

“Batteries are a key enabler of renewable energy.”

Battery Reincarnation

Lina Lee is co-founder and Executive Director of Durapower Holdings Pte Ltd, a Singapore-based energy storage solutions provider. Lina tells Nomura Greentech that she is extending the duration of electric vehicle batteries by giving them a second life as energy storage for renewables.



Q | Durapower's motto is 'lives empowered future transformed'. What first sparked your interest in sustainability? And can you tell us about your career journey?

I co-founded Durapower in 2009 together with my family at a time when fossil fuel depletion and air pollution was an emerging theme.

That led us to really think about the deployment of renewables. Electric vehicles were in their infancy but when you look into the EV transition, energy storage is a very big component.

Batteries are also a key enabler of renewable energy. Solar energy is taking off in many countries but we need to address intermittency and grid instability. Storage is the answer when the sun isn't shining. We entered this business to build that core enabler for the EV and energy transition.

I've always been mindful of environmental issues and climate change. We only have one Earth and we have to protect it not only for our generation but for future generations too.

Q | What does your role as executive director at Durapower involve?

I'm involved in company strategy, and I also look after the corporate functions such as human capital development.

Through Durapower's corporate vision to power the future, I strongly believe in empowering people to achieve their potential. And this is the key agent to drive and transform the future.

We are centered around our core values. To travel globally we need a visa and at Durapower we have our own VIISA, which stands for value creation, integrity, innovation, sustainability and adaptability.

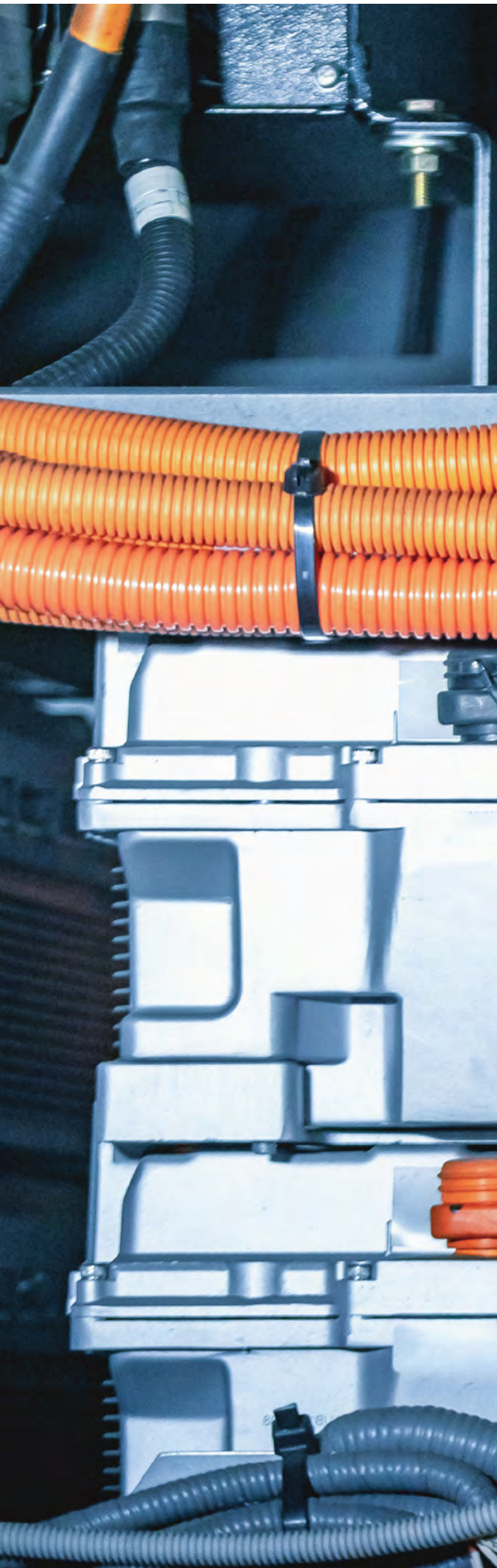
It means understanding client needs and building that roadmap together to create value. We are constantly innovating as a key driver to be a leader in the commercial electric vehicle sector.

And every business has to be sustainable so at Durapower that's about the circular economy that we build end-to-end from the research and development of battery materials to cell manufacturing, integration and recycling them back to second life and end of life.

So sustainability is very important to us. And in today's dynamic world, being adaptable is very important.

Q | Your business model is centered around large battery systems suitable for heavy duty and autonomous vehicles and the battery circular economy. How will Durapower develop over the next decade?

We've been supplying battery solutions for commercial electric vehicles from hybrid fleets of buses to full electric since 2011. We started with the China market and today we are present in more than 20 countries and over 40 cities across the world.



We are headquartered in Singapore and have our manufacturing base in China, with immediate plans to build global manufacturing facilities. We have more than 450 employees, a big presence in Europe and plans to grow there to be closer to our clients.

We recently announced a joint venture in Thailand for battery assembly set up.

Q | You recently supplied batteries for the world's first automated port and hybrid ferry. What were the challenges?

Battery technology has grown leaps and bounds but there's still much room for improvement. We have different battery solutions for different applications. In commercial fleet operations, a critical factor compared to regular passenger vehicles is the total cost of ownership which means fast charging capability to reduce downtime, and lightweight batteries that reduce the weight load and space for more passengers and goods.

For port operations, we have been supporting the PSA Singapore (Port of Singapore Authority) since 2012 starting with two hybrid diesel-electric automated guided vehicles (AGVs) to now fully electric AGVs.

In 2020 we started developing marine applications for our battery solutions. We built on the technology during the Covid-19 pandemic when everybody was in lockdown.

We are blessed to have strong partners and engineers that were able to deliver even during the challenging circumstances of the pandemic.

Singapore's first hybrid ferry, equipped with Durapower's lithium-ion battery solution, operates in the Singapore waters, and we also power fully electric vessels operating in Thailand.

Marine electrification is progressing rapidly amid a realization that sea transportation is also a big source of pollution and destroys precious marine life. I'm happy to say that today Durapower is one of the few battery companies worldwide that are both automotive and marine certified.

Q | Do you see any limitations for battery technology?

The sky's the limit. Efficiency gains are available in the chemical processes, performance, capacity and integrating the technology into real world solutions.

There is often hype in the market on breakthrough technologies but we must be mindful about the business viability. If it's still at the lab level, it may take time to commercialise technology for mainstream electrification.

Q | Are you concerned about mineral shortages and price spikes in lithium considering the importance of energy storage in the green transition?

The supply chain crunch has been a big topic this year and we have seen volatile prices for battery materials. It suggests demand outstripping supply as multiple companies look to scale up fast.

There was a time lag as the upstream exploration and extraction companies couldn't match the demand from downstream producers. But I expect this to resolve itself over the next few years as more mineral processing comes into development.

We are agnostic in terms of materials. As part of our future roadmap, we continue to invest in R&D to create next generation batteries that are less reliant on scarce resources.

Q | Singapore recently announced a net zero 2050 target. What role can Durapower play as a domestic company in helping achieve that milestone and how important are public-private partnerships to achieve your goals?

In Singapore, emissions are dominated by industry and energy sectors. Durapower is ready to support the acceleration towards net zero emissions.

For green public transportation, the Land Transport Authority aims to electrify half of its public bus fleet by 2030. Durapower has expertise in bus fleet electrification.

Singapore has set a goal to deploy 60,000 electric vehicle charging points by 2030 and Durapower foresees a role in helping the government reach that target. We have proposed solutions to integrate our energy storage with their charging infrastructure to reduce the burden on the grid.

Public-private partnerships play a crucial role in terms of funding support for pilot projects as proof of concept. We have co-invested with the Singapore government and Institutes of Higher Learning to set up a battery material research lab to house research outcomes and key intellectual property. We are working with our partners to establish local supply chains and mass production of the new generation batteries within the region.

Q | How do you see the market opportunity developing in the ASEAN countries between public transportation and 2-wheelers / micro-mobility?

ASEAN (the Association of Southeast Asian Nations) is a very exciting place right now. The Southeast Asia region is ready to build a local ecosystem through a bloc of countries with everything from upstream resources, IT, manufacturing, logistics and R&D capabilities to downstream implementation and demand.

For certain countries, two and three wheelers might be the main target for electrification while for others it may be public transportation. We are also trying to develop the market for battery cell manufacturing.

It's really about identifying what makes sense for each market and forging partnerships with local companies and the local governments. Southeast Asia is where we will see an inflection point in this EV and energy transition over the next few years. It is the place to be and home to Durapower and we hope to continue to contribute in building up the regional ecosystem and create value and jobs.

Q | You have an arm that provides a second life for used batteries. Is that a significant growth area given the increase in old batteries from EVs? And how far away are we from achieving a circular economy in the battery industry?

Once batteries reach 60-80% efficiency they are no longer used in the automotive industry but they are viable for stationary storage to support renewable energy. This gives them a second life in an economical and sustainable way.

Our digital platform, DP Pulse, was launched earlier this year. It leverages data science and machine learning to extract value from data collected by batteries, enables battery owners to make data-driven decisions to improve battery life, health and performance, and enables predictive maintenance, failure prevention and replacement planning.

DP Pulse can help optimize the use of these second life batteries to maximize performance and prolong the life of the battery system.

It's a very interesting market but it's still at a nascent stage. Second life batteries also have the potential to benefit the underprivileged. In Southeast Asia, some rural communities have no access to a clean and stable source of electricity so used EV batteries can help support rural electrification.

Certain battery materials are more valuable than others when it comes to recycling them back into raw materials. We are researching how to return them to the value chain as a circular economy solution.

Q | Who's your sustainable hero and why?

It is really every person on the street who is playing their part to protect the environment through small actions like recycling materials or not using plastic straws.

They are the sustainable heroes that are unseen but through small actions great things can be achieved. The ordinary person making a difference highlights that through collective action we can decarbonize the planet.



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