

# ACE-X2016

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## **Composite materials; are they good or bad for the environment?**

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Composite materials have been with us for thousands of years. Multimaterial adhesively bonded bows using bamboo, horn, and leather were used by Mongol archers on horseback, but modern composites were not possible until polymers had been invented which could wet the fibres and cure to give a strong and stiff material. Today, several racing drivers owe their lives to the high strength carbon fibre monocoque in which they sit, and Boeing have made much of the extensive use of CFRP in the 787 Dreamliner to save fuel. So we have several questions to answer.

1 Why have the advantages of composites not been realised in mass production cars and why are we still mainly using aluminium and steel?

2 How do we assess what is good for the environment? Is it so complex that no-one can truly assess good and bad? How do we sensibly define the mysterious carbon footprint. Are there complex equations with slithery variables which seem to adapt to give whatever answer “the boss” expects?

3 Can we tilt the scales by being clever engineers, or are there some other parameters in the equation?

4 And how do we deal with the end of life scenario?

*Quidquid it est, timeo Danaos et dona ferentes*

*Virgil, Aeniad II, 49*