



DK makes mark with composites



By [STEVE TOLOKEN](#) |

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The new ArtScience Museum, with its “lotus leaves” design, on Singapore’s waterfront is one of the world’s largest free-standing composite-cladded structures.

MELAKA, MALAYSIA (July 13, 2:20 p.m. ET) — Habibur Rahman Ibrahim has what could be described as a passion for plastic composites.

The Malaysian businessman, who is executive director of glass-fiber plastic composite fabricator DK Composites Sdn. Bhd., believes the rising demand for better infrastructure in Asia, coupled with the need for lighter vehicles and lower carbon footprints, will mean substantial opportunities.

He’s seen DK’s factory, on Malaysia’s west coast in Melaka, grow from a startup in 1997 to a 140 employee firm with business in boats, mosque domes and subway cars, with customers from the Middle East, Southeast Asia, Zambia, Australia and the United States.

From boats, trains and buildings, get a look at some of DK's Asia projects in the [PN video](#).

There’s some evidence to support his view: Asia’s composites industry, including plastic composites, is the fastest growing in the world, projected to rise from 38 percent of global production in 2010 to 43 percent in 2015, according to Paris-based composites promoter JEC Group.

Infrastructure is part of that. DK, for example, is developing glass-fiber-reinforced plastic components for mass-transit rail cars in Malaysia and Mumbai. It won an innovation award for that work from the JEC Asia composites show in June in Singapore.

It's also built up a sizable business making plastic-composite domes and decorative elements for mosques and government buildings throughout the Islamic world, including GFRP decorative parts for the Shrine of Imam Abbas in Karbala, Iraq, one of the holiest places for Shiite Muslims.

And last year it finished one of the world's largest free-standing composite clad structures, the new ArtScience Museum on Singapore's waterfront, with 213 feet high "lotus leaves" made from GFRP.

Ibrahim, who is also chairman of the Malaysian Composites Industry Association, believes the design flexibility, weight savings and longevity of plastic composites will make them increasingly popular in Asia.

"With labor costs going up and up, you don't want to do brick and mortar and steel in the traditional way," he said. "The ultimate objective of using GFRP is that the building of the future should be manufactured and not built."

To build the ArtScience Museum, for example, the company manufactured its plastic-reinforced panels in Melaka and shipped them 125 miles south to Singapore for assembly on a steel structure.

The project stretched DK's capabilities by requiring the same bright finish as a gel-coated boat, he said: "It's easy to do that on a boat, but when you do it on a 60-meter [197-foot] building, it is very difficult."

Ibrahim said Malaysia could support three factories similar to DK. JEC said Asian demand is a big factor behind global composites growth, including in mature markets.

"The composites market is growing fast in most developed regions around the world, which in large part is based on industrial development in Asia," said Frederique Mutel, president of JEC Group.

The Asian firms, however, are often lower-tech than those in more developed markets. Globally, there's a lot of talk about higher-tech applications like carbon-fiber plastic in electric cars or on Boeing's 787 Dreamliner, to make them lighter and more energy efficient.

But DK, which does both glass and carbon fiber, sees opportunities for advanced composites in emerging Asian markets, in areas like prefab housing, roofs and facades, and mass transit.

One example: composites can help make buses much safer in Asia. It's a market DK is exploring.

"Tens of thousands of buses are built lower than the standards they should be — people die when buses roll over," he said. "Europe doesn't have that. European buses roll over and people walk out because they have seat belts, they have crumple-free zones, they have rollover protection."

The company also has become a prominent manufacturer of GFRP domes, structures and decorative elements for mosques and government buildings in the Islamic world.

That was DK's initial market back in 1997. Malaysia's then Prime Minister, Mahathir bin Mohamad, went on a pilgrimage to Saudi Arabia and saw composite domes on the Al Nabawi mosque in Medina, Ibrahim said.

Mahathir, who was named *Time Magazine's* Newsmaker of the Year in Asia in 1998, wanted to build Malaysia's capacity in industries seen as having long-term potential. So he brought in a German company familiar with composites to be a 50 percent joint venture partner with DK. (The Germans left in 2006.)

Mahathir, who also was a medical doctor, first commissioned advanced plastic composites from DK to be used in prominent office buildings and mosques in Malaysia's new administrative seat, Putrajaya, Ibrahim said. Since then, DK has built about 600 GFRP domes worldwide.

Ibrahim contends the light weight of GFRP domes have advantages, such as requiring smaller foundations to support them and thereby giving more flexibility to architects to design spaces for work and worship.

But there are challenges, including that builders and architects don't know as much about GFRP, may not see past its higher initial cost, and sometimes feel limited by the modular structure of composites, he contends.

Like companies everywhere, DK is looking at upgrading. It wants to automate its processes and plans to start using resin transfer molding. And it sees education of its staff as very important.

But Ibrahim talks most animatedly about what he sees as the potential of plastic composites.

"There are a thousand different ways to do composites," he said. "I consider a composite roof as having life. I consider a concrete and steel roof as dead, with no character, because with composites you can put in the curves, you can mold them into triangles."

Perhaps most importantly for a businessman, though, it's something the market values, he said: "I see that people are willing to pay for the added value that composites can bring."

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