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Happy International Women's Day!







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LIGNOSON the plywood alternative



Mapletree Challenge 2023 Spotlights SIT's **Budding Entrepreneurs**



NEW/S

Urban Land Institute to Host 2023 Asia Pacific Summit in Singapore

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LIGNOSON – the plywood replacement



Plywood has been used since the Egyptian and Roman times, it is a preferred material used in furniture and home building for its durability. Applications for plywood are widespread including construction, home, retail, and office interior works and furnishings such as cabinetry, woodworking, renovations and outfitting.

In 2019, the world consumed 165 million cubic metres of plywood and was responsible for the creation of more than 3 billion tons of carbon dioxide. Deforestation happens because of mankind's insatiable appetite for wood.

Regulations and protectionism to slowdown deforestation plus the tightening of sustainable forestry management means lesser supply of logging available for plywood, and against the continuing rise in demand, prices of plywood can only continue to increase unabated.



Alternatives, like medium density boards (MDF) and particle boards are made from recycled wood waste, unfortunately plywood can only be made from virgin wood. Plywood is desirable because of its superior performance properties, resilience and durability. Currently there is no direct replacement for plywood until now.

As global demand continues to increase, the search for a viable replacement to plywood has become more pressing, the desire is to find a non-wood based replacement but at the same time performs exactly like plywood.

Curious inventor and eco-preneur, Dr. Andrew Dekguang Jhou Chew, decided to challenge the notion of creating a board/panel not from wood, but with the same performance characteristics of plywood. Initially collaborating with Malaysian Palm Oil Board (MPOB), the invention to produce a revolutionary panel/board that is a direct replacement for conventional plywood was made from Empty Fruit Bunch (EFB) Fibre, an abundant biomass waste of the palm oil industry.

Then came the formation of Lignoson with a global perspective and mission. The enhanced technology leverages on the global abundance of lignocellulosic fibre waste such as rice and wheat straw waste, which is a waste problem faced by all agri-food based countries around the world.

The top 20 countries in the world that grow rice and wheat also have a domestic plywood industry and these countries are net importers of plywood. What this means is that there is a ready supply of waste material and current existing demand, what is missing is the catalyst that brings both the left and right side of the supply chain together. Lignoson wishes to share with these countries the technology to be able to produce plywood replacement from rice and wheat straw waste.

Put the power in the hands of these countries to slowdown deforestation, help restore the water and carbon cycle and help to reverse climate change.





LIGNOSONIA IS A GREAT EXAMPLE OF CIRCULARITY

Environmental sustainability is by definition; "the ability to maintain an ecological balance in our planet's natural environment and conserve natural resources to support the wellbeing of current and future generations.

Circularity offers a credible sustainable solution; one that designs out waste, produces value-added products and materials to replace conventional products in use. Lignosonia boards/panels is a great example of circularity. It uses the palm biomass fibre waste, rice and wheat straw waste, reuse, remake, recycle, upcycle and renew to products and materials that replaces the conventional counterpart products and materials.

It's an infinite cycle; we resolve the waste problem, slowdown deforestation, meet consumer and commercial demand, operate in harmony with Mother's Earth to preserve its finite resource and delicate environment, more importantly, contribute significantly to reversing climate change. When Lignoson is successful in propagating the adoption of Lignosonia boards/panels around the world as a direct replacement for conventional plywood then, we have a real fighting chance to reverse almost 10% of the world's annual CO2 emissions. This is a doable and credible solution that is all about adoption much like electric cars and renewable energy but with a much lower hurdle to success.

Now isn't this mission worth fighting for to defend Mother Earth, preserve our natural forests and eco-systems and provide an environment on planet Earth that promotes the wellness and well-being of mankind.

TECHNOLOGY FEATURES & SPECIFICATIONS

- Produced material comparable to Grade A plywood in all performance parameters including modulus of rupture (MOR), modulus of elasticity (MOE) and water swelling
- Lower CAPEX & OPEX compared to producing conventional plywood
- Conversion process able to utilize standard commercial manufacturing equipment
- Activates the lignin within the agricultural biomass and transforms it into Mother Nature's superglue without the use of formaldehyde-based binders commonly used
- Utilizes a series of hot presses under swinging and cyclical pressures and temperatures



POTENTIAL APPLICATIONS

- Homebuilding
- Furniture
- Packaging
- Sports Equipment
- Automotive Industry
- Marine Industry

MARKET TRENDS & OPPORTUNITIES

Based on market research, the global plywood industry is about US\$120 billion evenly split between woodworking and homebuilding/construction. It has an expected compounded annual growth rate (CAGR) of 7% to 9.4%. With the increasing demand for sustainable materials and the valorization of agricultural waste, there is a probability for the technology to emerge as a sustainable replacement for conventional plywood in the global marketplace.



UNIQUE VALUE PROPOSITION

- Sustainable solution as a direct replacement to plywood that reduces deforestation and recovers tremendous amounts of CO2
- Non-added formaldehyde (NAF)
- Valorized plywood replacement comparable to Grade A plywood
- A credible global solution that contributes to reversing climate change

The technology owner is open to various forms of collaboration including IP licensing, BOT, joint ventures, equity investors and PPP. This presents an opportunity for businesses around the world to be involved in the commercialization of this potential business and to be part of a credible solution to reverse climate change, slowdown deforestation, recover significant amounts of CO2 and save Mother Earth. Woodworking companies and furniture companies who use **LIGNOSONIA** in producing their finished products can enjoy intrinsic value through applying for 'green' labelling as they are now selling 'green' furniture.

'At **LIGNOSON**, we believe that those who are in the position to do, has the responsibility to do, to influence a mindset change, to create change, and to create a better future. We have the responsibility to leave behind a world better than the world we inherited, so that our children and our children's children can continue to enjoy a healthy and quality life on this planet we call home.

We at **LIGNOSON** are prepared to transfer the technology to these countries so that they can benefit from true circularity; waste/resource is abundant, demand is strong, and we get to heal and protect Mother Earth while doing good and make monies.'



Celebrating Women in Sustainability on International Women's Day 2023

Let's be efficient, responsible and organic in showing our love to Mother Earth Let's stand on strong roots of the womren gone before us and spread our branches for the generations coming after us by aiming for a bigger purpose than ourselves Happy International Women's Day!



Women have always been at the forefront as primary caregivers for their families, they influence at least 70% of the household decisions. They understand their local ecosystems better and can better advocate for the necessary changes so our and our future generation respect and benefit from our natural environment.

Empowered women can definitely make the change from the grassroots level and experienced professionals can take it to the societal and national level and as a community, it becomes our responsibility to make sure that happens.

With the Singapore green plan 2030 looming large, efforts need to be taken and fast to access not just every business and community space but also every household, where women unarguably have the maximum influence on a daily basis. Celebrating Women's Day, Green Pulse has lined up – women who play a major role in the Singapore's sustainability space.

We can easily conclude that when women get involved, it becomes easier for the family as a unit and the society at large to make the necessary mindset shift – from these women it is evident that sustainability too follows the same theory.



Each time we talk about sustainability and climate change we often say that nature is impartial, unfortunately nature doesn't really care. It will always find a solution. It is our responsibility in making our planet liveable for us and making sure we benefit from it and enjoy the richness it offers. Let's all make it happen - *Dr Sussie Ketit, Founder of SGP FarmTech, adjunct faculty at SUSS and current SIBL President*





Our future generation deserves to live a happy, healthy, and purposeful life. As a scientist and an entrepreneur, I would do everything in my power to ensure they have equal opportunities, healthy food choices with sustainable options like alternative proteins, and a clean planet with no cruelty. I hope to see more Women in STEM believing in themselves and overcoming challenges that threaten our food security. – *Dr Sandhya Sriram, Founder and CEO of Shiok Meats, Forbes Women in Tech*

Amidst the concerning global narrative of climate change and urbanisation, the future of our cities is full of challenges and opportunities. We still have the chance to revisit, realign and redesign our thoughts, processes, methods and approaches towards embracing not just a 'City in Nature' vision but a 'City as Nature' perspective for achieving a sustainable, resilient and liveable environment for the next generation. I am optimistic that the momentum to change the status quo is stronger than ever, and the regenerative approach to planning and designing our built environments will help upturn the sustainability curve from net zero to net positive in the near future. – *Dr. Srilalitha Gopalakrishnan, President of SILA, Postdoctoral Researcher at Singapore-ETH Centre*



Mapletree Challenge 2023 Spotlights SIT's Budding Entrepreneurs

Six sustainable innovations pitched at The Grand Final

24 April 2023 – Mapletree Investments ("Mapletree" or "the Group") and the Singapore Institute of Technology ("SIT") successfully concluded the fourth edition of The Mapletree Challenge Grand Final. Team PowerPod, a group of Year 2 SIT students, impressed the judges and took centre stage with their proposal of a centralised battery charging system for efficiently charging Electric Vehicles (EVs). Emerging as champion among the six finalist teams from SIT, the team walked away with a cash prize of \$5,000.

Singapore's target to have 60,000 EV charging points by 2030 as part of its EV Roadmap spurred Team PowerPod to analyse the sustainability of installing and maintaining such EV charging points in the long run. The winning team began exploring renewable energy options such as solar energy and proposed an Energy Storage System which harnesses energy from solar power, as an alternative to charging EVs at fixed charging points.

First held in October 2018, The Mapletree Challenge seeks to groom the next generation of sustainability stewards. With the theme 'Sustainability and Innovation', this year's Challenge was held from February 2023 to April 2023, where participants were equipped with masterclasses on leadership, personal development and value pitching; a forum discussion on entrepreneurship and innovation by leading young entrepreneurs; and gained first-hand insights on their business ideas from industry luminaries through a small group mentorship programme.

12 teams were selected to compete at the semi-finals, with six teams progressing to the Grand Final to vie for the Mapletree Gold, Mapletree Silver and Mapletree Bronze awards. Ms Gan Siow Huang, Minister of State, Ministry of Education & Ministry of Manpower, presented the awards to the winners, which included cash prizes of \$\$5,000, \$\$3,000 and \$\$2,000 respectively.



The Mapletree Gold winner, PowerPod, with MOS Gan Siow Huang at The Mapletree Challenge 2023 Grand Final.

Professor Tan Thiam Soon, Institute Professor, SIT said, "As a university that imbues sustainability in our operations, education and research endeavours, our close collaboration with Mapletree has

been meaningful in nurturing the next generation of change-makers and building a collective of young entrepreneurs year on year. About 100 students across various disciplines had signed up for the Mapletree Challenge this year and we received proposal submissions from 19 teams. We hope our SITizens will use their knowledge and skills to create value through innovation and make meaningful contributions to society."

Mr Edmund Cheng, Chairman of Mapletree said, "We are heartened to see that the Mapletree Challenge has continued to inspire and enable SIT undergraduates to develop entrepreneurial ideas. We hope that participants will continue pursuing solutions for a sustainable future and bring their innovations to fruition."

The finalist teams spurred several new ideas in the realm of sustainability – from repurposing spent coffee ground to produce food additives, plant-based squid snacks to conserve the ocean habitat, a sustainable EV charging system harnessing solar energy, a mobile app installed on old phones for home security, a clip-on device measuring power consumption, to a smart battery storage facility that prolongs battery life.

About Singapore Institute of Technology

The Singapore Institute of Technology (SIT) is Singapore's first University of Applied Learning, offering industry-relevant degree programmes that prepare its graduates to be work- and future-ready professionals. Its mission is to maximise the potential of its learners and to innovate with industry, through an integrated applied learning and research approach, so as to contribute to the economy and society.

The University's unique pedagogy integrates work and study, embracing authentic learning in a real-world environment through collaborations with key strategic partners. Its focus on applied research with business impact is aimed at helping industry innovate and grow. Targeted to be ready in 2024, SIT's centralised campus within the larger Punggol Digital District will feature a vibrant learning environment where academia and industry will be tightly integrated with the community. For more information, visit www.SingaporeTech.edu.sg.

About Mapletree

Headquartered in Singapore, Mapletree is a global real estate development, investment, capital and property management company committed to sustainability. Its strategic focus is to invest in markets and real estate sectors with good growth potential. By combining its key strengths, the Group has established a track record of award-winning projects, and delivers consistent and high returns across real estate asset classes.

The Group manages three Singapore-listed real estate investment trusts ("REITs") and seven private equity real estate funds, which hold a diverse portfolio of assets in Asia Pacific, Europe, the United Kingdom ("UK") and the United States ("US"). As at 31 March 2022, Mapletree has assets under management of S\$78.7 billion, comprising office, retail, logistics, industrial, data centre, residential and student accommodation properties.

The Group's assets are located across 13 markets globally, namely Singapore, Australia, Canada, China, Europe, Hong Kong SAR, India, Japan, Malaysia, South Korea, the UK, the US and Vietnam. To support its global operations, Mapletree has established an extensive network of offices in these countries.

For more information, please visit <u>www.mapletree.com.sg</u>.

The judges for the Grand Final included:

- Mr Kent Williams, Head, Group Development Management, Regional (excluding China & SEA), Mapletree Investments
- Mr Eugene Yeo, Chief Executive Officer, Hyperscal
- Professor Ho Yew Kee, Cluster Director, Business, Communication and Design, Singapore Institute of Technology

Prize	Team & Members
Mapletree Gold	PowerPod
(\$5,000 cash)	PowerPod analyses the sustainability of installing and maintaining EV charging points in the long-run and explores renewable energy options such as solar energy. The team proposes using a centralised battery charging system (an Energy Storage System which harnesses energy from solar power) to efficiently charge EVs, as opposed to charging EVs at fixed charging points. When you park your EV at a shopping mall carpark, the centralised battery charging system which is powered by robot and autonomous driving technology, locates your EV with the help of IoT. As the detachable robot approaches the EV, the cover of the charging socket of the EV automatically opens to facilitate battery pack charging. Upon retrieving your EV after an hour or two, there is enough power charge for the EV to cover a distance of 100km. This relieves the driver of maintaining sufficient battery charge on a given day and eliminates the hassle of finding an EV charging point lot that could be occupied during peak periods.
	 Team members / Degree Programme: 1. Li Haowei (Team Lead), Computer Engineering 2. Tan Kee Yee, Electrical Power Engineering 3. Marcus Teo Rui Jie, Electrical Power Engineering 4. Tang Ming Jean, Sustainable Infrastructure Engineering (Land)
Mapletree Silver	Sea-No-Meat
(\$3,000 cash)	With the need to preserve the ocean habitat and address the microplastic pollution in the oceans, Team Sea-No-Meat suggests consuming plant-based food options as substitutes for meat and seafood. The team proposes the production of 'Çumil', a plant-based squid snack made from yellow peas and konjac. High in dietary fibre and being trans-fat free, the easy-to-prepare snack offers a healthier food option to the consumer.
	Team members / Degree Programme:1. Nur Ifaaf Ismail – Team Lead2. Ng Wanyu3. Ngee Ee Lin4. Esther Ong Su Xin5. Tor Shi Qi6. Bryan Tan YiAll the above students are from the Food Technology degreeprogramme.

Mapletree Bronze (\$2,000 cash)	The Beans The Beans propose the idea of repurposing spent coffee ground into functional food in the form of coffee nibs, small pieces of crushed roasted coffee beans that have a bitter, chocolatey flavor and are a good source of fibre, protein and healthy fats. In 2021, the global functional food and beverage market was worth USD281.14 billion. The market is predicted to grow at a compound annual growth rate of about 9.5 percent between 2021 and 2028. The coffee nibs to be produced by the team would be used as food additives. These healthy food additives can be added to a range of food products including energy drinks, protein shakes and low GI baked goods. For example, the team proposes to add 5% of coffee nibs to the production of Coffee Soba noodles.
	 Team members / Degree Programme: 1. Jonathan Yee Rou Sun – Team Lead 2. Jaedyn Wong 3. Teo Wei Shan 4. Lim Zhi Xin All the above students are from the Food Technology degree programme
Consolation Prizes	SIT Social Entrepreneurs
(\$1,000 cash)	PwrClip is an IoT-based, non-intrusive clip-on device that measures power usage of electrical appliances in households. Team SIT Social Entrepreneurs designed this sensor device to create awareness on excessive power consumption and encourage sustainable habits in saving energy. The device is clipped onto the AC cable of an electrical appliance and collects data on power usage through electromagnetism. This electricity usage information is then wirelessly transferred to the user's smartphone. The software application on the smartphone displays usage patterns, trends and provides analysis of the user's energy-saving habits.
	 Team members / Degree Programme: 1. Gan Jia Le Caleb (Team Lead), Mechatronics Systems 2. Johannes Gan Dombrowski, Electronics and Data Engineering 3. Clarissa Ow, Computing Science 4. Lee Weichen, Information and Communications Technology majoring in Information Security
	Team Mobil Team Mobil addresses the issue of mass disposal of used phones by repurposing them into smart home security systems. This helps to extend the lifespan of a mobile phone and reduce e-waste. The 'MoBii' app downloaded on the old phone will host a suite of smart home security functions. This phone will be installed at the home entrance. The app features include a doorbell function, 24/7 surveillance monitoring, unlocking of entrance door through face recognition, message notification of food/product delivery and voice communication with delivery personnel.

(12)

Team members / Degree Programme:

- 1. Sim Jia Yew Team Lead
- 2. Tan Jun Peng, Harron
- 3. Bevan Quek
- 4. Shannon Yeo Jun Wei
- 5. Ang Jin Yang
- 6. Cheng Jia Jun Kelvin

All the above students are from the Computer Engineering (specialisation in intelligent transportation) degree programme.

ABDY

Team ABDY proposes a UAV SMART battery storage facility that prolongs the useful life of LiPo batteries. The solution also paves way for a more sustainable, safe and efficient way of charging and maintaining LiPO batteries.

The storage facility can monitor the health status of the battery, which includes current, voltage, internal resistance, state of charge and temperature. This data is transmitted using IoT messaging to a website accessible to the user.

The storage facility also periodically monitors the health status of the battery every 3 months and automatically charges/discharges a battery based on the parameters monitored. It also possesses fast charging capability for the LiPo battery to be ready for operational use. There is also a safety circuit breaker feature that disconnects a battery from overcharging.

Team members / Degree Programme:

- 1. Belinda Soh Hui Hui Team Lead
- 2. Chee Boon Loong, Aloysius
- 3. Darren Au Xian Yong
- 4. Ng Yang Kai

All the above students are from the Systems Engineering (Electromechanical Systems) degree programme.

Urban Land Institute to Host 2023 Asia Pacific Summit in Singapore

More than 700 Real Estate Decision Makers Will Gather 29 May – 1 June to Address Challenges and Opportunities in Asia Pacific's Commercial Real Estate Sector

SINGAPORE, 25 April 2023 – The Urban Land Institute (ULI) announced its **2023 Asia Pacific Summit** will take place in Singapore from 29 May to 1 June, bringing together more than 700 decision makers from all corners of Asia Pacific's commercial real estate industry to address current and future challenges facing the region.

The three-day summit will feature a range of expert panels and remarks by industry leaders to share insights into global trends in real estate, including the challenges of inflationary pressures, supply chain constraints, rising interest rates, and economic uncertainty. Discussions also will focus on solutions to improve housing attainability, social equity, and sustainability in cities across the region and globally.

Keynote speaker Minister Indranee Rajah, who serves as Minister in the Prime Minister's Office, Second Minister for Finance, Second Minister for National Development, and Leader of the House for the 14th Parliament, will headline the summit and share how events of recent years have shaped Singapore's urban development initiatives. Other prominent speakers include Prof. Khoo Teng Chye, Director, Practice Professor with the College of Design and Engineering at the National University of Singapore (NUS) and Chair of ULI Asia Pacific; Benett Theseira, Managing Director at PGIM Real Estate and head of Asia Pacific; and Mr. Lim Eng Hwee, Chief Executive Officer of Singapore's Urban Redevelopment Authority (URA).

In addition, the summit will organise experiential study tours, including the Central Business District, Changi, and the Thomson-East Coast Line (TEL) – Singapore's newest Mass Rapid Transit (MRT) line and one of the world's longest driverless rapid transit lines.

"The emerging and developed economies of the Asia Pacific region remain bright spots for investors amid economic headwinds and will drive much of global growth in the years to come," said **David Faulkner, President, ULI APAC.** "Leveraging this increased investment in ways that advance social and environmental goals will be key to creating more livable and inclusive cities. Singapore's unique approach to urban development – including its initiatives for affordable housing, multi-use developments, and easier connectivity to outdoor spaces – can serve as useful blueprints for other cities in the Asia Pacific region as they tackle the challenges of rapid urbanisation."

"The future of cities around the world will be shaped by the current trend of rapid urbanisation and how we respond to the many challenges it presents," said **Ron Pressman, Global CEO, ULI**. "This is especially true in the Asia Pacific region, where innovative thinking and a collaborative approach will be needed to build thriving communities, address gaps in affordable housing, and stay on track to meet net-zero targets. By bringing together leading cross-disciplinary experts to exchange innovative solutions to these pressing issues, the ULI Asia Pacific Summit will help equip the region's industry leaders to turn challenges into sustainable growth opportunities and build a better future for all."



SPECIAL NOTE FOR PRESS

Members of the media interested in attending the ULI Asia Pacific Summit from 29 May to 1 June at The Ritz-Carlton, Millenia Singapore may contact Jemima Huang from Progressive Communications at <u>jhuang@progressive-comms.com</u>.

For the complete agenda, please visit https://apacsummit.uli.org/programme/.

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About the Urban Land Institute

The Urban Land Institute (ULI) is a non-profit education and research institute supported by its members. Its mission is to shape the future of the built environment for transformative impact in communities worldwide. Established in 1936, the Institute has nearly 46,000 members worldwide representing all aspects of land use and development disciplines. For more information on ULI, please visit uli.org or follow us on Twitter, Facebook, LinkedIn and Instagram.

ULI has more than 2,600 members in the Asia Pacific region. For more information on ULI Asia Pacific, visit asia.uli.org or follow us on Facebook, Instagram, LinkedIn and Twitter.



Green In Future is a novel venture of like-minded professionals with

achieving a sustainable future as the target. Among the many services provided, the diffusion of technology to as many as possible and as far as possible, educating and generating awareness by being the link between the producer and the user, giving adequate training to the interested to adopt an innovation in Urban Landscaping, Urban farming, Education, Environmental issues and Health etc. are in the forefront.

For further details, please contact:

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