

# New face of manufacturing emerging

FEW would disagree that change is the only constant in the world. This is even more true for an innovation-led global economy.

The other constant in the world is the ever rising competition in global business. Business everywhere is looking for ways to stay ahead of competition.

The Blue Ocean Strategy, for example, has been widely embraced as a popular tool in business positioning. In the face of a daunting array of challenges which include among others scarce resources, climate concerns and demographic change, the manufacturing sector is busy preparing how best to respond.

In the developed economies of the world, a new approach in manufacturing called E3 is being developed.

Many now believe this may become a disruptive force which will drastically transform global manufacturing.

E3 which stands for Efficient, Emission-neutral and Ergonomic is about sustainable manufacturing. In Germany, researchers at the Fraunhofer Institutes for applied research are laying the vital groundwork for the E3 production system.

Under the project, researchers will develop novel machines, technologies and processes that save energy and resources, eliminate

climate distorting emissions from factory operations and integrate the role played by people in future production by re-evaluating the ergonomics of human machine interaction.

Ergonomic here concerns a science that deals with designing and arranging things so that people can use them easily and safely. For example the use of industrial robots will be made much safer.

It is easy to understand why Germany gives serious attention to develop this new form of manufacturing.

One compelling reason has to do with the fact that the country's economic performance has always been largely dominated by the production of goods.

In fact, nearly one in two jobs in the country is in manufacturing. We are of course familiar with the superior car technologies coming out of Germany.

And if Germany is to keep its competitive edge at a time when climate change, scarce resources and demographic change pose serious threats, a fundamental shift in thinking is needed in the design and operation of manufacturing units.

It is clear a more holistic approach is needed. This requires the concerted use of new approaches which will ensure that

all future production processes will deliver the same, or even higher, outputs whilst consuming a significantly lower amount of energy and resources than it has been thus far.

Energy efficiency is a big agenda in Germany, a country known to be deficient in natural resources. This alone has been a major driver of innovation in the country.

In E3 manufacturing, aside from resource efficiency, reducing the emission of climate distorting greenhouse gases is the next important feature of production.

Making sure production plants reduce such emissions to levels which are less harmful will contribute positively towards dealing with environmental and climate concerns.

In the future, manufacturing companies must therefore have much greater recourse to alternative and regenerative forms of energy for the production of electricity and heat. This is where the use of biomass and other forms of renewables will become more prominent.

In addition, better energy management systems should be common practice in business. As a nation known to have the relative abundance of the renewables, we in Malaysia need to position ourselves to benefit from this emerg-

ing opportunity.

Researchers at Fraunhofer Institutes are also busy developing tools for the ergonomic target of E3 manufacturing. This is to essentially make human-robot cooperation safer.

In this regard they are actively researching prototypes for new lightweight robots with safe drive units.

Such new form robotics presents another opportunity in the E3 manufacturing. It is unfortunate that we as a nation have yet to seriously invest in such automation technologies. So far, most of our robotic involvement are mainly limited to school level competition.

It is time we consider creating a high profile R&D alliance on robotics for the nation. Institutes such as SIRIM may be given the task to lead such initiative which should bring together expertise from the country's universities.

We should no longer ignore the clear signals that a new revolution in manufacturing is in the offing. Otherwise we will again miss out on the emerging business opportunity.

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