



Mobile energy storage

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Mobile battery energy storage systems offer an alternative to diesel generators for temporary off-grid power. Alex Smith, co-founder and CTO of US-based provider Moxion Power looks at some of the technology's many applications and scopes out its future market development.

Diesel generators have long served as the stopgap power source for industries that rely on off-grid temporary power, such as construction, live events, film, utilities and disaster relief. Unfortunately, generators come with unwelcome side effects including noise, fuel and maintenance costs, and - most concerning of all - millions of tons of greenhouse gas emissions each year.

On top of carbon emissions, diesel generators in California's South Coast and Bay Area communities alone emit an annual 20 tons of fine particulate matter, 62 tons of volatile organic compounds (VOCs), and nearly a thousand tons of nitrogen oxide, the single most significant ozone-depleting emission.

Exposure to diesel exhaust has been linked to lung cancer and is classified as carcinogenic to humans by the World Health Organization.

As a result, industry and regulatory pressure has mounted for cleaner temporary electricity alternatives that address the shortcomings of diesel generators and protect the planet. Net-zero targets have been set by more than 140 countries and the private sector is following suit. More than 9,000 companies have pledged to halve global emissions by 2030.

Fortunately, an innovative, cleaner solution is gaining traction to replace dirty generators: mobile battery energy storage systems (mobile BESS).

Mobile BESS products provide mobile, temporary electricity wherever and whenever it's needed. By storing low-cost off-peak grid power and dispatching it onsite as needed, mobile storage provides operators with emissions and noise-free electricity - often for days or weeks without having to recharge.

For certain applications, where swapping or recharging is difficult, hybrid operation with a generator is an option. This method can still deliver 50-80% fuel savings and emissions reductions, while providing a learning period for customers to get accustomed to the new technology. From remote construction sites to disaster response hubs, mobile BESS products are delivering reliable, affordable power everywhere generators can.

And the world is listening. In 2023, one of Time Magazine's Best Inventions was a mobile battery system.

Compared to diesel generators, the benefits of mobile batteries are clear. Diesel generators emit carbon dioxide, harmful particulate matter, volatile organic compounds, nitrogen oxides, and other pollutants. In



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contrast, mobile batteries produce no exhaust fumes, improving local air quality and worker health. Unlike loud diesel generators, mobile battery storage systems operate virtually silently. By eliminating disruptive noise, batteries facilitate clearer communication between workers on construction job sites or disaster relief efforts, better experiences at live events and more productive environments for film production.

Replacing fossil-fuel-burning generators with zero-emission battery storage also reduces projects' carbon footprints. This helps companies follow emissions regulations, achieve their decarbonisation goals, and align with global efforts to reach net zero emissions. Operators can also avoid costly diesel fuel markups since mobile batteries charge from cheap off-peak grid or microgrid power.

Generators need to idle to be ready to dispatch electricity. This constant operation wastes energy, fuel and money. On the other hand, mobile batteries simply wait on standby and provide immediate power when it's needed.

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