



AmInvestment Bank

Thematic Report

23 Sep 2025

Gan Huey Ling, CFA

gan-huey-ling@ambankgroup.com

+603 2036 2305

POWER

The BESS Play

NEUTRAL

(Maintained)

Rationale for report: Sector Update

Investment Highlights

Stock Universe

YTL Power

TP: RM4.88

Rec: BUY

Upside/Downside: +15.9%

Malakoff

TP: RM0.88

Rec: HOLD

Upside/Downside: -10.2%

Mega First

TP: RM5.18

Rec: BUY

Upside/Downside: +38.9%

Solarvest

TP: RM2.40

Rec: HOLD

Upside/Downside: -11.8%

We believe that battery would be the next area of growth in the RE (renewable energy) space. However, growth would be driven by government policies such as the BESS tender and self-consumption (SelCo) requirements. It is unlikely that C&I (commercial and industrial) customers would voluntarily install battery systems as they are expensive. A battery system would almost double the cost of installing the solar panels. Risk is the rising cost of batteries. Similar to the recent increase in the price of solar panel, there is a possibility that battery prices would start inching up after falling in the past 11 years. Battery storage is needed to facilitate the increase in solar capacity in the country and address intermittent issues while the grid is being upgraded. Malaysia's current RE capacity is 4,500MW with infrastructure supporting up to 6,000MW of capacity. We reckon that the upcoming LSS 6 tender would require battery storage. Potential bidders or asset owners in the government's recent BESS tender are Mega First, Malakoff, YTL Power, Citaglobal and a unit of Seal Incorporated. Potential BESS EPCC players include Solarvest, Pekat Group, Sunview Group and Samaiden. We are Neutral on the power sector.

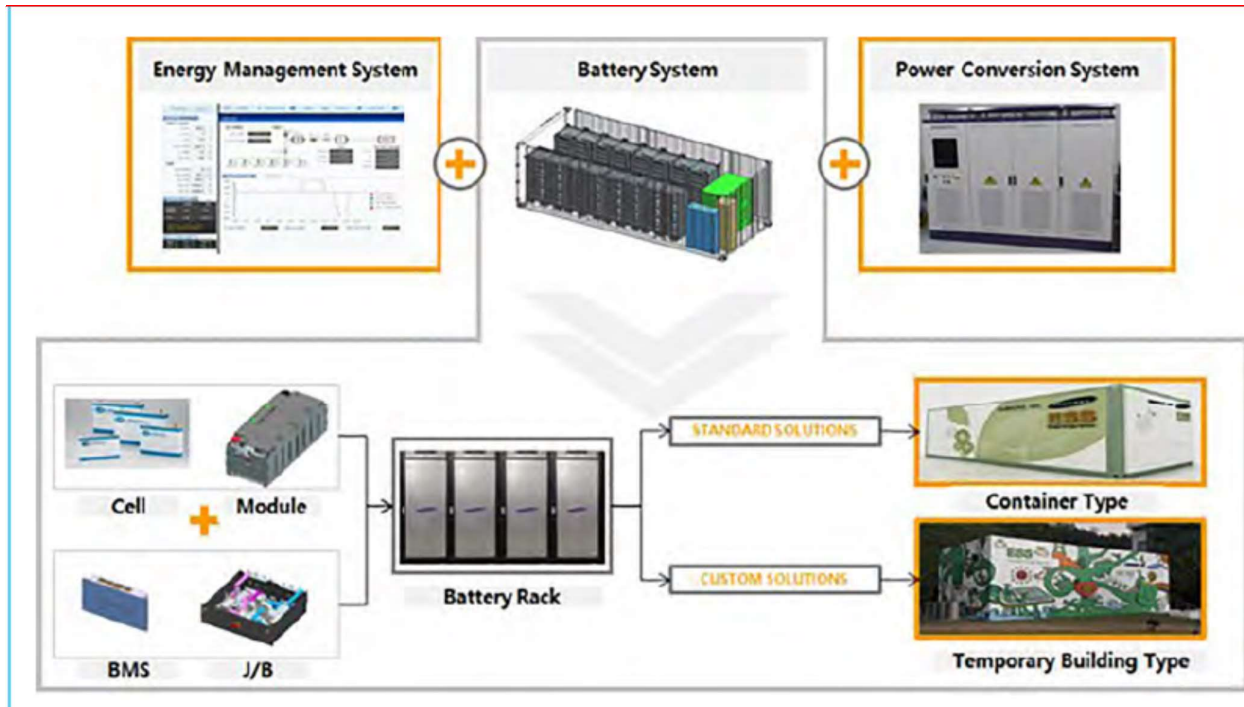
- **Winners of BESS (battery energy storage systems) tender may be announced in 4Q2025 or 1Q2026.** Under the government's BESS tender, there are four packages of 100MW/400MWh each. The tender closed at the end of July. Separately however, TNB has launched its own BESS tender. The tenders by TNB were for two sites i.e. Teluk Intan and Putrajaya. These closed on 27 June 2025. Prior to this, TNB's tender was for PMU 132kV (Transmission Main Intake) Santong, Dungun, Terengganu. The tender for Dungun closed on 20 February 2025.
- **SelCo (self consumption) requires battery storage.** From 1 January 2026 onwards, non-domestic users installing solar systems with capacity larger than 72kWh would be required to install battery storage on a 1 for 1 basis. Users with systems larger than 1MWp would also have to pay a monthly standby charge of RM12/kWh to TNB.
- **IRR is likely to be high single-digits.** Like the recent LSS tender, we believe that the IRR for the BESS tender would range from 8% to 9%. We reckon that the business model for BESS would be similar to a PPA (Power Purchase Agreement) for power plants. This means that companies offering BESS to TNB would receive payments when the battery releases electricity to the grid and capacity payments when the battery is idle. We think that the bidder's capacity rate factor and variable operating rates would probably be derived by assuming a certain profit margin, project cost and rate of return.
- **Sarawak and Sabah's BESS have commenced operations.** Sarawak Energy commissioned Malaysia's first BESS at the Sejingkat Power Plant in December 2024. The 60MW/82MWh BESS costs about RM128mil and encompass 22 containerised battery units. Sabah's BESS started commissioning in early-July with a reserve energy of 50MW during peak demand and is expected to reach 100MW in August. Sabah's 100MW/400MWh BESS, which was awarded to MSR Green Energy (30%-owned by Seal Incorporated), cost about RM644.6mil.
- **BESS industry is expected to grow.** Although the IRR for BESS may not exceed 10%, we believe that the outlook for BESS is positive as more storage is needed to facilitate the rise in solar capacity. BESS would allow solar energy to be stored during peak hours and then released to the grid in the evenings.

What is BESS (battery energy storage system)?

A BESS consists of several components

First, a set of batteries, which are connected to each other and placed on racks. Second, a battery management system, which checks parameters such as voltage and temperature. Third, a power conversion system, which converts direct current to alternating current. Fourth, an energy management system, which monitors and optimises energy flows. Finally, cooling systems such as fans or liquid to reduce the heat of the battery system.

EXHIBIT 1: COMPONENTS OF A BESS



Source: Korea Battery Industry Association 2017, Asian Development Bank

Lithium ion batteries are most commonly used

Lithium ion batteries are widely used as they are efficient, versatile and dense. Downsides are they are highly flammable and the mining or extraction process of lithium may be environmentally unfriendly. Other types of batteries include lead-acid, flow and sodium-ion.

EXHIBIT 2: PROS AND CONS OF DIFFERENT TYPES OF BATTERIES

	Pros	Cons
Lithium ion batteries	High energy and load factors Long life cycle High capacity	Risk of thermal runaway Degradation at high temperature Need for transportation regulation when shipped in large quantities
Lead acid batteries	Low cost Capable of high discharge currents Good performance at low and high temperatures	Slow charging Limited cycle life Low specific energy Need for storage in charged conditions
Nickel cadmium batteries	The only high battery that can be ultra fast-charged Good load performance Long shelf life Simple storage and transportation	Low specific energy Cadmium is toxic; cannot be disposed in landfills High self-discharge; needs for recharging after storage Low cell voltage of 1.2V

Source: Korea Battery Industry Association 2017, Asian Development Bank

How much battery storage is required?

This depends on the number of hours or days that are required to be backed up. In TNB's tender for a 100MW/400MWh BESS, the BESS can store and deliver 100MW each for four hours.

In terms of space, a large BESS e.g. 100MW may require more than five acres of land.

Issue is battery degradation

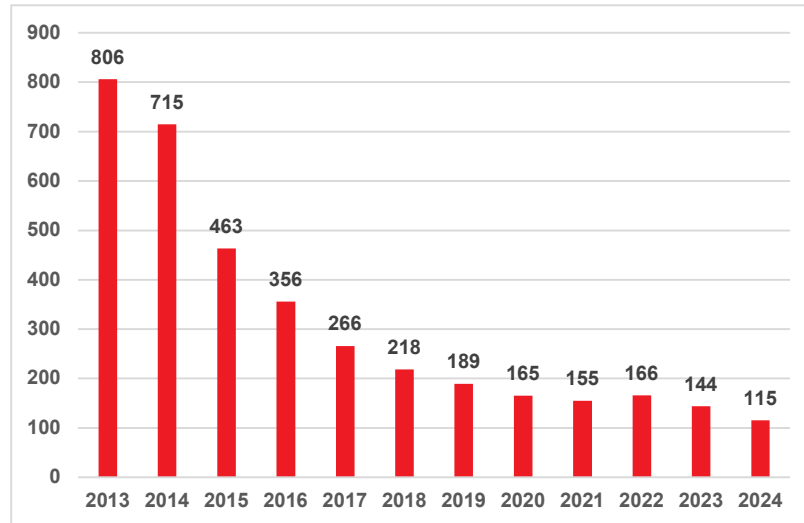
Battery degradation is caused by changes in temperature, aging and the constant charging and discharging. The rate of degradation for lithium ion batteries is about 2% to 4% per year. To mitigate degradation, smart charging and temperature management have to be practiced. Generally, a BESS can last for almost 15 years.

Battery prices may start rising after falling in the past 11 years

There is risk that battery prices may follow the recent upward trend in solar panel prices. Price of polysilicone, which is used to make solar panels has been rising since the middle of July on news that China is cutting production capacity in the solar panel industry. According to *Bloomberg*, polysilicone price has gone up by 43.9% to US\$7.02/kg since the middle of July.

Battery prices fell from 2013 to 2024. According to *BloombergNEF*, battery prices recorded the largest fall of 20% in 2024. Battery prices have been declining since 2013 due to overcapacity, a glut in China and weak sales of electric vehicle cars.

BloombergNEF said that the average price of a lithium ion battery pack (weighted for cars, buses, commercial vehicles and stationary storage) plunged by 30.3% from US\$165/kWh in 2020 to US\$115/kWh in 2024.

EXHIBIT 3: VOLUME WEIGHTED AVERAGE PRICE OF LITHIUM ION BATTERY (US\$/KWH)

Source: BloombergNEF

BESS tender in Malaysia may cost more than RM500mil each

Assuming a cost of US\$300/kWh, a 100MW/400MWh BESS may cost about RM510mil.

Using Sabah's 100MW/400MWh BESS as a gauge, the RM644.6mil project cost translated into about RM1,612/kWh or US\$380/kWh.

Apart from battery, the other costs include installation and system components such as switchgears.

China is the world's largest producer of batteries

According to the IEA (International Energy Agency), Chinese battery manufacturers have a few advantages such as extensive manufacturing know-how and an integrated supply chain from the mining of the mineral to the final production of the product.

Some of the established BESS manufacturers are CATL (Contemporary Amperex Technology Ltd), BYD and Samsung SDI.

Downside of a BESS

There is risk of a fire or explosion if the system overheats. Also, the initial capex may be high. In the RFQ (Request for Qualification) for BESS in Malaysia, bidders must show that they have raised at least RM500mil in total financing for an infrastructure project in the past five years.

Valuation and recommendation

Healthy balance sheet needed to own a BESS

As BESS is capital intensive, we believe that only the large utility companies would be able to own and manage the assets. According to news reports, there were more than 20 bidders in the government's BESS tender. These included Malakoff, YTL Power, Tenaga Nasional and Mega First.

BESS EPCC players would be the same as solar EPCC

These include Solarvest, Pekat, Samaiden and Sunview Group. We think that the EBIT margin for BESS EPCC works would be below 10%.

Buy MFCB (TP: RM5.18/share) and YTL Power (TP: RM4.88)

MFCB's valuations are undemanding at 7x FY26F earnings. The group has a proven track record as it has a 325MW hydropower plant in Laos and 95MW of solar assets. Also, MFCB's Edenor oleochemical joint venture is expected to swing into the black in 2HFY25.

Although YTL Power is not a prominent player in the RE space, the group has decades of experience in the Malaysian and Singaporean power industry. YTL Power also plans to build a 500MW solar farm for its data centres in Johor.

EXHIBIT 4: VALUATION MATRIX

	Share price (RM)	EPS (sen) FY25F	EPS (sen) FY26F	PE (x) FY25F	PE (x) FY26F	Target price (RM)	Rec	Upside/ (Downside)
Malakoff	0.98	5.2	6.3	18.9	15.7	0.88	Hold	-10.2%
Solarvest	2.72	8.2	11.2	33.2	24.3	2.40	Hold	-11.8%
Mega First	3.73	42.9	51.8	8.7	7.2	5.18	Buy	38.9%
YTL Power	4.21	29.3	31.7	14.4	13.3	4.88	Buy	15.9%

Source: AmlInvestment Bank

DISCLOSURE AND DISCLAIMER

This report is prepared for information purposes only and it is issued by AmlInvestment Bank Berhad ("AmlInvestment") without regard to your individual financial circumstances and objectives. Nothing in this report shall constitute an offer to sell, warranty, representation, recommendation, legal, accounting or tax advice, solicitation or expression of views to influence any one to buy or sell any real estate, securities, stocks, foreign exchange, futures, investment or other products. AmlInvestment recommends that you evaluate a particular investment or strategy based on your individual circumstances and objectives and/or seek financial, legal or other advice on the appropriateness of the particular investment or strategy.

The information in this report was obtained or derived from sources that AmlInvestment believes are reliable and correct at the time of issue. While all reasonable care has been taken to ensure that the stated facts are accurate and views are fair and reasonable, AmlInvestment has not independently verified the information and does not warrant or represent that they are accurate, adequate, complete or up-to-date and they should not be relied upon as such. All information included in this report constitute AmlInvestment's views as of this date and are subject to change without notice. Notwithstanding that, AmlInvestment has no obligation to update its opinion or information in this report. Facts and views presented in this report may not reflect the views of or information known to other business units of AmlInvestment's affiliates and/or related corporations (collectively, "AmBank Group").

This report is prepared for the clients of AmBank Group and it cannot be altered, copied, reproduced, distributed or republished for any purpose without AmlInvestment's prior written consent. AmlInvestment, AmBank Group and its respective directors, officers, employees and agents ("Relevant Person") accept no liability whatsoever for any direct, indirect or consequential losses, loss of profits and/or damages arising from the use or reliance of this report and/or further communications given in relation to this report. Any such responsibility is hereby expressly disclaimed.

AmlInvestment is not acting as your advisor and does not owe you any fiduciary duties in connection with this report. The Relevant Person may provide services to any company and affiliates of such companies in or related to the securities or products and/or may trade or otherwise effect transactions for their own account or the accounts of their customers which may give rise to real or potential conflicts of interest.

This report is not directed to or intended for distribution or publication outside Malaysia. If you are outside Malaysia, you should have regard to the laws of the jurisdiction in which you are located.

If any provision of this disclosure and disclaimer is held to be invalid in whole or in part, such provision will be deemed not to form part of this disclosure and disclaimer. The validity and enforceability of the remainder of this disclosure and disclaimer will not be affected.