



LS 2 HOLDINGS LIMITED
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MEDIA RELEASE

SINGAPORE'S FIRST ENVIRO TECH INNOVATION HUB TO DRIVE TRANSFORMATION AND CAPABILITY DEVELOPMENT IN THE ENVIRONMENTAL CLEANING

7 June 2023 – Temasek Polytechnic ("TP"), together with the Environmental Management Association of Singapore ("EMAS"), and industry players LS 2 Holdings Limited ("LS2"), Republic Power Pte Ltd ("Republic Power"), Cleantools Pte Ltd ("Cleantools"), Karcher Singapore Pte Ltd ("Karcher"), and Nilfisk Pte Ltd ("Nilfisk") joined hands today to launch Singapore's first Enviro Tech Innovation Hub ("ETIH@TP").

2 This Innovation Hub will serve as a pioneering "Living Laboratory" dedicated to the advancement of sustainable environmental cleaning and integrated facilities management. The first-of-its-kind in Singapore, the hub will serve as a platform for developing capabilities, co-creation and test-bedding of innovative solutions in the cleaning industry. ETIH@TP will be housed within TP and will operate under the joint coordination of TP, EMAS, and LS 2, in collaboration with a consortium of enviro tech partners including Republic Power, Cleantools, Karcher and Nilfisk, with the support of the National Environment Agency (NEA).

3 The seven organisations jointly signed a Memorandum of Understanding today at the CESG Catalyst 2023 event at the Sands Expo and Convention Centre, Marina Bay Sands Singapore. The MOU signing was witnessed by Mr Ng Chun Pin, Deputy Chief Executive Officer (Planning, Corporate and Technology) of NEA and Mr Aw Tuan Kee, Deputy Principal of Temasek Polytechnic.

4 The ETIH@TP will officially open its door at the end of 2023 and will be accessible to all environmental cleaning industry partners in a bid to support transformation in the Environmental Services (ES) industry. ETIH@TP will also promote training and skills development through joint CET courses. *[Refer to [Annex](#) for more information on ETIH@TP.]*

5 Mr Song Kwok Yuen, Director, School of Engineering at Temasek Polytechnic said, "Temasek Polytechnic is committed to support the transformation of the environment industry. ETIH@TP will curate and offer customised workforce upskilling courses and programmes that are validated collectively by government agencies, IHLs and trade associations to meet targeted training needs in the environmental services industry. We hope to grow awareness and upskill workers to adopt new technologies such as robotics and automation, IoT and data analytics in environmental services. We will also develop training programs to support those in new job roles such as, integrated facility specialists, sustainability specialists."

6 Mr Tony Chooi, EMAS President said, "Through consultation and joint effort with the National Environment Agency, TP and EMAS together with enviro tech consortium partners (such as LS2, Republic Power, Cleantools, Karcher, Nilfisk, etc.), the Hub will plan and carry out initiatives for workforce upskilling, talent development and test-bedding of new solutions. EMAS and enviro tech consortium partners will also provide consultancy on outcome-based contracting to help address the issues of manpower constraints and to boost efficiency and productivity in the fast-changing environmental cleaning landscape."

7 Mr. Alvin Ong, CEO of LS 2 said, "Reinventing our operational models and refreshing our skillsets is critical in today's world where technology (such as robotics and AI) will push us to rethink and rebuild our business operating models in order to stay agile and competitive. With the ETIH@TP, we are able to support and expedite the skills and capabilities transformation of environmental cleaning industry players and help them to undergo the relevant digital transition to manage ongoing challenges whilst enabling them to take on fresh opportunities, not just in Singapore but also in global markets. We are therefore seeking like-minded practitioners to join ETIH@TP to grow and contribute to the development of tech solutions, innovations and robotics for the environmental cleaning industry."

8 The launch of ETIH@TP align with the goals of the Environmental Services Industry Transformation Map (ES ITM 2025), which aims to enhance ongoing industry transformation initiatives by fostering the development of technology-driven companies and exploring emerging areas of growth in environmental sustainability. For more information on ES ITM 2025, visit <https://www.nea.gov.sg/industry-transformation-map/environmental-services-industry-transformation-map>.

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About the CleanEnviro Summit Singapore

The CleanEnviro Summit Singapore (CESG) Catalyst 2023 will be held on 7 June 2023, as a by invitation-only preview to CESG 2024. Themed 'Towards a Low Carbon and Just Transition', participants will discuss pertinent issues and generate challenge statements that will be addressed at the main event in 2024.

The biennial CleanEnviro Summit Singapore (CESG) is a global networking platform for thought leaders, industry captains and policy makers. Held from 19 to 21 June 2024, the sixth edition of CESG will explore solutions for enabling net-zero cities, as well as facilitate in-depth discussions and sharing of best practices through high-level plenaries and business forums in the Climate Action, Resource Circularity, and Public Hygiene pillars. CESG 2024 will also feature the Environment Expo, which showcases cutting-edge environmental technologies and services to enable the drive towards green economy. For more information, visit www.cleanenvirosummit.gov.sg.

About LS 2 Holdings Limited

Listed on SGX Catalist since February 2022, LS 2 Holdings Limited is a one-stop integrated environmental services provider, offering a comprehensive suite of cleaning services to a diverse and growing base of customers from the private and public sectors. With an established track record spanning more than 20 years, the Group believes in making strategic investments in new equipment, technology and people to boost its competitive edge and market position. It is an early adopter of new and innovative solutions and provides regular training for its workforce of around 1,500 in order to enhance its service offerings to meet customers' needs and drive service excellence. Attesting to the quality of its service standards and skilled workforce, the Group has been awarded various accreditations, including FM02 L6 BCA, Clean Mark Gold, ISO 9001:2015, ISO 45001:2018, BizSAFE STAR, and SkillsFuture Employer Awards, among others.

About Temasek Polytechnic

Established in 1990, TP is one of the leading institutions of higher learning in Singapore. Currently it offers 36 full-time diploma courses in the areas of applied science, business, design, engineering, humanities & social sciences and informatics & IT. It also offers over 40 part-time courses, up to the advanced diploma level. TP students undergo a holistic learning system that combines hands-on experience, character education and relevant life skills, in an enriching learning environment. The Polytechnic has also infused global realities into its programmes and developed a mindset on campus that embraces socio-cultural diversity. Believing in the possibilities of tomorrow, Temasek Polytechnic is committed to co-creating a better world with its stakeholders by nurturing the next generation of values-centred leaders, lifelong learners and future-oriented creators. For more information, please visit <https://www.tp.edu.sg>.

About EMAS

Environmental Management Association of Singapore (EMAS) was first established in 1986 by service providers from contract cleaning, waste management and pest control industries. The aim of EMAS is to provide a cohesive platform for companies in the environmental industry to raise the professionalism of the industry and to address the common concerns of environmental and hygienic services. EMAS is represented in Tripartite Cleaning Cluster chaired by NTUC, Tripartite Committee for Low Wage Workers and Inclusive Growth chaired by Ministry of Manpower (MOM), Public Hygiene Council, Workplace Safety and Health Council chaired by MOM, and Cleaning Sectoral Tripartite Committee chaired by National Environment Agency (NEA). EMAS will continue to be the conduit for industry players to engage the government, service buyers and the union. EMAS does this by fostering information exchange and creating potential strategic alliances amongst members, industry, government agencies and overseas partners. Since its inception, EMAS has organised various activities such as seminars, mission trips, trainings, etc, to promote and expand the interest of its members and the Industry. EMAS also disseminates information and industry updates which are useful for both business and professional development.

About Republic Power

Republic Power has over 8 years of experience in enterprise-level software development, Republic Power offers a cutting-edge smart facilities management platform that is agnostic to specific industries. Our solutions are tailored to meet the unique needs of both small and large corporations as well as government agencies in Malaysia, Singapore, and Indonesia. Our platform boasts real-time monitoring, efficient resource allocation and workforce optimization, planning, surveillance, and threat detection capabilities, all powered by advanced artificial intelligence for predictive analysis. We pride ourselves on our ability to quickly develop customized software solutions for our clients in various industries, thanks to our pluggable algorithms and modules. As the world navigates the post-COVID-19 era, our business has thrived with the increased demand for digital products and services. Notable examples of our work include a bespoke trolley management system for an airport client and software that predicts language requirements for a cruise terminal client. Our ability to seamlessly integrate hardware and provide IoT connectivity gives us a competitive edge in the software customization sector.

About Cleantools

Cleantools started in year 2000 where we distribute a wide range of cleaning equipment. We actively design and improve products to meet the ever-changing demands of the fickle market and is dedicated to bringing nothing but the best and most affordable to our clients all around the world. Today, Cleantools has ventured into the autonomous sector, where we develop our range of autonomous cleaning machines to cater to the needs of the market. Cleantools believes in the collaboration between humans and robots to deliver efficient solutions. Cleantools focuses on advanced innovations to ensure that our technologies will enhance and improve our clients' operations and results. In Cleantools, your needs are always our priority.

About Kärcher

Kärcher is the world's leading provider in cleaning technology. Founded in 1935, the company made a breakthrough in the cleaning industry with the development of the first European hot water high-pressure cleaner. Headquartered in Winnenden, Germany, it now offers a diverse range of cleaning solutions including pressure washers, vacuums and steam cleaners, home and garden pumps, sweepers and floor scrubbers, and vehicle washers. Kärcher is committed to providing effective, efficient, and environmentally friendly cleaning products. It ensures that sustainability starts with the development of the product and continues through production, supply chain and waste disposal management. For more information, please visit www.kaercher.com/sq/

About Nilfisk

The company was founded on a vision of producing and selling products of the highest quality worldwide and for more than a hundred years, Nilfisk has adapted to the changing needs of markets and customers with innovative products and solutions. With a global sales force and proven sales channels, we have established strong and valuable customer relations and partnerships across the world, and we strive to be at the forefront of technological advancement to drive future customer needs. Today, Nilfisk offers an extensive range of premium cleaning products and a trusted aftermarket offering to the professional market. Our main product lines are floorcare equipment, vacuum cleaners and high pressure washers and a wide range of domestic vacuum cleaners and high pressure washers to consumers worldwide.

ANNEX

About ETIH@TP

R&D Focus - Driving Creativity Innovation and Efficiency

Supported by NEA, ETIH@TP aims to become a one-stop ideation & learning space for development, test-bedding and sharing of industrial best practices and benchmarking for industrial adoption in collaboration with industry players, trade associations, institutes of higher learning (IHLs) and government agencies.

It will gather ideas, perspectives and thoughts from industry players and transform them into projects to create products and services to uplift the entire industry. Under the terms of the MOU, TP will jointly develop and commercialise innovative engineering solutions in the area of environmental cleaning via staff-student projects and student internship programs.

An ecosystem of Research, Innovation and Enterprise (RIE) centres, Proof of Concept (POC) laboratories and training facilities for joint CET courses and industry outreach activities, ETIP@TO will occupy an area of about 200 sqm.

Role of EMAS

EMAS will engage relevant stakeholders to create value to achieve continuous improvement and digital transformation to the cleaning industry.

With the progression from headcount-based contracting to performance-based contracting and now towards an outcome-based contracting model, EMAS aims to lead this transformation with the relevant stakeholders through seminars and experiential learning programs at ETIH@TP.

Role of LS2

LS2 will also jointly develop and commercialise innovative engineering solutions in the area of environmental cleaning via staff-student projects and student internship programmes. It will also create opportunities for student internship programmes as well as offer technical training / operating practices for participants in the emerging areas of environmental cleaning.

Our Partners

Republic Power, Cleantools, Karcher and Nilfisk will contribute specialised equipment, robots and technological knowhow to jointly develop and commercialise innovative engineering solutions as well as educational and upskilling programs in the area of environmental cleaning and integrated facility management.

One of the new technologies in ETIH@TP is the Envirotech Testbed@TP, a configurable Internet of Things (IoT) platform for integrated optimisation of workforce performance, equipment deployment and facility monitoring built with expertise from partners such as Republic Power, Cleantools, Karcher and Nilfisk. The IoT platform can perform AI analysis of images from surveillance cameras of targeted facilities for inspection and audit.

Talent Development

To equip the workforce with the latest digital skills in environmental cleaning and applied knowledge in environmental management, ETIH@TP with its IHL partners will offer an array of courses across various levels – from tertiary to continuing and professional education. This will develop a strong pipeline of environmental and sustainability services as the industry expands teams and deepens the relevant capabilities to serve the growing needs of Singapore and the region.

ETIH@TP aims to create greater awareness on emerging job roles for a redesigned workflow and work environment to attract young talent to explore multidisciplinary career options in the environmental cleaning industry. To encourage workers to train and upskill, TP will offer courses with training grants from SkillsFuture Singapore to support progressive wage model adoption in the Environmental Services industry

Vast Opportunities and Bright Prospects

With ETIH@TP, those in the environmental cleaning industry can look forward to acquiring new skills and adopting new enviro tech tools and solutions to arm themselves to tap the vast opportunities in Singapore and overseas.

According to a report by Allied Market Research, the global cleaning services market was valued at \$55,715 million in 2020 and is projected to reach \$111,498.8 million by 2030, registering a CAGR of 6.5% from 2021 to 2030. [Source: <https://www.alliedmarketresearch.com/cleaning-services-market>]

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