Energy Storage

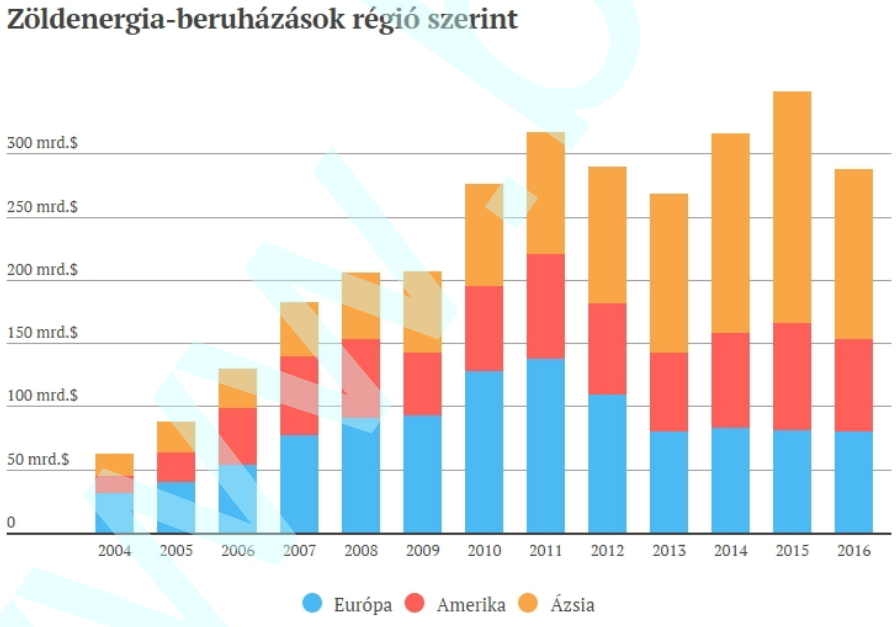
There is a very important principle of logistics that everything must and should be where and when it is needed. (Just in time) This is not always easy to do with tangible things, and **even more difficult for immaterial things**. For example, the energy - which we know will not be lost if someone has ever produced it somewhere, someone has to use it somewhere.

This is especially true for electricity because some types of energy can be stored with more or less success, but in the case of electricity this is not easy. Or very expensive. Or both…

Electricity from the production side is classically well designed, predictable and manageable. Delivering to the consumer again is not a tricky, technically completely solved. However, with the higher production of alternative energy sources - most of which come from the exploitation of natural resources (wind, sun), the classic model has long been unfavorable, geopolitical, urbanization and population-related changes have further undermined the situation and environmental protection has also intervened in the present state.

Green energy production is a constraint as energy security needs to be contributed, and the environmental damage and unwanted effects of "non-clean" energy production (eg "greenhouse effect") have to be slightly balanced.

Accordingly, production has grown steadily in recent years, as shown in the diagram below.



Forrás: Bloomberg New Energy Finance.

But the diagram shows something else. The fact that European production is practically stagnant, in the American recession, only in Asia is hectic, with slightly different reasons than the European and American trends.

The European and American trends are partly due to technical and partly economic

reasons.

All of the technical reasons are due to the fact that the generated energy and demand are not synchronized in time, and the energy is usually not stored or cumbersome stored, and the circumstance makes it even more expensive.
This is also explained by the economic state system, that the economic environment is uncertain, the technical background uncertain, and the outcome of long-term investments in such an environment is also uncertain. This is not only caused by actual economic operators, but also by power, if necessary, by "shaping" events by laws and regulations. (This is a good example for example Hungary ...).

Looking at the actual trends, knowing the constantly changing proportions of renewable and classical energy production, the constant and sharp conflict of interest of the system players and the balance of power in the process of lobbying will soon be over. Unfortunately, there is a strong lobbying activity within the industry, and this complicated technical-economic model is further distorted.

It is clear that the interests of production and consumption are completely different, between the classical energy branches and the renewal between the investor aspects and the technical level, both the technical and the economic factors motivate interests, And the expectations of the central energy strategy and tactics are clearly visible.

As a consequence, it can be seen that there is no unified, complex approach in the sector, and this has no motivation for the players of the system. This also contributes to the fact that there is a lack of an important link in technology, there is no need for an identity of interest and financial framework to mitigate the disparities in the system.
But that would be a necessity for many reasons, and on several levels!

What causes unsteadiness? It is important to know this because their elimination has a causal connection with phenomena, so eliminating them can not be possible.

The biggest problem is the different cyclical nature of production and consumption, which is on the consumer side, but production can not be followed. The reason for this is that controlling the performance of classical power plants is very difficult if we only think of the steam development process, which is already clear. This is already causing regulatory problems on networks, but if we look further at the elements of production and involve the natural resources (wind and sun), the situation continues to worsen, as the sun still follows some designable and transparent cyclicality, but the wind not, The electricity generated by the wind can be subjected to transient impacts due to stochastic cycles, which is ultimately undesirable. Time cyclicity is therefore one of the issues to be solved that requires complex treatment in multiple actors.

It is not only time-consuming but also in space that we need to count. Energy production effectively reflects the geographic position and logistic order of energy carriers, whereas consumption differs according to a different set of criteria. Exceptional links between some industries and direct energy production (eg in the iron and coal industry (Donetsk-Basin, Liège), the aluminum industry and hydroelectric power plants (Kujbisev, Seattle), but this is rare and not necessarily characteristic. **Energy logistics system is neither inexpensive nor straightforward. In addition, it is necessary to account for the continuous losses and adverse effects on the wires.**

Security of supply is again a sensitive issue, since it is a coordinating task, at certain times

and situations it is a strategic issue.

Public thinking can not really assess the complexity of how complex the system is to operate. Meanwhile, there is a need for much stronger and more targeted reconciliation and co-ordination among the actors, if that were the case, some of the problems could have been solved at least.
O
ne of the keys to time waving is temporary storage. It is not easy to store electricity, but it is not impossible. And if we're devoting money and capacity to the solution, it's possible to have final storage as well.

It's a good idea to think about technical options and needs, which are a major factor in the cost of storing a unit of energy, and the size of the capacity has the effect of choosing a technical solution for a different order of magnitude, depending on the available options.

This raises an additional question, namely the issue of expandability and enlargement, because not all of the capacity created can be expanded freely.
Another exciting thing is how flexible storage capacity is built up, how it can shorten short transients and how fast it can replace the momentary shortage (how much is the "rising time"). And if we know all of this, how to work with the existing system?

Without going into the high water tanks (tube turbine solutions), the hydrogen-based compressed air and other, somewhat futuristic solutions will be introduced and analyzed, rather than classic, battery-powered systems.
The principle of battery is based on electrochemistry, so it is almost impossible to expect good efficiency, but what we have to do is manage it.
Due to the competition in the market for certain types of batteries, it is not worth it to say which is better or worse, rather it is worth considering what kind of purpose is more suitable and how much it actually costs.

Connecting to the power grid now has two target areas, which especially require adequate power storage devices - at a reasonable price level.

- **One would be to store the energy produced by households**, as solar power systems, low power wind turbines, are also cyclical. Temporary storage of this is important (would) if it could be done intelligently, with little effort. For this purpose, the lead-acid batteries currently manufactured are only limited in scope (as they are made for other purposes), although other battery packs offer specially recommended battery packs but they are also not completely suitable for the purpose, and are extremely expensive. So, for example, In America it is not considered a real solution, the explosive motor generator generator offers a cheaper alternative.

  However, if there is a battery system specifically designed for this purpose, the Hungarian developed, Blewin, would have to pay more for the expenses, as well as other benefits. (Eg, simpler, cheaper control system)

  If the system is widespread and the network and the users intelligently connect and synchronize the elements, a truly "smart" grid can be created, ie a two-way network. It is worth considering and analyzing the advantages and the real benefits of this, which is here and now the potential possibility for synchronized storage capacities to behave as a virtual peak power within the network, and thus can significantly

"assist" the spatial and temporal local peaks or Shrinking shortages.
For this, of course, there is a need for serious mergers, government intentions and co-ordination, and users should also be attracted to the opportunity that could be done by sharing of the benefits. Technically, the system is quite easy and quick to implement, as all the elements are available, only mass production of batteries should be ensured.

- Thinking about a bigger scale, the "family" size, the solar panel systems (small community) **and solar panel farms could be an excellent complement with this battery system.**
Previously, with the current technology and batteries tried to build "solar" batteries, it was unreasonably expensive and technically highly objectionable, it is no longer very much on the market today. Neither the manufacturers have paid attention to the development nor the distributors have asked for the affordable and technically viable solution instead of the undeniably expensive products, everyone believed and believe that someone (other) would solve it.
Therefore, these systems - apart from a few exceptions - do not even count on storing, working on the network, and ready ...
Even the solar cell is the one whose energy can be stored in the most favorable conditions by the DC battery pack.
Where the idea of storage is raised at all, the only solution that can be considered is lithium again, since its up-to-date and cheaper competition is not in circulation, the Blewin-type lead-acid battery system that can be measured in its technical parameters is not being manufactured.

When it comes to me, I'll give you some thoughts on why the use of the Blewin system would be more advantageous than anything else:

Thanks to the internal design of the system, the extremities are particularly well tolerated, their transient tolerance and smoothing properties are outstanding.
Thanks to to the pure lead construction its recyclability is very high, lead is lead, plastics recycled plastic ...

Due to its low internal resistance, its technical parameters are far better than the current mass production of obsolete technology.
The internal elasticity of the fabrication is high and can be tailored to user needs.
It can be improved, while non-alloyed materials minimize the risk of failure (sulphation), and its lifetime is high.

If you are interested in the details, visit **www.blewin.li.**