

## Feature

### Maximising Labour Efficiency in the Marine & Offshore Sector

#### Scaffold Coupler Maintenance Machine Improves Productivity

The Marine & Offshore sector is one of the most labour-intensive sectors in Singapore. It is also one of the sectors which A\*STAR's Technology Adoption Programme (TAP) is actively looking into to help raise productivity levels. One project that has been met with enthusiasm is the introduction of a Scaffold Coupler Maintenance Machine.

A scaffold coupler is a mechanical unit that secures tubular scaffold tubes together and is widely used in constructing elevated work platforms for both the marine and the construction industries. The coupler servicing process is highly manual, time-consuming and also tiring for the operator. To improve and speed up this operation, TAP and the Marine & Offshore Technology Centre of Innovation (MOT COI) came together and started a series of engagements with scaffold companies to develop a semi-automated machine that would require little experience to operate.

"MOT COI and the A\*STAR TAP team complements each other very well in playing their respective roles," said Mr Subrata Chanda, Director of the MOT COI, explaining that the A\*STAR TAP team had been supportive and forthcoming throughout the machine's development. "This synergy helps the marine industry to improve productivity, especially for the Small and Medium Enterprises (SMEs)," he added. MOT COI was awarded TAP's Technology Developer (TD) grant to develop the machine.



TAP officer visited the shipyard to appreciate the hard work of workers in the Marine and Offshore sector

#### Coupler Servicing Comparison

<b>Manual</b>	
Rate of servicing:	1-2 couplers/min
Skill:	Experienced workers need to align the impact wrench to the nut on the head, as well as to secure the coupler during servicing so that it does not slip and cause an accident
Safety:	Operating the impact wrench is a manual and laborious process when done repeatedly
<b>Semi-automated</b>	
Rate of servicing:	3 couplers/min (50 per cent improvement)
Skill:	No experience is required, so companies can tap into local pool of mature workers for the job
Safety:	Less time consuming and tiring compared to the manual process

#### Generating Waves of Improvement

All of TAP's initiatives for the Marine & Offshore sector are overseen by Ms Tan Wanjing, the programme's Assistant Head. Not one to sit in the comfort of her office, she often visits the shipyards to talk to companies and their staff to get a first-hand understanding of their problems.

While working with MOT COI on the Scaffold Coupler Maintenance Machine projects, for example, she spearheaded focus group discussions with different scaffold companies to uncover the challenges that they faced and to find out how they could overcome these issues. Even after the completion of the prototype, she continued to engage the sector to fine-tune the machine's functionalities. Concurrently, she is also working with A\*STAR's SIMTech to improve productivity at the shipyards for other labour-intensive processes, such as welding.



## Our Success Stories

### Clault Teams-up with T-Up

#### For Award-winning Business Results

Clault Pte Ltd, founded in April 2011, is a provider of enterprise key management and data encryption solutions. From the beginning, its aim was to develop Cloak Apps, a password-free file encryption solution, as well as to design and implement a secure cloud-based solution for uploading very large files. To develop the software, it tapped on A\*STAR's Technology for Enterprise Capability Upgrading (T-Up) programme from 2011 to 2012.

With the support of T-Up, Clault was able to file for a patent for its solution. It also launched Cloak Apps for user trial within 18 months of its inception. Within one month of product launch, Clault had over 10 enterprises sign up for its live cloud and application services. Today, Clault has more than 10,000 registered users for Cloak Apps.

Besides product development, the T-Up project also helped Clault to improve its in-house efficiency by at least 30 per cent. Clault also saw a three-fold increase in its R&D team over the period.

Mr Marcus Tan, Director of Clault Pte Ltd, said, "Large file transfers from your devices to Clault's backend would require reliable and secure technologies. Thanks to the research completed through T-Up, our system can recover from network error conditions transparently, without having to repeat the entire file transfer. This is especially useful when users are sharing files through mobile platforms with limited bandwidth."

Dr Li Qiming, a researcher from A\*STAR's Institute for Infocomm Research (I<sup>2</sup>R), was seconded to the company for this T-Up to assist in developing the software for commercial release. His performance was so impressive that Clault offered him a position after the project ended, an opportunity which Dr Li took up. He is now the CTO of Clault.

The success of this project earned Dr Li a T-Up Excellence Award in 2014. This award recognises T-Up secondees who have made significant contributions to their T-Up companies. This is in addition to Clault's 2012 Red Herring Asia Top 100 Companies award win, and its semi-final position at the Inotribe Award, organised by SWIFT.



### Something Traditional, Something Novel

#### Ethical Ethnic-wear Retailer Pioneers Shop Floor Technology

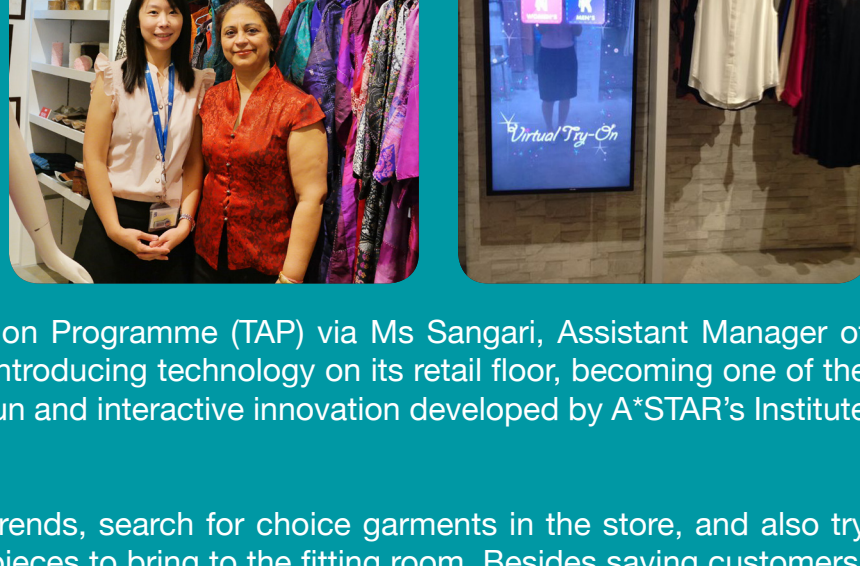
Moirai, managed by Mrs Anita Gandhi, is an ethnic-themed fashion store located at Great World City retailing women's apparel, fashion accessories, scented candles and ornaments, and hand-crafted products.

Moirai's fashion collection "Weave" is a line that supports the craft sector of India's rural communities by promoting and practicing fair wages and good working conditions, and by enabling them to grow and integrate. It is accredited by the reputed "Craft Mark" of India and by members of the Ethical Fashion Forum. In addition to its ethnic-themed offerings, Moirai also carries apparel for everyday working wear.

Having been introduced to A\*STAR's Technology Adoption Programme (TAP) via Ms Sangari, Assistant Manager of SME Centre @ SICCI, the retailer quickly participated in introducing technology on its retail floor, becoming one of the pioneers in Singapore to use the Virtual Try-On Mirror, a fun and interactive innovation developed by A\*STAR's Institute for Infocomm Research (I<sup>2</sup>R).

Moirai's customers use the "mirror" to preview fashion trends, search for choice garments in the store, and also try on the clothes virtually, before selecting the appropriate pieces to bring to the fitting room. Besides saving customers' shopping time without marring their shopping experience, this technology also helps to maximise the use of shop front window space by displaying the different outfits that are stocked within.

With plans to open up more outlets in the Asia-Pacific region, Moirai underlines its business success with its philosophy to harmonise the old and the new – as seen by its range of heritage crafts and its willingness to adopt new and innovative technology.



## Technology Showcase

### FITPRISE Enterprise Management System

#### Delivering Better Logistics Services Through Web-based Inventory



Aequitas Global operates a third party logistics service (3PL) that manages inventory and distribution for a diversity of customers. Previously, all incoming and outgoing records of stock item transactions were entered in a journal and then keyed into an Excel spreadsheet. This manual system became too cumbersome and inaccurate as more of its customers demanded frequent updates on their stock balances and movements.

Aequitas Global then decided to overhaul its paper system with a web-based information management system, to improve productivity through a central monitoring system of stock items for customers.

This web-based solution is able to ensure smooth information flow for effective planning and management of inventory, which ranges from receiving incoming stock to issuing outgoing stock. It also provides real-time generation of inventory reports.

Productivity has been further raised by providing customers with their own accounts, as that allowed them to view their stock balances remotely, instead of calling Aequitas Global to check on every detail.

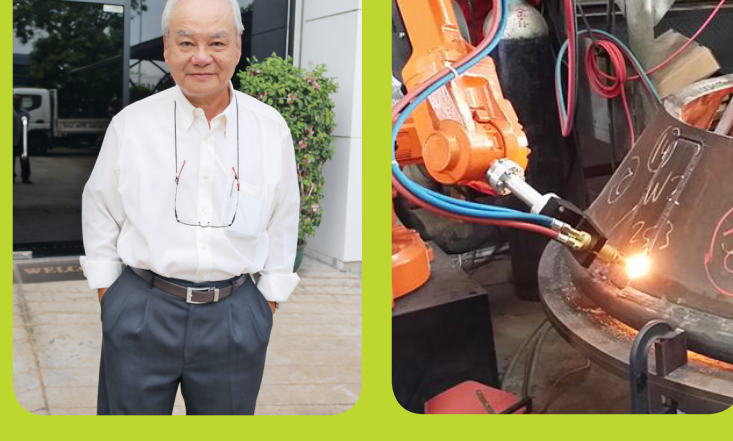
### Welding Automation

#### Standard Welding Jobs Sees Jump in Productivity

Continental Engineering Enterprise, established in Singapore in 1989, provides structural fabrication and engineering services for both the onshore and offshore marine industries. For the wide variety of parts and materials that it produces, its workshop of more than about 3,000sqm is outfitted with overhead cranes, CNC and conventional machines, as well as various welding and cutting equipment.

To increase the efficiency of its welding works, Continental Engineering Enterprise adopted the use of two robots: one coupled with a 10m track for welding of long pipes; while the other is fixed to a turntable – allowing the robot to weld conical shapes, and with a change of the head, also perform cutting jobs.

With the introduction of automated welding, the company saw a 40 per cent jump in productivity for its standard welding jobs, and is now confident of meeting the delivery deadlines for high volume parts, said Mr Lee Patt Yong, General Manager, Continental Engineering Enterprise Pte Ltd.



## Our Past Events

### Manufacturing Productivity Technology Centre Annual Conference and Technology Exhibition 2014



Graced by Mr Teo Ser Luck, Minister of State for Trade & Industry with close to 300 industry representatives from manufacturing and related industries attended the Manufacturing Productivity Technology Centre (MPTC) Conference and Technology Exhibition 2014 at SIMTech Auditorium on 9 October 2014.

Created to promote research collaboration in RFID technology, the consortium will seek to raise the productivity levels of laundry services.

Under the terms of the MoU, SIMTech will be responsible for developing RFID solutions tailored to the needs of this industry sector, while participating industry partners will provide domain-specific and application scenarios, as well as jointly test the RFID systems.

Mr Raphael Saw, Chief Operating Officer, Far East Hospitality Management (S) Pte Ltd, said that by adopting RFID technology, the company envisages quantifiable productivity gain and more efficient workflow processes, while minimising safety and health issues associated with the repetitive task of counting and sorting of linen at the hotels.



Likewise, Mr Harry Toh, Director, Orchid Laundry, believes that an automated counting and handover process could potentially reduce the manpower required for counting the laundry by half. He explained, "Our drivers would be able to do pick-ups from more customers as the handover time will be greatly reduced."

The results of the consortium-driven pilots would pave the way for industry-wide, full-scale adoption of RFID systems in the laundry business.

### Singapore Innovation and Productivity Conference (SIPC) 2014

A\*STAR showcased its technologies and programmes for SMEs at the fifth Singapore Innovation and Productivity Conference 2014, held in October at Suntec Convention Centre. The A\*STAR team included representatives from TAP, GET-Up, Institute of High Performance Computing (IHPC), Materials Centre of Innovation (MCOI), Precision Engineering Centre of Innovation (PE COI) and Exploit Technologies Pte Ltd (ETPL).

Mr Liao Eng Soon, Director, GET-UP/TAP, also participated as a conference speaker and panelist, giving his insights into upcoming technology trends for SMEs, and how A\*STAR will continue to help local companies transform and grow their business.

The two-day event was graced by Mr S. Iswaran, Minister, Prime Minister's Office and Second Minister for Home Affairs and Trade & Industry, and was attended by over 350 visitors. Besides plenary and panel sessions from industrialists, academicians and researchers, there was also the Singapore Workforce Development Agency (WDA) – Singapore Manufacturing Federation (SMF) Productivity & Innovation Awards ceremony, as well as the release of findings from the productivity benchmarking study.



#### Editorial Committee

Mr Jason Tan  
Ms Tan Wanjing  
Ms Ho Chiew Yin  
Ms Sarina A. Rahman

#### ENQUIRIES / SUBSCRIPTION

For further enquiries, to subscribe or to unsubscribe, please email: [A-STAR\\_TAP@a-star.edu.sg](mailto:A-STAR_TAP@a-star.edu.sg)  
iSME is published quarterly by A\*STAR. Copyright of the material contained belongs to A\*STAR and shall not be reproduced in whole or part in any format without prior written consent.