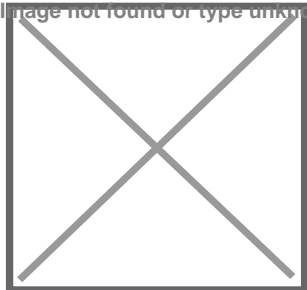


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# Ultracapacitors: the next step for energy storage

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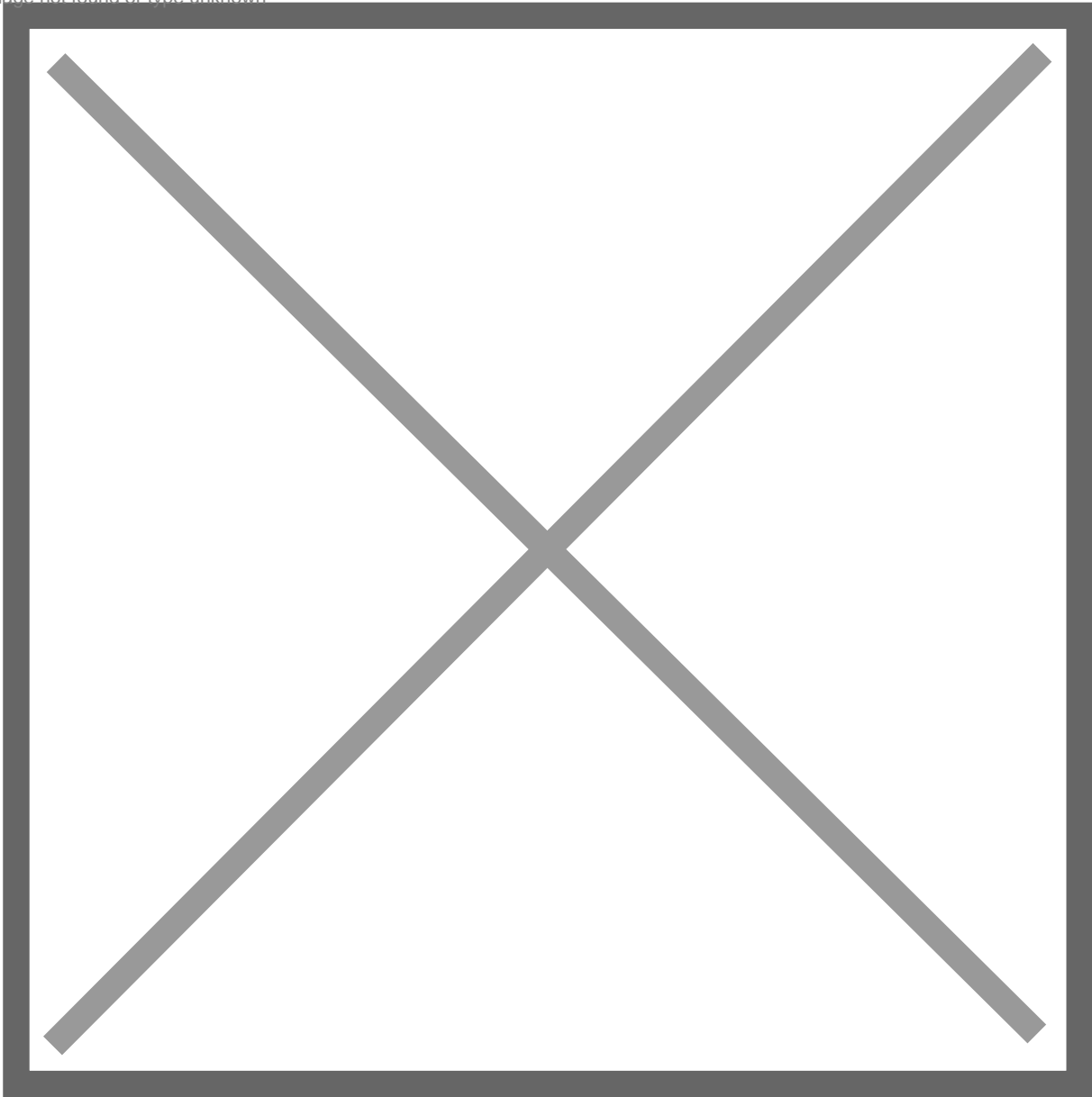
## De Challenge

Ports and terminals require modern equipment and solutions to maximize energy and environmental efficiencies for RTG and STS cranes. Most ports still use diesel-powered cranes. As emission controls continue to become more stringent, port operators have to design and use equipment and technology to reduce energy consumption, enhance sustainability, and minimize the environmental impact of port and terminal operations. New approaches are needed to lessen ports' reliance on fossil fuels and reduce overall energy consumption. Ultracapacitors can help in solving these issues.

## De Solution

Electricity reuse is a key element in any strategy to save energy and reduce emissions. [Skeleton Technologies](#) is offering 3 efficient applications for port crane operators:energy recovery for RTG port cranes (helps to reduce emissions and minimize fuel consumption), peak shaving application used in STS port cranes (frequency fluctuations have no impact on port crane efficiency and operation) and engine start application(less cranking time and reliable engine start in adverse weather conditions). [Watch the innovation pitch from Skeleton Technologies here](#)

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## De Businesscase

Energy Recovery for RTG Port Cranes:

- Longer lifetime of KERS compared to a li-ion solution ?
- Retrofit & downsizing of the diesel powerplant leads to 60% saving?
- Over 30% less greenhouse gases emissions ?
- Less noise from the diesel engine during operation?
- Preventive attitude towards regulation changes

#### Peak Shaving for STS Port Cranes:

- Uninterrupted operation of cranes
- Reduced peak load demand on grid connection point
- Mitigated voltage and frequency fluctuations
- Helps avoid costs related to expanding grid connection point
- Helps avoid costs related to power line capacity

#### Engine Starting for RTG Port Cranes:

- Reliable engine starting system: no battery-based start failures
- 10 – 20 % less cranking time
- Reliable & safe even in extreme temperatures (-40°C to +65°C)
- Cost saving: no costly downtime
- Time saving: maintenance-free device
- Considerably lighter than batteries