

Composite Material Applications to Industries in China

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Abstract

Since the first glass fiber reinforced plastics was born in 1958, China has grown up to the largest composites manufacturing country in the world, output of 4.62 million tons in 2016. With the progress on the technologies in raw materials, innovative design and production process, China has greatly promoted her composites applications in industries. This presentation shows composite material applications in several industries such as energy, infrastructure, transportation and marine in China. The development of raw materials including matrix & reinforcement materials have been a key support to composites applications in China. Design for manufacture (DFM), digital simulation design and virtual detection, and “tailored-design” techniques have been applied to composites in industries. Automatic manufacturing technologies are playing an important role in labor cost reduction, high repeatability, further advancements of continuous processes to reducing defects, improving quality and efficient production. The progresses on the raw materials, design techniques and production processes of composites have led to more and new applications in industries. The achievements of composites applications to industries include composites wind turbine blade, bridges, high pressure cylinders, ships and boats.

The potential opportunity for the technologies and applications of composites in the future would be:

- (1) Raw materials with more advanced performance;
- (2) Booming markets in electric vehicle, which is estimated 5 million EVs in 2020 in China, will be more chance for thermoplastic composites and CFRP;
- (3) Business jet and general aviation;
- (4) Marine engineering applications;
- (5) Environmental engineering applications.

Dr. Zhongmin Xue—Short Biography:

Dr. Zhongmin Xue is the Chairman of Sinoma Science & Technology Co., Ltd. (briefly Sinomatech). Dr.Xue has devoted his professional career to the composites materials for 30 years. Dr.Xue had been the President of Beijing FRP Research & Design Institute which is the first state institute of FRP/composites in China, established in 1958. He was the Chairman of Sinomatech Wind Power Blade Co., Ltd from 2007 to 2011, the company has grown to be one of leading wind turbine blade manufacturers in the world and top one in China. Since 2013, Dr.Xue has been the Chairman of Sinomatech, now the company has been one of the largest fiber composites manufacturers in China. Dr.Xue has also significant contributions to composites academic progress in China and exchange with the world. Dr.Xue has been playing important roles in academic bodies. He is a Vice President of the Chinese Society for Composite Materials, Vice President of China Composites Industry Association, and Chairman of China FRP Society. Also Dr.Xue is the Chief Editor of the Journal of FRP/Composites, which is one of the earliest academic publications for FRP/composites in China and established in 1974. Dr.Xue accepted a SAMPE Fellow Award in 2016.

Dr. Xue received his B.Eng. in Composite Materials from the National University of Defense Technology (NUDT), China, an M.Eng. in Composite Materials and a PhD in Materials Processing Engineering from Beijing University of Aeronautics and Astronautics (BUAA), China.