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Somnath Pal Choudhury
Managing Director
Analog Devices India
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After passing through the phases comprising widespread use of steam engines mechanising manual works, excellences encompassing electrical gadgets leading to mass production techniques, and amazingly automated machines, now globally, the manufacturing industry is entering the fourth phase of industrial revolution, popularly called Industry 4.0, which is eyeing on merging the industrial infrastructure with the Internet of Things and Cloud Computing. It is a beginning of a great going towards developing a direct and real-time interface between the virtual and physical world.

Started originally as a German initiative, the worldwide welcomed step has already started revealing glimpses of its revolutionary road maps. Visitors in Hannover Messe 2013, the world’s largest technology trade fair, have witnessed it. In fact, extended automation – the gift of the third industrial revolution, popularly called Industry 4.0, is leading us towards a new manufacturing paradigm, called ‘Cyber-Physical Systems (CPS),’ which means integration of computation, networking, and physical (manufacturing) processes.

When today’s manufacturing leaders are deeply concerned with issues like energy saving; downtime reduction; waste diminution; pollution mitigation and safety enhancement, the cornerstones of the factories of the future as targeted by Industry 4.0 present the panacea. The initiative chalks out changes from two angles: the vertical automation – digitalisation and networking of production systems, and the horizontal integration of supply and value chains. As its obvious outcome, the future products and production systems will become much smarter (intelligent) and better connected.

According to a Siemens’ note, “This intelligence will be made possible by the use of miniaturised processors, storage units, sensors, and transmitters – which will be embedded in nearly all conceivable types of machines; unfinished products and materials; as well as smart tools and new software for structuring data flows. All of these innovations will enable products and machines to communicate with one another and exchange commands. In other words, the factories of the future will optimise and control their manufacturing processes largely by themselves.”

However, experts feel it will take a long time to get to that point. Peter Herweck, Head of Corporate Strategy at Siemens, says, “We’re talking about a time period of 20 years or so. The result will appear to be revolutionary from today’s point of view, but ultimately it will involve a large number of development steps.”

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Indian manufacturing sector has enormous growth potential, still it has been witnessing an unsatisfactory growth rate. Government of India has chalked out several plans to improve the scenario...

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DTDC acquires major stake in Nikkos Logistics

DTDC Courier & Cargo has acquired 70 per cent stake in Bangalore-based Nikkos Logistics, and formed a new company, called “DTDC Nikkos International logistics Pvt. Ltd. The acquisition of Nikkos complements and expands DTDC’s strategy to offer complete end-to-end logistic solutions to customers in national and international markets. Nikkos logistics solutions will help expand DTDC’s network by linking the domestic offerings globally and vice versa.

“The acquisition allows DTDC to combine its strength with Nikkos’s to penetrate and consolidate its presence globally. Tapping on opportunities will further enable more feet on street, robust infrastructure and quality delivery capabilities for DTDC around the globe,” said Abhishek Chakraborty, Executive Director of DTDC.

Commenting on the development, Kochat Narendran, Director said, “DTDC group, with global presence and being one of the largest domestic logistic players, combined with Nikkos network and international expertise could be the key factor for change in the Indian logistic arena with local expertise and global reach in supply chain solution.”

CG receives $60 million contract

A vantha Group Company CG has been awarded a major contract for $60 million, for the turnkey construction of four high voltage GIS substations by the Electrical Transmission Project Office of the Ministry of Electricity (MOE) in Iraq. The company will design, manufacture, deliver and install the substations, thus helping upgrade and reinforce the existing 132 kV electricity transmission grid.

The components’ list for delivery will include all electrical engineering works, Twelve power transformers, medium voltage (MV) and high voltage (HV) Gas Insulated Switchgears (GIS) and SCADA/ control and protection systems for the high voltage substations. The project is expected to be completed by August 2014.

PTC’s software receives certification

TÜV SÜD Automotive, a global company offering technical certification services, has certified that PTC Integrity is fit for the purpose to develop safety-related systems – for use in ISO 26262 and IEC 61508 (functional safety standard for passenger vehicles) compliant development processes.

This independent assessment of PTC Integrity single platform approach and software change and configuration management, requirements management and test management capabilities enables automotive engineering organisations developing safety-related embedded systems to qualify the tool chain being used to produce these systems up to ASIL-D or SIL3, the most stringent levels of safety function as defined by the standards.

In addition to that, the PTC Integrity development organisation has achieved Capability Level 2 under the wellknown Automotive SPICE (Software Process Improvement and Capability Determination) framework.

PTC Integrity is an application lifecycle management solution that manages all global software development processes, and connects all software engineering artifacts, including requirements, models, code and testing, to ensure comprehensive lifecycle traceability.

“Automotive development organisations are managing complex requirements for embedded software in their products. Continuing to certify PTC Integrity with automotive safety industry standards like A-SPICE and ISO 26262 will help our customers comply with functional safety standards to ensure safe software development processes,” said Jake Simpson, Divisional General Manager, ALM segment, PTC.

A-SPICE is a framework for designing and assessing software development processes. When implemented effectively, it leads to better processes and better product quality. It also helps in improving the cooperation among complex supply chains.
Essar launches specialised steel targeting the growing ship-building industry

Essar Steel, the first Indian steel company to launch specialised steel products that can withstand -40 degree celsius (below sea level), has recently launched high-end branded steel plate products for the shipping and logistics industry. The products, aimed at import-substitution, are being manufactured at the company’s state-of-the-art plate mill located at Hazira, Gujarat.

The Indian shipbuilding industry has witnessed a tenfold growth over the last decade. Today, there are ten large and about 30 medium and small ship building yards in the country. These yards not only build ships but also undertake ship repair activities.

Looking at the opportunity and the growing need in the shipbuilding sector, the company has introduced ‘Essar Shipor’, a range of hi-tech steel plate products, which have been designed to support this surge in demand in the sector.

Commenting on the launch of these plate products, Alok Gupta, President, Sales & Marketing, Essar Steel said, “The competencies that we have built in ship building plate products is not only aimed at replacing imports to meet the burgeoning domestic demand, but has a lot of export potential as well.” Pointing at Essar’s strategy, he added, “We plan to work closely with the ship building industry to develop any specific grade of steel that it may require - since the plate mill is versatile and has the capability to produce any grade of plates.”

IBM helps Itella to streamline their business operations

IBM has signed a seven-year cloud computing agreement with Itella, a leading provider of business services in Europe and Russia, to streamline its business operations and improve flexibility and time-to-market.

The modern cloud-based service delivery platform and use of IBM’s global industry assets – will enable and expedite Itella’s transformation to a more agile enterprise. The agreement will allow Itella to focus on its core business and develop new value-add services for its clients.

Itella provides postal, logistics and financial transaction process services in Northern and Central Europe as well as Russia. As a services company, it has specialised in managing its client’s important information and product processes. As a result of competition and escalating costs, the company is now working with IBM to strengthen its competitive advantage, and enhance its business operations as well as improve cost efficiency. More efficient use of technology is essential to improve its agility and flexibility.

IBM will build a private cloud to provide hosting as well as application management and development services to Itella. With the cloud, IBM will automate basic production of technology services as well as improve the quality and management of those services.

SAAS solution from Intergraph

Intergraph, the global provider of engineering and geospatial software, has launched SmartPlant Cloud, the company’s Software as a Service (SaaS) solution, a dynamic cloud computing environment to support the entire SmartPlant Enterprise portfolio.

This removes the need for customer hardware and infrastructure. It allows users to access SmartPlant Enterprise applications, project and plant maintenance environments via a simple URL, regardless of global location. SmartPlant Cloud presents all users with their relevant information, data and documents to support each user’s work processes and decision-making.

SmartPlant Cloud provides a software ecosystem that allows Engineering, Procurement and Construction (EPC), and owner operator companies to provision users with the required engineering software tools and utilities.

The service, which is accessed through an intuitive web-based portal, has been configured to adapt to company-specific standards, engineering workflows and processes. It facilitates rapid deployment, robust security and a dynamically scalable environment – that has been designed to specifically support all sizes of projects and assets for both – the owner operators and EPCs, regardless of global location.

Intergraph has been supplying SaaS to a select customer base for a few years already, and it is now making it commercially available.

SmartPlant Cloud will actively speed up project execution, reduce costs and improve operating plant performance – allowing users global access and providing them with 24/7 support and pay-per-use service.
Honda uses Honeywell automotive turbocharger in their diesel engine

Honeywell Turbo Technologies, a global player in automotive turbocharger development, has designed and built the turbocharger for the Honda Amaze. The wastegate-type turbocharger supplied by Honeywell is used in the 1.5L i-DTEC diesel engine powering the highly anticipated Honda Amaze, Honda’s first compact sedan in India and the first with a diesel engine.

“Honeywell is proud to be the turbocharger technology partner and supplier for the Honda Amaze. The base technology of this turbo is completely developed out of India, as we are committed to using global leadership position to develop turbos specifically for the Indian market. Our innovative technologies help our customers deliver best-in-class products like the Honda Amaze, offering fuel economy and reduced emissions without sacrificing performance,” said David Paja, Vice President and General Manager, China and India, for Honeywell Transportation Systems.

A turbocharger uses exhaust gas otherwise wasted out the tailpipe to drive a turbine, which in turn operates a compressor feeding increased volumes of fresh air into the engine. This improves the engine combustion process reducing emissions and improving fuel economy.

“Turbochargers offer a combination of fuel-savings and performance at an affordable price compared to other technologies, making them an attractive option for all vehicle types from subcompact cars, full-size luxury sedans to pick-up trucks – and everything in between,” added Nitin Kulkarni, Vice President, Customer Management, Honeywell Turbo Technologies.

ITC Infotech ranks in IAOP’s list

ITC Infotech, a fully owned subsidiary of ITC Ltd, has been featured for the 7th consecutive year in the International Association of Outsourcing Professionals (IAOP) Global Outsourcing 100 List for 2013. The company has been ranked 40th in the Leaders category.

IAOP has also recognised ITC Infotech with sub-list honours in several categories including ‘Best 20 Leaders-Retail & Consumer Goods, Best 20 Leaders-Financial Services (Banking, Markets), Best 20 Leaders-Discrete Manufacturing, Best 20 Leaders-Information/Comm. Technology Services and Best 20 Leaders in UK and Top List Climbers Year-to-Year.’

“Global competition is at an all-time high, which is reflected in this year’s rankings. This comes at a time, when companies that outsource are scrutinising their providers more closely,” informed IAOP CEO, Debi Hamill.

Siemens’ new drive to make SMEs more competitive

Siemens Industry Sector has unveiled the ‘Siemens Productivity Tour’, a nation-wide, multi-city mobile road show – aimed at empowering small and medium manufacturing enterprises across India – with technologies for productivity and efficiency. Targeted primarily at automotive, medical, aerospace, power, F&B, packaging, textile, printing and pharmaceutical industries, this road show will cover 204 locations in 86 cities across India. Through this ‘productivity tour’, Siemens aims to raise awareness among the SMEs about the definite competitive advantage that can be gained by adopting innovative technologies and solutions.

According to FICCI, Indian manufacturing segment houses over 26 million MSME units that employ around 59 million people. However today, the Indian MSME sector contributes only eight per cent to the GDP, as compared to that of China, where the contribution is almost 60 per cent of the GDP.

Despite its enormous size, the sector is yet to realise its true potential. One of the reasons is the lack of technology penetration beyond industrial hubs in and around large cities. As the economy is going through testing times, it is becoming increasingly difficult to sustain the high growth rates without embracing cutting edge technology that can optimise energy efficiency and productivity.

According to Bhaskar Mandal, Executive Vice President and Sector Cluster Lead - Industry Sector, Siemens South Asia, “It is imperative for manufacturers, especially the SME sector to adopt the latest technologies that enable them to improve productivity, enhance flexibility, optimise costs and increase profit margins. Proven technologies from Siemens can help these industries accelerate their growth and thus gain a competitive edge globally.”
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Steel majors will need more minerals

Public sector steel majors, Steel Authority of India (SAIL) and Rashtriya Ispat Nigam (RINL) have decided to increase their raw material consumption up to 39 per cent by 2015-16, as these companies will soon be completing their respective capacity expansion programmes. While, SAIL’s coking coal requirement is expected to increase by 33.33 per cent in 2015-16, to 19.2 million tonne (MT), RINL’s coking coal requirement will increase to 7.08 MT by 2015-16.

Meanwhile, SAIL’s iron ore requirement is expected to go up by 32.42 per cent to 36.80 MT, given it is half way through a plan for expanding its steel capacity to 21.4 MT.

Also according to the sources, RINL’s iron ore requirement is expected to increase by 39.39 per cent in 2015-16 to 9.2 million tonne (MT).

SAIL currently needs 27.79 MT iron ore and 14.40 MT coking coal to meet the requirements of its six plants including Bhilai, Bokaro, Durgapur, Rourkela and IISCO Burnpur.
Customers Need a Lot of Careful Babying

Marshall Plympton (name changed) is the owner of an “eclectic American” restaurant with forty-seven reviews on Yelp, and the majority are pretty positive. Marshall, however, responds to even the smallest online slight or constructive criticism with outrage. For example: “If any other jerks like “Jjhamie319” are thinking of coming to my restaurant, listen up: DON’T. I have enough work serving the rest of you people without this kind of grief.”

Marshall doesn’t need this article. He needs a new line of work, far away from customers. But smart business owners and their service representatives realise – the landscape in which customers operate has shifted – and that profoundly redefines what good (and bad) customer service means. Here are some ways in which customers have changed that will profoundly impact how you deal with them.

Social media has empowered customers. Respect and work with that power, not against it: Specifically, they expect that your company will make itself easy to contact and will speedily respond to their comments at a high and thoughtful level. This isn’t to say that – this feedback has to occur in a public forum.
If you strategically make the people at your company easy to reach round the clock, you can by and large avoid public outbursts on social media airwaves.

Think about it this way: If your friend saw you had your fly undone, would he ‘tweet’ about it? No, he’d quietly tell you. Use the same principle to your advantage here. Why should customers address issues to you indirectly via Twitter or their blogs when they can use email, the phone, or a feedback form on your website and know that it will be answered – immediately and with empathy? Make sure that the first impulse of customers is to reach you directly, by offering “chime in” feedback forms throughout your website; direct chat links for when your FAQs fail to assist; and an easy way to reply directly to every corporate e-mail you send out.

Today’s customers expect companies to share their burdens:
The companies that are thriving today realise that what reasonably could be considered a customer responsibility is now a great opportunity to take something on themselves. Anticipatory customer service can be accomplished by technological or human means, or both. Providing the kind of customer service and customer experience that will generate loyalty and profits in our technologically altered world isn’t a fundamentally different proposition than it was a decade ago, but it’s faster.

Realisations

• If you strategically make the people at your company easy to reach round the clock, you can by and large avoid public outbursts on social media airwaves.
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Today’s customers expect companies to share their burdens: The companies that are thriving today realise that what reasonably could be considered a customer responsibility is now a great opportunity to take something on themselves. This is why your bank tells you when your mortgage payment is due and your pharmacy reminds you that it’s time to refill your prescription. Amazon even notifies you when you already purchased a particular title for your Kindle two years ago, and refuses to let you accidentally pay for it again. These best practices should be in every company’s ballpark if you want loyal customers.

Your customers demand their right to serve themselves:
Self-service, formerly the sketchy domain of snacks and cigarettes, is now an absolutely central right. Customers are talking online about your brand at all hours of the day; and so they require round-the-clock convenience, a level of autonomy in how their experience is constructed, and the ability to apply intimate knowledge of their own problems to the task that no service representative can ever match. Royal Caribbean, for example, augments its human concierges with interactive kiosks on every deck of their new cruise ship ‘Allure of the Seas’. These kiosks answer two crucial and oft-asked questions: “What activities are happening now?” and “How the heck do I get back to my room?”

So, what hasn’t changed? Most centrally, great customer service – the kind that builds loyal customers, brand equity, and sustainable profits – relies on “anticipating what they need”. Anticipatory customer service can be accomplished by technological or human means, or both.

High-touch examples include the attentive doorman at the Ritz-Carlton – who notices the flush of your brow and brings you water before you even realise you are thirsty. Hybrid human/technology examples include my recent trip on Southwest Airlines: Landing very late in Denver for a connection I had clearly missed, I was astounded when a gate agent came to the plane and handed me an already-issued boarding pass for the very next plane out of the airport. Up-to-the minute, entirely technology-driven examples include Gmail warning that you forgot to add an attachment because you typed “attached is” in the body of the email, or Amazon letting you know that “people who considered item X ended up buying item Y.”

Providing the kind of customer service and customer experience that will generate loyalty and profits in our technologically altered world isn’t a fundamentally different proposition than it was a decade ago, but it’s faster. More transparent. More twitchy. Unforgiving. Viral. Magnified. But still designed by, implemented by, and dedicated to people. So, don’t throw the baby out with the digital bathwater. Now, more than ever, customers need a lot of careful babying.

The author is a customer service and customer loyalty keynote speaker, consultant and bestselling author. He may be reached at http://www.micahsolomon.com or by email: micah@micahsolomon.com.
Adopting to the Era of Stretched out Payments

For every business, trouble-free running is possible – only when there is a smooth flow of cash. However, today many suppliers to the manufacturing industries are facing the challenge of maintaining it, as delayed payments from the receiver companies are increasing their (suppliers’) costs of running businesses. What’s the way out? By Pinak Kulkarni

In the world of business today, ‘cash’, more than anytime else in the history, is the ‘king’. The state of flux of demand, the uncertainty of economy and its performance, increased stress on asset utilisation and risks associated with global trade – have resulted in an increased stress on the ‘supply chain’. It looks logical that the largest cost contributor to the organisational costs will lead to the initiative of preserving ‘cash’. The improved ‘cash’ flow – i.e., ‘working capital cycle’ naturally improves the position of your company as you need to borrow less money and return some cash to shareholders etc.

The ‘cash flow cycle’ of a business is pretty straightforward – you have accounts receivables (money that is to come into the business), accounts payable (money that you owe) and inventory (money locked in the system). It is fairly obvious that the ‘cash’ is easy to be released into the business – if the company works on reducing the days for receivables outstanding and / or prolongs the days for payable outstanding and/or reduces its inventory on hand.

As a business manager, you know which one of these options is the simplest one to work upon. It is to prolong the days for the payable outstanding – increase the credit period with your suppliers. It is now a new industry norm – where 45 days payment period is out, 90 to 100 days is in. Suppliers have to wait these many days to get payments from their customers. The GAME OF STRETCHING OUT PAYMENTS TO SUPPLIERS is the route adopted by one and everyone – right from the industry leaders to your small customers. These delayed payments will have some natural and some unintended impact on the ‘supply chain.’

Suppliers are under pressure to oblige customers – so that they absorb the additional cost of doing business. In economies like India, where the cost of funding is in excess of one per cent per month, that would mean three to four per cent additional cost to be absorbed by the supplier. It only means that the ‘supply chain initiatives’ of ‘cost’ (not price) optimisation will have to focus on the suppliers. The suppliers will have to take initiatives to improve their cost performance, which may include their process improvements, quality, true cost discovery, inventory reduction and delivery performance reliability.

In my opinion, it can be an initiative of the manufacturing company – as in the ‘supply chain’ of their own, end customers (the weakest link) are normally not the customer but the supplier base of the manufacturer is.

The author is a Sustainable Performance Improvement Consultant and the Founder of SPARK. He may be reached through http://www.think-spark.com/ or contacted via e-mail: pinak.k@think-spark.com.
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Bio-inspiration to Drive Engineering Design

Engineers at the University of California, San Diego, have found that the tail of a seahorse can be compressed to about half its size – before any permanent damage occurs. The tail’s exceptional flexibility is due to its structure, made up of bony, armoured plates, which slide past each other.

Researchers are now hoping to use a similar structure to create a flexible robotic arm – equipped with muscles made out of polymer, which could be used in medical devices, underwater exploration and unmanned bomb detection and detonation. The team of UC San Diego engineers is being led by Materials Science Professors Joanna McKittrick and Marc Meyers.

“The study of natural materials can lead to the creation of new and unique materials and structures – inspired by nature that are stronger, tougher, lighter and more flexible,” said McKittrick, a Professor of Materials Science at the Jacobs School of Engineering at UC San Diego.

McKittrick and Meyers had sought bio-inspiration by examining the armour of many other animals, including armadillo, alligators and the scales of various fish. This time, they were specifically looking for an animal that was flexible enough to develop a design for a robotic arm.

“The tail is the seahorse’s lifeline, because it allows the animal to anchor itself to corals or seaweed and hide from predators. But no one has looked at the seahorse’s tail and bones as a source of armour,” said Michael Porter, a Ph.D. student in Materials Science at the Jacobs School of Engineering.

Most of the seahorse’s predators, including sea turtles, crabs and birds, capture the animals by crushing them. Engineers wanted to see if the plates in the tail act as an armour. Researchers took segments from seahorses’ tails and compressed them from different angles. They found that the tail could be compressed by nearly 50 per cent of its original width before any permanent damage occurred. That’s because the connective tissue between the tail’s bony plates and the tail muscles bore most of the load from the displacement. Even when the tail was compressed by as much as 60 per cent, the seahorse’s spinal column was protected from permanent damage.

Magnetic Materials Used to Develop Memory

By using electric voltage instead of a flowing electric current, researchers from UCLA’s Henry Samueli School of Engineering and Applied Science have made major improvements to an ultra-fast, high-capacity class of computer memory known as magnetoresistive random access memory, or MRAM. The improved memory, which is called MeRAM or magnetoelectric random access memory, has great potential to be used in future memory chips for almost all electronic applications, including smart-phones, tablets, computers and microprocessors, as well as for data storage, like the solid-state disks used in computers and large data centres. MeRAM is up to 1,000 times more energy-efficient than current technologies.

MeRAM’s key advantage over existing technologies is that it combines extraordinary low energy with very high density, high-speed reading and writing times, and non-volatility — the ability to retain data when no power is applied, similar to hard disk drives and flash memory sticks, but MeRAM is much faster.

Currently, magnetic memory is based on a technology called Spin-Transfer Torque (STT), which uses the magnetic property of electrons — referred to as spin — with their charge. STT utilises an electric current to move electrons to write data into the memory. Yet while STT is superior in many respects to competing memory technologies, its electric current-based write mechanism still requires a certain amount of power, which means that it generates heat when data is written into it. The UCLA team has replaced STT’s electric current with voltage.
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Supertough, Strong Nanofibre – Now a Reality

In structural materials, conventional wisdom holds that strength comes at the expense of toughness. Strength refers to a material’s ability to carry a load. A material’s toughness is the amount of energy needed to break it; so the more a material dents, or deforms in some way, the less likely it is to break. A ceramic plate, for example, can carry dinner to the table, but shatters if dropped, because it lacks toughness. A rubber ball, on the other hand, is easily squished out of shape, but doesn’t break because it’s tough, not strong. Typically, strength and toughness are mutually exclusive.

A team of Material Engineers from University of Nebraska-Lincoln (UNL) has developed a structural nanofibre that is both strong and tough. The development has the potential to transform everything from airplanes and bridges to body armour and bicycles.

“Whatever is made of composites can benefit from our nanofibers. Our discovery adds a new material class to the very select current family of materials with demonstrated simultaneously high strength and toughness,” says the team’s leader, Y. Dzenis, McBroom Prof. of Mechanical and Materials Engineering and a Member of UNL’s Nebraska Center for Materials and Nanoscience.

The team has developed an exceptionally thin polyacrylonitrile nanofiber, a type of synthetic polymer related to acrylic, using a technique called electrospinning. The process involves applying high voltage to a polymer solution until a small jet of liquid ejects, resulting in a continuous length of nanofibre. They have discovered that by making the nanofibre thinner than had been done before, and it has not only become stronger, as per expectation, but also tougher.

Dzenis feels, the toughness comes from the nanofibers’ low crystallinity. In other words, it has many areas that are structurally unorganised. These amorphous regions allow the molecular chains to slip around more, giving them the ability to absorb more energy.

Most advanced fibers have fewer amorphous regions, so they break relatively easily. In an airplane, which uses many composite materials, an abrupt break could cause a catastrophic crash. To compensate, engineers use more material, which makes airplanes, and other products, heavier.

Manufacturing at Home

Low cost 3D printers have hit the mainstream market in full scale, and now they are one of the most talked about consumer gadgets. With the technology, many people are building custom computer cases, toys, art and even remote controlled cars and planes. Invent-A-Part, a rapid prototyping company specialising in high quality FDM (Fused Deposition Modeling) and PolyJet rapid prototyping services, has recently released the RigidBot 3D printer for just $355, finally making 3D printing affordable to the masses.
BOOSTING MANUFACTURING GROWTH

FDI  Σ  NMP

DMIC
Indian manufacturing sector has enormous growth potential, still it has been witnessing an unsatisfactory growth rate. Government of India has chalked out several plans to improve the scenario. Let us look into the present situation, some observers’ opinions and the steps being taken up...

By Saurabh Chandra
Design: Atul Deshmukh

The global economic turmoil has impacted the overall economy in general and industry in particular. This is quite evident from the deceleration witnessed in the performance of industrial sector in the recent past.

During 2011-12 industrial growth in terms of the Index of Industrial Production (IIP), released by the Central Statistics Office (CSO), showed a low growth of 2.9 per cent compared to 8.2 per cent growth registered in 2010-11. The moderation in the industrial growth, however had started in 2008-09. The IIP growth rate was 2.5 per cent in 2008-09, which improved slightly to 5.3 per cent in 2009-10 compared to the peak growth rate of 15.5 per cent achieved in the year 2007-08.

Manufacturing growth
During 2011-12, a low growth in manufacturing (3.0 pc) was a main reason for moderation in IIP growth. The cumulative growth of manufacturing sector was 1.0 per cent during April-October, 2012-13 compared to its 3.8 per cent growth during corresponding period of the previous year. Similar to the overall industrial growth, the reasons for moderation in the growth of manufacturing include global slowdown, moderation in domestic demand, hardening of interest rates etc.

Amongst the manufacturing goods, the moderation in its growth rate is largely accounted by the performance of capital goods and intermediate goods, which has been in the negative trajectory for most part of the year. Capital goods witnessed a sharp decline in growth during 2012-13 (April-October) with growth rate of -11.4 per cent. Items such as Boilers; Grinding Wheels; Cement Machinery; Sugar Machinery; Textile Machinery; Plastic Machinery including Moulding Machinery; Transformers (small); Earth Moving Machinery; Computers have shown a consistent negative growth.

Measures to boost manufacturing
The future trajectory of the Index of Industrial Production (IIP) depends largely on the revival of investment. Low economic activity due to weak investment sentiments and global slowdown is well reflected in National Accounts Statistics. Gross Fixed Capital Formation (GFCF) as a measure of addition in productive capacity of the economy grew at 5.5 per cent in 2011-12 compared to 7.5 per cent in 2010-11. The GFCF as a percent of GDP at 2004-05 prices moderated to 32.0 per cent in 2011-12 compared to 32.5 per cent in previous year. Gross Fixed Capital Formation grew at 4.1 per cent in the second quarter of 2012-13 against 0.7 per cent in the first quarter.

The government has been taking confidence building measures for improving the industrial climate and manufacturing in the country. Three important initiatives taken in this regard are announcement of National Manufacturing Policy (NMP), implementation of Delhi Mumbai Industrial Corridor (DMIC) Project and policy reforms to promote Foreign Direct Investment (FDI).

National Manufacturing Policy (NMP)
The National Manufacturing Policy (NMP) was approved by the government in October, 2011. The major objectives of the policy are for enhancing the share of manufacturing in GDP to 25 per cent and creating additional 100 million over a decade or so. Other quantitative and qualitative changes that are envisaged by the policy include creation of appropriate skill sets among the rural migrant and urban poor – to make growth inclusive; increasing domestic value addition and technological depth in
“The growth in developed western markets has slowed down; consequently a large number of global players are increasingly looking towards developing markets like India and China for their future growth. Countries like India and China not only offer a huge untapped domestic market but also have the advantage of keeping the manufacturing costs much lower.”

— V. Krishnamurthy
Chairman, National Manufacturing Competitiveness Council (NMCC)

The Policy also provides special focus to the industries that are employment intensive, those producing capital goods, those having strategic significance, small and medium enterprises, public sector enterprises besides industries where India enjoys a competitive advantage etc.

In addition, specific instruments have been conceptualised under NMP to achieve its stated objectives. Accordingly, the policy envisages among others - rationalisation and simplification of business regulations; simple and expeditious exit mechanism for closure of sick units while protecting labour interests; financial and institutional mechanisms for technology development, including green technologies; industrial training and skill upgradation measures; incentives for SMEs, clustering and aggregation support through National Investment and Manufacturing Zones (NIMZs), trade policy etc.

Promoting clustering and aggregation, especially through creation of NIMZs is a major policy instrument of NMP NIMZs – as key instruments to catalyse the growth of manufacturing are envisaged to be developed in the nature of green field industrial townships, benchmarked with the best manufacturing hubs in the world. The zones are expected to help in meeting the increasing demand for creating world class urban centres in India.

INDEX OF INDUSTRIAL PRODUCTION (SECTORAL), FOR THE MONTH OF FEBRUARY, 2013

<table>
<thead>
<tr>
<th>Month</th>
<th>Mining</th>
<th>Manufacturing</th>
<th>Electricity</th>
<th>General</th>
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<td></td>
<td>(141.57)</td>
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<td>135.0</td>
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<td>149.6</td>
<td>------</td>
<td>198.7</td>
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</tbody>
</table>

*Indices for Feb 2013 are quick estimates.
Indices for the months of Nov’12 and Jan’13 incorporate updated production data.
The General Index for the month of February 2013 stands at 176.2, which is 0.6 per cent higher as compared to the level in the month of February 2012. The cumulative growth for the period April-February 2012-13 over the corresponding period of the previous year stands at 0.9 per cent.

while absorbing surplus labour by providing them gainful employment opportunities. These NIMZs will seek to address the infrastructural bottleneck, which has been cited as a constraining factor for the growth of manufacturing. Ten NIMZs have been announced, eight of which are along the Delhi Mumbai Industrial Corridor (DMIC).

**DMIC project**
The Delhi - Mumbai Industrial Corridor (DMIC) Project is being implemented on both sides of the 1483 km long Western Dedicated Rail Freight Corridor between Dadri (UP) and JNPT (Navi Mumbai). The project seeks to create a strong economic base with a globally competitive environment and state-of-the-art infrastructure to activate local commerce, enhance investments and attain sustainable development. The DMIC Project covers six states, namely Uttar Pradesh, Haryana, Madhya Pradesh, Rajasthan, Gujarat and Maharashtra. The DMIC Development Corporation (DMICDC) was incorporated in January 2008 for project development, coordination and implementation of the numerous projects. Looking at the magnitude and diversity of the project, it is planned to be implemented in phases. Initially, eight industrial cities have been taken up for development.

So far the overall perspective plan for the entire DMIC region has been completed. The Master Planning for the Investment Regions and Industrial Areas, (taken up initially to be developed as new cities in Gujarat, Madhya Pradesh, Haryana, Rajasthan and Maharashtra) have been completed and that (Master Planning) in Uttar Pradesh has started. The state governments have initiated the process of obtaining land for the new industrial regions/areas as well as for the Early Bird Projects.

Environmental Impact Assessment (EIA) Studies have been initiated for five industrial cities. DMICDC had initiated development of Smart Communities or Eco-Cities that can contribute to improving the sustainability of the DMIC region. Japanese technology and expertise is being made available under collaboration with METI, Government of Japan for the Smart Community projects. Significant progress has been reported by DMICDC in the development of Smart Communities or Eco-Cities. Along with the planning of each city, preparation of feasibility studies for Early Bird Projects has been taken up on the recommendation of the state governments. These projects are in the sectors of water supply, transport connectivity, logistic hubs, mega industrial parks, knowledge cities etc.

As the Master Plans progressed, it was felt necessary and essential that new industrial cities must be created on the back of world class trunk infrastructure i.e., drainage, sewage, solid waste, water supply, internal roads. Without the trunk infrastructure development of PPP projects in greenfield cities was not feasible, and it was felt that this may lead to real estate development without trunk infrastructure and a developed backbone. Accordingly, the project was restructured in September, 2011 with an Implementation Fund of Rs.17,500 crore to be utilised over a period of five years – and an additional project development fund of Rs.1000 crore for project development. The land for the new industrial cities will be the contribution of the state government.

The ‘DMIC Project Implementation Fund,’ is a revolving fund, and has been set up as a trust. It will be a repository of Government of India financial assistance. The funds will flow from the trust to the Special Purpose Vehicles (SPVs), and the trust will receive upside from bidding and monetisation of land values. The trust will also provide resources to DMICDC for project development activities. The Japanese Government has also announced their financial support for DMIC.

“It is interesting to note that Indian business leaders with the accelerator mindset target big growth and accept risk. They set high ambition and pursue them with a strategy which is a big picture vision driven by colossal dreams.”

—Dr. Arindam Bhattacharya
Managing Director, BCG India
“America and Europe have continued to watch emerging markets mature and become formidable competitors over the past decade. While the UK is currently still performing very well against its global competitors, it will struggle to keep up the rapid pace of innovation, development, growth and investment expected from emerging countries such as Brazil and India.”

—David Raistrick, UK Manufacturing Leader, Deloitte

Foreign Direct Investment (FDI) policy
Domestic savings in India have not been adequate to meet the investment requirement of the country. The ratio of domestic savings to GDP has generally been lower than the ratio of GCF to GDP. During 2008-11 share of Gross Domestic Capital Formation in the GDP was 35.3 per cent, whereas share of domestic saving during the period was only 32.7 per cent. Capital inflow from other countries, particularly of an investment nature, therefore adds to the domestic investment. It also brings in new management practices and technologies, besides subsequently contributing to enhancement of the export potential/earning of the country.

India’s attractiveness as an investment destination has to be seen in the context of major economic reforms embarked upon by the Government of India since mid-1990s, the objective being the achievement of a greater level of integration with the world economy – and the emergence of India as a significant player in the globalisation process. As a part of this process, the FDI policy is being liberalised progressively on an ongoing basis – in order to allow FDI in more industries under the automatic route. Some recent changes in the FDI policy, besides consolidation of the policy into a single document include FDI in Multi-Brand Retail Trading up to 51 per cent – subject to specified conditions; increasing FDI limit to 100 per cent in Single-Brand Retail Trading; FDI up to 49 per cent in Civil Aviation and Power Exchanges; FDI up to 49 per cent in Broadcasting sector under the automatic route, and FDI beyond 49 per cent and up to 74 per cent under the government route – both for Teleports and Mobile TV. The advantages of India as an investment destination rest upon strong fundamentals, which include a large and growing market; world-class scientific, technical and managerial manpower; cost effective and highly skilled labour; abundant natural resources; a large English speaking population; independent judiciary etc. This is now recognised by a number of global investors. Ongoing initiatives, such as further simplification of rules and regulations, improvements in infrastructure are expected to provide the necessary impetus to increase FDI inflows in future.

The government continues to make efforts to increase economic cooperation with the developing as well as developed countries through different means – such as Joint Commissions/Joint Committees, other bilateral channels like interaction with the delegations visiting the country and organising visits abroad for discussions on issues of mutual interest and business/ investment meets between Indian and foreign entrepreneurs to stimulate foreign investment into India. It has announced the setting up of ‘Invest India,’ – a joint venture company between the Department of Industrial Policy & Promotion and FICCI, as a not-for-profit, single window facilitator, for prospective overseas investors and to act as a structured mechanism to attract investment.

In addition, the government has initiated implementation of the e-Biz Project, a Mission Mode Project under the National e-Governance Plan (NeGP) for promoting an online single window – at the national level for business users. The objectives of setting up of the e-Biz Portal are to provide a number of services to business users, covering the entire life cycle on their operation. The project aims at enhancing India’s business competitiveness through a service oriented, event-driven G2B interaction.
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How is the automation and instrumentation segment shaping up in India?

In the process control and industrial automation space, approximately 75 to 80% of the market share is with large MNCs. As it happens globally, 20% market is taken up by small size niche providers. So, we have a few large MNC customers and a number of small Indian manufacturers. On the instrumentation side, it is mostly the global MNCs that control most of the market.

Opportunities for the industrial automation and instrumentation sector are big – as India has barely scratched the surface. The market is easily growing at 10 to 12% CAGR, and the trend will continue for the next few years – at almost double the rate of GDP.

Challenges for the Indian manufacturers are in terms of R&D and manufacturing scale. How can they innovate, provide a robust reliable cost-optimised solution for the Indian market? That is the biggest challenge.
Indian manufacturers need to think – how they will grow their market shares against existing large MNCs, which are already established with channels, design and manufacturing in India.

Q How is your preparation to address those challenges?
A In India, Industrial and Instrumentation (I&I) is a key segment for us, as it constitutes over 80% of our India sales revenue today. However, other segments are also growing fast.

This has been primarily due to the indigenous nature of the India Industrial business that encompasses ‘process control, energy metering, UPS/inverter market’ – as well as ‘Indian military and space’ – where ADI has a leading market share. There is a large segment of customers in the West Zone of India in the ‘process control and factory automation’ space. On the instrumentation side, we’ve only a handful of customers in India.

We find, Indian arms of large multinational companies and Indian design houses are doing good amount of system designs in India – besides the Indian manufacturers. Engineers have gone up the value chain – doing just software/IT to embedded software, to sustenance engineering and design support, to conceptualising and designing many of the systems and sub-systems themselves.

To help Indian manufacturers go to market faster, we are doing more ready solutions in form of reference designs and ‘circuits from the labs’ readily available on our website. We are doing regular and targeted webinars and seminars to educate our customers on the technology and solutions available from us in these domains. We are also doing matchmaking between the customers and Indian Design Houses, if they want to partner for quick technology development to go to market faster.

Q Which mfg segment has the maximum potential to absorb technologies?
A I will probably answer it in a slightly different way.

The above figure shows the various components of the ‘Industrial automation and control automation systems. The field devices are a series of sensors and actuators controlled by intelligent logic controllers. The control network consists of DCS/SCADA, HMI and PLC/PAC over a network run over industrial ethernet, RS-485, CAN, ModBus or other protocols. The corporate network is dominated by 10/100 or Gigabit Ethernet network and connected by the servers and PCs.

‘Industrial Automation and Control’ industry is characterised by smaller volumes and a huge variety of applications servicing diverse and varied needs. Hence, automation companies customise products for specific applications and end user requirements. The Innovation hence comes more from targeted applications – and less so from the application of the hottest and the newest technologies unlike in consumer devices.

The one exception to that is on the sensor and the Human Machine Interface (HMI) side, where significant innovations and developments have taken place and continue to do so. Wide ranging sensors for measurements from companies like Analog Devices, as well as touch screen interfaces are bringing opportunities in this market. Another unique characteristic of such automation is the decades of reliability and shelf life of the equipment, which the resultant semiconductor parts have to endure. Automating a process or the factories is very expensive, and once done it stays for several years. Hence, a highly configurable and flexible system is a must besides the reliability.

Q What do you suggest to the Indian manufacturers?
A My suggestions are:

- Pick niche and underserved markets, not serviced by global MNCs, and expand your market share to compete against the global MNCs.
- Focus on cost and frugal innovation. Possibly partner with Indian design houses who are already serving global clients.
- To increase scale, look at adjacencies both in terms of other emerging markets and enhancing product portfolio.
- Be a trusted partner to your customer with world class reliability and support.
Reducing Design and Operation Cost

GlaxoSmithKline (GSK) has an estimated seven per cent share of the world’s pharmaceutical market. Let us see how the company successfully mitigated the challenge of integrating islands of information that slowed down its workflow.

A few years ago, GlaxoSmithKline (GSK) used a variety of applications for its engineering data, drawings and documentation, including AutoManager Workflow for drawing management, Docuware for document management, and a custom instrument index on a Microsoft SQL Server database. Data resided on a number of standalone, unconnected applications, some of which were obsolete or unsupported.

GSK is a global pharmaceutical company. GSK Cork is a highly automated manufacturing facility located in Curraheen, County Cork, Ireland, and includes a research and development pilot plant. It is the primary production site for a number of the company’s best-selling products.

The challenge

“Our islands of information slowed down the workflow. Even minor changes meant that numerous...
systems had to be updated with the same data. This could lead to omissions and unreliable data, and additional work for engineering personnel,” said Ed Collins, Integrated Engineering System (IES) Project Sponsor at GSK Cork.

Although some of the company’s engineering consultants were using intelligent systems, it was not possible to take advantage of this intelligence after the transfer from the project phase to the operational phase of the plant life cycle.

GSK’s decision
GSK realised that its (then) current systems were not working. It launched a plan to implement a world-class, lean, and cost-effective integrated engineering system that would be used at all stages of the plant life cycle. The details of the target to overcome challenges included:

• Implementation of a lean and cost-effective integrated engineering system
• Use of efficient workflows that could create reliable data
• Supporting intelligent data through the entire life cycle
• Building on well-established applications with a path for growth

Finding out a solution
After a thorough search, GSK Cork chose the Intergraph SmartPlant Enterprise solution suite, beginning with three applications:

SmartPlant Foundation, SmartPlant Instrumentation, and SmartPlant P&ID. The company arrived at the decision based on a number of factors, which included:

• Intergraph offered a strategic solution that matched the company’s strategy
• Modularised solutions provided flexibility for future growth
• SmartPlant Enterprise could be accessed by a large number of users

The Intergraph solution suite was already being used by some of GSK Cork’s technical and engineering consultants.

Starting implementation
To begin this implementation, Intergraph and the GSK Cork team migrated all instrument data and drawings from legacy systems to SmartPlant Instrumentation.

The team extracted non-intelligent AutoCAD drawings from AutoManager Workflow and loaded them into SmartPlant Foundation. Finally, they performed a phased migration of vendor documentation from the company’s legacy system.

Initially, SmartPlant Enterprise implementation focused on Building 35 of the Cork plant. Among other things, this involved generating 900 intelligent loops and migrating 34 AutoCAD P&IDs into SmartPlant P&ID. This building is fully intelligent and integrated.

Later scenario
SmartPlant Enterprise is now used across GSK Cork. All groups on-site use the site drawing management functionality. This delivers access to all plant drawings for the entire Currafinny site. The solution also links intelligent data as well for Building 35 and promotes smart association with vendor documentation as well as applicable data and document sources. This enables easier, more streamlined access to drawings and relevant data.

For site instrumentation management, project engineers and Engineering Service Providers (ESPs) use the solution to comply with instrument numbering standards. They can generate smart loops and associated smart instrumentation deliverables, auto-generated from the integrated system, that enables efficiency gains and quality of data across deliverables.

SmartPlant Enterprise supports vendor document management. Project engineers, maintenance personnel, and ESPs can view drawings and vendor documents. Project engineers and ESPs benefit from the management of change control. Audit logs are automatically maintained for all changes. “With SmartPlant Enterprise, we enjoy accurate P&ID generation. In addition, engineers and technicians save time – thanks to improved access to accurate drawings, data, and documents,” said Collins.

Intergraph provided comprehensive implementation services to help GSK Cork make the most of its software investment. “We were very happy with the technical competence of Intergraph’s personnel working with us on the project,” added Collins.

<table>
<thead>
<tr>
<th>Time saving benefits of smartplant enterprise</th>
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<tbody>
<tr>
<td>Instrument information loaded directly into instrumentation and electrical system</td>
</tr>
<tr>
<td>Instrument data within system populates instrument specification sheets</td>
</tr>
<tr>
<td>Virtual wiring of loops on system</td>
</tr>
<tr>
<td>Loop drawings generated automatically from within the wiring module</td>
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<tr>
<td>P&amp;ID electronic signoff and approval using workflow on system</td>
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</tbody>
</table>
In today’s global-market, manufacturing companies often strive to create customer-specific and market-driven products. Offering one product with one configuration might have helped scale manufacturing and deployment 100 years ago. To stay competitive, manufacturers now need to offer customers greater choice and enable the delivery of more targeted products to key market segments.

Product diversity is a requirement, but achieving diversity with ‘scale’ delivering variety with efficiency – is the key to success. This strategy can be a powerful growth driver, but typically comes with increased product complexity. To manage this complexity, companies need a product-platform approach.

A product-platform approach can enable companies to take advantage of the following opportunities:

- Control product costs (design, development and manufacturing costs) by standardising required components
- Capitalise on new market opportunities with price premiums for tailored and custom products.

In this era of rapid technical advancement and ever growing competition, as the customer’s taste change very fast – and willingness to enjoy further value addition is a continuous process, companies in any segment need to offer variety of products at a high speed. Let us see how a product-platform approach helps in this process...

By Matthew Sheridan
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• Synchronise product configurations by sales with engineering-defined options – so the right product is configured for the right market.

While manufacturers can agree on the value of a product platform approach, there are various ways to realise that value. In many organisations, platforms are managed in a complex system of spreadsheets, documents and home-grown systems. The array of spreadsheets and documents can become difficult to manage and lead to inefficiency and losses in platform benefit. Too often, products are introduced late into the market or fail to even meet customer requirements. The outcome may be a low level of customer satisfaction with a new product introduction, or perhaps worse, leaving that market opportunity to be realised by a competitor. The consequences of a poorly managed product family can have critical implications to a manufacturing company’s growth and profitability.

To fully realise the market opportunity and take advantage of the best design and engineering a company has created, a consistent approach to managing core product platform information is required. This means discrete manufacturers must be able to connect the required product configurations for each geographical market with the correct engineering Bills of Material (BoM) and CAD geometry, ensuring that manufacturing – wherever it happens to take place – is producing the right product for the right market.

**Research highlights the benefits of a product platform approach**

Evidence to support this consistent platform approach along with examples of the resulting benefits can be found in the recent Frost & Sullivan research study, “Strategic Analysis of Platform Strategies of Major Heavy-duty Truck Manufacturers.” According to the study, the make-up and course of the heavy-duty truck market has changed dramatically over the last 10 years. Frost & Sullivan researchers expect that over 50 per cent of the top 12 global OEMs will increase the number of platforms by 2018, resulting in an average of one in every three trucks built with a platform approach.

By Frost & Sullivan’s definition, a global truck platform is, “A single set of common design, engineering, and manufacturing elements shared between different products/brands/marquees within the same organisation or between organisations.”

The Frost & Sullivan research shows, “Markets considered as an afterthought a few decades ago are now dictating the course of global commercial vehicle demand and the industry’s growth.” As these growth strategies emerge, a consistent global platform approach has become a major requirement for any OEM.

Further evidence that the approach the Heavy Truck industry is taking is the right one (i.e., promoting global product development and growth), can be found in a recent release by IBISWorld. The release states that the global heavy duty truck industry has ‘managed to post average annual growth in the five years since 2007, and that growth is expected to continue through 2017.’

When analysing the heavy-truck industry, Frost & Sullivan discovered that global platform development and execution may appear to be a unique strategy from the triad OEMs (United States, European Union and Japan) to penetrate growth markets, reduce manufacturing costs and complexity in domestic and global markets, and enhance margins. Yet, they go on to highlighting that this strategy is also being pursued by Brazil, Russia, India and China (BRIC) OEMs to develop truck models for both developing and developed markets. Irrespective, Frost & Sullivan forecasts that global heavy-duty truck production from global truck platforms will reach approximately 612,000 units by 2018, nearly double the global platform-based truck production levels in 2011.

In their research, Frost and Sullivan focus on specific benefits achieved by Scania AB’s platform approach:
• Estimated 50 per cent parts reduction achieved inter-nally, compared to reduction achieved by non-modular approach
• 30 to 50 per cent reduction in design and development costs
• 10 per cent manufacturing cost reduction
• 30 per cent reduction in sales and service expenses

There is no question that strategies and benefits of a consistent global platform strategy can apply to other companies. In fact, many companies beyond the
Companies responding to the growing challenges of product diversity

The Volkswagen Group: Alongside the global heavy-truck industry, global automotive OEMs have also sought a strategy to address challenges in global product development. The Volkswagen Group, makers of VW, Audi, Porsche, and other vehicles, is one of the world’s most profitable automakers, largely due to its global platform strategy.

In an interview with German automotive trade publication Automobil Industrie, Michael Macht, Member of the Board of Management of Volkswagen AG (responsible for production), said he expected cost savings of up to 20 per cent and assembly-time reductions of up to 30 per cent with the introduction of Volkswagen’s new MQB platform. In total, the Volkswagen Group expects standardisation to cut product development costs by 20 per cent, parts costs by another 20 per cent and production time by 30 per cent. Furthermore, analysts at Société Générale believe the annual savings could reach $3 billion.

KHS GmbH: KHS Filling and Packaging is a worldwide manufacturer of machines that serve the beverage, food, and non-food industries. Producing many variations of refillable and non-refillable PET and glass bottles or cans; be it for mineral water, beer or sparkling wine, KHS is able to control these product variants and satisfy customer need by using a consistent approach to their product platform strategy.

By implementing a modular product architecture in a global product development environment, KHS is able to organise and map a customer’s requested application into a pre-defined set of capabilities, which in turn can be mapped to specific design options to especially overcome variants in the filling stage. As a result, KHS is able to address specific customer requests – and at the same time reduce process costs and cycle times – proving their overall strategy supports consistency in dealing with variations and complexities.

WinWind LTD: WinwinD, a Finnish based company, lives and breathes wind energy. The company has been successfully managing business growth within the wind turbine industry since 2002. Its main drivers for moving to a consistent platform approach were to manage product quality, change, and growth. In a recent interview, Jonas Hagner, ICT Director at WinwinD, said the company doesn’t get many second chances when building a wind turbine. With its product platform approach, WinwinD has successfully produced a high class product, and has expanded its business at the same time.

Exploring the best practices of a product platform strategy

With the opportunities and benefits outlined for a global product development environment, it is easy to understand why many manufacturing companies are investigating the best approach to managing a product platform strategy within their organisation. The PTC Global Platforms Solution helps companies efficiently meet the varied requirements of market, region, and customer-specific products without drowning in complexity.

This solution allows you to take a consistent approach to platform information by taking into account the engineering Bill of Materials (BoM), the platform logic, all the various configurations, the variant offerings, and the resultant CAD geometry.

With this level of control, companies can achieve component reuse, module standardisation, process standardisation, validation of platforms and variants (cost, weight, and interference), configuration management, and change management across the entire platform definition. Managing product platforms in a consistent manner enables companies to achieve product diversity with scale, resulting in cost saving for their organisation and their customers.
Decentralised system intelligence, a high degree of flexibility, easy system engineering and commissioning for machines – in the production operations of the future, networking will be everywhere, as the real and virtual worlds merge together. Under the banner of ‘Industry 4.0,’ Festo’s new focus is on technological developments with expansion of reach to social context.

Fundamental changes are taking place in the world of production and a lot is being discussed under the heading of ‘Industry 4.0,’ as the recent Hanover Fair had taken up this theme under the slogan of ‘Integrated Industry.’ The forecast is that modern information and communication technologies will in the future merge with classical industrial processes. “We are meeting these changes by working together with partners from industry and science to deal with the associated challenges and play an active role in shaping new technologies,” says Professor Dr. Peter Post, Head of Research.
and Programme Strategy at Festo AG. The company considers the development of production systems holistically and from various different perspectives, paying attention not only to technology – but also other factors such as cooperation between human beings and machines and questions of training.

A glimpse of the future
A particularly important aspect for Festo is to look into the future. With its Bionics projects and Future Concepts, the company is researching into, and constantly discovering new ideas for future production environments. Models in nature inspire Festo developers to come up with unusual solutions. Once again at this year’s Hanover Fair, the company made presentations on the new projects dealing with major topics ranging from function integration to adaptive systems and intuitively operated machines.

Intelligent components
The basis for the production systems of the future is intelligent components - discrete autonomously operating mechatronic modules. There will of course continue to be evolutionary further development in centralised factory control systems, but at the same time there will be ever more frequent use of the principle of decentralised self-organisation of components – to allow these to execute tasks assigned by a higher-level control system. In order to make networked overall systems of this kind possible, Festo is undertaking intensive further development of technologies such as precision engineering and microsystems technology.

Cooperation between human beings and machines
However, Festo does not focus on technology alone. One of the core questions with which the company is concerned is the cooperation between human beings and machines. For example, the future robots will actively assist human workers in manual activities. Humans are highly flexible and can master a large number of tasks within a very short time.

Present-day machines, on the other hand, are often static – but are able to work quickly, precisely and powerfully. The challenge is to combine these two worlds: technology must be able in the future to adjust to changing parameters and to human interventions. Examples of this development even today are Festo’s prize-winning Bionic Handling Assistant (German Future Prize 2010) and ExoHand (nominated for Hermes Award 2012).

Future-oriented teaching in a training factory to develop skilled personnel
The company’s activities are not confined to production operations – it is also concerned with the training of the new generation of skilled personnel for the production environments of the future. With turnkey training factories and laboratory solutions, Festo Didactic offers the necessary tools for future-oriented instruction in mechatronics and automation technology. At the Hanover Fair, this was clearly demonstrated by a training factory – based on the Festo Modular Production System (MPS). This included topics of current interest such as RFID technology, intelligent networking, energy efficiency and condition monitoring.

Development progresses continuously
Machines, components and workpieces will in the future be closely networked and will communicate with one another. Many of the necessary functions are already in use in automation technology today, for example vacuum grippers with diagnostic functions or valve terminals with integrated programmable logic controllers, while others are currently still at the research stage.

Professor Post emphasises: “Industry 4.0’ for us is a highly interdisciplinary future project on which we are working continuously.” •
Energy Efficiency Depends on the Application

Plant operators, who want to make their production facilities energy-efficient, need to know which technology is most appropriate for their respective applications. Prof. Peter Post, Head of Research at Festo AG & Co KG, explains P. K. Chatterjee, how to select the right drive for an application. Excerpts...

In a power starved country like India, generally, the focus is towards low power consumption. What is the right way to select the correct drive for an application?

Prof. Peter Post: Any industrial application has its own specific requirements regarding technical criteria such as speed, load capacity, power to weight ratio, accuracy, control behaviour, rigidity under load, efficiency and robustness, as well as economic criteria such as acquisition costs (purchase price, costs of installation and commissioning) and operating costs (maintenance, service life, energy costs).

Energy efficiency depends on the application. This must be clearly defined before a user chooses the drive technology – electric or pneumatic or a mixture of both.

Technologies can be compared only on the basis of the Total Costs of Ownership (TCO). TCO take into account both the acquisition costs as well as the energy costs.

How should a user proceed to select the most advantageous drive solution?

Prof. Post: Energy efficiency is totally dependent on the purpose for which the drive is used. Measurements reveal some notable differences: For a simple motion task, an electric drive often needs less energy, depending on the cycle time and the stroke length. If the application requires a holding force, pneumatics is clearly at an advantage.

However, the level of process force and the duration of the operation decide which technology is more efficient. In this comparison, motions are performed from point A to point B. These motions can easily be performed in all cases by pneumatic drives. If, on the other hand, an application requires free and flexible positioning, electric drives are more advantageous.

What can simulation tools contribute in this process?

Prof. Post: Simulation tools can assist in the planning, design and operation of facilities – including the electrical and pneumatic energy supply chain.

Well thought-out drive component design has potential to offer huge savings – that may go up to 70 per cent.

By means of a simulation tool the properties of technical systems, for example dynamic or static, can be simulated and analysed. Thus, the behaviour of a drive system in terms of its energy consumption can be predicted, and the most suitable component for a particular application can be determined. Festo supports its customers with several such tools.

What’s your suggestion to the Indian manufacturers as far as buying an optimised drive is concerned?

Prof. Post: Take advice from suppliers who have an overview of the requirements of the entire system. Energy efficiency in automation is dependent on the industrial application – that’s the same all over the world.
I don't believe in waiting for opportunities

I believe in creating them.

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Strengthening SAP Transactions

Although migration of the SAP ERP application onto a new platform was not an easy task, IBM’s team managed to offer a seamless migration – when Page Industries needed it to restore their business operations.

With the opening up of the economy in India in the 1990s, people were exposed to a larger variety of retail products than ever before. Formerly, innerwear was a low involvement category for consumers, and there was no organised innerwear retailing brand in India. Bangalore-based Page Industries had identified this need and introduced their products. It is the exclusive licensees of JOCKEY International (USA) for the manufacture and distribution of the JOCKEY brand innerwear and leisurewear in India, Sri Lanka, Bangladesh, Nepal and the UAE. The public limited company employs over 13,000 staff,
and has manufacturing operations spread over eight plants in Bangalore.

**The challenge**

In April 2009, to address the growing needs of the company and streamline operations, Page Industries implemented SAP Enterprise Resource Planning (ERP) solutions. The existing technical environment served the company’s needs until 2010.

This environment became constricting as the company grew – and it began to face problems including reduced operating speeds and response times. Especially, during month ends and critical billing cycles, these issues proved to be challenging and created dissatisfaction among top management and end users.

In February 2010, a major system crash – followed by the inability of the failover system to function led to disruption of business resulting in inefficiencies.

**Proposal for betterment**

The technical team at IBM undertook a comprehensive review of the existing infrastructure including understanding of the CPU and memory utilisation. With the help of their in-house SAP insight manager, the team captured the system workflow to drill down further into application level details.

This gave the client a neat analysis of which modules were causing memory leaks and system failures. In addition, the IBM team was able to pinpoint bottlenecks in the existing SAP architecture.

IBM proposed POWER6, POWER7 and the install base. POWER7 systems deliver unprecedented performance for both transactional and throughput computing for UNIX, IBM i and Linux applications – with up to four times the performance and workload consolidation capacity, and three times the performance per watt of POWER6 processor-based systems.

**Migration to a new platform**

Migration of the SAP ERP application onto a new platform was no trivial task. IBM’s industry benchmarked best practices and expert SAP migration team came on board – and completed a seamless process migration.

The new infrastructure included two POWER7 710 boxes and a DS5020 storage system in the new primary datacenter. Page made a strategic decision to implement DR, and IBM supported Page in fulfilling the requirements with P710 and storage. For this, the team installed a POWER7 710 server, which would serve as the failback system at an alternate site.

The entire project, starting from the initial analysis and client buy-in up to the server set up, configuration and phased migration was spread across seven months. The team, keeping in mind the importance of ‘business-as-usual’, completed the migration in phased downtimes in non-working hours and ensured that there was no disruption to the business.

**Business benefits**

The scalable solution’s performance proved to be outstanding. The client is currently using around 25-30 per cent of the total system bandwidth for production. Operating speeds and response times were enhanced. The SAP system is stable and providing good performance to manage Page Industries’ SAP transactions.
L&T wanted to illuminate their plant near Surat – with international standard and ensure best comfort for the working personnel. Philips Lighting took up the challenge, and delivered a satisfactory lighting solution for the plant. Here is a brief account of the project.

After setting up a world class facility for steel and heavy forging to develop steel for nuclear reactors near Surat in Gujarat, L&T was looking out for a lighting partner. Management of the company always wanted a clean and well lighted plant for the benefit of its people working late at night. It was also looking at a plant, which could compete with the modern international standards - as most of the plants’ produce was dedicated primarily towards exports.

The company wanted a leader in the segment as a reliable partner, who could supply modern advanced technology with variety and energy efficient products. Finally, L&T selected Philips
Lighting, and Philips installed energy efficient lighting solutions at their plant.

**Challenges faced by Philips Lighting**

- The plant spanned over a huge 700 acres of land with the largest floor area of about 30,000 sq. feet.
- The requirement was to create a lighting system of international standards.
- It had to create an ease for the workers working during the night hours.
- It was necessary to reduce the number of luminaries, which were mounted at the height of 43 mtrs.

**Solution and execution**

Philips targeted to produce energy efficient lighting with minimum glare, better uniformity and good lux level.

Philips team started working on the project 6 to 8 months prior to the order and execution. As the lighting was installed before the plant got functional, it didn’t affect the normal functioning of the operations.

Philips team worked on an altogether different concept of combination of Highbays & Floodlights and proposed a mix of energy efficient LED comprising of Power Balance, sleek aesthetics and good lighting level – and conventional lighting solutions including 2x400 watts asymmetric floodlights, 400 watts Highbay fixtures with SON gear. The Highbays and floodlights were mounted on side columns within an indoor shed. The other areas of shop were lighted by the clusters of light fixtures in a unique design, which allows a control over 10-12 light fixtures. The asymmetric floodlights offer outstanding glare suppression with the use of high-grade asymmetric optics, accurate beam control and uniform light distribution, and those were placed horizontally.

The area of melting bay was illuminated with a cluster of floodlights in a circular manner at a height of 42 metres – to achieve the desired lux levels. The high pressure mercury and metal halide lamps with a choice of reflectors were used to suit the specific beam requirements.

**Results and L&T’s opinion on the solutions**

The lighting solutions provided have uniform lux levels, reduced maintenance cost and significantly increased productivity.

- The LED lighting of the administration building has won L&T platinum rating.
- The lighting solutions provided by Philips included glare free bulbs, which work wonderfully in the plant – as the glare doesn’t obstruct the vision of workers while they are on job.
- Lighting simulation at shop floors, lighting prodding at various heights and cluster lighting have been possible.

“We wanted to use best products for our new plant at Hazira including best lighting products. Philips partnered with us at various stages of this project through lighting simulations. The company is known for its quality products, and we are happy that we chose them for meeting our lighting needs,” says R. G. Kulkarni, CEO, L&T Special Steel and Heavy Forging.
Seventy per cent of companies believe that climate change has the potential to significantly affect their revenue, a risk which is intensified by a chasm between the sustainable business practices of multinational corporations and their suppliers – reports a study conducted on 6000 suppliers on behalf of 52 companies.
In 2012, the Carbon Disclosure Project (CDP) sent its fifth annual information request for member companies and their suppliers. CDP has come out with its report this year, which reveals: companies that responded (2415 organisations, including 52 members) indicated that they are more aware than ever of the considerable risks that climate change poses to their global supply chains (SCs). Growing percentages of respondents are making investments to reduce emissions and drive cost savings, though a notable capability gap exists between the best-performing CDP Supply Chain members (52) and their suppliers.

In addition, companies are increasingly aware of the potential business value that can be created through more sustainable supply chains – from new products to premium pricing to improved brand value to better awareness of consumer trends. Key findings of the study are:

**Risks from climate change are greater than ever**
The business continuity risk to the global corporate supply chain posed by climate change is clear. Seventy per cent of the respondents identify a current or future risk related to climate change – risks with a potential to significantly affect business or revenue. More than half of the supply chain risks (identified due to drought and precipitation extremes) are already affecting respondents’ operations or are expected to have an effect within the next five years.

**Performance gap**
The Q&A results affirm a persistent gap between CDP Supply Chain members and their suppliers – when it comes to sustainable supply chain performance. Only 38 per cent of suppliers, compared with 92 per cent of CDP Supply Chain members, report having a target for emissions reduction. The percentage of members investing in emissions reductions initiatives is 69 per cent; by contrast only 27 per cent of responding suppliers invest in such initiatives.

Perhaps not surprisingly, the results being achieved differ greatly; 63 per cent of members report year-on-year emissions reductions – while only twenty nine per cent of suppliers indicate such an achievement. Seventy three per cent of members report monetary savings from emission reduction activities compared with only twenty nine per cent of suppliers.

The twenty nine per cent of suppliers that have reduced their emissions have saved some $13.7bn as a result. If the remaining proportion of suppliers were to achieve reductions at that rate, this implies aggregate potential savings of all 2,363 suppliers could reach three times that figure.

**Leading companies are investing and they are making a difference**
Compared with 2011 figures, there is an increase in the proportion of suppliers realising benefits in areas of both monetary savings and emissions reductions. For example, the proportion of suppliers reporting emissions reductions has increased from 19 per cent in 2011 to 29 per cent in 2012.

Engaging effectively with suppliers is characteristic of supply chain sustainability leaders. Although only 42 per cent of suppliers receiving one invitation report physical risks related to climate change, the percentage is above 67 per cent for those receiving three or more invitations. This suggests that as more members reach out to each supplier, the supplier’s performance and awareness of climate change risk improves significantly.

Risk identification, which is one of the key factors, is spurring investments in emission reductions activities. Regulations do not appear to be the primary driver here, but rather concerns about business continuity based on a growing awareness of physical risks and customer demands.
Of the total number of respondents investing in emission reductions initiatives, 73 per cent say they feel that climate change presents a physical risk to their operations – while just 13 per cent identify regulation as a sole driver of risk.

**Sustainability is creating additional business value**

There is a stronger business case than ever before for supply chain sustainability. Business value manifesting itself in the following ways:

- This year’s respondents are realising business value through multiple areas such as operational efficiency, emissions reductions, product and service innovation and premium pricing for low-carbon products. Better integration of climate change strategy with overall business strategy is another success factor: among the respondents that integrate climate change strategy with business strategy, 41 per cent report year-on-year emissions reductions compared with 33 per cent who reported such reductions in 2011.

Among responding CDP members, 43 per cent reported emissions reductions in 2011; in 2012, that number rises to 63 per cent. Similarly, 39 per cent of members reported monetary savings from emissions reductions activities in 2011; in 2012, that number grows to 73 per cent.

- Leveraging reputation through sustainability credentials and increasing a company’s awareness of consumer behaviour related to sustainability are identified by respondents as top opportunities for business value creation this year. Respondents identify ‘changing consumer behaviours’ and ‘reputation’ as the top two opportunities related to climate change that can increase intangible business value. The percentage of respondents identifying ‘changing consumer behaviour’ as a key driver of intangible value-generating opportunities from climate change has risen from 17 to 23 per cent, while those identifying ‘reputation’ has increased from 16 to 19 per cent.

**Requirements to achieve leadership position**

Making investments in sustainable supply chains is important, but it must also be accompanied by efforts to improve capabilities in several areas: the ability to manage data and measure progress; to embed sustainability in day-to-day processes; and to manage multiple parts of the organisation more effectively. Sound performance measurement and effective decision making depends on high quality data. Good management practices help reduce emissions, improve operational efficiency and raise revenue-generating potential.

Common data collection forums like CDP Supply Chain help in reducing data redundancy, lowering data management costs and improving risk management capabilities. From a process perspective, interventions such as supplier engagement, cross-functional collaboration and communications are increasingly important. Finally, companies are discovering that they can benefit if traditional approaches to governance are accompanied by activities to build sponsorship among key executives and manage change across all affected stakeholders.

As CDP respondents look to the future, they should be aware of the importance both of protecting against risk and of driving value for their businesses. The risks posed by climate change to business operations and continuity are very real, and supply chain professionals have an important role to play in mitigating those risks. At the same time, sustainability in the supply chain also provides a lens to identify opportunities for revenue generating innovations.
Sustainability is a Journey

A sustainability report should be a mirror that reflects the systems and processes that are embedded into the organisational DNA.

Frost & Sullivan (F&S) concluded its 4th edition of the ‘Green Manufacturing Excellence Summit and Awards (GMEA), recently in Mumbai. Its mission through the GMEA was to educate organisations about the need of ‘Sustainable Development’, to assist in their sustainability journey and motivate those – who have inched ahead of others by recognising their efforts. The day, which started with the summit, provided a platform for showcasing some of the best practices in sustainable manufacturing from diverse manufacturing industries that F&S assessed for Green Manufacturing Excellence Awards. It was a forum for deliberations and sharing of thought and experiences by industry stalwarts, who have been pioneers in the field of sustainability. The focus was on the strategic aspects related to sustainability as well as the mechanism for implementing the ‘green strategy’.

One of the focus areas for manufacturing industries today is taking sustainability to their supply chains. Nitin Kalothia, Director, Manufacturing & Process Consulting Practice, F&S, said, “Finalising the boundary in the supply chain and understanding supply chain risks are the starting steps towards this journey. So far, companies have focused on improving supply chain efficiency and reliability with respect to cost, quality, and delivery. But, now they have to focus on environmental and the social sustainability in ‘supply chain’.”

There were three categories of GMEA 2013 awards. The Overall Leader Award went to Hindustan Unilever (Khamgaon), First Runner Up: L&T MHI Turbine Generators (Hazira Manufacturing Complex – West. Leaders Awards (Medium Business) were bagged by Hindustan Unilever (Sumerpur), ACC Limited – Lakheri Cement Works, and the same for Large Business went to Hindustan Unilever (Barotiwala). Eight large companies, namely, Bharat Petroleum Corporation (Mahul), Hindustan Zinc (Chittorgarh), Ericsson India (Jaipur), Dr. Reddy’s Lab (Bachupally), ACC Limited - Gagal Cement Works, JK Lakshmi Cement (Jaykaypuram), JK Paper (Jaykaypuram) and ACC – Chanda Cement Works received the Challengers Awards.

Frost & Sullivan Green Manufacturing Excellence Awards 2013 - Group Photograph
6 Points to Ponder before Taking up New Projects

Time and cost escalation are not very uncommon facts as far as project completion is concerned. However, always those are not uncontrollable. A stitch in time saves nine. Right people, right estimation of time frame (with reasonable allowance) and right finance at the right time are very essential. Considering a few important points, many manufacturing CEOs have been benefited while taking up new projects...

1. Setting the right target

Weigh the pros and cons before you set a goal. Judge your strength. Are you sure it will benefit your company? Are there limitations related to (say) time, finance, people or otherwise?

2. Outstanding planning

You know well your limitations. Are you considering those while drawing your plan? How close is your planning to practicality? Are the deviations manageable without speculations?

3. Innovative communication

All stakeholders involved in your plan need to understand it correctly, and hold a positive outlook about it. Are you doing that through your communication? How have you ensured that?

4. Right engagement

For timely completion of any project, you need to have sincere, efficient and prudent people. Have you got them? Have you checked any further criteria beyond their past records?

5. Bringing involvement

Total involvement with the project is important – at least for the people in managerial role. In today’s business environment, mutual co-operation is absolutely essential. Have you ensured that?

6. Creating a vision

Inspiration comes from vision. In case of a project, vision comes from repeated hammering of ideas. Have you planned a method for frequent discussions and spreading the ideas of better future?
Single-use Sterile Disposable Technology

In biopharmaceutical industry, single-use technology is rapidly replacing the age-old practice of reusing the devices after decontamination. Adoption of the new practice is economic, it saves time, and most importantly – it eliminates the risk of contamination. This article introduces the subject, describes the types of systems available and touches upon the primary method of sterilising them (by irradiation).

By Dr. Tim Sandle
Many disposable medical devices, such as syringes, implants, canulas (flexible tubes) and intravenous sets, are required to be sterile for the manufacture of different types of medicines and pharmaceutical products. In the past, many items were recycled and autoclaved (such as stainless steel manifolds). This way of working is now regarded as inefficient in terms of time and energy costs, as well as presenting occasional contamination control risks due to cycle inefficiencies. The current trend in the biopharmaceutical industry, as well as with medical devices and parts of healthcare, is towards single-use sterile disposable systems.

**Single-use technology**

Arguably the most significant advances with cleanroom technology have been with single-use disposable technologies. Single-use, sterile disposable technologies (sometimes referred to as biodisposable technologies) are available in many different formats, and confer different advantages for pharmaceutical manufacturers. Single-use disposable devices are generally manufactured from plastic (polymers) involving processes of injection moulding, extruding and blow moulding.

Such technologies include tubing, capsule filters, single-use ion exchange membrane chromatography devices, single-use mixers, bioreactors, product holding sterile bags in place of stainless steel vessels (sterile fluid containment bags), connection devices and sampling receptacles.

**Advantages of single-use disposable systems**

Considerable research and investment has been directed into single-use technologies in order to reduce processing time, and to reduce costs, and to seek improved sterility assurance. The primary time and cost savings arise through the removal of the need to clean and recycle equipment like vessels. The investment into a higher level of sterility assurance is to improve controls - whilst the product is being manufactured and filled, not least to overcome the concern that by the time a product is assessed for batch release using the final product sterility test – there is nothing that can be done to correct a sterility problem with the manufacturing of the batch should the sterility test fail. Such technologies have reduced risks by allowing pharmaceutical organisations to move away from - equipment which needs to be sterilised or consumables which are recycled or pose a risk with their transfer into cleanrooms - to disposable and single-use sterile items.

The advantages of single-use technology are that:

- eliminates the need for cleaning
- eliminates the need for the pharmaceutical company to perform in-house sterilisation
- reduces the use of chemicals
- reduces storage requirements
- reduces process downtime and increases process flexibility
- avoids cross contamination

**Disadvantages of single-use systems**

Despite these clear advantages single-use technology is still in its infancy, and there are a number of validation steps, which need to be undertaken before such a technology is adopted by a pharmaceutical manufacturer. These include assessing any leachables or extractables, which might arise when the product comes into contact with the single-use device. The presence of extractables could lead to adulterated product or to the inhibition of any microbial contamination. Other disadvantages are in the availability of the technology (in that not all sizes or types required by pharmaceutical manufacturers are available) and development costs. Let us now examine some of the types of single-use technology available, and

In biomanufacturing of monoclonal antibodies, vaccines and therapeutic proteins, filtration is an essential step. Single-use filters are used for reducing the bio-burden and removing particles.
see some of the steps required by pharmaceutical manufacturers to bring the technology on-line.

Prime example: aseptic connectors
As an example, let us look at aseptic connectors. A critical cleanroom step is the aseptic connection, especially for aseptically filled products. Types of aseptic connections include the connection of a vessel or filter to another item of equipment for the transfer of fluids. Conventional methods of connection involve steps such as clamping or heat welding of tubing. The major risks arising in this system are from the external environment and from any microbial contamination that could be transferred from the operator’s hand.

Innovations in aseptic connection technology have led to the development of single use connector systems to allow for a totally enclosed and automated process. These are based on the so-termed alpha-beta principle, which allows the connection to be performed in an environment that does not require unidirectional airflow cabinets or other capital equipment to maintain sterility. This principle allows liquid sterile products to be transferred simply and safely, towards or from contained areas, via a small scale rapid transfer port. These devices shorten the time required for the connection and could, depending upon the risk- based position adopted by the pharmaceutical manufacturer, remove the requirement to undertake the connection in the general environment.

Before single-use connectors are adopted by a pharmaceutical organisation it is important that the devices are assessed through a bacterial challenge test.

This is designed to determine – whether bacteria can breach the connector seal and thereby contaminate any product passing through the connector.

Sterilisation of single-use plastic items
Given that plastics cannot be subjected to sterilisation by heat, for plastic disposable devices the primary way in which they are sterilised is by gamma irradiation (electromagnetic irradiation). Gamma irradiation is an established process for sterilisation and decontamination. Although the technology is established, the process can be complicated as various factors need to be weighed up. These include the microorganisms (bioburden) – which might be typically on the device during manufacture (this natural load can be reduced substantially, when devices are assembled in cleanrooms); the type of polymer used to manufacture the device; and selecting the appropriate process controls.

Irradiation is the process by which an object is exposed to radiation. Gamma irradiation sterilises materials through the energy from photons of gamma radiation (provide by a radioisotope) being transferred to the electrons in the target material. This creates highly active electrons (a process called ionisation) and highly active free radicals. These physical elements are capable of breaking the DNA within microorganisms and spores – which destroys them as well as prevents them from replicating and thus causing sterilisation.

The author is the Head of Microbiology at Bio Products Laboratory.

Gamma irradiation is an established process for sterilisation. However, the process can be complicated as various factors need to be weighed up.

Transportation and storage of biologics are key intermediate steps in the production of biopharmaceuticals. To ensure the safety of these products across the entire process chain, these liquids are filled into sterile single-use bags and stored in specially designed tanks.
**Optical Sensors**

In addition to measuring the pH value and conductivity, determining the concentration of dissolved oxygen is an important task in aqueous analytical measurement. For this purpose, JUMO presents the ecoLine O-DO – a new digital sensor based on a visual measurement procedure (luminescence method).

Unlike conventional electrochemical sensors, the optical sensor is characterised by a measurement that is low-drift, low-maintenance, and has great long-term stability, informs the company. It is suitable for use in communal and industrial sewage treatment plants.

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Website: www.jumo.net

**Capping Machine**

Masterfil has recently supplied a single head capping machine to DDD (Fleet Laboratories) a contract packer who develops, manufactures and distributes pharmaceutical and toiletry products. The machine handles 16 types and sizes of container and a number of caps including screw cap, pump pack and press on lids. Containers can be automatically fed or hand fed onto the conveyor dependant on the type. The Mastercap single head inline indexing capping machine incorporates a host of innovative features, providing a versatile capping operation at a maximum speed of up to 60 per minute, depending on product, container and cap type.

The capper is equipped with an elevator cap feeder and with 304 stainless steel cladding as standard. Changeovers between cap styles and sizes are made quick and easy by some innovative features.

Adelphi Masterfil
Tel.: +44 1444 472300
Website: www.masterfil.com

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