

Manufacturing on the way back up

In the run up to the general election it was not surprising that each party chose to visit manufacturing bases across the country. Manufacturing was back on the political agenda with each party again stressing the importance of Manufacturing and Product Design to the UK economy. Although we are not yet out of the economy woods there are more than green shoots to show that manufacturing has come out of the recession a little stronger, smarter and leaner than before. The MPD diploma does match all of the points that are being highlighted as the needs of the industry as it moves to make the most of the future in a competitive world market place.

Did you know? That the Japanese expression "Mono zuki" means; the art of making things?

Manufacturing in the West Midlands

Workforce intelligence: Analysis in the West Midlands Economic Strategy, suggests that there is a £10 billion 'output gap' in the region (compared to what Gross Value Added (GVA) would be in the region if it produced wealth at the current national average per head of the population). Much of this gap is put down to skills shortages and a lack of investment in research and development. Annual gross pay in the West Midlands was £23,807 compared to the rest of England at £25,520. Unemployment of 6.5% compares to the UK average of 5.4%. The West Midlands provides 10% of the UK's Gross Domestic Product.



The Government's *New Industries, New Jobs* agenda aims to boost economic recovery by focusing public investment in the areas including:

- high technology manufacturing
 - ICT
- environmental technologies
 - digital media
 - medical technologies

Advanced Manufacturing

Advanced Manufacturing describes businesses which use a high level of design or scientific skills to produce technologically complex products and processes. Because of the specialised requirements involved, these are usually goods and associated services of high value. The market for high value goods and services associated with Advanced Manufacturing, especially those produced to high environmental standards, is likely to increase significantly. New and improved technologies will continue to reshape manufacturing by creating the capability to adopt more efficient processes and develop new and better products to cater for new and changing market demands, such as low carbon.

The UK is well placed to take advantage of this growing market. The UK is the world's sixth largest manufacturer measured by output, and has a well developed infrastructure of manufacturing companies and supply chains. The UK is a leading exporter of high-tech goods, with 25% of UK goods exports defined as high-tech, compared to 22% in the USA, 15% in France, and 11% in Germany. Much of our manufacturing has transformed beyond its historical origins in labour-intensive production lines and heavy engineering. Manufacturing is now more focused on specialised and diverse activities, particularly in high technology areas. Many UK-based firms have used ICT, new materials such as advanced

composites, and process revolutions such as nanotechnology and biotechnology to transform the way they work. These innovations have driven growth in Advanced Manufacturing sectors far faster than in other manufacturing sectors.

(Source: BIS Advanced manufacturing strategy)

Smaller footprints

"The transition to a low carbon world will transform our whole economy. It will change our industrial landscape, the supply chains of our businesses and the way we all live and work. The vast majority of, if not all, economic activity in Britain will have to reduce its carbon impact significantly."

The UK low carbon goods and services (LCEGS) market is worth £106 billion and employs 880,000 people directly or through the supply chain. Equipping the British workforce with the skills that will allow them to seize the opportunities of the low carbon economy, including the development of a new skills strategy that will address the UK's low carbon skills needs. (Building Britain's Future: New Industry, New Jobs. HMG 2009)

Business in the community:

Business in the

Give & Gain Day 2010, 9th July - West Midlands

Members work collaboratively to address key social issues and the needs of their local communities in relation to education, employability and economic renewal.

Community

Give & Gain Day is Business in the Community's annual employee volunteering event. This national day of action mobilises employees from businesses throughout the UK to volunteer their expertise and time during work hours. Registrations are now open for businesses wanting to take part this year in the West Midlands. Our focus in the region this year will be on STEM (Science Technology Engineering Maths) .

On the CREST of a wave



CREST is Britain's largest national award scheme for project work in the STEM subjects (Science, Technology, Engineering and Maths). It gives young people aged 11-19 opportunities to explore real world projects in an exciting way. CREST links closely to the curriculum and is a great way to make STEM creative and engaging – both in and out of the class. The CREST awards could be used to add motivation and give short term reward to learners. They encourage independent and applied learning and could be used to help deliver one or more Manufacturing diploma units. Science skills and processes are an important component of the MPD diploma delivery.



Love it or hate it! Inside The workplace and Network Meeting 2.

On the 10th of March the latest network meeting took place at the home of the iconic 'Marmite' in Burton on Trent. The network meeting was organised as a diploma 'Inside The Workplace' event giving delegates the opportunity for a tour of the production facilities and to explore the question of employer engagement.

Did you know?

- Members of the Marmite supporters outer circle "Marmiteers" to you and I are all members of the "Love" Marmite party.
- Few products bring out stronger feelings apparently 14% of people even take a jar of Marmite on holiday with them. There is also a comparethemarmite.com website!



Our guide from the company was Ben Wadlow, the process leader at the plant who gave us a detailed tour of the processing areas brought to life by his observations and comments all delivered with a dry sense of humour. As the tour progressed we were all fascinated by how well the plants operation would give learners a holistic view of the MPD diploma.

Starting with a waste product from the brewing industry; spent yeast, 17 tankers travel the country collecting the yeast waste stream from most of the medium to large brewing companies. Remaining alcohol at low level is extracted and mixed with natural gas to fuel a newly installed combined heat and power facility. Heat is needed at a lot of points in processing both Marmite and its sister brand Bovril also produced at the Burton plant. The processing involves the addition of salt to Autolyse yeast cells (the destruction of cells by the action of enzymes and other substances) and then centrifuges are used to extract unwanted solids and filters to refine things further. The remaining solution is then left to stand to 'de-bitter' as bitter particles are precipitated out. Some of the water that is present is then evaporated.



Pipework transports the liquor from stage to stage with the flow controlled by computerised valves. Most of the process is computer controlled with visual displays warning technicians when readings start to move from control levels. The company needs skilled employees to staff the process which includes quite a lot of science to analyse the levels of different components in the liquid. Vegetable extracts and spices and other ingredients in the secret recipe are then added. The resulting thick spread is collected in large stainless steel drums and left to mature before being packed in the distinctively shaped containers.



The rest of the meeting was spent reflecting on what had been seen and how lessons learnt could be embedded in diploma delivery. Tony Homer presented a PowerPoint on manufacturing sectors that is being developed as part of a baseline analysis tool kit of learner's skills. It is hoped that the final package will be available to consortia very shortly. The meeting ended with attendees being given a 'goodie bag' of Marmite and Bovril and a memory stick of extensive diploma support documents specific to MPD.

<http://www.unilever.com/mediacentre/multimedia/foods/Marmite.asp>

Network plans

The next MPD network meeting will be on the 21st of July at GPS Norton Canes. Timings will be 1pm until 4.30 to give time to visit the most important aspects and have a little time to share experiences and the help that is available. This event will also be an 'Inside the Workplace' training event looking at a production system for polymer based products that uses robotics and computerised equipment. These are used to produce polyethylene pipe and pipe fittings. The fittings have integral heating elements to be able to produce on site welded joints (thermo fusion). The company produce polythene fittings for the water and gas industries. These fittings have to be right for all of our safety so quality is very important. The tour of the plant and training will focus on production planning, monitoring and control with visits to the production lines and the materials testing and quality control labs. You will also be able to see and compare robotised cells to more traditional/ labour intensive cells.

Delegates will be able to bring away a sample joint and we are also preparing a case study based on diploma delivery and activities at the plant. The company have also approved the use of cameras in most areas of the facility.

Please book on for the event at <http://www.diploma-support.org/communities/networkmeeting>

This truly is your network please let us know your thoughts about what you would like us to do to help you? What do you want covered at meetings and in future newsletters? What is the best way of contacting you and keeping you up to date? Email us at Stempoint@staffs.ac.uk

And the good news is?

- Increased exports have led manufacturing to its fastest growth in over 15 yrs (4th May 2010)
- The UK is the World's sixth largest manufacturer by output
- 275 new jobs announced at Land Rover (6th May 2010)
- The UK is still predicted to become the largest economy in the European Union by 2020 moving ahead of both Germany and France
- JCB announce they are recruiting up to 200 more employees (6th May 2010)

STEM Ambassadors



Ambassadors are all volunteers from industry that are prepared to support young people and teachers with STEM (Science, Technology, Engineering and Maths) learning and activities. Availability in the working day may be a little limited but not out of the question. Volunteers have a CRB disclosure and will eventually have an ISA registration as part of the rolling programme. They also have public liability insurance. Each Ambassador attends an induction that raises awareness of modern education and child protection issues.

For more information on the national programme contact your local Stempoint/ STEM Ambassadors manager.

There is also a number of Manufacturing and Product Design focussed employee and product design case studies and posters/ booklets on the STEMNET website. <http://www.stemnet.org.uk/ambassadors.cfm>



Teaching and learning resources

Just a reminder that teaching resources produced by the West Midlands MPD Network last year are available to download from the www.diploma-support.org website. Case studies:

Manufacturing car assembly

AGV Vehicles

Body Box case study

This website also has a lot of other MPD resources including videos of emerging good practice and employer engagement and other case studies.

At the moment Staffordshire STEM Centre is working on the format of a skills and experiences audit/ baseline assessment with support from the Lifelong Learning Network in Staffordshire, Shropshire, Stoke on Trent, Telford and Wrekin. This is in response to Ofsted comments that consortia need to know where learners are starting from in terms of PLTSS, Functional skills and Principal learning to be able to personalise learning and provide appropriate IAG. Come to the next meeting to find out more!

Unilever company videos

A variety of production and advertising videos are available in the media centre section of the company website:

<http://www.unilever.com/mediacentre/multimedia/>

Visit to Wolverhampton University is a 'real eye opener' for Technology teachers

Curriculum Innovation and Development (CID) supports a number of subject groups acting as forums between the University and schools and colleges. At a recent Manufacturing focus group teachers highlighted not being up to date Design and Technology software. There was also a need to identify packages for use with new diploma qualifications in Manufacturing and Product Design. In response CID and the Architecture and Product Design (APD) department developed an, after school, programme to introduce relevant software used at the University. The session highlighted free to use software that is available. Kevin Garner, Head of Department for Architecture and Product Design stated "we are always looking for opportunities to share our expertise, facilities and research findings with the local educational community through staff CPD events and student workshops".

Invitations went out through subject networks and the Making Choices Partnership. The event began with demonstrations of Solid Works (a 3D Mechanical CAD Package) and then a hands-on session testing stresses on a modelled wing rib design. The group then moved onto the Virtual Design Enterprise Centre (ViDEC), for demonstrations of Google Sketchup (free to use 3D model creator), AutoCAD and Kerkythea (a photo realistic renderer).

Feedback was extremely positive with one attendee saying the event was 'a real eye opener' and another that it was 'really useful to see packages in action'. At the end of the event the majority remained in order to see further examples and explore staff development opportunities. Interest was expressed in bringing in groups of staff and pupils for follow up sessions on specific packages. Specific mention was made by one attendee that the event had helped them to 'identify suitable software for the Manufacturing & Product Design diploma'.

For further information please contact Bryan Fryer, Curriculum Innovation and Development Officer, on email b.s.fryer@wlv.ac.uk or telephone 01902 322225.

Web links

University of Wolverhampton www.wlv.ac.uk



MANTLE

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MANufacturing Termly Link Extracts

Architecture and Product Design www.wlv.ac.uk/apd

Google Sketchup http://sketchup.google.com/intl/en_uk/product/gsu.html

Kerkythea <http://www.kerkythea.net/joomla/>

Solid Works <http://www.solidworks.com/>

AutoCAD <http://www.autodesk.co.uk/adsk/servlet/index?siteID=452932&id=12306568>

Over to you!

If you have an article or engineering activity you would like to share with the network members please contact us at the Staffordshire STEM Centre and/or send your contribution to Stempoint@staffs.ac.uk

