Mobile power plants are taking to the high seas

Part of: GS-III- S&T (PT-MAINS-PERSONALITY TEST)

As economic lockdowns complicate efforts to bring electricity to every corner of the planet, one company is putting generation units on ships that can sit offshore and plug into local grids at short notice. Karpowership is busy marketing floating power plants across the developing world, where governments are seeking extra voltage to power hospitals and other facilities to keep the lights on during the coronavirus pandemic.

Benefits

- Vessels can hook into an onshore grid quickly, sidestepping the red-tape and construction issues involved with building a traditional power plant.
- And these ships come with their own fuel -- liquefied natural gas and fuel oil -- tapping into markets that are currently oversupplied.
- “We can deploy them in less than 30 days,” Zeynep Harezi, chief commercial officer of Karpowership, said by phone from her office in Istanbul where the ships are designed.
- The generators on the ships can produce between 36 megawatts to 470 megawatts of electricity and are already fully financed. While the ships use fossil fuels and present a challenge to the global drive for cleaner energy, they remain among the few solutions for feeding power to remote areas.
- Such ships can work well in places with high barriers for onshore power stations or that lack access to gas pipelines

Risks

- High cost and up-front capital requirements. Also, floating power plants concepts compete with more traditional units that run on liquid fuels, renewables and nuclear power, which may receive governmental support over LNG, the report said.
- Karpowership has the biggest fleet of the vessels. Starting from the first ship for Iraq, which took three years to build in 2010, it now operates 25 such ships in 11 countries from Mozambique to Cuba to Indonesia. Coronavirus hasn’t slowed work, opening some opportunities for new markets instead.

How power ships work in four steps

- LNG tanker arrives and unloads its fuel to another vessel earmarked for floating storage and re-gasification (FSRU)
- LNG is turned back into gas on board the FSRU
- From the FSRU, gas is delivered via a floating gas pipeline to the power ship, whose length varies from 80 meters to 300 meters. There, the fuel feeds generation units on the power-ship.
- Electricity from the ship flows via a transmission line to a tower onshore and into a local distribution grid.

The company converts existing dry bulk vessels, buys engines in bulk and builds them “one after another, almost like a production line. The technology for the power plant is internal combustion engine, rather than more typical turbines. While more expensive to build, they are cheaper to maintain and better suited for countries in hot climates with unstable
grids, which are often in desperate need for power to avoid blackouts. Since traditional power plants on land can take six years or more to complete, floating units have a distinct advantage and can appear in under three months to deal with a surge in demand.