precision. This is also the reason for any differences between the information contained in this and previous market reports. According to the revised figures, demand in the years up to and including 2011 is now believed to have been somewhat higher than was the case in 2012. Growth in demand until 2015 is now expected to be slightly lower than previously forecast although still high at a rate of over 13%. [SGLG], [TohoT] [Ind.Exp.].

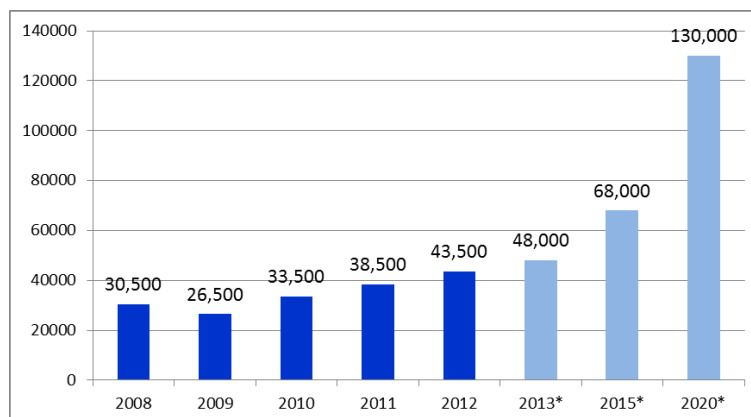


Fig. 1: Global demand for carbon fibre in tonnes 2008-2020 [Ind.Exp.],[SGLG],[TohoT]. (*estimated)

According to the figures available to us, the increases in capacity announced in 2011 and 2012 have for the most part been implemented and the companies are beginning to expand their market positions more actively.

- Toray has increased its CF capacity to 21,100 t. [Ind.Exp.]
- Russian newcomers Argon Ltd. (CJSC Holding Company Composite) and Alabuga Fibers LLC have each expanded their capacity by 1,500 t/year. [Ind.Exp.]
- Taekwang Industrial Co Ltd (Ulsan/South Korea) started CF production in March 2012 and has expanded its capacity to 1,500 t/year in 2013. [Ind.Exp.]
- Hyosung began production of approx. 2,000 t/year (small tow <48k / 2,000 t/year in the city of Jeonju/South Korea). [Hyosung]
- The capacity of Kemrock Industries and Exports Ltd. is now estimated at 650 t/year. [Ind.Exp.]
- Zoltek Corporation has also completed the investment projects it announced. "Zoltek honored for new \$15 million carbon fiber plant in St. Peters [West Media Inc. - 21 Publishing LLC] Total capacity for 2013 is now stated at approx. 17,600 t/year. [Ind.Exp.]
- Chinese companies currently have a carbon fibre manufacturing capacity of around 12,000 t/year. This is predicted to expand to approx. 22,000 t/year by 2020. The main players in this region are: Jiangsu Hengshen Fibers Materials Co. Ltd. (3,500 t); Zhongfu Shenying Carbon Fibers Co. Ltd. (3,200 t), Dalian Xingke Carbon Fibers Co. Ltd (1,670 t), Weihai Tuozhan Fibers Co Ltd. (2,150t). [Ind.Exp]
- SGL Group is in the process of acquiring 86% of the shares in the Portuguese fibre manufacturer Fisipe. This provides the manufacturer of carbon fibres and carbon fibre reinforced plastics (CRP) with an additional source of raw materials. [K Zeitung online Freitag, 17.08.2012]
- MRC, a 100% subsidiary of Mitsubishi Chemical Holdings, has completed its acquisition of TK Industries, a German-based manufacturer of carbon fibre multiaxial fabrics. [BusinessCar, 16 November 2012]

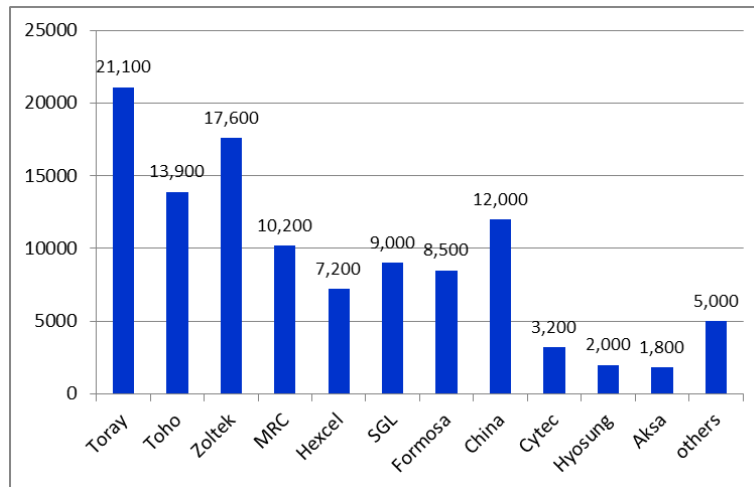


Fig. 2: Carbon fibre capacities itemised by manufacturer (2012) in t according to information provided by [Ind.Exp.], [SGLG], [TohoT], [TohoT].

For 2013, we calculate a theoretical total capacity (depending on the production portfolio of the manufacturer – small tow / large tow) of approx. 111,500 t of carbon fibre. In the graphic above, new capacity in Russia, South Korea and India is stated as a combined total under "Other". This capacity is supplemented by around 4,000 t/year of additional pitch-based CF capacity in Japan, the USA and China. The greatest installed CF capacity is to be found in the USA, Europe (including Turkey) and Japan, each of which account for some 23-24% of global output. China has now expanded its production to around 11% of total global capacity. The remainder is distributed between Taiwan, South Korea, Russia, India and Mexico.

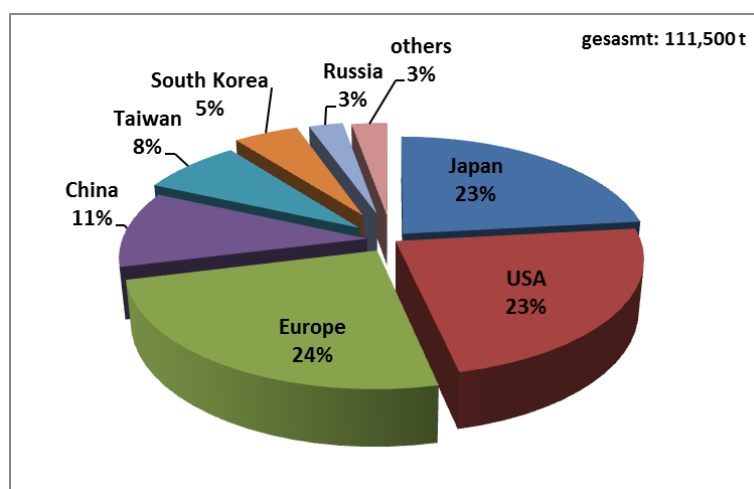


Fig. 3: CF capacity by region (PAN-based) (2013) [MTP]

The global carbon composites market

As the vast majority of carbon fibre produced (over 97%) is processed into composite materials of all types, the carbon composites market develops at the same pace as the CF market. The tonnage of CRP is naturally much higher, however, due to the addition of the matrix component.

Carbon composites: Market data and developments in 2012

95% of the CF used in composite materials is processed into carbon fibre reinforced plastic (CRP). The rest is used in composites with matrices based on carbon, ceramic or metal. These materials are used in special applications, such as aircraft or vehicle brake discs.

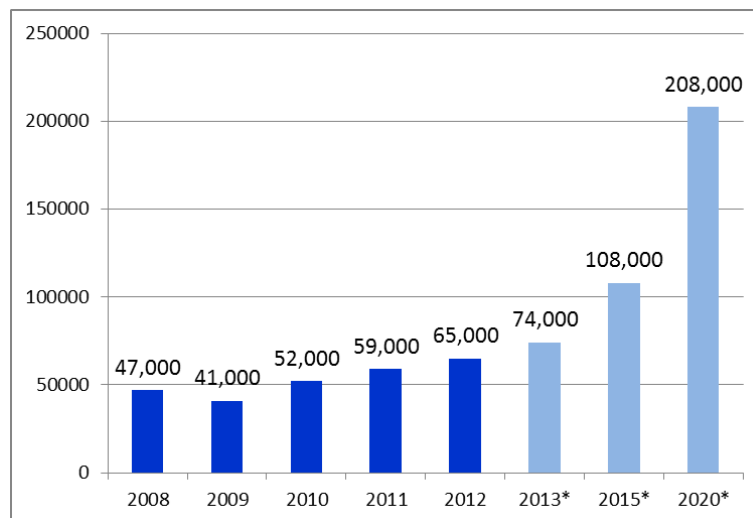


Fig. 4: Global demand for CRP in tonnes 2008-2020
(*estimated)

A variety of different production processes are used in the manufacture of CRP materials/components. These are required for processing the various semi-finished fibre products. A look at this area of the market shows that little has changed here since 2012. Prepregs continue to dominate in the production of CRP parts. Around 54% of the carbon fibre produced world-wide is used for manufacturing prepregs, of which

42% are based on unidirectional fabrics and 12% on woven fabrics. 5% of carbon fibre is used to make semi-finished products such as fabrics, braids etc., which are in turn used to make CRP parts via an infiltration process (e.g. RTM). The winding (approx. 15%) and pultrusion (approx. 8%) processes are also important techniques in CRP production. Here the fibres are used in the form of yarns.

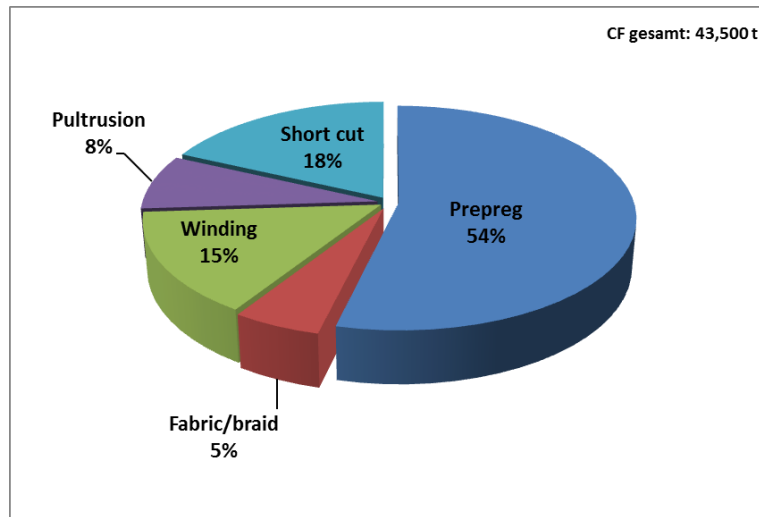


Fig. 5: Market shares of the manufacturing processes / Semi-finished products for CRP (2012) [MTP], [Ind.Exp.]

In this year's market report, the additional data and information now available enable us to analyse these areas of application in detail. We can also highlight the sales and revenues for each application area and study the regional distributions of the most important application areas.

Overall, the most important use of CF (23% of a total of 43,500 t) continues to be in rotor blades for *wind turbines*. This area is closely followed by *aerospace & defence* and *sport/leisure* (18% and 17% respectively). The fourth-largest application area for carbon fibre (12%) is in *molding & compound*.

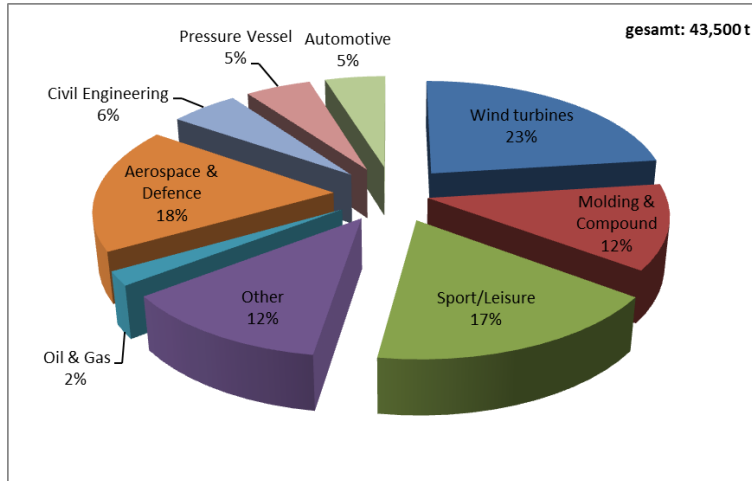


Fig. 6: Global CF consumption (t) by application (2012) [Ind.Exp.]

The values of global carbon fibre sales in these areas (\$ 2.034 billion) do not, however, correspond to the volumes of carbon fibre used in the various application areas. *Aerospace & defence*, for example, uses only 18% of the total quantity of CF but accounts for around 40% of the value of global sales. This is because costs in this sector are significantly greater due to the high quality standards, licenses and inspections. In contrast, the largest segment by volume, *wind turbines* (23%), generates only approx. 13% of global revenues. The third-largest market segment, *sport/leisure* (17%), is responsible for around 11% of revenues.

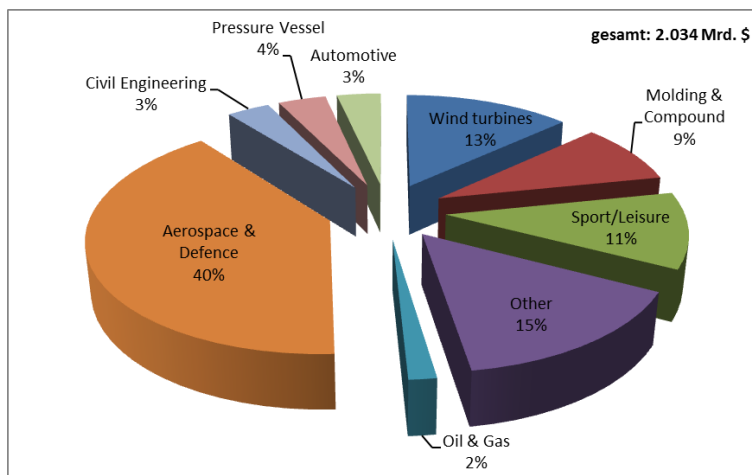


Fig. 7: Global CF revenues (\$ / %) by application (2012) [Ind.Exp.]

The regional distribution of CF consumption reflects the levels of activity and development involving CRP in the respective economic regions. Due to the various CRP projects in the aerospace industry being conducted by the major aircraft manufacturers, European companies consume 46% of the quantity of CF used worldwide in the *aerospace & defence* sector while their counterparts in the USA use a further 33%. 86% of the CF used in the area of *sport/leisure* is processed in China, a result of pricing pressure and the fact that this sector is now primarily dominated by mass production methods.

In the largest market segment by volume, *wind turbines*, the majority of CF is used in Europe. The principal manufacturers of wind turbines are based in Europe, a fact clearly demonstrated by its consumption of 74% of the CF used in this sector. The USA is the second largest region in this area with 15%. The Asian market share is expected to rise from the current level of 11% to 15% by 2020 with most of this business being taken from Europe.

The global use of CF in the automotive sector is distributed between the major car building nations/regions, such as Europe with 56%, North America with 26% and Japan with 14%.

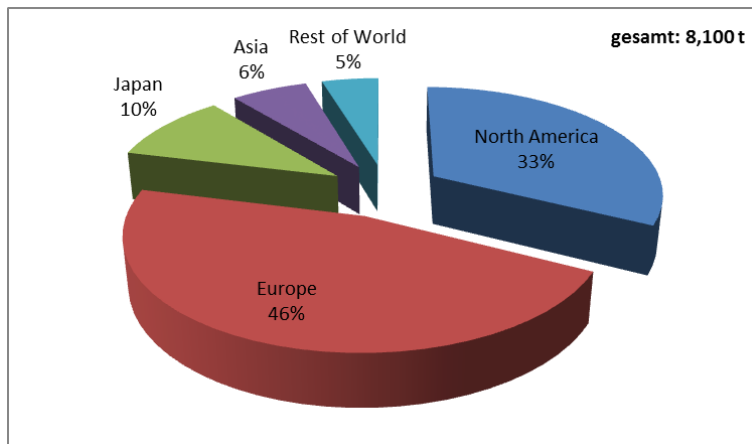


Fig. 8: CF consumption according to region in the market segment **Aerospace & Defense (2012)** [Ind.Exp.]

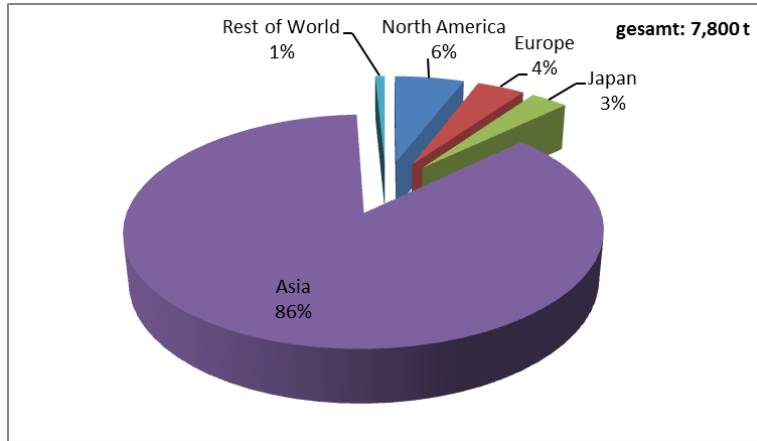


Fig. 9: CF consumption according to region in the market segment Sport/Leisure (2012) [Ind.Exp.]

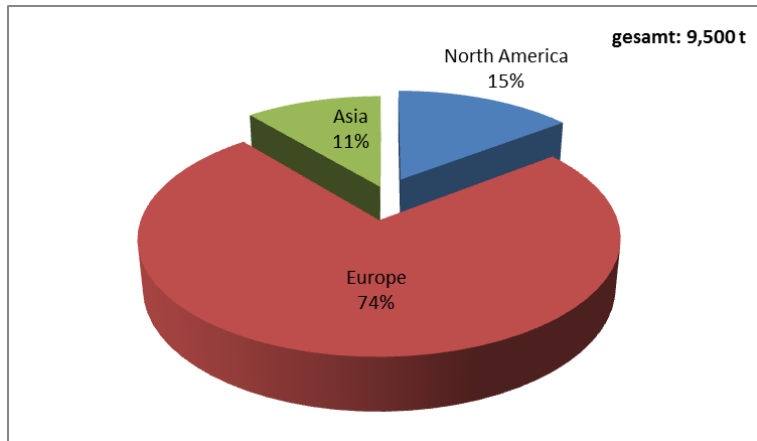


Fig. 10: CF consumption according to region in the market segment Wind Turbines (2012) [Ind.Exp.]

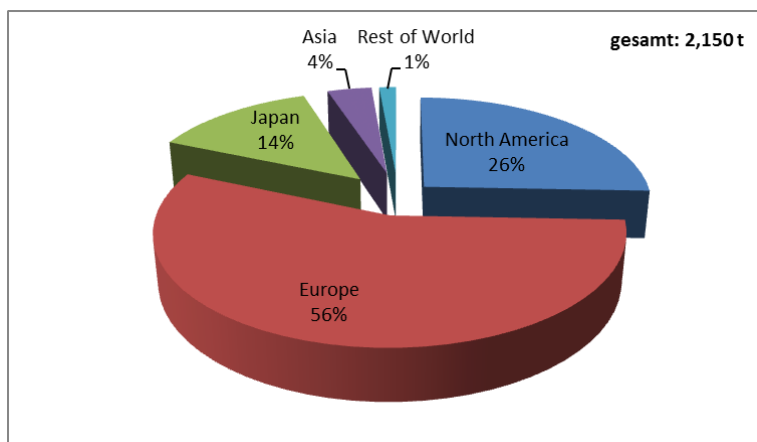


Fig. 11: CF consumption according to region in the market segment Automotive (2012) [Ind.Exp.]

Trends, outlook and risks

Analysts continue to see the CRP market as solid and with high growth potential. The consensus is for annual growth of at least 13% while optimists expect growth of approx. 17% [VDMA-Press Release-12.10.2012]. In 2012, approx. 65,000 t of CRP materials were sold in the various market segments. This corresponds to sales worth approx. \$ 10.3 billion [Ind.Exp.] or \$ 14.6 billion [Lux Research report./SpecialChem - Oct 11, 2012] depending on the method of calculation. By 2020, analysts forecast that the value of this market will grow to between \$ 25.2 billion [Ind.Exp.] and \$ 36 billion [Lux Research report./SpecialChem - Oct 11, 2012] subject to the development of the market segments. The large ranges stated here are due to the significant differences in the estimates relating to price and volume trends in the individual market segments. The growth potential of the CF and also the CRP market is currently based on three large volume segments – *wind turbines, aerospace & defense* and *sport/leisure* – as well as the *automotive* segment, which is viewed as the sector with the largest growth potential.

In the largest segment by volume, *wind turbines*, analysts forecast that the quantity of material consumed will quadruple by 2020 while revenues in the segment will "only" triple during the same period. This is due to cost pressures and the expected gains in efficiency. The total of approx. 9,500 t of CF used in 2012 (total installed global wind energy generating capacity is around 280 GW [Energie Kontor- July 11, 2013] of which 110 GW were in Europe in 2012 [Innovation Report - 29.07.2013]) is predicted to rise to approx. 36,000 t in 2020. Growth in this segment will vary according to region. Annual growth of approx. 17% is forecast for Europe, currently the strongest growth region in this segment (74% or 7,000 t of the total quantity of CF used in this sector in 2012). Here, the USA and Asia have a combined share of 26% or 2,500 t of CF in 2012. Growth forecasts for these regions (20% (USA) and 24% (Asia)) are also higher.

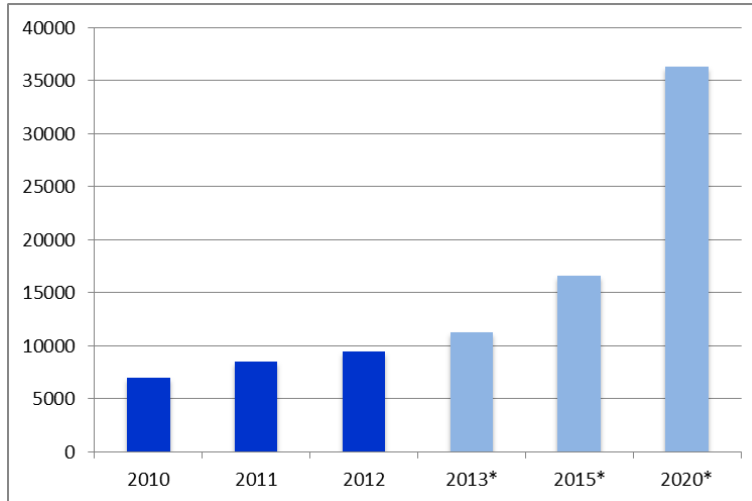


Fig. 12: CF consumption in t in the market segment Wind Turbines [Ind.Exp.]
(*estimated)

The aircraft industry is the most important factor in the market segment *aerospace & defense*. A significant increase in orders for new aircraft is expected over the coming 20 years. Airbus expects 27,800 [MTP/Airbus-GMF] new aircraft to be ordered between 2011 and 2030, while the forecast from Boeing is even higher at 33,500 aircraft [MTP/Boeing-CMO]. Approx. 8,100 t of carbon fibre were used in the *aerospace & defense* market segment in 2012. Based on the assumption of an annual growth rate of around 14%, demand is expected to total 23,000 t by 2020. Europe and the USA accounted for 6,400 t or 79% of the carbon fibre used in this area in 2012. No significant change is expected in this distribution by 2020.

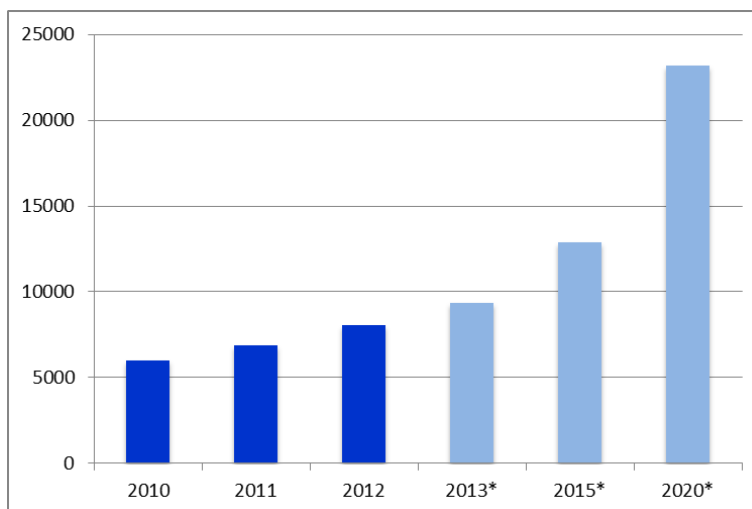


Fig. 13: CF consumption in t in the market segment Aerospace & Defense [Ind.Exp.] (*estimated)

Sports/leisure is the third cornerstone of the global CRP industry. This segment is an area, which has provided the carbon fibre and CRP industry with an adequate market for many years. After all, this was also the reason that the industry was able to survive even in the crisis years. In 2012, the sector used a total of 7,800 t, which is comparable with the two market segments described above. In contrast to the other major areas of application, growth forecasts for this area are considerably lower (6%). Demand in 2020 is forecast to be approx. 12,000 t, by which time this sector will have declined to be the fourth largest segment by volume. However, revenues in this area will not grow at the same rate. As the sports/leisure area is subject to fierce price competition, annual growth in revenues until 2020 is only expected to be 3%.

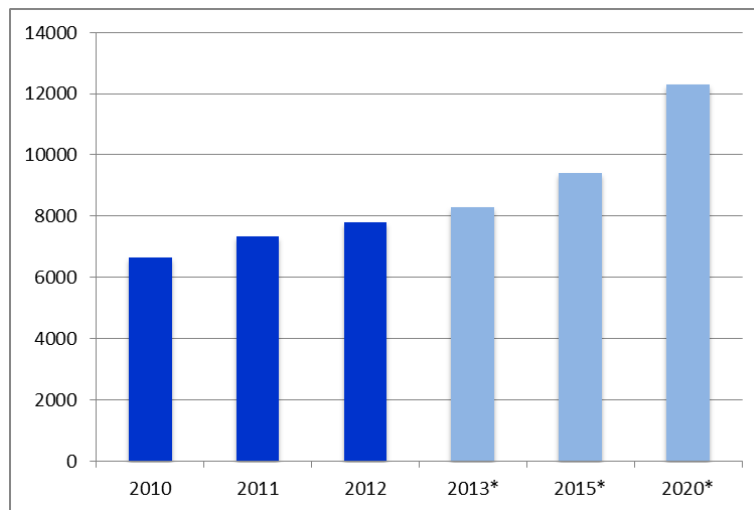


Fig. 14: CF consumption in t in the market segment Sports/Leisure [Ind.Exp.]
 (*estimated)

The actual quantities of CF used in the automotive sector in recent years were significantly lower than stated in previous market reports. One reason for this is probably the difficulty of obtaining reliable figures from the large OEMs. As this sector is still one of the smaller areas in terms of volume, revisions of just a few hundred tonnes immediately become more apparent as a percentage than is the case in the other three major segments.

The automotive sector continues to be seen as the major driver and future market for carbon fibre and CRP due to the relevance of the topics currently dominating the industry, such as general weight reduction of vehicles, fines for excessive CO₂ fleet emissions, lightweight construction, e-mobility, pressurised containers for gas fuelled cars (Audi project: Power to Gas). In 2012, this segment used around 2,150 t of carbon fibre and analysts are forecasting annual growth of approx. 34%. This rate of growth is only possible due to the relatively low starting point of this pioneering market. By 2020, it is expected that around 23,000 t of carbon fibre will be used in this sector. This implies its transformation from a small market segment into one of the Top 3 sectors. Carbon fibre used in CNG fuel tanks is not yet included in this view of the market. However, experts agree that this scenario will only transpire if the costs for CRP components in the automotive sector can be reduced to a level in the region of approx. 20 - 30 €/kg of component weight. Cost reductions could be achieved by reducing the amount of material used (by up to 50% compared to 2010) and through innovative processes for manufacturing components (up to 90% compared to 2010). If the assumptions about the potential for cost reductions can be implemented, the prices imagined by the OEMs should certainly be achievable. The way should then be open to the high volume series production of CRP materials.

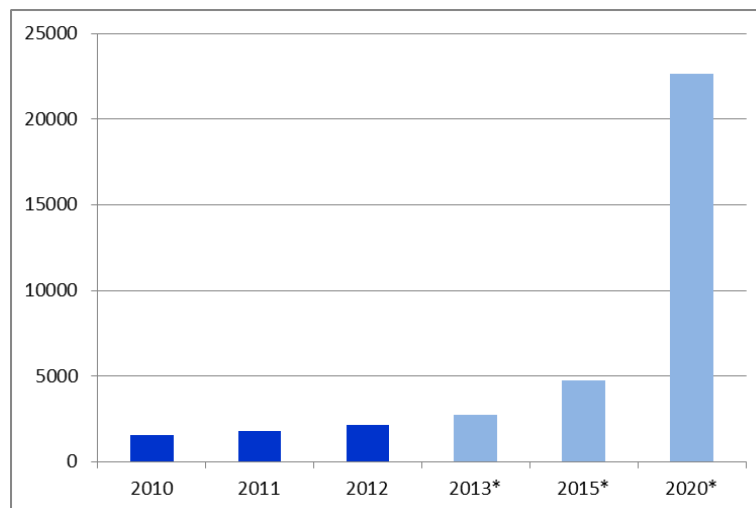


Fig. 15: CF consumption in t in the market segment Automotive [Ind.Exp.]

(* estimated)

Final observations

In 2012, the global composites market was valued at approx. € 76 billion assuming an annual growth rate of around 6%. In contrast, a growth rate of 13% to 17% ^[McKinsey] is expected for the CRP market, which represents only a small part of the composites market.

There has long been a consensus in society that there must be a greater focus on conservation of resources and raw materials. Energy use is one of the key considerations here. The potential of high performance fibre composites in lightweight construction will make an important contribution to increasing energy efficiency and certainly offers many opportunities whether in generating, consuming or storing energy. The durability and long life of CRP and its ability to be combined with traditional lightweight materials will open the way to additional fields of application. In the area of lightweight construction, the search is on for intelligent methods of combining and integrating steel and CRP. This could lead to ecologically and economically viable material combinations.

Urban mobility that conserves resources will be one of the megatrends of the coming years. ^[Vortrag Hoster, CCeV Automotive Forum 2012] Lightweight construction will be paramount for most means of transport. Weight savings contribute to both increasing efficiency and reducing costs. Here, too, the outstanding potential of CRP becomes immediately apparent when it is weighed against all other materials. Optimally designed parts that efficiently exploit the properties of CRP can be 70% lighter than steel and 30% lighter than aluminium. ^{[CCeV],[SGLG]}

However, tangible ecological and economic benefits can only be achieved if lightweight construction is used on a large scale. Mass production of CRP parts and the associated automation of manufacturing processes are essential if this goal is to be achieved. This, above all, is the key to the large scale use of CRP components in the automobile industry. CRP with thermoplastic matrix components will probably play an important role in this process. Partnerships/joint ventures between well-known automobile manufacturers (Audi, BMW, Daimler, Toyota and VW) and the CF industry show that there is now both a recognition of the necessity to investigate the opportunities of CRP materials in detail and the will to do so. ^[MTP]

Price-performance ratios will decide which materials and combinations of materials will be adopted in the various applications. In the future, the ecological rather than the economic aspects may well be the decisive factor. The positive market outlooks are also reflected in the results of the first market study conducted among their members in early 2013 by the four major organisations representing the composites industry in Germany – AVK, CCEV, CFK Valley Stade and VDMA Forum Composite Technologie. These member companies see the development of their businesses as mostly positive or very positive. CRP is seen as the most important area driving growth followed by GRP and combinations of materials. In terms of applications, the automobile industry is seen as key area of growth followed by aviation and wind energy.

Literature:

- [Ind.Exp.] Carbon Fibers & Carbon Reinforced Plastics (CFRP) – A Global Market Overview; Industry Experts - Issue 2013
- [SGLG] Carbon Fibers & Composites-Ascent to Industrial Engineering Materials - Bayern Innovativ; SGL Group; 05.05.2011
- [TohoT] Kohlestofffaserverstärkte Thermoplaste für Strukturbauteile in der Luftfahrtindustrie – thermocomp; TohoTenax Europe GmbH - 06.2011
- [Toray] KunststoffWeb; Toray International Europe GmbH - Date of impression 27.03.2012 08:45:36 (Ref: 1047273518)
- [MTP] The Carbon Fiber Industry worldwide 2011-2020; Materials Technology Publications – Issue 2012

The European GRP-market 2013

Author

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Its services include organisation of task forces, seminars and conferences as well as providing market relevant information (www.avk-tv.de).

The AVK is one of the four national pillars of the GKV – Gesamtverband Kunststoffverarbeitende Industrie and an international member of the European composites confederation EuCIA – the European Composites Industry Association.

The European GRP market in 2013

A slightly positive general sideways trend

After the decline in the volume of glass fibre reinforced plastics (GRP) manufactured last year, a return to weak growth is expected for the European market this year. It would probably be accurate to describe this as a slightly positive general sideways trend. For some applications, countries and even manufacturing processes the trend is positive but for others it is negative. In the extremely heterogeneous GRP industry, changes in the volumes produced can sometimes be due to shifting currents between processes but they can also be caused by shrinking markets or growth through innovation. As in previous years, the trend line for the GRP market, a specialist segment of the plastics industry, more or less mirrors the current state of the economy and the general trend for the plastics processing market.

Anyone following current media reports could be forgiven for believing that the further development of the composites industry as a whole depends on achieving breakthroughs in the production of carbon fibre reinforced plastics (CRP) for the series production of cars. However, it should be remembered that the composites market (GRP, CRP and other materials) comprises many more areas of application in a diverse range of industries and that composite materials are, frequently, already well established. As is well known, these sectors and industries have widely varying market dynamics. In the medium-term, even above-average growth in the use of CRP, which is expected under certain conditions due to the possible aforementioned stimulus from the automotive industry, would have a relatively small effect on the total volume of composites produced because the market share of this material is currently so small. A variety of different approaches are now being taken with the aim of achieving new breakthroughs for these comparatively novel materials in different manufacturing processes, different countries and individual applications. In addition, new developments can also be expected in the area of raw materials.

Market observations

The European situation presented here is based on a survey conducted by the AVK – Industrievereinigung Verstärkte Kunststoffe e.V. (Federation of Reinforced Plastics). It includes those countries, for which the production figures can be recorded and validated. The quantities manufactured in Turkey are considered but (still) stated separately due to the lack of data for long-term comparison.

In the following, the term GRP includes all materials with a thermoset matrix as well as glass mat reinforced thermoplastics (GMT) and long fibre reinforced thermoplastics (LFT). Short fibre reinforced thermoplastics are not included in the tables presented here. However, the quantities are stated in the following discussions.

Carbon fibre reinforced plastics (CRP) are dealt with separately in the second section of this market report. The market for additional reinforcing fibres (e.g. natural or aramide fibres) will not be considered here due to the relatively small volumes processed and difficulty of gathering data. GRP continues to account for by far the largest proportion of the composites market, i.e. the reinforcing fibres in over 95% of all composites are glass fibres (short and long fibres, rovings, fabrics ...).

GRP production in 2013: Overall development

After a slight year-on-year decline in the volume of GRP produced in 2012, the sector returned to growth, albeit weak, in 2013. The overall market in Europe is expected to grow by 1% to an estimated 1.02 million t (see Fig. 1). The GRP industry is dominated by small and medium-sized companies and is therefore extremely diverse not only in terms of the spectrum of manufacturing processes and level of automation but also in regional differences, country-specific conditions and the raw materials used. Not least, the very different requirements of the application industries (e.g. transport, construction, electro, ...) mean that it is necessary to take a differentiated view and stating total quantities is only of limited value in analysing the market trend.

	2013* Kt	2012 Kt	2011 Kt	2010 Kt	2009 Kt
SMC	184	188	198	198	160
BMC	71	70	69	69	56
∑ SMC/BMC	255	258	267	267	216
Hand lay-up	142	145	160	160	123
Spray-up	90	90	98	92	74
∑ Open mould	232	235	258	252	197
RTM	126	120	120	113	94
Sheets	84	78	77	72	56
Pultrusion	47	47	51	47	39
∑ Continuous processing	131	125	128	119	95
Filament winding	78	80	86	82	69
Centrifugal casting	66	67	69	66	55
∑ Pipes and Tanks	144	147	155	148	124
GMT/LFT	114	108	105	100	75
Others	18	17	16	16	14
Sum:	1,020	1,010	1,049	1,015	815

Fig. 1: GRP production volumes in Europe itemised by procedures/components (kT = kilotonnes, 2013* = estimate)

Trends in the development of procedures/components

SMC/BMC

SMC (sheet moulding compound) and BMC (bulk moulding compound) components, mostly series manufactured, still account for one quarter of the total quantity of GRP produced. The largest market here is vehicle production, which is experiencing its most difficult year for some time in 2013. Consequently, SMC production has contracted by over 2%. As was the case last year, production of BMC components grew slightly by 1.4%, which can be attributed primarily to applications in the electro/electronics industry. Because it can currently be assumed that Western Europe, and to an even greater extent Southern Europe, are unlikely to return to their previous levels of automobile production, SMC manufacturers are faced with the challenge, but also the opportunity, of opening up new sales and production markets. The currently observed trend in the use of GRP thermoplastics in the automobile industry could increase the urgency to take action still further.

Open mould

The least automated "open processes" (hand lay-up, spray-up) continue to be in decline – although not as severely as last year. While the volume of components manufactured using the spray-up process is stagnating, the market for hand lay-up parts is shrinking by over 2%. It is not expected that this process will increase its share of the total volume of the composites market nor that it has significant growth potential of its own in absolute terms. The mostly small companies, which manufacture small numbers of parts with no or very little mechanical assistance, are battling against the substitution of their manufacturing processes through (partially) automated techniques (e.g. RTM) and also against non-European suppliers. At the same time, there are major differences in quality between the products manufactured in this way due to their heavy reliance on the precision of the craftsmanship and reproducibility of the process. Consequently, companies based in high wage Western countries may be able to position themselves on the basis of proven quality – a programme is currently being implemented in Germany to this end – and the associated generation of additional market shares.

RTM:

Growth in the production of RTM (resin transfer moulding) components, at around 5%, has been stronger than average in 2013. Due to the wide range of production possibilities and the broad scope for changing its process parameters, RTM processes are currently among those receiving the greatest attention with regard to the development of large series production processes in the composites sector. Above all, current projects in the automobile sector – e.g. in Germany – are investing heavily in developments in this area. While media reports focus mostly on CRP, the GRP sector is also among those to benefit.

Continuous Processing

With annualised growth of nearly 8%, continuous processes for manufacturing GRP panels and webs have been among the fastest-growing in the sector. As well as applications in the transport sector (especially in commercial vehicles, caravans and buses), the few large and highly automated suppliers are also opening up an ever-

growing number of new uses in the sport/leisure and construction sectors (e.g. for facades).

After its contraction last year, the market for GRP pultrusion profiles has stabilised in 2013 and is no longer in decline in Europe. The main area of application for these components is the construction industry, which is still in a more or less devastated condition, especially in Southern Europe.

Pipes and tanks

Western European countries, in particular, again recorded a slight fall of 2% in the production of pipes and tanks, which are manufactured using the centrifugal casting and filament winding processes. However, the production figures for Europe do not reflect country-specific differences or major drinking water projects in the countries of Central and South-Eastern Europe as well as North Africa.

GMT/LFT

As was the case last year, the market trend for glass mat reinforced thermoplastics (GMT) and long fibre reinforced thermoplastics (LFT) was significantly more positive than the average. The main area of application for these products is the automobile industry. Here, manufacturers of thermoplastics have, above all, repeatedly found success in replacing other materials and opening up new areas outside this industry.

Short fibre reinforced thermoplastics

The quantities of short fibre reinforced thermoplastics produced are difficult to assess and record and as a result they are not included in the GRP figures presented here. However, this area is growing fast compared to the GRP market as a whole. It is estimated that the total quantity manufactured in Europe is more than 20% greater than the production figure for GRP stated here. Approximately half the volume produced is used in applications in the transport sector, one quarter in the electro/electronics sector and somewhat more than 15% in the area of sport & leisure. The automated production, e.g. of short fibre reinforced polyamide and polypropylene parts, is increasingly gaining traction, especially in vehicle construction.

Application industries at a glance

Once again, this survey has detected virtually no shift in the proportions of GRP components used in the individual application industries in 2013. The transport and construction sectors each consume one third of total production volume. Other sales markets include the electro/electronics sector (E & E) and the sport & leisure segment.

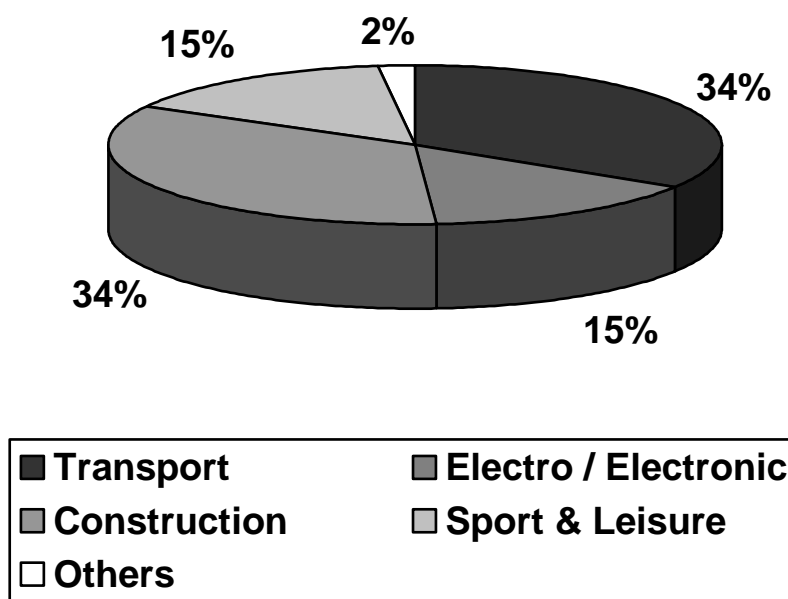


Fig. 2: GRP production in Europe for different application industries (year: 2013)

GRP production in 2013: itemised by country

Fig. 3 shows clear differences between the trends in the individual countries surveyed. These closely reflect the respective economic trends and major applications for GRP components in these countries.

The survey shows that only very few countries are currently experiencing any growth at all and that these are therefore outperforming the general market.

As was the case last year, these include Germany, the UK/Ireland and Eastern European countries. In the case of Germany, this is due to the generally good growth in its economy, compared to the rest of Europe. Growth in the production of new vehicles in Germany and major energy generation projects are also contributing to this positive trend. In Eastern Europe, growth is primarily being driven by major infrastructure projects.

GRP production is still declining most significantly in the countries of Southern Europe, whose economies continue to be in recession – although this negative trend is less pronounced than in 2012. In some cases, it is already possible to detect a slight recovery in demand. Volumes in the Benelux countries are also shrinking while the markets in Austria and Switzerland are stagnating.

The relatively strong contraction witnessed in Scandinavian countries in 2012, and which was most severe in Denmark, appears to be slowing for now. Although some sectors continue to be in decline, especially traditional applications such as the manufacturing of wind turbine blades and machine housings as well as the transport sector (trains and commercial vehicles), there is evidence of production shifting to serve new markets, such as tanks and pipes for the food processing industry.

Once again, according to information from the Turkish Composites Association (TCMA), Turkish production is expected to be above the European average at nearly 10%. This market, which is larger than any of the other European countries included in the survey, is therefore becoming ever more interesting for Western European companies as well. Due to the economic structure of the country, the most important composites applications are different from those in Western Europe: over half of GRP production is used in the area of pipes and tanks. This sector is followed by other construction projects and transport, which accounts for less than 20% of the volume in Turkey. Future potential is seen here above all in the areas of pipe construction, transport, wind energy, the marine sector as well as CRP applications and thermo-plastic materials.

The slow growth of the European GRP market in 2013 closely mirrors the general development of the European economy. Nor is any other region of the global economy is growing as strongly as last year. Although continued growth is expected in the BRIC countries (Brazil, Russia, India, China) in 2013, this is significantly weaker than in recent years. A return to the double-digit rates of growth seen in the last few years is not expected in the short-term. The economic dynamism of these countries has lost its intensity; the stimulus for growth is currently emanating primarily from the USA and Japan as well as a number of EU countries, which are not members of the Eurozone. Nevertheless, it should be noted that general economic growth, including that in the BRIC countries, will also generate growth potential for the composites industry in these countries.

	2013* Kt	2012 Kt	2011 Kt	2010 Kt	2009 Kt
UK / Ireland	140	134	126	130	106
Belgium / Netherlands / Luxembourg	42	43	42	40	31
Finland / Norway / Sweden / Denmark	44	44	52	50	52
Spain / Portugal	152	160	200	217	188
Italy	146	152	165	154	122
France	112	117	122	116	87
Germany	192	182	172	161	118
Austria / Switzerland	17	17	17	16	13
Eastern Europe**	175	161	153	131	98
Sum:	1.020	1.010	1.049	1.015	815
Turkey***	214	195	180		

Fig. 3: GRP production volumes in Europe - and Turkey - broken down by country / group of countries

(kT = kilotonnes / 2013* = estimated / Eastern Europe** = Poland, Czech Republic, Hungary, Romania, Serbia, Croatia, Macedonia, Latvia, Lithuania, Slovakia and Slovenia / Turkey*** = Source: TCMA

Outlook

It is extremely difficult to make any forecasts regarding the future development of the composites market considering the current backdrop of general economic uncertainty and fragility in many European and non-European countries. This task is made even more difficult by the extremely diverse nature of the composites industry, which serves a wide range of different industrial applications. Estimates must therefore be considered qualitative rather than quantitative.

It is clear that, above all, the German composites industry has emerged stronger from the crisis years of 2008/2009. For example, it has expanded its share of total production volume in the area of Europe covered by this survey to nearly 19%. Thus, within four years, Germany has become the most important manufacturing country in this sector in Europe. The reasons for this are often stated as the high quality of its manufactured products and excellent standard of service offered. Innovation, carefully targeted development and refinement and the constant urge for renewal are reasons why German companies (including those in the composites sector) are able to compete successfully in the international market. Highly developed sectors that are particularly strong in Germany, such as the automotive, mechanical engineering and chemical industries are continuing to generate high levels of exports even in difficult economic times.

Opportunities generally arise for composites companies when tailor-made solutions are required or they are able to serve the needs of special segments and applications. After all, the ability to respond to individual requirements and develop specific solutions allows companies to build a competitive advantage and generate added value for their customers. The interaction between the customer and supplier is of crucial importance as they jointly develop new products and service solutions. Partnerships with research bodies and the focused professional development of both young and more experienced employees play a key role here. History has shown in other sectors of industry that German and European companies cannot compete with the rest of the world purely on the basis of price in the long term.

This is increasingly prohibited by a lack of natural mineral resources and rightly high standards of education and work.

Considering the strong competition from various regions of the world, players in the European market, in particular, should attempt to intensify and use the opportunities becoming available to them for international exchange and cooperation, e.g. through projects, trade fairs, conventions and associations/organisations. The double-digit growth in the Turkish market, for example, is a perfect illustration of the opportunities available "on the doorstep".

Many businesses, especially small and medium-sized companies, are currently in the process of expanding their business activities into other countries. Here, it can be advantageous to participate and engage with local partners and employees in order to fine tune production to the prevailing conditions and markets.

Combining different materials often presents a special challenge, especially as there can be dramatic differences between material properties and later issues with recycling. However, this too offers a route to developing novel solutions.

Secure and sustainable long-term growth can only be achieved if effective and efficient processing techniques that conserve resources are combined with an innovative engineering and pioneering spirit and the courage to work together with partners along the entire length of the value added chain – and when necessary, even those operating outside their own material segment.