

“My vision was always to become a high-volume producer for automotive & aerospace OEMs.”

interview

PATRICK HESSEL
CEO

c2i (COMPOSITES INNOVATION
INTERNATIONAL)

Founded in 2005 by Patrick Hessel, c2i is specialised in carbon-fibre components manufacturing and assemblies. The company has grown rapidly in the aeronautics and automotive fields due to a brand new equipment and a unique technology concentration in Slovakia. Located at the cross of western and eastern Europe, Patrick Hessel introduces for us his strategy and vision on composites.

JEC Composites Magazine: What are the milestones in your professional path and in the development of c2i? In which sectors does c2i operate and what's its position on the global composites materials value chain?

PATRICK HESSEL:

c2i (short for Composites Innovations International) was established in 2005 after I finished my studies and decided that I wanted to start my own business rather than working in a corporation. We started low volume carbon-fibre components production mostly for motorsport companies, but my vision was always to become a high-volume producer for

top automotive and aerospace OEMs. c2i is now positioned among world's top 5 carbon-fibre producers in the automotive industry supplying as a Tier 1 to the likes of JLR, Bentley, BMW, Porsche, Praga, Koenigsegg and as Tier 2 to Airbus or Boeing. A year ago we started actively to develop the aerospace sector and currently we have over 120 staff working only on aerospace. Going forward, we are particularly interested in developing the aerostructures industry as well as high-volume automotive.

JCM: What makes your facility in Slovakia the « state-of-the-art » in composites materials manufacturing?

P. H. : Our 13 000 sqm facility in Dunajska Streda, Slovakia is a



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one-stop shop for development and production of advanced composites components. The facility was set-up 3 years ago and can be considered state-of-the-art due to the efficient flow of material and components moving through the facility, as well as the large clean room of 1500 m2 and the wide range of capabilities we have under one roof. As such, we engineer and manufacture carbon-fibre components and assemblies acting as technology partner to our clients. c2i is able to design, engineer carbon-fibre components and perform a complete component simulation such as static, dynamic, crash and pedestrian impact analysis. We design and manufacture our tools, forms and jigs in-house. The component production

About c2i

c2i engineers and manufactures carbon-fibre components and assemblies for automotive and aerospace industry. Based in Dunajska Streda, Slovakia, we are 40 km from Bratislava and 100 km from Vienna Airport.

The company produces both carbon-look and structural components incl. monocoques mainly using Prepreg/Autoclave and high-pressure RTM. For special projects c2i

develops custom production technology in-house. c2i currently employs 400 people and is undergoing further growth.

c2i offers complex component engineering consultancy whereby the components are engineered and virtually CAE tested. As composites specialists the team will design components with dfm (design for manufacturing) in mind ensuring the best possible design for lowest possible manufacturing costs.

includes painting and assembly, integrating metal, plastics and wiring harnesses. We are currently building a new 13 000 sqm production facility to accommodate larger aerospace projects.

JCM: Production cycle times and constant quality are the OEM's major requirements in automotive industry. What are the assets and technical solutions developed by c2i to reach those requirements ?

P. H. : c2i has experience with a wide range of leading production technologies and development of novel technologies for next-generation vehicles. The current standard technologies for high-volumes are RTM and wet pressing techniques. At c2i, we have experience with the RTM process as well as prepreg press moulding. We are currently adding to our existing technologies the wet pressing technology to reduce cycle times further. Many companies are investing significant money into very large presses for high pressure RTM. Albeit higher injection times reduce the cycle time, the cost of the equipment is going up significantly. Overall, one needs to critically consider the unit component price as well as equipment flexibility. The aim should not be to reduce cycle times to the minimum in case it increases component cost. c2i has a track record of highest product quality for geometrically complex components and we digitally track every step of the process via advanced ERP system where we bring aerospace traceability levels to the automotive industry.

JCM: Can you introduce the c2i Excellence System (CES), its way of functioning and the results expected by this quality manage-

ment system?

D. C. : The CES is an operational excellence system and is adopted from the Toyota Production System. It is linked with the overall quality management system of the company and is based on lean manufacturing principles.

The expected results are building a culture of continuous improvement where employees are motivated and empowered to improve the company's internal and external quality level, efficiency and productivity, on-time-delivery performance and ultimately EBIT. In our case, we have all production processes measured in our ERP system and hence have a high degree of data which enables us to drive improvements not only via the shop-floor, but in parallel via our lean and process engineering department.

JCM: Porsche, BMW, Jaguar... How c2i manages to convince prestigious automotive brands to adopt you as a tier one for composites components ?

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Only if you are a top performer in each category will you be strongly positioned to gain further business. We now have many large OEMs as customers and often we are a top 3 supplier in terms of market share with that OEM. We are growing our market share with existing customers by gaining new contracts continuously which demonstrates our overall good value. With new, potential customers it



c2i possess brand new equipment including 6 x 3 m and 5 x 2.5m Boeing spec D6-49327 REV.E autoclaves

is more difficult. They often don't trust new suppliers and are more risk averse. But if the purchasing departments are functioning well and unbiased, they will typically send us RFQs and if we are price competitive, they will pursue a site audit where they will see our performance with other customers which is our largest selling point.

JCM: Innovation is a gravity axe of your mission statement. How do c2i support this strategy ? How do you spot trends and set your research programs ?

P. H. : The research programs are driven a) by customer communication and b) by our R&D philosophy. Not always does the customer know what exactly he wants in terms of production process. He just wants minimal cost. At the heart of the development is an R&D philosophy. We systematically tackle major cost drivers of current technology, and we take a holistic supply chain perspective with focus on intelligent design, novel materials and a high degree of automation.

JCM: Already included in high value cars, are all conditions gathered for composites materials to penetrate the « casual » cars market ?

P. H. : Conventional cars are extremely cost driven and composites materials are not cost competitive, and most likely won't be in the coming 10 years. The adoption of composite materials is rather in the luxury car segment as well as the electric vehicle segment. Cost and quality consistency, as well as recyclability are the main drivers and so far still the main limitations. Technologies which focus on material waste reduction will also play a critical role to reduce cost. ■

More information:
www.c2i.com

Enter c2i factory. Watch how premium, low-to-high volume composites components are produced for automotive and aerospace industry.

