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Introduction

It will quickly become evident that there have been tremendous changes to the global structure of the automotive textiles industry since the last edition of this report was published in 2013.

Over the past three years there has been unprecedented consolidation among manufacturers of both fabrics and finished components for automotive interiors, not least among the Tier 1 suppliers to the original equipment manufacturers (OEMs).

Among the most notable changes are:

- Johnson Controls merged its automotive interiors business with China’s Yanfeng to form a new company, Yanfeng Automotive Interiors;
- Visteon broke up its Interiors business, with the major share of it also being taken over by Yanfeng as Yanfeng Automotive Trim Systems;
- following the above two transactions, Yanfeng has quickly risen to sixth place in the top 10 of Tier 1 automotive suppliers with textile activities, based on pro forma 2015 sales – a first for a Chinese majority-owned company;
- Magna International sold its automotive interiors business to Grupo Antolin;
- ZF Friedrichshafen acquired TRW Automotive;
- Italy’s Adler Plastics took full ownership of the HP Pelzer Group;
- Aunde acquired FS Fehrer.

Table 1 shows how these changes have altered the rankings by turnover of the leading top 16 companies, with certain rounded estimates where no detailed financial figure is provided.

The June 2016 merger of Michigan, USA-based Key Safety Systems with China’s Ningbo Joyson Electronic (page 211) was announced too late to be included in this Table, but also creates a new global leader with annual sales of more than US$3bn and 20,000 employees worldwide; this would rank it in 12th place in 2016.

What will also become clear from considering the performances of many of the leading companies profiled is that while turnovers have returned to levels comparable to before the global recession of 2008-09, much of the profitability in supplying to the automotive OEMs has been driven upwards and is now being retained with the carmakers themselves.

The key issue that has driven such change was initially the ongoing shift in mass vehicle manufacturing centres from the US, Europe and Japan to developing countries, notably China and Asia-Pacific, and to lower cost regions within Europe.

Between 2007 and 2009, automotive industry production in North America and Europe experienced the steepest peak-to-trough declines in history. In North America, vehicle production fell by more than 40% – from a high of 15m units in 2007 to a low of 8.6m in 2009. In Europe, industry production also declined by more than 20%, from 20.2m units in 2007 to 15.6m in 2009.
As a consequence, the industry underwent major restructuring in response to overcapacity, narrow profit margins, excess debt and the necessary realignment of resources from mature markets to emerging ones.

The OEMs have sought to structure their operations so that a particular model of vehicle is the same wherever in the world it is produced – whether in North America, South America, Europe or Asia.

To achieve such standardisation – and to benefit fully from economies of scale – the OEMs have set up manufacturing operations in these regions with the aim of making them identical, or as similar as is possible. They have also sought to harmonise requirements and technology among their suppliers and to standardise supply chain procedures. Increasingly, the OEMs have demanded that chosen suppliers ship larger, finished component assemblies direct to their manufacturing plants.

In theory, their immediate suppliers, the Tier 1s, have exerted increasing power in the supply chain. In turn, Tier 1 suppliers have moved from relying on a network of regional suppliers to partnering with bigger companies down the supply chain that have more effective global operations.

The reality is something a little different, as illustrated by the car seat manufacturing companies, from whom much profitability has been driven over the past five years.

Increasingly, carmakers are making bulk orders of individual parts with different suppli-
Magna International

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Tel: +1 905 726 2462. Fax: +1 905 726 7164. Web: www.magna.com

With sales of US$34.4bn in 2015 and employing 139,000 people worldwide, Magna International, headquartered in Aurora, Ontario, Canada, was positioned the second largest of all Tier 1 automotive suppliers by turnover in the last rankings compiled by Automotive News for 2014 – behind only Germany’s Robert Bosch.

In a major shake-up, however, in August 2015 Magna completed the sale of substantially all of its interiors operations to Grupo Antolin, headquartered in Burgos, Spain, for US$525m.

The transaction included 36 manufacturing operations and around 12,000 employees located in Europe, North America and Asia. Full year 2014 total sales for these operations were approximately US$2.4bn. Magna’s seating business was not included in this transaction.

| Table 8: Magna International, financial performance, 2007-2015 |
|---|---|---|---|---|---|---|---|---|---|
| Sales (US$bn) | 26.1 | 23.7 | 16.9 | 23.5 | 28.7 | 30.8 | 34.8 | 36.6 | 34.4 |
| Net income (loss) (US$m) | 663 | 71 | (453) | 1,003 | 1,015 | 1,433 | 1,545 | 1,880 | 1,946 |

Source: Magna International

Magna International develops and manufactures automotive systems, assemblies, modules and components in addition to engineering and building complete vehicles; at present the major share of its business remains in North America and Europe.

In 2016, its activities are broken down into the following eight business areas:

- Body and chassis systems;
- Exterior systems;
- Seating;
- Powertrain;
- Electronics;
- Roof systems and modules;
- Closure systems;
- Vision Systems.

Although it has continued to innovate in textile and interior-related technologies, these have been largely buried deep within the more general activities of its Seating business.
Automotive Textiles: An industry in flux – from Motor City to Silicon Valley

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and the Interiors operations that have been sold to Grupo Antolin.

Nevertheless, they have spanned:

• sidewall and trim systems:
  - interior garnish trim;
  - door and side panels;
  - package trays (parcel shelves);
  - liftgate (hatchback) trim;
• cockpit systems:
  - cockpit modules;
  - instrument panels;
  - glove boxes in multiple surface materials (soft, hard and grain options);
  - floor consoles;
• cargo management systems:
  - sliding and stationary load floors;
  - accessible floor storage bins;
  - multilevel shelf systems;
  - integrated cargo organisers;
• overhead systems:
  - complete overhead systems;
  - headliner substrates;
  - sun visors;
• overhead consoles:
  - grab handles;
  - lighting;
• carpet and load-space systems:
  - wheelhouse linings;
  - floor and trunk trim;
  - carpet;
  - acoustic countermeasures.

An examination of former subsidiary Intier Automotive – founded by Magna in 1987, floated off as a stand-alone company in 2001 and reintegrated into the general company in 2005, when it was initially called Decoma International – provides a clearer picture of the company’s contribution to automotive textiles over the past 30 years.

Intier was primarily grown through acquisitions, notably of eight specialist European companies (Table 9), at a combined cost of US$290.6m in the 1990s, and it continuously introduced new textile-related innovations to the market.

Sustainable materials

Sustainable materials have crept into Magna’s portfolio in recent years, including Cell-
Form, a lightweight, high-stiffness sandwich load-floor that incorporates 100% post-consumer recycled paper honeycomb core. Additional bio-content is achieved by utilising plant oil-based polyurethane resin and natural fibre reinforcement layers.

The company has also introduced 5% BioFoam content into its headliners to achieve weight and cost savings, while maintaining dimensional performance and stability through thermal cycles.

Magna is also involved in the development of a bioplastic with Bio-on based in Bologna, Italy. Created through the use of naturally occurring bacteria that feed off sugar beet by-products, the two companies believe it could eventually find application in everything from nonwovens and textiles in interiors to replacements for metal parts.

**Carbon fibre**

Like a number of other automotive original equipment manufacturers (OEMs) and Tier 1 suppliers, Magna has also turned its attention to the potential of carbon fibres and fabrics.

In 2012, the company announced a joint venture with Zoltek to develop low-cost carbon fibre sheet moulding compounds (SMCs). The SMC material uses Panex 35 commercial carbon fibre combined with Magna’s EpicBlendSMC formulations and production expertise.

EpicBlendSMC EB CFS-Z lends itself to lightweight structural applications with 50% carbon fibre (by weight) and is particularly suitable for electric vehicle battery enclosures owing to its excellent electromagnetic interference (EMI) shielding properties. Further, the material can be used in the moulding of complex shape applications.
Borgers

Borgers AG, Borgersstrasse 2-10, D-46397 Bocholt, Germany. Tel: +49 2871 3450. Fax: +49 2871 345291. Email: info@borgers-group.com Web: www.borgers-group.com

Borgers celebrated its 150th anniversary in 2016 at a high point in its development, with a new sales record achieved for 2015 and the highest employee count in its history.

The company can claim to be one of the longest established suppliers of fabrics to the automotive industry – although the coaches it initially furnished with wadding material in 1866 were still horse-drawn, as opposed to horse-powered. It is also one of the oldest recycling companies, with shredded fibres from second-hand textiles and leftovers being the basis of founder Johann Borgers’ industrial felts and waddings.

By growing steadily, Borgers, headquartered in Bocholt in Westphalia, Germany, has developed into a strong supplier to the automotive industry, offering acoustically effective textile components from multiple plants, in addition to machines and tools at three further facilities.

The vast scope of the components it supplies is illustrated by the fact that the company has supplied more than 100 different versions of textile package trays for the Audi A8 alone.

The fifth-generation family-owned company had 7,016 employees at the end of 2015 – up from 5,237 a year earlier – and its annual turnover again reflects the turbulence of the recession years of 2008 and 2009, and the subsequent recovery of the automotive industry (Table 45). Recent expansion in both the US and China is in line with the general movement of the sector.

<table>
<thead>
<tr>
<th>Table 45: Borgers, turnover, 2007-2015</th>
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<tbody>
<tr>
<td>Turnover</td>
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<td>2007: 623</td>
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<td>2008: 476</td>
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<td>2009: 384</td>
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<td>2010: 527</td>
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<td>2014: 673</td>
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<td>2015: 765</td>
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<td>Source: Borgers</td>
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</table>

Automotive components now account for around 80% of the company’s sales, with engineering companies R+S Teknik and Olbrich responsible for the remaining 20%.

The acquisition by Borgers of the former AKsys Group in 2010 for €43m made a signif-
icant contribution to the company’s turnover. With this takeover, Borgers gained new manufacturing sites, primarily for polyurethane (PU) foam components, at Krumbach and Ellzee in Germany. In 2011, meanwhile, Borgers sold Gebrüder Rensing, a manufacturer of technical woven fabrics and protective workwear, to Setex Textil. Rensing had been part of the Borgers Group since 1982.

The European automotive sector’s consolidation after the recession years allowed Borgers to gain further business – notably with Audi, BMW and Daimler – as a result of former competitors going out of business.

Establishing a base in China, the world’s fastest growing car manufacturing country, was almost inevitable for the company as a next major step, and in 2012 Borgers opened its first plant in this country: Borgers Tuopu Automobile Parts, in Beilun, Ningbo, makes textile trim components.

The following year a second plant was established in Langfang, Hebei, to supply Triflex trim and carrier components for Mercedes-Benz.

In 2014, Shenyang Borgers Tuopu Automobile Parts became the third Borgers plant to open in China, marking a rapid entry into this market. This plant, in Shenyang, Liaoning, is now manufacturing textile wheel arch liners, undershield and rear seat trims for BMW.

In other recent expansions, the company’s former logistics centre in Vance, Alabama, USA, was expanded into a production site in 2012. It now manufactures luggage compartment trims for BMW and Mercedes-Benz, as well as Propylat outer wheel arch liners for General Motors (GM).

In 2014, a second US plant was opened in Norwalk, Ohio, to also make Propylat outer wheel arch liners and luggage compartment trims for GM.

Manufacturing
The current structure of the Borgers group is shown in Table 46.

Products
The Borgers LowMass range features products that are largely recyclable and also consist of up to 90% recycled materials to start with – such as shredded cotton or polyethylene terephthalate (PET) bottle fibres.

The company’s materials serve not only to provide improved acoustic insulation, but also weight reduction compared with traditional solutions based on heavy layers. They often have to be heat-formed and pressed into complex shapes to conform to the contours of the vehicle, whether under the bonnet or as part of the interior.

Owing to their material configurations, Borgers products possess a crucial characteristic that conventional synthetic plastic components do not have as trim components – they do not rattle. In addition, the textile surface lends a higher value appeal to the components and at the same time offers a high scratch resistance.
Nonwovens are the basis for all Borgers products; these are manufactured from both natural fibres such as cotton, jute and kenaf, as well as synthetic or glass fibres.

The type of process and the composition of the fibre mix are modified to match specific applications, and in respect of their functionality, the company generally distinguishes between materials for absorbers, trim and carrier components, and those used as décor materials.

Propylat NVH is based on cotton and hardened by thermoplastic fibres without the need

<table>
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<th>Table 46: Borgers plants, 2015</th>
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<tr>
<td><strong>Plant location</strong></td>
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<tr>
<td>Bocholt, Germany</td>
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<td>Bocholt, Germany</td>
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<td>Beilun, Ningbo, China</td>
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<td>Berlin, Germany</td>
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<td>Brasy-Stupno, Czech Republic</td>
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<td>Breitscheid, Germany</td>
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<td>Bremen, Germany</td>
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<td>Dingden, Germany</td>
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<td>Elzée, Germany</td>
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<td>Ghent, Belgium</td>
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<td>Gothenburg, Sweden</td>
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<td>Holoubkov, Czech Republic</td>
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<td>Hrádek, Czech Republic</td>
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<td>Krumbach, Germany</td>
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<td>Langfang, Hebei, China</td>
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<td>Madrid, Spain</td>
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<td>Maintal, Germany</td>
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<td>Norwalk, Ohio, USA</td>
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<td>Rokycany, Czech Republic</td>
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<td>Shenyang, Liaoning, China</td>
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<td>Sindelfingen, Germany</td>
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<td>Vance, Alabama, USA</td>
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<td>Volduchy, Czech Republic</td>
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*Source: Borgers*
Glossary

AA&E
Aunde Achter & Ebels

A-B-C pillar
The A-pillar is a name applied by car stylists and enthusiasts to the shaft of material that supports the windshield (windscreen) on either of the windshield frame sides. By denoting this structural member as the A-pillar, and each successive vertical support after a successive letter in the alphabet (B-pillar, C-pillar, etc.), this naming scheme allows those interested in car design to have points of reference when discussing design elements. In the most usual configuration, the C-pillar supports the rear window.

ABL
active buckle lifter

ABS
anti-lock braking system

ACC
Advanced Composite Center (Toray Industries)

ACR
active control retractor

ACRS
air cushion restraint system

ACU
airbag control unit

AE
Automotive Experience (Johnson Controls)

AFBG
Aramid Fibers Business Group (Teijin)

AFN
Advanced Fiber Nonwovens (Hollingsworth & Vose)
AFS
Aerospace Filtration Systems

Airbag
A flexible membrane or envelope, inflatable to contain air or some other gas. Airbags are most commonly used for cushioning, in particular after very rapid inflation in the case of an automobile collision. Also known as a supplementary/secondary restraint system (SRS), an air cushion restraint system (ACRS) or the supplemental inflatable restraint (SIR).

AMC
Autoliv Mando Corporation (South Korea); Automotive Center (Toray Industries)

ANFA
Asia Nonwoven Fabrics Association

APM
APM Automotive Holdings Berhad

AREP
American Real Estate Partners

ASCI
Automotive Safety Components International

ASHRAE
American Society of Heating, Refrigerating and Air-Conditioning Engineers

ASR
auto shredder residue

ATY
air textured yarn

AWS
Anti-Whiplash Seat (Autoliv)

Bast fibre
fibre obtained from the stems of certain plants
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- The Fiber Year 2016: World survey on textiles and nonwovens
- Per Capita Consumption 2013: Country-specific analysis 2005-2012
- China's Chemical Fiber Producers: The changing climate of an industry, 50 company profiles
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