

*Bob Griffiths*



Bob Griffiths is the president of SAMPE Europe. As a mechanical engineering graduate of Southampton University, he joined Rolls Royce Motor Car Division and later moved to Westland Helicopters, which became GKN Aerospace, where he specialized in composite materials. In recent years he has worked as a consultant, in composites-related business development.

## The state of the European composites industry

**A**s one of the organisers of the SAMPE European conference in April, I was nervous that the current economic downturn would result in poor attendance. I need not have worried; we had the technically most exciting conference for many years, with attendance almost matching the record set last year. The conference and the co-located JEC exhibition, moved to a larger site this year, in the south of Paris, and the industry's support fully justified this change.

The clear message that came over from the conference was that many R&D topics of the

past are now finding large-scale applications in a wide range of industries. No longer can we say that aerospace uses advanced composites and that other industries use low-tech composites. The use of CFRP in the automotive and wind turbine industries is a reality, with growth predictions that make aerospace materials salesmen look on in envy.

On the research side, the European TANGO programme has reached the stage where the ambitious plans of former years have been translated successfully into manufacturing development and test specimens. Airbus and its industrial partners are looking at composites for the wing box, the centre wing box and the fuselage of the next generation of aircraft. For reasons lost in the evolving history of Airbus, there are two fuselage programmes with very different solutions. The most radical, based in Germany, proposes two skins with the longitudinal members running between the two and the hoop frames inside the inner shell.

On the more immediate aircraft programmes, I cannot remember a time when three totally new programmes were launched in Europe so close together. All are using significant advances in composite technology to achieve very aggressive weight, performance and cost targets.

The first programme, the A380, is now in a detailed design stage and will be using composites in many new areas. Thermoplastics are becoming the standard method of making small brackets and ribs. "Welded" thermoplastic structure will be used on the wing leading edge along the full span. Resin infusion processes are being used for the ribs of the vertical

stabiliser, the rear pressure bulkhead and some wing panels. The continuous pultrusion of constant sections is being extended from the "T" stiffeners in the vertical stabiliser of existing aircraft to the massive, 23 ft/7.0m long by 10 inch/0.25m thick "I" sections of the upper floor beams.

Following closely on the heels of this programme are the JSF and the A400M military transport aircraft. Significant sections of the JSF will be designed and built in Europe, Fokker, Rolls Royce and BAE SYSTEMS being three of the early companies to be involved. The A400M programme will include a large all-composite wing box over 66 ft/20m long. Not only are the three airframes new, but further opportunities for composites are being generated in the power plants and nacelles, as well

Outside the aerospace industry, business is even more buoyant. The wind turbine business is facing the challenge of making 164 ft/50m to 197 ft/60m long blades to meet the requirements of the next generation of machines, many of which will be placed offshore. The larger size has led to the increased use of carbon fibre and new infusion processes to improve quality and reduce costs. As well as needing increased quantities of materials, the move to the more widespread use of carbon fibres is further improving the value of this business. The long-term outlook for wind turbines in Europe is good, following the Kyoto Treaty.

The automotive industry is using more and more composites in such applications as the beam behind the front bumper. Additionally a new programme for an all-composite sports car, from a world famous company will be announced by the end of the year. Production quantities will be significantly larger than in previous "sports car" applications, maturing the processes and materials necessary for the more widespread application of composites in vehicle body shells.

For the material suppliers, the current production environment is much more buoyant than reported in the general press. Some suppliers reported their aerospace business was down but those with large military programmes were operating at the same levels as last year. The European fighter programme is now scaling up to full-rate production at an opportune time.

Excepting the current problems of the materials and parts manufacturers in the civil aircraft industry, the outlook is very good, and significantly better than in most engineering areas. My main area of concern is how we are going to find the right people to undertake the new programmes. We need to counter the "doom and gloom" merchants who are discouraging young people from entering our exciting industry. **IBC**