SIEWCast: Mr Yu Tat Ming, CEO of PacificLight

Michelle Martin (Money FM 89.3) 00:00
This SIEWCast is brought to you by Singapore International Energy week and MoneyFM89.3 in partnership with Saudi Aramco. Welcome to another SIEWCast. I'm Michelle Martin. This is a series where I chat with visionary leaders about the energy transition, challenges and opportunities. What does it take to power a nation through an energy transition, while staying reliable, resilient and ready for the future, we're going to find out with CEO of PacificLight.

His name is Mr. Yu Tat Ming. Mr. Yu, welcome to the programme.

Yu Tat Ming (PacificLight) 00:31
Thank you.

Michelle Martin (Money FM 89.3) 00:32
It's great to meet you. As someone leading one of Singapore's power generation companies, what is top of mind for you now, and are your priorities evolving in a situation where the energy system is moving as well?

Yu Tat Ming (PacificLight) 00:45
I think we always like to strike a balance between energy security, affordability and climate goals against the need to meet the rising demand of electricity in Singapore, provide grid stability due to the proliferation of intermittent generation capacity, like solar panels, and most importantly, how to overcome the lack of natural resources in Singapore.

Take the example of our 670-megawatt power plant going to be built by 2029. It is the single largest generation capacity and the most efficient in Singapore, capable of burning hydrogen with the unique feature of integrating onsite battery energy storage system.

So, that enables us to harness the technologies to the fullest, because Singapore has certain limitations on how big the unit can be here to 600 megawatts. With a battery installed, we can make the system, power plant much bigger and more efficient. And more importantly, the onsite electricity generation can instantaneously inject 70 megawatts to arrest any shortage in supply. So that's a very critical consideration when we build 670 megawatts.

And more importantly, the plant derives immediate benefits to the consumer because by being the most efficient, so our fuel costs will also be lower, and we also emit less electricity on a unit generation basis, by more than 40% as compared to the system average. The plant is also future proofed for the future, because this plant is capable of burning hydrogen so as and when the renewable sources become commercially viable, we can switch seamlessly to the new hydrogen source. Then also we have the new 100-megawatt faster machine, which can spring from standstill to full capacity in 18 minutes, which will come into operation by the middle of this month.

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So, this will enable us to restore balance between supply and demand, should there be any interruption with supply, particularly in the case of Singapore, where we will consider seeing more and more intermitting solar energy being deployed in Singapore. So as and when the weather changes, then there is an imbalance between supply and demand, then this machine comes in handy to restore the balance between supply and demand.

And lastly, but not the least, we are also developing a massive solar PV project on Bulan Island, which is just 40 kilometers off Singapore waters. So that will bring renewable electricity to Singapore by 2029 and that will take us closer to a target of meeting 30% of energy needs met by imports by 2035.

So, these are the measures that PacificLight has been taking to position ourselves to not just meet the current needs, but how we transition to a net-zero future in Singapore.

Michelle Martin (Money FM 89.3) 03:40
A lot of insights there. I'd just like to zero in on what you're building – Singapore's largest hydrogen ready power plant. Can you give us sort of an overview of the role that you see this playing in Singapore's energy transition?

Yu Tat Ming (PacificLight) 03:54
I think first of all is that we need to meet the immediate need of meeting the demand, which is still rising in Singapore, because of the data centres, because of the electronic industry, which requires a huge amount of electricity to power them. So, we will be able to builta 670 mega plant within the next few years to meet the immediate need. As I mentioned earlier, the plant is also the most efficient in Singapore and the least emissions on a unit generation basis, so that gives the consumer immediate, direct benefits.

Secondly, as I mentioned, that plant has two unique features. One is that we integrate with the onsite battery storage system, so that can instantaneously inject 70 megawatts in the grid. We are also close to Singapore LNG terminal, which has a huge amount of cold energy. So, we are also considering the feasibility of adopting carbon capture. So, in the event that we cannot switch over to green sources of fuel, we can at least capture the CO2 invariably emitted and sequester it in some remote locations, for example, a depleted oil well. So, these are the things that we want to incorporate in this 670-megawatt power plant, which we are going to build in a few years' time.

Michelle Martin (Money FM 89.3) 05:09
Super impressive. Even the location of the power plant has a role to play in terms of maximising its output, very fascinating. Keeping the lights on is more complex than ever. How is PacificLight making sure that the grid stays stable as Singapore ramps up its power ambitions?

Yu Tat Ming (PacificLight) 05:28
I think that's very important. I think the recent incident in Spain and Portugal, I think, is a wakeup call to many of us, that you know, while we transition to green electricity was to make sure that the grid remains stable. So, few things that we are taking into action is that, first of all I mentioned, the onsite

battery storage system that will instantly inject 70 megawatts of electricity should there be a need. Our fast start 100-megawatt machine which can start from standstill to full load in 18 minutes, will again help us to restore any imbalance between supply and demand. So, I think in the future, as we move to smart grid, smart grid will also play a very important role in managing the dynamics between supply and demand, and that's exactly why we want to carry a pilot project at Punggol, which we can elaborate later.

Michelle Martin (Money FM 89.3) 06:17
Yeah. So, this is Singapore's first smart grid project, right? That's what you are talking about in Punggol? How do you see this kind of initiative unlocking opportunities, not only in smart grid, I suppose, but also digital technology.

Yu Tat Ming (PacificLight) 06:30
Yeah, I think this is a very exciting project, which I believe will serve as a blueprint for the wider applications of smart grid nationwide. Let me elaborate on some of the key features, and then you see why it is so good for the future here. Apart from installing PV panels, battery energy storage system, central to this system is what we call an intelligent energy management system, which can dynamically control the flow of energy. So, the salient feature of this system is that there has to be a two-way communication between the energy providers and the consumers. Unlike the conventional system, there's only one way flow. You flow electricity from a generator to the consumer and it ends.

So, the second feature is that there will be adoptions of technologies, advanced technology, which includes sensors and controllers which can monitor and control the energy flow on a real-time basis. And because of that on-time capability, the grid can better dynamically adjust the energy demand and supply so that they can match it at any instant of time.

And because of that feature, so it is better suited to integrate intermittent energy sources like PV into the system, which invariably will happen in Singapore, and in fact, it's already happened. And the last piece of that feature is engagement with consumers. We give the consumers real time information about their energy consumption pattern, so that they can make a choice as to whether they want to use it now or later, so they can effectively manage their consumption. So, these are the very key features I believe, that would enable us to provide system security, and at the same time integrate intermittent energy sources that will help us to reach our green target.

Michelle Martin (Money FM 89.3) 08:24
Can you elaborate just a little bit on how the communication flows are so different with this smart grid? You mentioned, flows from the consumer to the grid. How does that work, and how would it benefit the consumer?

Yu Tat Ming (PacificLight) 08:35
I think first of all is that right now, there will be a network connection between the provider and the consumer, so the consumer is widespread. So why? With the Internet of Things, you can consolidate all the data. With the smart meter you can monitor the online consumption of each individual consumer. So together with the price signal being sent to the consumers, so the consumer can make a decision

whether they want to use electricity now or they want to ship it to some time when the electricity prices are lower, so that will help us to smooth out the demand.

So, the good feature about this is that, [it] will minimise any wastage, so you don't need to overbuild the capacity. Because right now, if all the consumers were to consume the electricity at the same time, then you need to build a capacity solely for that peak, which will hardly be used in other periods. By dynamically shifting this load, then not only, you can achieve a better security that will also result in a better utilisation of resources.

Michelle Martin (Money FM 89.3) 09:32
So, collaboration is often key to moving the needle when we talk about energy transition and innovation, how is Pacific Light working with others to support its sustainability goals?

Yu Tat Ming (PacificLight) 09:43
I think we can put a different level. First of all, a partnership with like-minded people to achieve a certain goal, partnership with technology providers, and partnership with end customer.

Let's talk about the partnership with like-minded entities. For example, we are embarking on a massive solar project, a project to bring electricity from Bulan Island to Singapore. That’s a partnership between ourselves and an Indonesian entity which knows the system in Indonesia very well, and also partnership with the landowner, who has to provide us the land to install the massive PV panels, as well as the battery end-use storage system. So, we have a shared mission to make it work.

Secondly, is the partnership with technology provider, which can provide us to either install completely new things or improve our existing installation. For example, last year, we partnered with our existing manufacturer for the 800-megawatt power plant, essentially to adapt the latest technology to a 10-year-old power plant. So instantaneously, we transformed the plant to the present technology. So not only were we able to increase the capacity from 800 megawatt to 830 megawatt. We have a quantum jump in efficiency, and that in itself brings about a significant reduction in carbon emissions. Equates to almost taking off 8000 cars off the road a year.

Then finally, as I mentioned, is the partnership for consumers. So, what we call a demand response capability. If you aggregate the demand of some consumers who are willing to offload the consumption when there is a shortage of supply. So again, that will help us to smooth out the requirement for additional generation. So, the partnership at different levels will help us to transition to a green future. So that's what PLP has been doing.

Michelle Martin (Money FM 89.3) 11:41
So, the theme for this year's SIEW 2025 is *Envisioning Energy Tomorrow, Building Systems Today*. How is PacificLight like putting this vision into action?

Yu Tat Ming (PacificLight) 11:53
I think we will reap what we sow, so that the infrastructure that we build not only must be able to meet the current needs, but also with the eye to reach our final target, which is transition to a net-zero here,

right? So, take the case of our 670-megawatt power plant. The plant meets the existing need in a more efficient way. At the same time, the plants can seamlessly transition to grid sources, as and when hydrogen is available.

Secondly is that we need to make sure that we adopt other technology, at the same time we not to just rely on the current conventional electricity generation.

We are also partnering with a company who's going to install waste wood to energy power plant in Singapore that will come into operation in 2027. These are very unique features, which is, I think, the first of its kind in Singapore.

Michelle Martin (Money FM 89.3) 12:45
Did you say waste wood?

M Yu Tat Ming (PacificLight) 12:46
Yes, waste wood. In Singapore, we generate quite a huge amount of waste every day due to wood trimming and pallets from the transportation. So, we are able to convert this waste wood into energy. So again, that project will help us to meet our net-zero target. At the same time, we are also looking into the importation of electricity to make sure that, you know, we are completely green. So, this is a huge project of 600-megawatt that involves land mass of 3000 hectares of land, which is by no means small, right? So, the capital investment is huge, and I think that is the kind of project we are looking in.

And not to mention the project I mentioned that hopefully we can also adapt our 670-megawatts to install a carbon capture facility. Should everything fail, we can still have the last resort that if CO2 were unavoidably be emitted, we have a way to capture them and sequest them.

Michelle Martin (Money FM 89.3) 13:45
Mr. Yu, what would you like our listeners to know? You're on the cutting edge of the energy transition? What would you like the mass listener to know about how Singapore is progressing?

Yu Tat Ming (PacificLight) 13:53
I just want to let the audience know that energy is a very exciting sector in Singapore. We are going through a very massive transition. No longer is a conventional power plant. We have new technology coming in, adoptions of not just a fiscal plant, but new ideas, adoptions of advanced technology, like the digital technology in the power grid system.

So, I would encourage everybody who are interested in this field and really take it up as a career. And in fact, we do need good engineers and technologists to help us transition from the current stage to a net-zero future. And this is a very massive transition that requires the input of huge amounts of talents in all fields. So for those that are listening, I hope that you find it interesting and take this up as your career choice.

Michelle Martin (Money FM 89.3) 14:41

Well, thank you for that very optimistic note. I'm sure that's of definite interest to many of our listeners as well. Mr. Yu Tat Ming, CEO Pacific Light, thank you so much for being on the SIEWCast.

Yu Tat Ming (PacificLight) 14:51
Thank you.

Michelle Martin (Money FM 89.3) 14:52
Thank you for joining us on SIEWCast, the podcast on the cutting edge of insights from leaders shaping our energy future. Until next time, I'm Michelle Martin.

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