



Marco Corradini

Ultra light and super performing composites

With a Design & Engineering department accustomed to working at a senior level in the automotive and off highway sector, Ama Composites is able to provide experience, support and advice with professionalism and competence to the RV sector, offering innovative, new and interesting solutions, such as LWRT technology.

Words Andrea Cattaneo

Founded in 2004 and active in the RV sector since 2006, Ama Composites is a division of the Ama group, a production company that employs 1.300 people and has a turnover of around 200 million euros. The Ama group, an International company headquartered in Italy, with offices across Europe and the rest of the world from China to South America, from India to Russia, Bosnia and the United States with offices in Indianapolis, near to the American "Caravan Valley". In all, there are currently thirty-three companies working in various market sectors ranging from automotive and service parts for agricultural machinery, through to the building and construction market. Ama Composites operates in the field of the latest generation composite plastic materials, which are viewed with increasing interest by the European motorhome manufacturers, for the simple fact that with the use of composites they are able to ensure a high aesthetic finish combined with strength, low weight and component tolerancing not to mention the fact that they can be modeled

to any desired shape with the opportunity to integrate various additional systems and components. *"Inside Ama Composites there is a Design & Engineering department - explains Marco Corradini, CEO of Ama Composites - where we are able to develop anything from the smallest detail to an entire vehicle. We have the skills and equipment to develop all the parts of a vehicle, both interior and exterior this includes all the plastic parts of a vehicle cab in both composite and thermoplastic materials. We currently produce parts internally using Vacuum Forming Tech, RTM, RIM S-RIM - Injection Thermoplastic -PUR, as well as parts such as wiring and instrumentation including dedicated software, through to soundproofing and thermo-insulating and conductive materials".* Ama Composites has the skill and experience to identify and recommend the most appropriate technical solutions and to integrate these technologies into the design. For example, if you plan to build one hundred vehicles a year then thermoplastic injection moulding technology will probably not be

proposed, focusing perhaps instead on more classic vacuum thermoforming, or RTM technologies.

Ama Composites and RVs

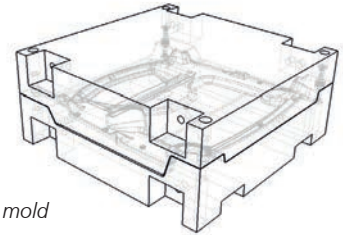
"Our activity in the RV sector is growing exponentially, - says Marco Corradini - and in recent years we have been very oriented towards the campervan, motorhome and Light Commercial Vehicle (LCV) sectors. After all, the van is definitely in our DNA. It all started in 2017, when I, together with a team of international experts (SABIC-FRT & RLE International), showed to Ford a sample of a composite component capable of replacing certain metal parts on high volume production vehicle, in particular the bulkhead of the Transit (this component is the body structure part dividing the cargo part and the cabin part). Today Ford is producing the bulkhead, based on our patent. Amongst other recognitions the composite bulkhead won 1st Prize in the Ford Group 2017 Global Awards for Design and Innovation recognised across the



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LWRT
male-female mold

Ford Group globally". Ama Composites focuses heavily on innovation, investing at least 3% of its annual turnover in research and development. The composite bulkhead designed for the Transit, which is today produced by a Ford Tier-1 under an agreed Technology Transfer Agreement [TTA] is made up of five different superimposed materials produced in a single shot moulding operation, which guarantee both mechanical strength, the part is certified to ISO 27956 impact test standards, as well as the required client vehicle acoustic sound proofing standards. The composite component eliminated various industrial operations compared to traditional metal technology. The composite part achieved a weight reduction of approx 8 kg less than an aluminum equivalent and approximately 18 kg when compared to steel. The presence of Ama Composites in the RV sector covers a number of different areas, thanks to the use of various technologies. "We entered the RV world in 2007 at a time when the RV industry was in serious crisis, - explains Marco Corradini, CEO of Ama Composites, - we were one of a very few companies that was already using 3D. We realized, not without surprise, that almost all of the companies still worked in a highly artisanal way, real three-dimensional projects were not developed and adjustments were done by trial and error. We started almost immediately to collaborate with the Italian division of Trigano, studying together with them the Pegaso and the Mizar models, everything started from there. For these vehicles we have most notably designed the over cabin sleeping area combining thermoforming with other technologies such as LWRT (Light Weight Reinforced Thermoplastic)".

LWRT Technology

"We could say that LWRT technology is super light - continues Marco Corradini - and high performance, but I would also say "super luxury". We have developed a production system

adapted for the RV sector, where the volumes are lower than those of the car. LWRT technology was already used in the U.S.A, but Ama Composites has been able to take it to a higher level. Basically, we took the most advanced automotive technology and transformed it for use in the the RV sector with much lower costs". Ama Composites has managed to make large wooden moulds in birch plywood, greatly reducing costs and leadtimes compared to traditional aluminum or steel molds. The concept of investment has been changed, the return on investment [ROI]. Traditionally, hundreds of thousands of euros are invested in moulds to make a certain number of pieces per year, guaranteeing "X" number of years of amortization. Ama Composites on the other hand, almost always starts with specially designed wooden moulds: the quality of the product is very similar, but the up front investment is significantly less for the manufacturer to produce and launch a new vehicle reducing the time necessary to recover their overall investment costs. With wooden moulds, at least 3-4,000 pieces can be made, volumes already very significant in relation to the camper industry. Some customers ask to continue making subsequent parts using wooden moulds, while others with larger volumes, start with the wooden mould, launch production and then make the investment in aluminum tooling. The product made with LWRT technology can also be modified with the introduction of unidirectional tapes CFRT, glass fibre or other "one-way materials", providing very high mechanical strength competitive with that of steel, but at the same time extremely light. This product, if it is implemented in conjunction with other materials, specially studied, for a certain application gives life to a very robust and extremely sound absorbant product. The "sandwich" is modular through the use of different elements and various fabrics, (imitation leather, PVC or TPO), structural layers of different weights (GSM), resulting in very rigid and very lightweight components.

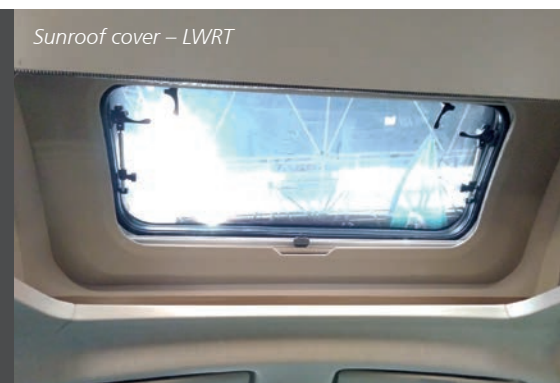
In some cases it may even be a load-bearing structure, not just a covering panel. Today LWRT technology is mainly used to make headliners, domes above the cabin area and other raised sections of the camper van. The walls and internal side panels of the campervan bed area are also made using LWRT moulded to perfectly follow the sheet metal profile. With a single mould it is possible to produce both a right and a left component. The product is an integral part of the thermal insulation and acoustic vehicle standards, performed on the basis of the design provided by the customer providing part of the vehicle roofing. The internal finish can be made with washable fabrics combined with a layer of PU-soft touch or other types of materials, non-woven or classic fabrics of various colors or in equal measure with layers of PVC, TPO or eco-leather. The customer can receive delivery of the finished panel ready to be sent directly to the production line. "Our goal is to create highly performing and ultra-light products combined with other technological elements - concludes Marco Corradini, CEO of Ama Composites - and I can tell you that we are also now working to replace in some cases even the sheet metal with class A paintable thermoplastic materials; as well as combining these and other materials with heating systems patented by us".



LWRT - Fiat Ducato



LWRT-ABS - Fiat Ducato



Sunroof cover - LWRT