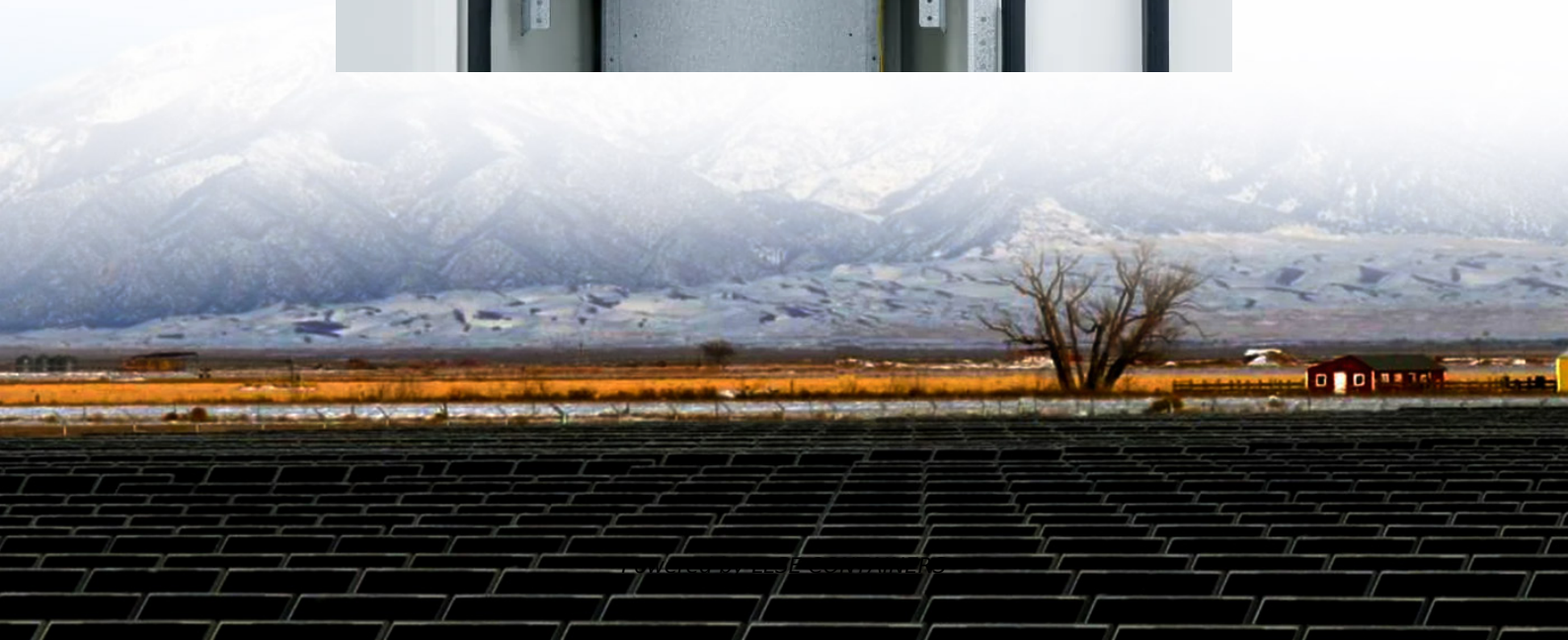


# Requirements for large energy storage power stations





## Overview

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Should energy storage be integrated with large scale PV power plants?

As a solution, the integration of energy storage within large scale PV power plants can help to comply with these challenging grid code requirements 1. Accordingly, ES technologies can be expected to be essential for the interconnection of new large scale PV power plants.

What are the energy storage requirements in photovoltaic power plants?

Energy storage requirements in photovoltaic power plants are reviewed. Li-ion and flywheel technologies are suitable for fulfilling the current grid codes. Supercapacitors will be preferred for providing future services. Li-ion and flow batteries can also provide market oriented services.

Which energy storage options should be used in future grid codes?

While flow batteries could be an alternative option, Lithium-Ion or flywheel energy storage could also be used, specially in those particular cases where very high power is required (e.g. very large photovoltaic power plants). Black start is also one of the candidates to be required in the future grid codes.

How many electrochemical storage stations are there in 2022?

In 2022, 194 electrochemical storage stations were put into operation, with a total stored energy of 7.9GWh. These accounted for 60.2% of the total energy stored by stations in operation, a year-on-year increase of 176% (Figure 4).



## Requirements for large energy storage power stations



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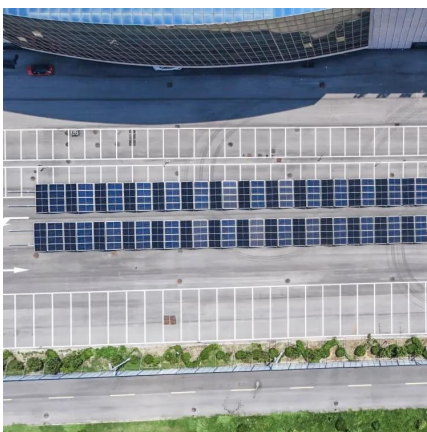
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