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Electrifying the Industrial Sector in Malaysia

The Edge, Malaysia



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Carbon Tax and CBAM Compliance

As a new era of carbon pricing reshapes Malaysia's heaviest industries, a quiet shift in electrification is already underway — and companies leading it are not just cutting emissions, but also costs.

For decades, Malaysia's heavy industrial sector has operated under a familiar set of rules. Raw material costs, labour, and logistics determined the bottom line. Today, that landscape is changing with increasing expectations for companies to deliver on their sustainability commitment.

2030 is the moment of truth globally when projects, capital and operating models must already be delivering results to set the pace for net zero by 2050.

In Malaysia, Prime Minister Datuk Seri Anwar Ibrahim tabled Budget 2026 and announced the introduction of a carbon tax on the energy, iron, and steel industries. It is the first time in the nation's history that carbon emissions carry an explicit financial cost. The tax is designed to promote the adoption of low-carbon technologies, with revenue channelled into green research and technology programs.

For business leaders, the question is no longer whether carbon costs matter. It's how quickly they can turn this into a competitive edge.

Why Electrification is the Answer

Among the range of decarbonisation strategies available — Carbon Capture, Utilisation, and Storage (CCUS), renewable energy procurement, process optimisation — electrification stands out for a simple reason: it delivers on two fronts simultaneously. It reduces emissions, yes. But more importantly for the bottom line, it makes industrial processes fundamentally more efficient.

Traditional heavy industrial operations in Malaysia's energy, iron, and steel sectors rely on fossil-fuel combustion for heat, power, and material processing.

This is energy-intensive by nature. As the transition to a low carbon future accelerates, fossil fuel-based processes are increasingly being replaced with clean electricity. In heavy industry, including refineries and petrochemical facilities, the shift from mechanical turbines to electric drive trains is already underway, with ABB delivering such projects in Malaysia, Indonesia and Qatar.

Electric motors, the workhorse of industry, represent another major opportunity. ABB's IE5 synchronous reluctance (SynRM) motors, paired with drives, reduce motor energy losses by up to 40% compared with commonly used IE3 induction motors. This has now been extended to IE6 hyper-efficiency SynRM motors, which deliver a further 20% reduction in losses for higher

power industrial applications, pushing efficiency benchmarks even higher.

But technology alone isn't the complete answer. Services play an equally critical role in unlocking these efficiency gains. ABB's Retrofit & Modernisation Services help reduce operating costs by up to 33%, extend asset lifecycles by as much as 30 years, and improve energy capacity by up to 20 — all with minimal downtime measured in hours rather than weeks.

The implications extend beyond Malaysia's borders as well. The European Union's Carbon Border Adjustment Mechanism (CBAM) begins imposing carbon-related tariffs on imported energy products, iron, steel, and cement from January 2026.

Malaysian exporters who can demonstrate lower carbon intensity in their production processes will hold a significant advantage.

Balancing Carbon Costs, Grid Reliability and Power Affordability

For Malaysia's energy and power generation sector, the challenge is twofold: reduce emissions to meet the new carbon tax threshold, and maintain grid reliability while keeping electricity costs stable.

ABB's electrification solutions — including smart grid systems, high-efficiency power distribution, and digital substation technologies — effectively address both challenges.

ABB has AI-powered IoT solutions for electrical systems in the grid which enables fault prediction, event monitoring and analysis, and alert notifications for equipment such as protection relays, switchgear, and transformers. This enhances the stability and reliability of electricity distribution.

ABB Ability™ zenon SCADA system provides real-time control, supervision, and data collection, with remote access to the monitoring interface. Supporting multiple communication protocols, including IEC 61850, the solution optimises electrical systems operation and reduces downtime.

With these systems in place, energy distribution losses can be reduced, and power flow will be optimised in real time — improving overall electrical network performance.

The government has set a clear mandate for the nation's industrial future. The National Energy Transition Roadmap and the Steel Industry Roadmap 2035 both point in the same direction.

The carbon tax that begins in 2026 targets iron, steel, and energy first, before moving on to other industries. Companies that start their electrification journey now will stand to gain — turning compliance into a competitive advantage.

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