ENGIE Laborelec

Laboratory & centre of expertise in

Electrical energy storage

The ENGIE Laborelec laboratory and centre of expertise in electrical energy storage is capable of testing all the components of an electrochemical storage solution, including complete racks.

About us

ENGIE Laborelec offers the ultimate guarantee of multi-level technical and operational expertise in batteries and energy storage for customers and business partners.

We offer:

- **State-of-the-art laboratory**, capable of testing all the components of an electrochemical storage solution, from a cell to a complete module, including control systems.
- **On-site intervention capability**, including measurement, validation and monitoring using mobile measuring devices.
- **A team of experts** with seasoned electrochemical, electrotechnical and communication skills.
- **Expertise in multiple domains**, including power grid integration and hybridization with turbines, gensets and renewable energy.

Who we work for

ENGIE Laborelec services every customer segment in need of storage applications, ranging from industry to residential over grid-scale. More specifically, Laborelec's laboratory and centre of expertise in electrical energy storage focuses on assisting companies looking for cutting-edge expertise in battery storage, such as:

- **Companies offering storage solutions** to their industrial or residential customers.
- **Industries** wanting to optimize the use of their renewable electricity production and the management of consumption peaks.
- **Grid operators** looking to manage the integration of storage installations into their networks.
- **Investors** wishing to evaluate a technology or company.
- **Battery manufacturers** who want their technology evaluated independently.
- **Universities** or **laboratories** looking for research partners.

The battery park in Drogenbos, Belgium.

Our offering

We offer a broad range of services to evaluate and optimize the lifetime management, sizing, integration, performance and total cost of ownership of electrical and electrochemical energy storage technologies.

Laboratory tests

Our test facilities are fully equipped to test all the components of an electrochemical storage solution, from cell to rack, including the battery management system. Test protocols are adapted to specific customer use cases, and performance is evaluated based on actual cycling profiles, leading to clear recommendations.

Battery parks will gain greater acceptance over the next few years. ENGIE Laborelec has the expertise to assist companies in the selection, purchasing and safe implementation of storage solutions.

Health monitoring and performance analysis

Effective monitoring leads to continuing optimal operation. Operating conditions, and the choice of equipment technology, hugely influence a storage installation's long-term behaviour, its rate of ageing, and ultimately the cost of replacement. Laborelec's continuous monitoring activity highlights the indicators that optimize battery operation and identifies highly-effective use and replacement strategies.

Sizing advice for each business case or project

The size and type of the installation directly impact its ageing. Laborelec makes recommendations on sizing and battery type, which in turn optimize the battery operating range. Depending on the use case (i.e. the type of cycling), the factors involved can include depth of discharge, the reference state of charge, whether the nominal rating is exceeded, and guarantee issues.

Evaluation of solutions proposed by suppliers

The most appropriate solution for a given application is not always easy to figure out. Factors other than the initial investment must be taken into account, such as changes in performance and life expectancy, maintenance costs, and compatibility with existing equipment. Laborelec experts are every day helping customers conduct comparative studies and make the best choices when faced with evaluating proposals from different suppliers.

Tendering and implementation assistance

For companies looking to make their hardware purchasing procedures more robust, Laborelec can draw up tender specifications and analyze supplier responses to identify the most appropriate solutions. Verifying equipment as it leaves the factory from a functional and safety point of view (FAT) and its performance on installation (SAT), Laborelec helps modify on-site procedures as well as finetune on-site monitoring.

Optimal energy management

The efficiency of a storage solution for an industrial or grid application can be limited by a lack of configuration flexibility in the energy management systems (EMS) available on the market. ENGIE Laborelec has developed multiple flexible EMS, which allow the complete optimization of energy flows, with a positive effect on revenues.

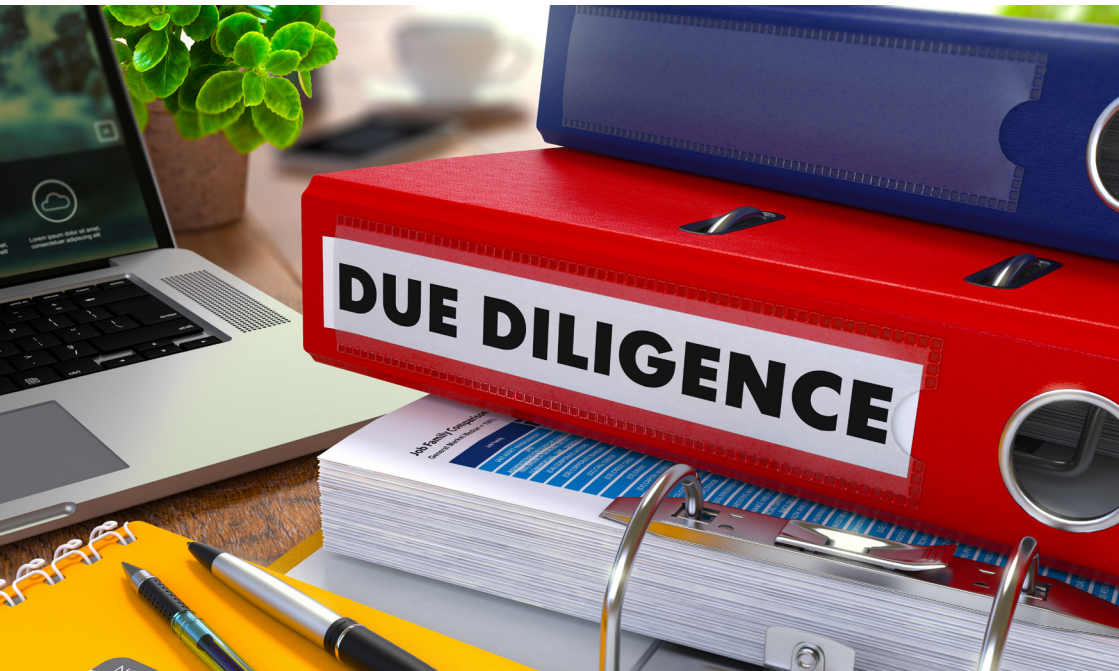
Evaluating emerging as well as proven technologies

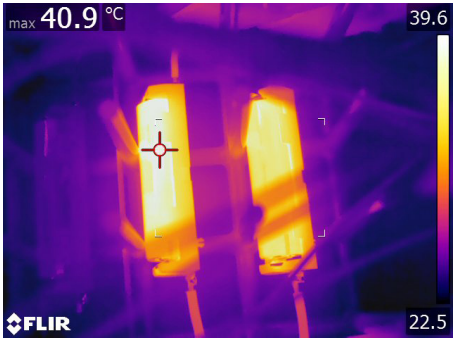
The Laborelec laboratory and centre of expertise in electrical energy storage is equipped to carry out qualification and performance testing of new technologies under development as well as proven technologies. Its expertise covers the full range of technologies and both cells and integrated systems.

Investment due diligence and advice

Investment in storage technologies has never been as extensive as it is today, making it more important than ever for the investor to minimize risk by distinguishing actual from potential performance. Laborelec, as both laboratory and a multidisciplinary centre of expertise, is the partner of choice when it comes to the technical evaluation of a potential investment in a company or a project.

Pouch cell testing is one of a range of battery tests carried out by the lab.





Heating up of a battery cell during a rapid discharge, measured by infrared thermography.

In the control room, experts oversee and monitor tests carried out in the lab.

Test equipment

Our test equipment for **cells** includes:

- Ageing tests in climatic chambers at different relative humidity levels (VÖTSCH 350L and 600 L)
- Cell testing (80 V, 12* 50 A) with monitoring and analysis server
- Impedance spectroscopy (cycling and impedance measurement)
- Thermal imaging to identify hot spots

Our module test equipment comprises several test sources of up to 90 kW AC and 30 kW DC.

In addition, Laborelec has the skills and the equipment to perform a wide range of other measurement projects through its specialist laboratories, such as its solar, wind, hydro & marine, power networks and materials labs.

Five reasons for you to choose Laborelec

- Wide range of technical competencies in Electricity Generation, Grids, and End-Use
- Increased profitability and sustainability of your energy processes and assets
- Unique combination of contract research and operational assistance
- Independent advice based on certified laboratory and field analyses all over the world
- More than 50 years of experience

Would you like to know more?

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