Mark Tomlinson, CEO and executive director of SME, (the Society that advances manufacturing and attracts future generations), outlines his views on current and future manufacturing trends and forecasts as well as the next generation needs, workforces and technologies.

**ISMRF: Please outline SME’s main objectives, successes and achievements?**

MT: SME is a non-profit organisation that focuses on the importance of manufacturing as a vital part of a thriving economy and our vision is to enhance progress, prosperity and strong communities through manufacturing. Our mission is to inspire, prepare and support our indicators in manufacturing and our purpose is to advance manufacturing and attract future generations. SME serves not only the forming, fabrication and sheet metal industries but also the other sectors associated with manufacturing. In particular, we focus on aerospace, defence, transportation, energy, medical devices etc.

We are a credible authority associated with manufacturing but not just a membership organisation – we engage with all segments in the manufacturing sector. True engagement should mean that we are part of the solution for all issues associated with manufacturing such as new technologies that need to be introduced or existing technologies being used in other sectors (i.e. lasers). We believe that making things is an important part of a vital economy and, to continue this activity, you need a pipeline of workers who understand how innovation influences manufacturing. All of our products and services are focused on those areas.

In terms of successes and achievements, we are an 81-year old organisation that runs the second largest event associated with sheet metal manufacturing in the world, FABTECH. We have over 100,000 attendees to the event. We have an online platform, which is one of the key success factors for us. We will hold over 90 conference events, we are also holding FABTECH-branded events in Canada and Mexico, which are an 81-year old foundation that inspires, prepares and supports the next generation of manufacturing professionals. This year, we gave out almost $700,000 worth of scholarships for students that are entering manufacturing education at the community college level as well as at the four-year level. We are also acknowledging schools in communities that collaborate with industry and academia to support the needs of manufacturing in the US. Twenty-six schools across the US have received our PRRIME Partnership Responisbility in Manufacturing Education School designation and SME funding. There are also over 1400 companies and over 450 schools using our ToolingU-SME online products.

Another success for us is our new online product called Knowledge Edge, launched in January this year, that enables students or manufacturing practitioners to receive manufacturing knowledge in the way they wish to access it. They can access any SME books, presentations, white papers, videos, podcasts, whitepapers, etc. and take segments of these materials to create their own documents for their own training needs. It is much more than a research archive – it is a valuable additional service that incorporates the Knowledge Edge online education platform and subscription-based service that incorporates the cream of SME’s educational manufacturing content and consequently spent some time doing this system. We were able to become a partner in 2010 of a variety of platforms and devices, including mobile phones. Altogether, a very impressive tool.

**ISMRF: What are your views on the current manufacturing climate for manufacturers?**

MT: North American manufacturing has been experiencing steady, slow growth since the recession. In particular, in the US, the forecast is for 20 billion dollars of activity by 2016 – growth of over 5% per year since 2011. The sheet metal and forming and fabricating industries are part of this growth and the need for knowledge in those industries continues to grow. Energy is a key sector – as North America starts to become more energy self-sufficient, there is a need for manufacturers’ products to support that industry and we are seeing a lot of growth there. We are also seeing a lot of growth in the medical device manufacturing sector.

I also see a trend in bringing manufacturing back from low cost manufacturing countries. I am not talking about high volume, assembly-type manufacturing but the more centralised manufacturing processes which are starting to come back to US, Canada and Mexico. The prospect of 2014 is very promising – there doesn’t seem to be any concerns about the period up to 2015 but, as we know, history repeats itself and there will be a recession, we just don’t know when. Although we are seeing job losses in the high volume, repetitive assembly area through productivity gains, we are also seeing huge vacancies for highly technical positions in manufacturing. This is where our training courses can help. Certainly, for the short term, North American manufacturing will continue to see steady but, slow, growth. There is currently a major initiative to increase the amount of North American exports and price competitiveness is part of that initiative. As companies get to grips with productivity increases, they become more competitive because labour is only about 18% of the cost of many products. As you improve your productivity, you decrease your labour costs so products become more competitive on a global basis.

The greatest challenge right now is global financial stability and, managed properly, there should not be any dramatic downturn in global manufacturing. There is still a lot of investment money on the side lines waiting for stability to occur in the global market so I believe that growth opportunities are still there for new innovations, new products and new growth to support the manufacturing industry going forward. The foundation of this growth will be the small-to-medium sized companies, and not large OEMs.

**ISMRF: Which issues are of prime importance for your members at the moment and how are you addressing these for them?**

MT: As an example, one issue of concern to our members is that the fundamental skills that people need to make things are not being provided by the university sector in North America. The university sector has moved towards more of a problem-solving engineering culture, rather than teaching core fundamental skills to people. How do you fill that gap? Community colleges and trade schools are our answer but continuing education is an ongoing issue for our membership and we work to fill that gap for them.

The perception of manufacturing also needs to change, in terms of attracting more people into the industry. The process of making things is a continuous operation made up of numerous activities – starting with getting the materials out of the ground and ending with delivery of the product to the customer’s shelf. It is a complex set of activities that offers great opportunities and even greater monetary rewards if you continue to improve your manufacturing knowledge.
ISMR: What is your strategic and technical focus/vision over the next few years?

MT: There is a lot of focus on additive manufacturing and 3D printing so we will place our focus on those areas as well as on core manufacturing technologies that continue to grow. The sheet metal forming and fabricating/body in white/assembly areas are continuing to grow, but are just growing differently than they have in the past. We will focus there. We will also focus on traditional manufacturing technologies associated with metal removal ie how laser, water jet and machining affect the way that products are made and how they can be combined into a process to allow manufacturers to be more productive and effective.

North America is currently behind Europe and other parts of the world in terms of sustainability models. Sustainability will be a big part of the future manufacturing infrastructure of North America. Energy efficiency will be an active part of this. We are engaging with the US Department of Energy providing energy assessments to North American companies and helping them to find ways to improve their energy usage.

Our other key focus is how to get the upcoming workforce to engage in all manufacturing sectors and what do traditional manufacturing companies have to do to allow this workforce to work the way they wish to work, rather than the way we would like them to work.

If you think about young people of between 16-21 today and how they interact, how they vocalise, how they want to work, their attention spans, their goals and aspirations, they are totally different from the Millennium generation or Generation X. Usually, what happens in manufacturing is that people want to mould them into the workers they want and manage them in a traditional way. Well, that’s not going to work. A person of that age is looking for the next job the moment that they take one. You have to find a variety of ways to keep them engaged in activities that allow them to continue to grow and interact in a different way to the way we did when we were growing up. They are actually better collaborators, better social connectors and better information gatherers than we have ever been. This is an upcoming issue that requires a huge amount of education in manufacturing marketplaces.

SME EVENTS

FABTECH, 16-19 November 2013, Chicago, USA
FABTECH Canada, 18-20 March 2014, Toronto, Canada
FABTECH India, 10-12 April 2014, New Delhi, India
FABTECH Mexico, 6-8 May 2014, Mexico City, Mexico
See www.sme.org for further details.

SME BENEFITS OF MEMBERSHIP

SME members offer many opportunities for enrichment and leadership development. SME connects its members to content and expertise that represent the highest ideals of manufacturing advancement. Local chapters help build a member network, their potential customers and vendors, develop leadership opportunities. Technical Communities connect and share ideas in special disciplines to solve technical and business challenges. Networks with people who think like you and find out the latest industry trends and developments. See www.sme.org

ISMR: Which trends do you see developing in sheet metal/manufacturing markets?

MT: We see trends such as the migration of multiple technologies associated with sheet metal manufacturing markets. For example, it is not just about bending or cutting any more, but bending, cutting, coating and welding. It’s about the entire process of how sheet metal is used in a manufactured product – I would also include machining as part of that for creating specific features in the sheet metal.

When you go to FABTECH, you are not just seeing machine tools like press brakes and punch presses but new technologies that incorporate all these different manufacturing processes into a sheet metal product. It is becoming very sophisticated now. Twenty years ago, the sophistication was only in the body-in-white component of automotive development – now it is across all sheet metal processes. In tandem with that, operations such as data transfer between different operations, quality control, production efficiency and control software development have become more important.

Lightweighting is another key trend. New materials are being developed to take the weight out of sheet metal products or parts associated with forming and fabricating. The trend you will see is with the use of sensors in automobiles and the likelihood that a driverless vehicle will happen in our generation, a huge transformation in what a vehicle looks like, how much it weighs etc. If a car doesn’t crash, it doesn’t need the same strength of materials that it needs today, or as large a powerplant and its energy requirement will reduce. All of these factors will come into play as new technologies are adopted in industry sectors such as metal manufacturing, nano manufacturing, sensors and adaptive technologies etc. Sensors and lasers were only part of the manufacturing process in the past – now they are becoming part of the product, which means the product and its use of material will change. It’s a fascinating future...

ISMR: Where do you see the greatest challenges and opportunities for your members?

MT: Government leaders are now talking about manufacturing as a critical part of the economy and understand the need to have a strong manufacturing economy, and support it with dollars. We need to take advantage of that to provide the right new products, tools and services to manufacturers in the most efficient way. The opportunity is to have a good balance of research and development plus traditional manufacturing. The challenge is to continue to make money while you are doing it. Different sectors go through different growth cycles of need (whether aerospace, automotive etc.) and manufacturers need the agility to adapt to these cycles in different industries and sectors.

Another challenge for manufacturers is the ability to be flexible in their approach to job cycles. As production site locations change, then issues such as remote working, commuting etc. come into play. I think the next workforce generation of 16-21 year-olds are already honed in to accept this.
Star Trek: The Next Generation (often abbreviated to TNG) is the second live-action Star Trek television series, set in the 24th century. Like its predecessor, it was created by Gene Roddenberry. Produced at Paramount Pictures, it aired in first-run syndication (by Viacom in the US) from September 1987 to May 1994. The series led to two spin-offs in the TNG era: Star Next generation. The Guardian identifies the best young talent coming through around the world every year and will also follow their progress with an annual update. 10 October 2019. Next Generation 2019: 60 of the best young talents in world football. Eidur Gudjohnsen’s son, the new Paul Pogba and Barça’s Ansu Fati are among our 60 most talented players in the world born in 2002. Published: 10:00 AM. Next Generation 2019: 60 of the best young talents in world football. 9 October 2019.