Creating Devices for Safe Drinking Water
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T-Up Excellence Awards 2016

Innovative High Performance Server Rack System
Building a Community for Controlled Release and Encapsulation Technologies
Creating Devices for Safe Drinking Water

Established in December 2011, The GoodWater Company is a solution integrator for social and environmental causes. Working closely with Non Governmental Organisations (NGOs), the company actively engages in disaster management and environmental causes.

With its mission to provide clean drinking water for developing countries, remote communities and disaster areas, the company constantly seeks to develop innovative solutions.

The collaboration with the Singapore Institute of Manufacturing Technology (SIMTech) on a T-Up project provided a platform for the company to develop new water filtration devices to further their cause.

This collaboration started in 2014 and is expected to come to fruition in 2016, after the final phase of testing is completed.

The T-Up project enabled The GoodWater Company to develop capabilities in water filter prototype design and in the production of ceramic filters using the inkjet 3D printing technique.

Compared with conventional manufacturing methods, 3D printing allows product components to be fabricated with a wider range of materials and eliminates the need for tooling or machining.

Through the project, the company has also designed and developed a portable filtration device with enhanced filtration performance, which produces clean drinking water that meets the World Health Organization (WHO)’s standards.

Currently, the company aims to create a sustainable system for the production of drinkable water, by condensing the machinery and essential filtration components into a 20-foot container, which the company describes as a “factory-in-a-box”.

If successful, each “factory” is projected to supply clean water to around 300 families per month. This will help to provide great relief to remote and disaster-hit areas.

Enhancing Construction Productivity

About A*STAR’s Technology Developer (TD) grant:

This grant aims to accelerate the development of deployment-ready solutions that can benefit multiple SMEs, and improve their productivity by at least 20 per cent.

The grant is accessible to public sector research performers (e.g. Research Institutes, Institutes of Higher Learning, Centres of Innovation, etc) that want to translate technologies into a deployment-ready stage, for adoption by local Small and Medium-sized Enterprises (SMEs).

About PlanDo: NUS project funded by the TD grant

PlanDo is a project led by A/VP David Chua Kim Huat from the Department of Civil and Environmental Engineering, NUS.

PlanDo is a novel cloud application with built-in lean methodology for collaborative project planning by any company with a schedule slip. The construction industry can benefit from PlanDo, as it allows project control via a collaborative workflow between project owners, consultants, main-contractors and subcontractors.

Potential benefits

- Over 50% increase in weekly task completion rate and 30% increase in productivity.
- Provides a more streamlined medium for collaboration between the companies.
- Identification of key performance indicators and capacity metrics for continuous improvement.

For more information on PlanDo: info@leanstation.com
Improving Productivity and Shopping Experience in Retail Boutiques

Launched in July 2013, A’STAR’s Technology Adoption Programme (TAP) links SMEs with suitable solution providers to address technology needs and to enhance their productivity. Decks Pte Ltd is one of the companies which has benefitted from the programme.

Decks Pte Ltd is a fashion retailer for U.S. Polo Assn, Surfers Paradise and Island Shop. Altogether, the company has 41 outlets and shops across Singapore under the three brands.

For retail stores, manpower and customer service are the top areas of concern. Recognising this, Decks was on the lookout for technology which could improve productivity and service standards.

Through TAP, the company worked with A’STAR’s Research Institutes, the Singapore Institute of Manufacturing Technology (SIMTech) and Institute for Infocomm Research (I²R), and adopted three technology solutions.

With help from TAP, the company was able to test new technologies in a low risk manner and scale up the technology deployment to more retail stores. These technologies have helped Decks Pte Ltd to gain a competitive edge in the market through improved productivity, customer engagement and customer service. Its staff are also happy with the technology adoption as it has simplified their work processes.

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<tr>
<th>Technologies Adopted</th>
<th>Key Benefits</th>
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<tr>
<td>RFID-based Item Management and Tracking System (IMTS) from SIMTech</td>
<td>The customised RFID inventory management solution significantly reduced the stock management process by 2,370 hours and achieved $27,000 in cost savings per month. The accuracy of the information obtained has also increased to 99.8 per cent.</td>
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<tr>
<td>Virtual Try-On (VTO) from I²R</td>
<td>Utilising the system, customers are able to try on clothes virtually. This provides convenience to customers who may not have the time to physically try on clothes.</td>
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<tr>
<td>Video Analytics System from I²R</td>
<td>This system provided insights on customers’ profile and shopping behaviour through customer profiling according to age and gender. With the information, the company re-arranged its product display locations to optimise the shopping experience for its customers.</td>
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Enhancing Productivity using a Scientific Approach

Wong Hing Long Technologies Pte Ltd is a SME that specialises in sheet metal fabrication and precision engineering. One of the challenges that the company faced was the vibrations that occurred during the machining process. Productivity was adversely affected as the vibrations caused surface quality problems and failure to meet the surface tolerance level. The engineers were also unable to derive optimal cutting conditions to increase the productivity level, due to the complicated combination of the products’ geometry, material and tooling dynamics.

Driven by the desire to improve production efficiency and product quality, the company worked with SIMTech on a Collaborative Industry Project (CIP).

**SIMTech’s Contributions**

- Solved the complex mechanism of milling dynamics by analysing tool run-out and the different dynamics of spindle systems.
- Developed and customised quick milling vibration solver for engineers to prevent vibration issues and to optimise conditions.
- Improved the productivity by training the manager, supervisor and process engineers on the developed scientific method.
- Provided consultancy and know-how of advanced machining technology.

**Key Benefits**

By replacing the previous trial and error approach with the developed method, the company has seen significant improvements.

- Reduced Machining Time By Over 30%
- Reduced Chatter Time By Over 50%

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T-Up Excellence Awards 2016

The A*STAR SME Office has officially opened the Call for Nominations of the 6th T-Up Excellence Awards on 15 October 2015.

The objective of this award is to recognise outstanding T-Up Research Scientists & Engineers (RSEs) who have made impactful contributions to local enterprises, and have played important roles in building a knowledge-based, innovation-driven economy through the T-Up Scheme. A maximum of three winners will be selected each year.

The A*STAR SME Office would like to invite T-Up companies to nominate T-Up Research Scientists & Engineers (RSEs) who have completed their secondment, for the above award.

The Call for Nominations for the T-Up Excellence Awards 2016 is open from **15 October 2015** till **31 December 2015**.

Innovative High Performance Server Rack System

ERS Industries Pte Ltd is an established SME that designs and manufactures equipment racks for data centres. In recent years, ERS has faced challenges in providing energy-efficient server racks for data centres and also price competition from countries like China and India.

Through the T-Up scheme, the Institute of High Performance Computing (IHPC) seconded one of its scientists, Dr Keni Wu Chih-Hua, to perform the Computational Fluid Dynamics (CFD) analysis for ERS’ High Performance Server Rack System. Utilising the results, ERS developed the E@Rack that is able to dissipate heat more effectively, leading to lower server temperature and energy consumption.

Bolstered by the earlier success, a subsequent T-Up project was carried out in 2014 to conduct Thermal Flow Analysis for data centres that are equipped with the E@Racks. This enabled ERS to simulate the heat flow in the enclosed system under specified operating conditions, and identify thermal hotspots and areas where heat was trapped in server racks.

Consequently, ERS has been able to recommend better configurations for components such as server racks, chimneys, and fans, to achieve the following results that add further value to its data centre customers.

**Results:**

- Lower server temperature
- Better system reliability
- Longer lifespan of devices
- Improved system performance
- Reduced operating costs
17 April 2015 saw the launch of CoRE-Net by the Institute of Chemical and Engineering Sciences (ICES), where over 40 representatives from 23 companies attended a half-day seminar on the topics of controlled release and encapsulation technologies. The launch marked the culmination of ongoing efforts since 2014, including a technology forum and industry roundtable discussion to promote the exchange of ideas in the field of encapsulation.

The objectives of CoRE-Net are threefold, and we aim to:

- Grow a network of companies with interest in controlled release and encapsulation technologies
- Provide knowledge sharing and networking opportunities
- Enhance the technical expertise of industrial R&D community through seminars and training

Controlled release and encapsulation technologies are relevant in many industry sectors, e.g. personal and consumer care, food and nutrition, and pharmaceuticals. Its potential application to wide-ranging industries is shown by the keen interest demonstrated by companies and has prompted ICES to launch CoRE-Net in response to the recent industry trends.

Join CoRE-Net for valuable opportunities to interact with our researchers and upgrade your capabilities through the various schemes available to SMEs through A*STAR and SPRING. We are pleased that as of mid-Oct 2015 we have 6 CoRE-Net members on board and we look forward to welcoming you in joining our growing network and reaping the benefits!

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