

Energy Pool

Smart energy management



**SMART ENERGY STORAGE :
THE 3-IN-1 SOLUTION TO
REDUCE YOUR ENERGY BILL**

Schneider
Electric

Energy Storage as seen by Energy Pool

The tremendous development of renewable energy creates new balancing issues for the electricity grid that cannot be solved easily with traditional means. For instance, over-generation of wind or solar energy during low electricity consumption periods can encourage the grid operator to reduce or stop renewable electricity generation even if the energy is free.

Today's energy storage technology (such as chemical batteries) can reduce this loss of electricity generation, by storing energy during low consumption periods and restoring it when consumption becomes higher. However, the high cost of such technology is a barrier to its large scale deployment today.

Yet many other storage processes already connected to the electricity grid are not being used. In fact, many commercial and industrial facilities already have the capacity to store energy, even though they are not always aware of it. Below are just a few examples:

- A water tower can store potential energy in the same way a pumped storage hydro plant can.
- A cold storage facility can store thermal energy just like buildings can with electric heaters.
- A cement factory can adapt its storage of finished or semi-finished products to the grid's needs.

By putting this storage capacity at the service of the grid or using it to optimize their own energy usage, electricity consumers can generate important savings on their electricity bill.

Examples of industries able to store energy



Cold Storage



Building



Food & Bev.



Cement



Data-center



Ice Rink



Chemistry



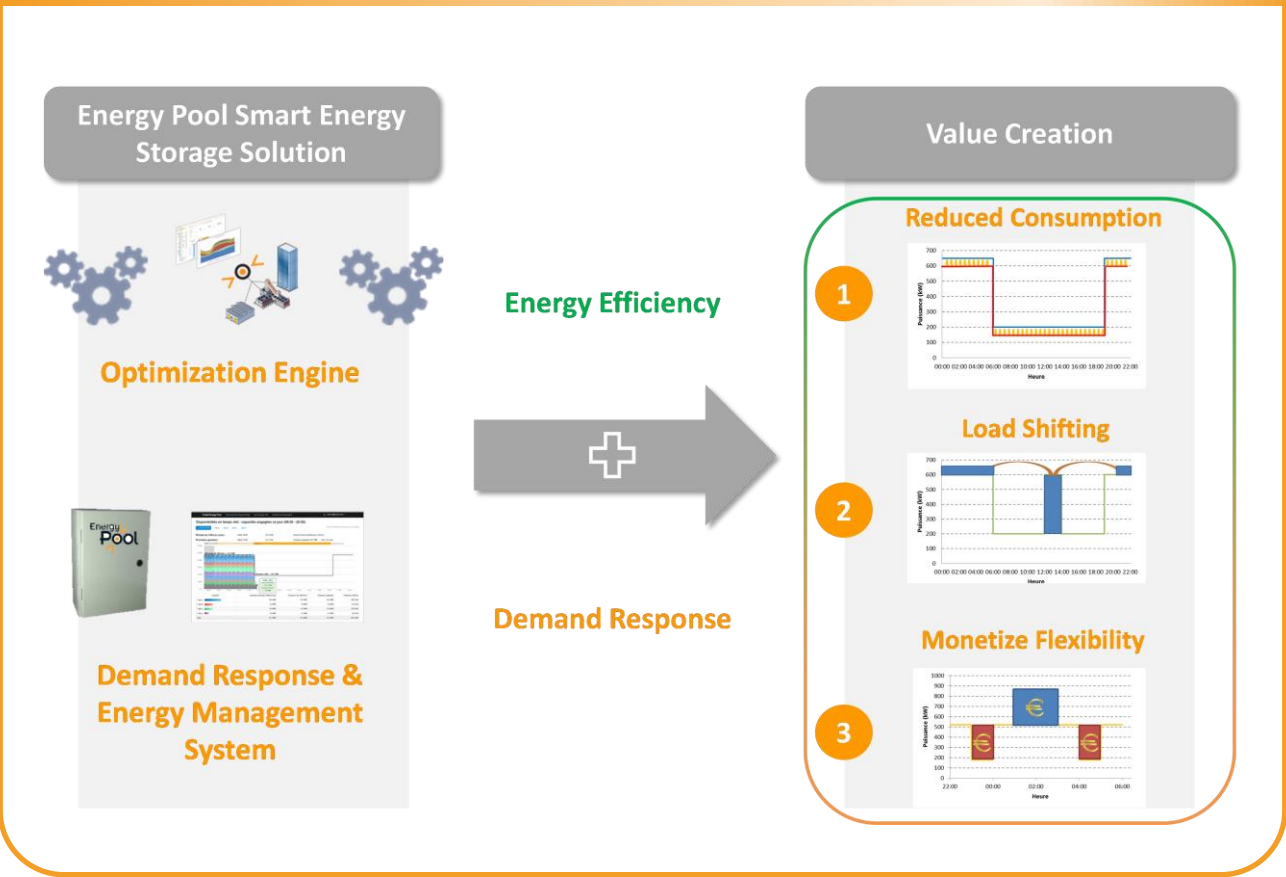
Water

The Smart Energy Storage solution by Energy Pool

Energy Pool, as European leader of Demand Response and subsidiary of Schneider Electric, worldwide in Energy Efficiency, has gathered Energy Efficiency and Demand Response in one unique solution called the “Smart Energy Storage”.

The Smart Energy Storage solution allows the eligible consumer to make three types of savings: **reduce its electricity consumption, shift it to low cost periods and monetize its flexibility** on various demand response programmes (Capacity, Energy, Ancillary Services...).

Combine Energy Efficiency and Demand Response



How does it work?

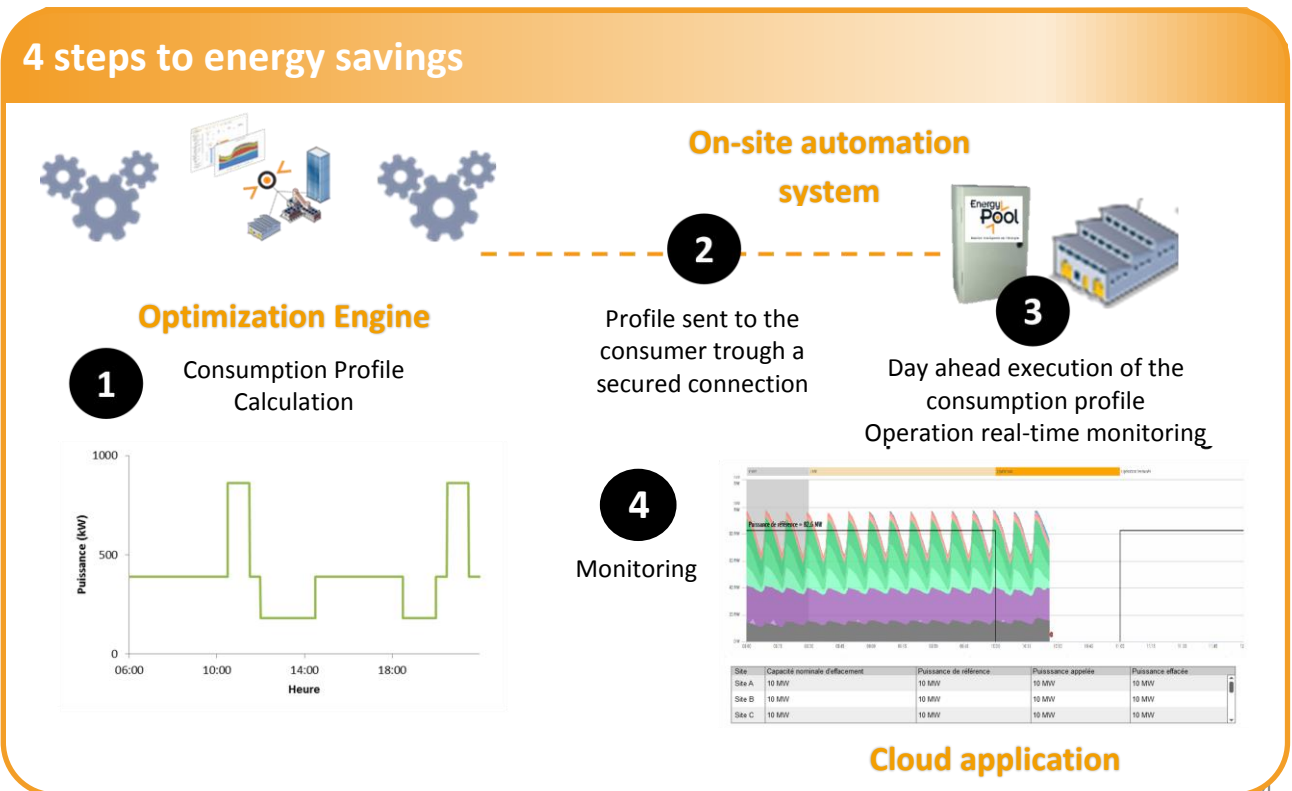
Because it is not easy for a consumer to manage its activity and its electricity consumption in parallel, Energy Pool has designed a solution running from its Operation Center on a 24/7 basis, in order to monitor and operate the sites with no action from the consumer. The consumer does not need to care about its consumption and is always sure that its electricity consumption is optimal.

Energy Pool has developed powerful algorithms to predict the behavior of consuming processes and optimize consumption taking into account external parameters like electricity spot price and outside temperature, as well as internal constraints of consumers. The solution is monitored in real-time from the Energy Pool's Operation Center and does not disturb the consumer's activities.

Every site equipped with the Smart Energy Storage solution receives an optimal daily profile in accordance with the consumer constraints (e.g. running of a pump between 8h and 10h), external constraints (e.g. weather forecast) and consumer capacity (e.g. maximum power...). The profile is executed without any action from the consumers thanks to the on-site Energy Pool system. The consumer can monitor its electricity consumption and savings through a web interface, and can always refuse the proposed consumption profile if needed, without any impact.

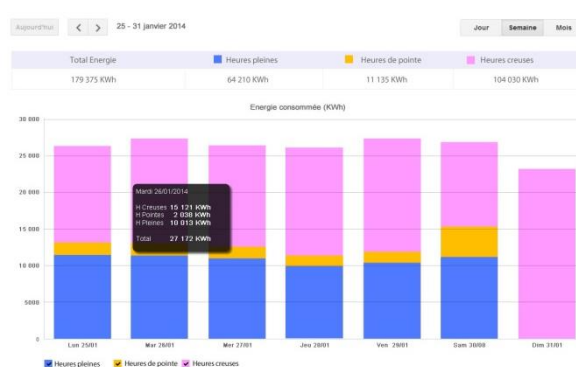
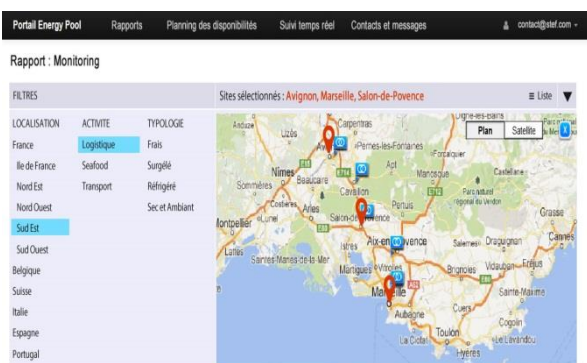
In case of a new electricity supply contract, the Smart Energy Storage solution will adapt the site consumption profile to this new contract in real-time. If a consumer wants to change his electricity supply contract for a pool of sites, there is no need to go to every site to modify the process automation system of every machine, the optimal running mode will be defined by the Smart Energy Storage solution from the Operation Center.

For consumers having a mathematical model of their processes and already optimizing the electricity consumption of their machines, and that want to monetize their flexibility consumption on the relevant markets, the Smart Energy Storage solution can integrate the model in the optimization engine. A specific study will be then performed.



Summary of the consumer's benefits

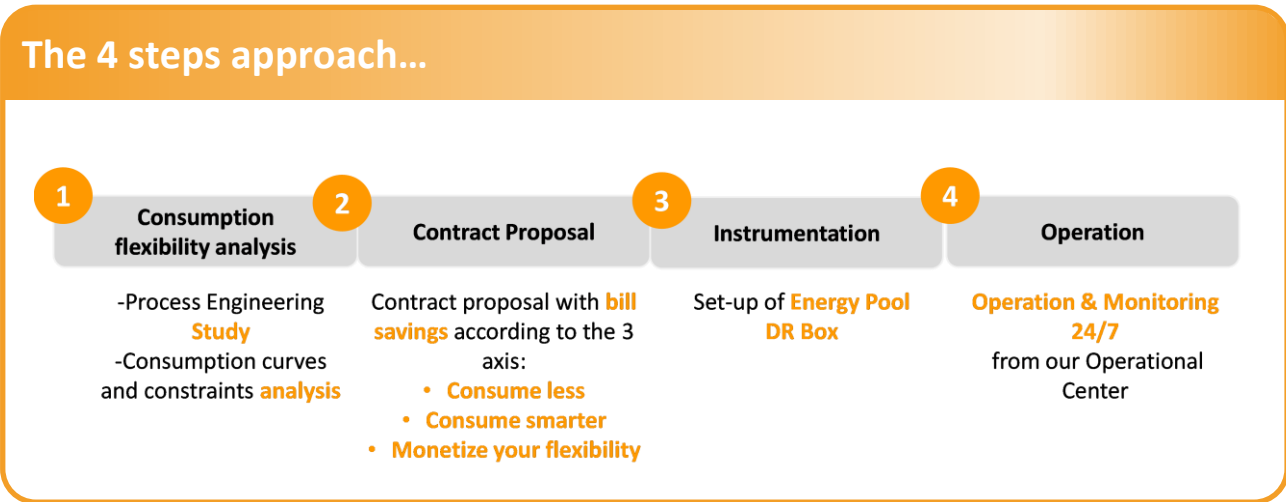
- An insurance to consume the electricity in an optimal way
- An insurance to participate to the grid balancing and renewables integration
- A significant bill reduction by consuming less electricity and in a smarter way (from 2 to 20% of bill saving)
- An optimal flexibility monetization on the appropriate market mechanisms (up to 10% of bill saving)
- A reprogramming of every machine from the Energy Pool Operation Center
- A real time monitoring of the consumption and bill savings thanks to a dedicated web-site



Financial gains can be significant for a consumer not yet engaged on Energy Efficiency program. 10 to 20% of bill reduction can be expected with a return on investment lower than one year.

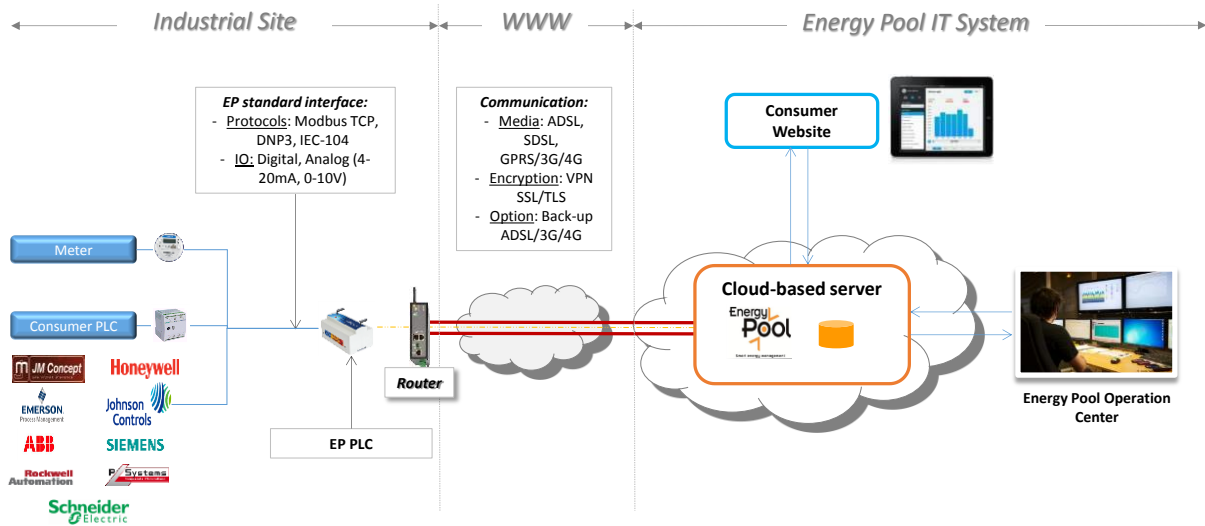
The Energy Pool approach

The Smart Energy Storage solution deployment requires 4-steps approach. Depending on consumer processes, the steps 1 to 3 can be performed very quickly (from few days to 3 weeks).



Some technical details about the Smart Energy Storage solution

From the consumer to the Operation Center



The consumers will see 2 major components:

- A Demand-Response Box that contains a PLC, a router, and push button "ON/OFF". This Demand-Response Box aims at collecting data to optimize the consumption (power, alarms...), and operating machines (ON/OFF for a motor...)
- A web-interface, enabling the consumer to follow in real-time the operations and bill savings.

As every consumer is unique and has his own IT architecture, Energy Pool has developed an agile solution able to communicate with a large panel of PLC.

The data security is a major concern for Energy Pool and the consumers, every connection is encrypted and secured through a VPN tunnel.

Hosted in France in a certified and highly secured server, the Smart Energy Storage solution gives access to the consumer to the latest technology in term of data security and IT infrastructure.

For more information...

If you are an industrial consumer or a municipality, you think that you have power consumption flexibility and/or storage capability, do not hesitate to contact Energy Pool for further information. Our engineering team will identify if your site is eligible to the Smart Energy Storage solution

If that is the case, a dedicated study will be proposed in order to define the most appropriate way to operate and monetize your consumption flexibility.



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