A major new in-depth Market Report on the Carbon Fibre Industry….

THE CARBON FIBRE INDUSTRY WORLDWIDE 2011-2020:
AN EVALUATION OF CURRENT MARKETS AND FUTURE SUPPLY AND DEMAND

By Tony Roberts

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The report provides information on:

- Global sales of carbon fibre reinforced plastics (CFRPs) are estimated to be $15.1 billion in 2011, and are forecast to reach $28.2 billion in 2015 and $48.7 billion by 2020
- The global demand for carbon fibre tow in 2011 is estimated to be 46,000 tonnes, and is forecast to rise to 140,000 tonnes by 2020
- Sales of carbon fibre tow (small tow and large tow) will increase from $1.6 billion in 2011 to $4.5 billion in 2020
- Large tow demand is forecast to grow from 38% of all tow types in 2011 to 45% by 2020
- The global end-use demand for carbon fibre in 2011 is: aerospace 17%, industrial (including wind energy and automotive) 67%, and sports goods 16%. The report forecasts yearly demand by end-use markets to 2020
- By 2020, the two major industrial applications – wind energy and automotive – will account for 46% of the world's total demand for carbon fibre. The wind energy market is set to increase from 10,440 tonnes of carbon fibre in 2011 to 54,270 tonnes by 2020
- Carbon fibre demand (by weight) in the aerospace/defence sector is forecast to grow from 7694 tonnes in 2011 to 18,462 tonnes by 2020
- By 2020, Japan will produce 25% of the world's carbon fibre, USA 28%, Europe 28%, China 9% and the Rest of the World 10%
- Plant capacity increases announced by carbon fibre manufacturers will result in nameplate capacity being increased from 102,000 tonnes in 2011 to 129,000 tonnes in 2015. The report highlights the potential for this capacity to increase to 185,000 tonnes by 2020
- Includes in-depth profiles of all the major carbon fibre producers worldwide, including history, takeovers/mergers, plant expansions, financial results, and data on product ranges
- The report is over 400 pages long and includes over 270 tables/figures giving plant capacities and output, consumption by individual key markets, and forecast supply/demand for carbon fibre and CFRP to 2020


This is the ONLY market report available on the carbon fibre industry that forecasts worldwide markets through to 2020, thus allowing evaluation of the market potential for carbon fibre during 2011-2020, which will be a crucial period in the development of the industry, one that will witness very high growth rates – global demand for carbon fibre is forecast to grow from 46,000 tonnes in 2011 to 140,000 tonnes by 2020.

Supply/demand forecasts to 2020 are provided through comprehensive statistical data (in table and graph formats) backed by analysis of likely trends for both carbon fibre and carbon fibre reinforced plastics (CFRPs). The complex relationship between supply and demand is expertly considered by the report's author, Tony Roberts, who is one of the world's leading market consultants on the carbon fibre industry.

All of the world's major carbon fibre manufacturers are featured in the report, along with new players entering the business, with detailed information given on plant capacities, production outputs, future expansion plans, product ranges and full financial results. The author has spent several years studying the carbon fibre industry in China, and the role that China will play in the next decade is fully assessed in the report.

Over 400 pages long and with over 270 tables/figures, the report provides data on:-

- Plant capacities for small tow and large tow PAN-based carbon fibre and pitch-based carbon fibre by manufacturer, to 2020, with details of new plants, plant expansions and investment programmes, as well as types of carbon fibre produced.
- Assessment of the aerospace industry, with information on Boeing and Airbus aircraft build programmes, as well as the business jet and general aviation sector. Details are provided for carbon fibre and carbon fibre reinforced plastic (CFRP) demand on an annual basis over the 2011-2020 period for each aircraft type.
- Assessment of the growing wind energy market, with information on the number of wind turbines installed by country/region, and carbon fibre/CFRP consumption in this sector, with forecasts for carbon fibre demand by wind turbine blade type over the 2011-2020 period.
- In-depth evaluation of the prospects for carbon fibre in the automotive industry, with realistic predictions regarding demand for carbon fibre and CFRP, stressing the important relationship between carbon fibre demand and price, as well as the need to develop suitable processing routes, in order that carbon fibre can achieve volume sales in the sector.
- Trends in compressed natural gas (CNG) vessels, detailing the demand resulting from the move towards clean air vehicles. Carbon fibre/CFRP demand forecasts to 2020.
- Details of carbon fibre demand in military programmes, covering military aircraft, missiles, and ground and marine defence systems.
- Trends in carbon fibre and CFRP usage in the sports and leisure sector.
- Analysis of the various processing routes, including intermediate (textiles, prepregs), filament winding and pultrusion, and moulding processes (resin transfer moulding and resin film infusion etc), with details of carbon fibre consumption and forecasts to 2020.
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An Evaluation of Current Markets and Future Supply and Demand
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Some of the +270 tables and figures featured in the report:

- Carbon fibre (PAN and pitch) manufacture by country/region, 2011, 2015 and 2020
- Carbon fibre (PAN and pitch) demand by country/region, 2011, 2015 and 2020
- Value of various stages of carbon fibre reinforced plastics (CFRP) business from fibre tow to finished components, 2011, 2015 and 2020
- CFRP utilisation in civil aircraft: percentage breakdown by fibre type, 2003-2020
- Carbon fibre usage in the aerospace sector by product form, 1996-2020
- Aircraft deliveries by aircraft type, 2005-2011
- Aircraft deliveries by major manufacturer, 2005-2011
- Major civil passenger aircraft suppliers: orders, deliveries and backlog, 2008-2010
- Manufacturers of composite parts for the Boeing 787
- Boeing 787 build rate and carbon fibre buy weight demand, 2011-2020
- Airbus A380 build rate and carbon fibre buy weight demand, 2010-2020
- Airbus A350 build rate and carbon fibre buy weight demand, 2012-2020
- Boeing and Airbus deliveries and orders by aircraft type, 2008-2010
- Large passenger aircraft build programmes, 2011-2020
- Carbon fibre buy weight demand for large passenger aircraft, 2010-2020
- ATR: aircraft production and carbon fibre usage, 2011-2020
- Embraer: aircraft production and carbon fibre usage, 2011-2020
- Bombardier: aircraft production and carbon fibre usage, 2011-2020
- Worldwide production of regional aircraft and carbon fibre demand, 2011-2020
- Deliveries of business jets and general aviation (GA) aircraft, 2008, 2009 and 2010
- Deliveries of business jets and general aviation (GA) aircraft by type, 2011-2020
- Carbon fibre buy weight demand in the business jet and general aviation (GA) sector worldwide, 2011-2020
- Military fixed-wing aircraft production worldwide, 2005-2020
- Composites demand in fighters and trainer aircraft by flyaway weight, 2007-2016
- Military aircraft deliveries worldwide, 2011-2020
- Carbon fibre buy weight demand in military fighter jets, trainers and tankers/transporters worldwide, 2011-2020
- Turbine-powered helicopter deliveries worldwide, 2011-2020
- Demand for CFRP and carbon fibre by top ten helicopter programmes, ranked by forecast flyaway weight demand, 2010, 2015 and 2020
- Production of UAVs, 2011-2020
- Carbon fibre buy weight demand in the UAV market, 2010-2020
- Turbofan and turbojet engine production worldwide, 2010-2015 and 2020
- Jet engine deliveries and CFRP/carbon fibre demand worldwide, 2010-2020
- Manufacturers of commercial aircraft engines and their market share, 2010-2015
- Manufacturers of business aircraft engines and their market share, 2010-2015
- Manufacturers of military aircraft engines and their market share, 2010-2015
- Major launch rockets, 2010-2020
- Carbon fibre demand in space systems (satellites/launch vehicles) sector worldwide, 2010-2020
- Production of missiles and guided bombs worldwide, 2010, 2015 and 2020
- Carbon fibre demand in JASSM missile programme, plus other missiles and guided bombs, 2010-2020
- Carbon fibre buy weight demand in the military vehicle sector worldwide, 2010-2020
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- Carbon fibre buy weight demand from the aerospace and defence sector worldwide, 2011-2020
- Carbon fibre flyaway weight/buy weight comparison, 2010, 2015 and 2020
- Carbon fibre demand in the automotive market, 2010, 2015 and 2020
- Automotive industry: carbon fibre demand worldwide, 2011-2020
- Carbon fibre demand in the civil engineering sector worldwide, by application, 2011-2020
- Carbon fibre demand in the civil engineering industry worldwide, by conversion route, 2011-2020
- Demand for carbon fibre in the offshore industry worldwide, 2011-2020
- Carbon fibre demand in the offshore industry worldwide, by processing route, 2010-2020
- Top ten markets for natural gas vehicles by the number of vehicles and number of refuelling stations, 2010
- Compressed natural gas (CNG) pressure vessel types: costs and market share, 2011-2020
- Carbon fibre demand in the pressure vessels sector worldwide, 2011-2020
- Growth in CNG pressure vessels market, and carbon fibre demand, 2011-2020
- Carbon fibre demand in bulk gas storage pressure vessels market worldwide, 2011-2020
- Top 10 countries by wind energy capacity installed in 2010
- Top 10 countries by cumulative wind energy capacity, 2000-2010
- China: installed wind energy capacity, 2001-2010
- Installed capacity of 7 GW scale Wind Power Bases, 2010, 2015 and 2020
- North America: installed wind energy capacity, 2000-2010
- Europe: installed wind energy capacity, 2010-2020
- The top 10 wind turbine suppliers worldwide, 2010
- Carbon fibre demand in the wind energy market, 2010, 2015 and 2020
- Carbon fibre demand in the sports and leisure markets worldwide, 2011-2010
- Major manufacturers of carbon fibre masts and spars
- Demand for carbon fibre in the sports and leisure markets worldwide, by processing route, 2011-2020
- Chopped and milled carbon fibre producers and their production levels
- Chopped and milled carbon fibre requirements by end use
- Chopped and milled carbon fibre: forecast growth by application, 2011-2020
- Supply chain for recycled carbon fibre
- Carbon fibre manufacturers worldwide: nameplate capacity share, 2011, 2015 and 2020
- Small tow and large tow PAN-based carbon fibre nameplate capacities by manufacturer, 2011-2020
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- Small tow and large tow PAN-based carbon fibre plant outputs by manufacturer, 2011-2020
- Pitch-based carbon fibre plant outputs by manufacturer, 2011-2020
- Precursor/carbon fibre costs in carbon fibre production
- AKSA: PAN-based carbon fibre capacity and output, 2011-2020
- AKSA: properties of standard modulus PAN carbon fibre
- Cytec Industries: financial results, 2006-2010
- Cytec Industries: sales by business group, 2006-2010
- Cytec Engineered Materials: sales worldwide, 2006-2010
- Cytec Engineered Materials: PAN-based carbon fibre nameplate capacity and output, 2011-2020
- Cytec Engineered Materials: pitch-based carbon fibre nameplate capacity and output, 2011-2020
- Cytec Engineered Materials: properties of Thornel pitch-based carbon fibre
- Formosa Plastics: PAN-based carbon fibre nameplate capacities and output, 2011-2020
- Formosa Plastics: properties of Tairifil standard modulus high strength carbon fibre
- Hexcel: business segments
- Hexcel: financial results, 2006-2010
- Hexcel: sales turnover and breakdown by business group, 2006-2010
- Hexcel: net sales by region, 2006-2010
- Hexcel: net sales to external customers, 2006-2010
- Hexcel: PAN-based carbon fibre nameplate capacities and outputs, 2011-2020
- Hexcel: properties of HexTow continuous carbon fibre
- Hexcel: chopped carbon fibre properties
- Mitsubishi Plastics: pitch-based carbon fibre nameplate capacity and output, 2011-2020
- Mitsubishi Plastics: properties of Dialead standard modulus carbon fibre
- Mitsubishi Plastics: Dialead 2 k pitch-based carbon fibre – composite properties
- Mitsubishi Plastics: Dialead 12 k pitch-based carbon fibre – composite properties
- Mitsubishi Plastics: pitch-based chopped/milled carbon fibre products
- Mitsubishi Rayon: net sales, 2006 and 2010
- Mitsubishi Rayon: sales by business groups, 2007-2010
- Mitsubishi Rayon: PAN-based carbon fibre nameplate capacity and output, 2011-2020
- Mitsubishi Rayon: properties of P330 and TR50S carbon fibre grades
- Mitsubishi Rayon: properties of standard, intermediate and high modulus carbon fibres
- Grafil chopped and milled carbon fibres
- Nippon Graphite Fiber: pitch-based carbon fibre nameplate capacity and output, 2011-2020
- SGL Carbon Group: Advanced Materials Division
- SGL Carbon Group: financial results by business unit, 2003-2010
- SGL Carbon Group: large tow PAN-based carbon fibre nameplate capacity and output, USA and Europe, 2011-2020
- SGL Carbon Group: properties of Sigrafil continuous carbon fibre
- SGL Carbon Group: properties of Sigrafil C staple and milled carbon fibres
- Teijin: financial results for 2004-2010
- Teijin: financial results for Synthetic Fibres business, 2004-2010
- Toho Tenax: carbon fibre sales and income, 2005-2010
- Toho Tenax: PAN-based carbon fibre nameplate capacity and output, 2011-2020
- Toho Tenax: chopped carbon fibres produced in Japan and Europe
- Toho Tenax: chopped and milled carbon fibres made in the USA
- Toray Industries: financial results, 2005-2010
- Toray Industries: PAN-based carbon fibre nameplate capacity and output, 2011-2020
- Toray Industries: properties of Torayca standard modulus high strength carbon fibres
- Toray Industries: properties of Torayca intermediate modulus carbon fibres
- Toray Industries: properties of Torayca high modulus carbon fibres
- Zoltek: properties of Panex 30 continuous carbon fibre
- Zoltek: properties of chopped and milled carbon fibres
- China: carbon fibre imports, 2009 and 2010
- China: PAN-based carbon fibre capacity and output, 2011-2010
- China: precursor manufacturers and their production capacities
- BlueStar: properties of carbon fibre grades
- Weihai Tuozhan Fiber: properties of carbon fibre grades
- Zhongfu-Shenyang Carbon Fiber: properties of carbon fibre grades
- Dalian Xingke Carbon Fiber: properties of standard modulus T300 type carbon fibre grades
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- Hysoung Corp: PAN-based carbon fibre nameplate capacity and output, 2011-2020
- Carbon fibre demand by main application, 2011-2020
- Carbon fibre demand estimated by "other sources", 2010, 2015 and 2020
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- Demand for carbon fibre by fabric type, 2011-2020
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- Consumption of small tow and large tow carbon fibre in the filament winding/fibre placement market, 2011-2020
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- Carbon fibre (oxidised and non-oxidised) demand in the carbon-carbon composites sector, 2011-2020
- Carbon fibre usage in conversion/processing routes, 2011, 2015 and 2020
- Carbon fibre demand by conversion route, 2011-2020
- Small tow and large tow PAN-based carbon fibre demand by intermediate and composite processes, 2011, 2015 and 2020
- Small tow and large tow PAN-based carbon fibre nameplate capacities, 2011-2020
- Small tow and large tow PAN-based carbon fibre plant outputs compared to estimated demand, 2011-2020
ABOUT THE AUTHOR – TONY ROBERTS

Anthony (Tony) Roberts has over 40 years’ experience in the carbon fibre and advanced composites industry sectors. From the 1970s to the 1990s, he was with Courtaulds Grafil, Coventry, UK, developing applications for carbon fibres in the aerospace, industrial and sports goods sectors. In this capacity, he spent time in Europe and South East Asia, developing a comprehensive understanding of the global markets for carbon fibre. He subsequently moved to Mitsubishi Rayon Co Ltd, working in the USA as Sales and Marketing Director for subsidiary companies Grafil Inc and Newport Adhesives and Composites Inc.

From 2005 to the present, Roberts has served the industry as an independent consultant. He has prepared a number of studies on the carbon fibre industry, including two individual client studies and two global reports published by Materials Technology Publications: The Carbon Fibre Industry: Global Strategic Market Evaluation (2006) and The Carbon Fibre Industry Worldwide (2008).

Roberts has a unique insight into the important growing carbon fibre industry in developing regions, particularly China. Over the last two and a half years, he has spent extended periods in China as a consultant to the carbon fibre industry, gathering data on manufacturers and evaluating market trends.