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NEWS RELEASE

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New Centre and Upgrading Programme Launched by A*STAR SIMTech and Singapore Workforce Development Agency (WDA) to Spur Manufacturing Productivity

*The Manufacturing Productivity Technology Centre (MPTC), a first of its kind in Singapore, is a rich resource of A*STAR SIMTech technologies showcased under one roof. Together with the launch of the new Singapore Workforce Skills Qualifications (WSQ) Operations Management and Innovation (OMNI) Programme targeted at PMETs, the manufacturing sector will be the recipient of two new initiatives targeted at heightening the sector's productivity efforts.*

SINGAPORE, 7 October 2011: Two new initiatives to spur productivity, the Manufacturing Productivity Technology Centre (MPTC), a first of its kind in Singapore, and the Singapore Workforce Skills Qualifications (WSQ) Operations Management and Innovation (OMNI) Programme were launched today by Mr Lee Yi Shyan, Minister of State for Trade & Industry and National Development at the Singapore Institute of Manufacturing Technology (SIMTech), a research institute of the Agency for Science, Technology and Research (A*STAR).

One-stop Resource for Manufacturing Innovations

2. The MPTC consolidates SIMTech's technologies and capabilities developed over the years; under one roof. It will serve as a rich and valuable resource for companies adopting or planning to adopt SIMTech-developed technologies, tools and capabilities in automation, processes and systems to gain "step-change" improvement in manufacturing productivity. Among those that the Centre aims to enthruse to innovate, are companies that have yet to get on the innovation bandwagon. MPTC will also equip Professionals, Managers, Executives and Technicians (PMETs) with the know-how to deploy these technologies to develop high-value products. By facilitating access to interdisciplinary research capabilities, technologies and providing avenues for technological training, the centre targets to be a knowledge hub for manufacturing innovations that will enhance the productivity and competitiveness of the industry. (Refer to Annex A for more details on MPTC)

3. The Centre houses exhibits that include technologies, samples, prototypes and implemented systems under three themes that align with the productivity objectives of companies, such as enhanced efficiency, effectiveness and value creation. Success stories of companies which have employed SIMTech technologies and reaped productivity gains of up to 100 percent will also be showcased. One such company is Tru-Marine.

4. Tru-Marine is a SME which specialises in the repair of turbochargers. The company adopted the SIMTech-developed Laser Aided Additive Manufacturing (LAAM) technology, replacing its slower and less efficient method of manual arc welding. The innovative move has cut short a process that used to take up to four days, down to as fast as two hours. This has also earned Tru-Marine the advantage of being the first mover locally in innovative repair technology for turbochargers.

5. Recognising that innovation is key to productivity and ultimately competitiveness, seven manufacturing companies, have signed a Memoranda of Understanding to initiate productivity improvement collaborations with SIMTech. Taking a step further, GLOBALFOUNDRIES, a global full-service semiconductor foundry, has signed a five-year Manufacturing Productivity Enhancement master plan agreement with SIMTech.

6. Dr Lim Ser Yong, SIMTech's Executive Director, said: "MPTC is set up to spur manufacturing productivity and innovation. Companies can work with SIMTech to develop new innovations by identifying productivity gaps and adopting suitable technologies. The centre also facilitates interdisciplinary research in manufacturing productivity technology, methodologies, systems and other training opportunities that address the challenges in implementing productivity improvements and value creation through innovation. The centre will work with researchers and industries to promote productivity through partnerships, knowledge transfer and technology transfer."

New Skills Programme to Spur Innovative Mindset

7. Complementing its suite of innovation offerings, MPTC will also equip engineering professionals with the technical knowhow on operational assessment and productivity improvement. In this regard, SIMTech has collaborated with WDA to implement the new Singapore Workforce Skills Qualifications (WSQ) Operations MaNagement and Innovation (OMNI) Programme. This enhanced programme rides on the success of the WSQ SME Manufacturing Excellence (S.M.E.) Programme launched in 2010.

8. WSQ S.M.E. Programme trains a pool of Operations Improvement Champions or "TechnoVation" Managers to champion and implement operations improvement in their organisations. Within a short span of less than 1 year since the scheme was piloted, a total of 47 managers from 26 companies have been trained under the programme. All 26 companies have applied and implemented the operations improvement strategies

and raised productivity from 30% to 230%. (Refer to Annex B companies with productivity improvement)

9. As such, the WSQ S.M.E. Programme will be extended to all manufacturing companies, under the brand new name Singapore Workforce Skills Qualifications (WSQ) Operations MaNagement and Innovation (OMNI) Programme which has been enhanced and customised to address the operational challenges of different manufacturing industries. The new programme has also been strengthened to provide funding support to companies which implement operations improvement strategies. Companies will be eligible for a grant of up to 50 percent of the implementation costs.

10. WDA will be injecting an additional \$2 million in the next three years to train a bigger pool of operations management champions under the OMNI WSQ Programme. This programme will help further enhance workplace productivity, benefitting not only the individual workforce but also companies' excellence in manufacturing.

11. Mr Wong Hong Kuan, Chief Executive of WDA said, "I am glad to see the initial success and effectiveness of the SME Manufacturing Excellence WSQ Programme bringing about a quantum leap in manufacturing productivity. With the new WSQ OMNI programme, we look forward to the operational management champions creating and sustaining a momentum of transformation. This will enhance the competitiveness and value-add of manufacturing companies, which are critical elements in helping them stay relevant in challenging times ahead".

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Enclosed:

ANNEX A - About Manufacturing Productivity Technology Centre

ANNEX B - Companies with improved productivity

ANNEX C - Details of Productivity Enhancement Collaborations

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About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is the lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based and innovation-driven Singapore. A*STAR oversees 14 biomedical sciences and physical sciences and engineering research institutes, and six consortia and centres, located in Biopolis and Fusionopolis as well as their immediate vicinity.

A*STAR supports Singapore's key economic clusters by providing intellectual, human and industrial capital to its partners in industry. It also supports extramural research in the universities, and with other local and international partners.

For more information, please visit www.a-star.edu.sg.

About the Singapore Institute of Manufacturing Technology (SIMTech)

The Singapore Institute of Manufacturing Technology (SIMTech) is a research institute of the Science and Engineering Research Council (SERC) of the Agency for Science, Technology and Research (A*STAR). SIMTech develops high value manufacturing technology and human capital to contribute to the competitiveness of the Singapore industry. It collaborates with multinational and local companies in the precision engineering, electronics, semiconductor, medical technology, aerospace, automotive, marine, logistics and other sectors.

For more information, please visit www.SIMTech.a-star.edu.sg

About the Singapore Workforce Development Agency (WDA)

The Singapore Workforce Development Agency (WDA) enhances the competitiveness of our workforce by encouraging workers to learn for life and advance with skills. In today's economy, most jobs require not just knowledge, but also skills. WDA collaborates with employers, industry associations, the Union and training organisations, to develop and strengthen the Continuing Education and Training system that is

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skills-based, open and accessible, as a mainstream pathway for all workers - young and older, from rank and file to professionals and executives - to upgrade and advance in their careers and lives.

For more information, please visit www.wda.gov.sg

ANNEX A

About Manufacturing Productivity Technology Centre (MPTC)

The MPTC is a one-stop resource centre for A*STAR enabling technologies, tools and capabilities in automation, processes and systems targeted at manufacturing enterprises. Through this initiative, MPTC spurs innovation and the adoption of the technologies by the manufacturing enterprises for productivity gains and enhanced competitiveness.

Productivity can be enhanced by employing three measures, enhancing efficiency, ensuring effectiveness and by creating value through innovation. The technologies developed by SIMTech, over the years encompass all three areas and hence the themes of the exhibits at MPTC. Some of the technologies highlighted under the 3 themes are:

Laser Aided Additive Manufacturing (LAAM) - Cuts Turbocharger Repair Time from Four Days to Two Hours

SIMTech developed Laser Aided Additive Manufacturing (LAAM) system for repairing turbocharger components. It uses laser as a heat source to build a component layer by layer.

Tru-Marine, a marine turbocharger maintenance, repair and overhaul company, adopted the LAAM system. Prior to the adoption of the LAAM process, repair work was carried out manually by operators using arc welding which can take up to four days. The automated process has cut repair time to as fast as two hours and the labour dependence drastically by 90% while ensuring consistent and high quality repair. In addition, operators can be trained to operate the automated system within two weeks compared to six months for the manual arc-welding method.

Tru-Marine is the first local company to have successfully applied this advanced technology for the repair of 3D turbocharger components. Following the adoption of LAAM technology, Tru-Marine is able to manage not only its existing business with enhanced quality but also expand its business to repair high value parts previously not feasible using manual arc welding.

The LAAM automated process is certified by the maritime classification society, Det Norske Veritas (DNV).

Manufacturing Energy Monitoring (MEMO) - Offers 50 Per Cent Energy Savings

Manufacturing Energy Monitoring (MEMO), a software system developed by SIMTech, monitors the energy consumption of manufacturing machines. Using signals, the software automatically tracks the power usage of machines in various operational modes, namely when idle, set-up or running. The energy consumption patterns charted by the software can be used as a basis to analyse trends, calculate the efficiency of manufacturing processes, alert on irregularities in energy consumption of specific machines and pin-point areas of energy leakages.

Manufacturers can also examine their production lines to identify pockets of high energy usage, take the necessary actions to reduce unnecessary wastage and fix malfunctioning machines to optimal conditions in a timely manner. Other innovation opportunities such as energy modelling, machine optimisation and energy-aware job allocation can also be enabled with this capability. With such data on energy consumption in hand, manufacturers will be able to carry out carbon footprint assessments more accurately.

A precision engineering components manufacturing enterprise that has experimented with the software has demonstrated that energy savings of up to 50% is feasible.

Printed Functional Film – A Flexible Twist to Lighting and Heating

Printed Functional Film fills the application gap that cannot be addressed by conventional semiconductor or circuit board technologies. Relying on roll-to-roll processing and additive patterning of printable functional materials, functional films such as printed heater and printed lighting can be achieved. The potential applications for printed heater include wearable heater and demister in buildings and transportation while printed lighting can be used for backlighting and ambient lighting.

With the introduction of roll-to-roll printing, the graphics printing industry can be transformed into a new functional printing cluster to produce higher value-add products. SIMTech is collaborating with key strategic industry partners on licensing and commercialisation of this technology in the areas of printed heater film for blood or liquid warming in medical applications.

ANNEX B

Companies With Improved Productivity

Company 1:

Maha Chemicals, a chemical distributor.

How productivity was improved:

Maha Chemicals leveraged on SIMTech's supply chain operations technology to enhance its role in inventory planning as a global HQ for its regional customer. The technology enabled Maha Chemicals to streamline their work processes, and perform bulk ordering in a timely manner, reaping greater economies of scale and lowering inventory costs. Since the adoption of this technology, Maha Chemicals has cut down its manpower needs by 50 per cent, reduced its lead time by 29 per cent and reduced inventory level of its supply chain by an estimated 10% yearly. The faster turnaround for inventory translates to the added competitive edge of being able to respond faster to meet customer needs. These supply chain technologies leverage on the Internet and communication technologies, combined with operations research to create solutions that are targeted at today's fast and dynamic business environment.

Company 2:

Teck Wah Value Chain Pte Ltd, a printing and packaging solutions provider.

How productivity was improved:

Using systems and automation technology acquired from the S.M.E. WSQ programme, Teck Wah Value Chain redesigned and simplified the printing process, operations and programme functions. Teck Wah was able to increase throughputs and reduce manpower requirements. Teck Wah's productivity increased by 17 per cent, amounting to S\$635,000 a year.

Company 3:

Wemark Techno Engineering Pte Ltd, an integrated engineering company, providing contract design and manufacturing and plant maintenance and servicing.

How productivity was improved:

Wemark Techno Engineering is a beneficiary of the WSQ SME Manufacturing Excellence Programme. Wemark Techno Engineering applied the OMNI methodology to make productivity improvements that included the application of customised fabrication aids. These efforts resulted in about 15-20 per cent productivity improvement and \$20,000 worth of savings in labour costs.

Company 4:

Kim Ann Engineering, a “one-stop supply service centre” offering a comprehensive range of specialty metals and related value-adding services

How productivity was improved:

Kim Ann Engineering reviewed their manufacturing process and applied the OMNI methodology following their participation in the WSQ SME programme. As a result, the company invested in a heavy duty mill and grinding machine capable of higher throughput. The company benefited from 200% productivity gain, equating to annual sales increase of more than S\$430,000.

ANNEX C

Details of Productivity Enhancement Collaborations

1. **SIMTech and GLOBALFOUNDRIES Singapore Pte Ltd** signed a five-year Manufacturing Productivity Enhancement master plan agreement to enable the full-service semiconductor foundry to apply cutting-edge technologies for the company's productivity improvement initiatives. The areas identified for R&D collaboration include Automated Guided Vehicles (AGV) to automate the movement of wafers in the fabs; implementing precision inspection capability into the fabs' existing inspection tools; exploring the potentials of recycling materials and refurbishment of fab tools; and finally adopting RFID technology for more efficient production tracking.

Quote:

"As a global leading foundry, GLOBALFOUNDRIES is committed to manufacturing excellence to deliver best-in-class technology and services to our customers. The collaboration we have with SIMTech will further enhance our existing productivity initiatives, and contribute towards strengthening our foundry leadership position as we move to adopt more technology innovation in our fabs," said **Raj Kumar, Senior Vice President for GLOBALFOUNDRIES' 200mm Business Unit and General Manager for Singapore.**

2. **CKE Manufacturing** is collaborating with SIMTech to implement a system to help them improve on the efficiency of the order planning and tracking process. They are also collaborating with SIMTech to automate their welding process to reduce over-reliance on labour.

"CKE Manufacturing's long-term collaboration with SIMTech not only put us at the forefront of various cutting edge technologies and technical know-how. The entire project team's professionalism gives us the confidence to continually focus on our business while they assist us in the implementation and execution of our projects. SIMTech's strong commitment and dedication make us realise that our success is also the very foundation of their success as well. CKE Manufacturing is delighted to actively develop and strengthen this partnership with SIMTech," said **Mr Kwan Lok Suen, Managing Director, CKE Manufacturing.**

3. **LHT Holdings** is collaborating with SIMTech in the development of business process management solutions which when implemented, will help them improve on the productivity of its pallet manufacturing process. Another area for collaboration is the joint promotion of RFID technology adoption in Singapore.

"A substantial overall savings is expected arising from productivity gains from higher capacity output, and energy and manpower savings which can be achieved through the collaboration on business process

management. Also, as a pioneer of RFID technology adoption, LHT is committed to work closely with SIMTech to promote the adoption of this technology by local companies in Singapore,” said **Ms May Yap, Executive Director, LHT Holdings.**

4. Maha Chemicals is collaborating with SIMTech in setting up its Supply Chain Operational Headquarters (OHQ) capability.

“Maha is now able to have timely visibility of all its Regional Customer Centres (RCCs) transactions, faster turnaround time for orders and also better productivity in their manpower deployment. This in turn enables Maha to perform bulk ordering (for economies of scale) and also plan their inventory levels across all RCCs better. Consequently, the inventory level of its supply chain is reduced by an estimated 10% yearly,” said **Ms Tan Seow Hoon, Director, Maha Chemicals.**

5. Mencast Holdings Ltd to collaborate on technology and automation development to improve its capability and system innovation.

“Mencast Holdings Ltd looks forward to promoting and partnering SIMTech through technology and automation to improve our capability and system innovation. The Memorandum of Understanding is the beginning of a long-term relationship to foster cooperation and experience sharing between the two organisations that will help manufacturing industry to gain improvement, boost productivity and innovation,” said **Mr Glendle Sim, Executive Chairman & CEO, Mencast Holdings.**

6. Sky Engineering is working with SIMTech to develop the abrasive flow machining technology in the application for microburr deburring.

“The collaboration aims to mechanise the labour intensive process to achieve increased productivity. It is also hoped that the development can be turned into a commercial product. This MOU serves to strengthen the commitment between both organisations in this collaboration,” said **Mr William Kuek, Operations Manager, Sky Engineering.**

7. Teckwah Industrial Corporation is collaborating with SIMTech on several initiatives to drive productivity and innovation for its group of companies.

“It is important to train a group of key staff so that they will have the common mindset and competency to drive productivity and innovation together in our organisation. We decided to partner SIMTech so as to transfer their knowledge in the classroom and also on site in our operation environment. Their knowledge in driving innovation through manufacturing excellence is commendable and it is valuable for us to move

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up the value chain of our business,” said **Mr Thomas Chua, Chairman & Managing Director of Teckwah Group.**