

Electric perspective

WHAT DOES THE FUTURE HOLD FOR THE GLOBAL EV MARKET? FRESH FROM A RECENT TRADE SUMMIT CHAIRED BY PRESIDENT OBAMA, STUART MARWELL OF CURTIS INSTRUMENTS SHARES HIS THOUGHTS

▶ Curtis Instruments, founded in 1960, is a world leader in advanced electric vehicle technology control systems, instrumentation and related technology. This private company, based in Mount Kisco, New York state, USA, operates 15 subsidiaries worldwide. Stuart Marwell, a descendant of one of the founders, joined the company in 1983 and has served as president, CEO and chairman since 2001.

Marwell recently participated in a summit conference on the technical and business alliance between India and the USA. His panel discussion, moderated by US President Barack Obama, focused on key technologies for improvement of public health and quality of life. In the following Q&A, he gives his views on future prospects for EVs globally.

How has the growth of environmental concerns affected the industrial and utility EV industry?

I see it not so much an awareness issue as a technology shift. EVs are most successful where there is a defined duty cycle and a fixed route within a certain distance, or opportunity to recharge between shifts. The growing use of industrial and consumer EVs outside those limitations has been made possible by new battery technologies, such as lithium-ion, which offer lighter, smaller formats and greater range. Designers can now integrate batteries into vehicles that were traditionally gasoline powered.

With that comes a new freedom to integrate electric drive systems into a whole new mode of hybrid vehicles in construction, agriculture and automotive. Of course, the indoor pollution issue is a catalyst for going electric in warehouses and airports, and many companies are replacing propane industrial vehicles with electric.

Will this be near-term or long-term growth in industrial and utility EVs?

We're going to see a general increase in business levels because of pent-up demand



RIGHT: **Stuart Marwell:** "Designers can now integrate batteries into vehicles that were traditionally gasoline powered"

and a lack of capital spending that deferred the purchase of new equipment, as a result of the recent recession. So we anticipate a huge rebound in the industries we serve.

There are also more players getting involved with electric vehicles, particularly light on-road, looking to electrify vehicles that are currently gasoline-powered. We're seeing that all over the world – Europe, the USA, China and India.

What kind of impact will EV expansion have on emission levels?

When you look at the total contribution of electric vehicles in lowering emissions over next 10 years, it's certainly going to help. In construction and trucking we might see use of batteries to perform functions that currently require those vehicles to run and idle – you'll see a big decrease in their outputs. For example, consider refrigeration units in trucking, now powered electrically

off the vehicle's gas-powered engine. And in ports, where a huge amount of pollution is created by trucks queuing up to the loading dock. For one container ship alone, thousands of trucks can be idling for hours. So if we can get trucks through the port system using electric drive mode, they won't be burning diesel at all. Governments are looking into these solutions.

A similar opportunity is in airports which use a lot of ground support that sits idling while awaiting the aircraft. Most of that equipment doesn't travel more than a few hundred feet – why should they be diesel? You're not going to have electric airplanes but we can certainly be supplying more drive systems for the ground vehicles.

Did the Obama stimulus plan impact the EV market?

Very much so. Part of the stimulus package offered Federal tax credits for the purchase

of certain classes of EVs, those with a higher speed and power level than golf carts. We saw a huge impact on that sector, which really pulled it out of a trough and back into recovery. A large number of US companies manufacture those vehicles, while a large number of Asian companies manufacture them for US distribution, so we have stronger markets now both in USA and Asia with the help of that initiative.

Tell us about the USA-India conference you attended, hosted by President Obama.

I was one of eight US CEOs invited to join a private round-table discussion hosted by President Obama during the US-India Business and Entrepreneurship Summit. Our purpose was to review and analyse US-Indian business relationships in developing beneficial technologies.

The President was very engaged in the process, was well prepared and had a real understanding of the issues. He was the moderator in our panel discussion. The US CEOs all had long-term technological partnerships within India. At Curtis, we've had a 16-year close relationship helping top Indian OEMs develop specialised materials handling and automotive EVs.

How important are the growing Indian and Chinese market to the EV industry?

India is one of the BRIC nations – Brazil, Russia, India and China – considered major developing markets. With more than one billion people and a huge developing middle class, it has very significant trade potential.

India has a well thought-out growth plan with three phases of investment: first in information technology, then agricultural distribution systems, and then manufacturing. It will take some time to get to that final phase, but when they do, there will be a boom in opportunities for EV usage. Right now, 40% of food produced in India is lost and wasted due to a poor distribution system. The country is very focused on the improvement of its distribution system, on equal level to its IT and Telecom industry, and that will mean growth in the industrial and utility vehicle market, including EVs.

There's a tremendous amount of vehicular congestion and pollution in Indian cities; we are working through our India partnership to reduce it. Advancing our EV technology into India's on-road

market is a sustained effort that has created jobs for Curtis engineers here in the USA. Also the control systems we make for these vehicles are produced in our plant in Puerto Rico and exported to India. So it's an example of doing business with India being good for the US work force. The India connection is an important part of our business and one we have a lot of pride in because we are promoting green air standards.

China is much more centrally controlled and is able to make improvements to its infrastructure more quickly. The state owns the land so highways can be built very quickly. While India currently leads the way in telecommunications infrastructure, China has more manufacturing leadership. So domestic use of electric vehicles, both on-highway and industrial, off-highway, is growing very rapidly in the country, in factories, warehousing, transportation and distribution. We'll see that continuing into the future. In addition, China has become a huge exporter of EVs and EV technology to the rest of the world because of its cost advantages.

What other opportunities should industrial and utility vehicle OEMs focus on?

I think the new higher-powered/lighter weight battery technologies will create an opportunity for urban delivery EVs to have a much higher profile. Think about the delivery trucks in urban centres that spend so much time traversing the streets and idling: if you've got an electric system you've reduced emissions considerably.

I can see a company such as UPS having distributed depots within the city rather than having one large depot, and then feeding smaller EVs out from those to make the local deliveries.

Is the rate of EV innovation speeding up?

I'll refer back to battery technology – that's the key to introducing more pure electric vehicles into the world – that and the infrastructure. The biggest shortcoming right now for EVs is range.

When we have quick-charge terminals or battery swap at every gas station, that's when the on-road and light on-road sectors will really take off. It could take another 20 years, except for pockets of innovation. There's a company working on battery swap technology in the San Francisco Bay

area, Israel is developing EV infrastructure, and I think Hawaii is too. So we'll see an uptick in unique urban areas where there is a high early adopter population that supports EV technology.

As a CEO of an international technology company, can you define your leadership style?

Curtis Instruments operates more like a matrix organisation than a hierarchy. We're like three-dimensional fabric, a highly interwoven group of professionals who are comfortable with mutual reporting obligations that stretch out in many directions. It requires great skills in judgment, negotiation, communication, and it creates a highly collaborative work place.

Worldwide, we have a philosophy of hiring local people, rather than expatriate management. That means our customers in each market are dealing with people who are sensitive to local cultures and business modes, and that's a real positive attribute. You can't impose your own style or culture. Instead, successful international business adapts to local opportunities and needs with local solutions.

Despite our size and international scope, we are more like a family. And one of the things our people really enjoy about Curtis is its ethics and management style. Our operating philosophy is personal, honest, compassionate. I think that's one of the things our customers appreciate as well. We will always go to extreme lengths for our customers.

What is your position on corporate responsibility?

One of the 'Ten Points' of our corporate principles is that Curtis companies are citizens of the larger community and have a responsibility to contribute not just to achieve technological progress, but to the community's well-being. That involves being environmentally responsible. We are in the process of going through the formal ISO 14000 certification process to get all our companies up to that standard of environmental compliance. **ivt**

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