

“Carbon is Future” Industrial Perspectives & Challenges

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The element carbon serves megatrends such as energy, sustainability, new mobility and urbanisation and is one of the most exiting elements in our periodic table with a bright future.

This bright future is based on

- a) a sustainable growing demand on traditional carbons such as electrodes for aluminium, steel and silicon production
- b) a double digit growth potential for modern carbons such as carbon fibers for light weight construction, carbon & graphite based products for solar industry and engineered carbon products for energy storage technology and
- c) new potential applications for novel carbons such as nanotubes and graphenes.

The focus of the presentation is to outline the industrial perspectives and the technical challenges of the traditional and modern carbons resulting in an over 40 billion Euro market, today.

For the future steel production carbon furnace linings with improved lifetime at a more flexible blast furnace operation and graphite electrodes with reduced consumption in electric arc furnaces are required. The growing aluminium production is searching for technical carbon & graphite based solutions to lower energy consumption per kg aluminium produced. The fast growing, silicon based solar market is asking for large isostatic graphite formats and thin walled, high strength carbon fiber reinforced carbon components and effectively thermal insulating carbon felt products. In the area of modern carbons, carbon fiber is just in front of a breakthrough regarding their use in light weight vehicles (aeroplane and automotive) and in wind mill blades especially for modern high power offshore wind plants. The growing need for renewable energy generation such as solar and wind triggers additionally the energy storage industry. New and improved carbon & graphite based anode materials for lithium ion batteries for the consumer market and for the future e-mobility and carbon felt based electrodes combined with graphite foil based bipolar plates for large stationary battery systems such as redox flow batteries are the hot topics of the industrial carbon sector.

These examples demonstrate that carbon will definitely play an important role in our future world. Therefore, we claim: “Carbon is future”.