

Bess integrators

With the introduction of Battery Energy Storage Systems "BESS", a new role has been created on the value chain. It is the role of a BESS integrator. The role of an integrator can be misunderstood at times or blended with other roles at other times. This is why we are trying here to highlight the role of a BESS integrator and how it is different from other roles and what to look for when selecting an integrator partner for your storage projects.

Let's start with having a helicopter view at how connecting a BESS system may look like. Although it may seem simple at the first glance to connect the Battery Racks, Power Conversion Systems, Transformers, and the Software and Controls together (see fig. 1), it is more complex than that.

The simple answer is "its main role is putting all pieces of the puzzle together", but the long one is... multi-dimensional role comprising of the following objectives:

Just looking at the number of abbreviations regarding the control of a BESS, we can feel the level of complexity this implies and the number of devices that must be synchronized together: EMS, PPC, BMS, MBMU, PMS, SCADA...

So, you have been able to secure (i) a bullet-proof design, (ii) a good "CAPEX" price, and (iii) the needed volumes and timelines for your storage projects. Now it is time to address - the yet mysterious side for many - the long-term performance commitments. Due to battery and components degradation, the system performance changes along the project lifetime, and the integrator should accompany the Client over the entire project lifetime. This implies committing themselves in the long-term to assure that (i) the BESS is well maintained and that (ii) the warranties are respected.

As a BESS asset developer/investor, Product and Performance Warranties are key to de-risk the investment and increasing the bankability of the storage assets. One should always consider this second half of the cost equation "how much will it cost to warrant the overall system performance over the project lifetime?" & "how much will it cost to warrant against flexible cycling profiles if needed*?". One should not be tempted to go for a relatively cheaper solution at year 0, and always consider the project lifecycle costs.

[illegible]

About Trina StorageTrina Storage, business unit of Trina Solar, is a global energy storage systemproviderdedicated to transforming the way we provide energy. Our mission is to lead therenewable energytransition through cost-effective storage and to provideSolar ForEveryoneby expanding solargeneration at scale. Building on 20+ years of solar experience,we deliver cost-effective and flexiblesolutions to utilities



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and developers around the world. More information at Trina Storage website.

While the global market was under the haze of the epidemic and many countries were still in lockdown, the energy storage market showed extremely strong resilience and began to recover and grow since Q3 and Q4 of 2020. According to the BloombergNEF report, the global energy storage market in 2020 has developed faster than expected;

Zhejiang Narada Energy Network Co., Ltd, a subsidiary of Zhejiang Narada Power Source Co., Ltd, is a leading Energy Storage Solution provider with headquarter in Hangzhou, China. Narada Energy Network focuses on smart energy storage services with four core support platforms in terms of integration R& D, test simulation, intelligent O& M as well as global services;

Powerful battery storage offers many advantages in terms of saving electricity costs and a reliable power supply. With this technology, companies retain control of their energy supply and costs. The battery storage system is charged when energy is cheaply available and it supplies the stored electricity when prices are at their highest. With applications such as;

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