



symbios symbiose

Smart Electronic Factory
by LACROIX Group

Feasibility study of France's electronics
factory of the future

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Summary of the Symbiose project

The LACROIX Group is planning to build a new electronics plant which should be France's first in years. It is also the chance to create an industrial unit of the future, integrating Industry 4.0 requirements, environmental imperatives and the ability for teams to spread their wings. The project is innovative and has a future in the French logic of being open to the World.

More specifically, a feasibility study is being launched in November 2018 to examine moving the current Montrevault-sur-Èvre factory (Maine-et-Loire), whose obsolete framework is unsuitable for pursuing the industrial processes of the future. So we are looking for a site for the new pursuit within easy reach of the existing one in order to maintain the 460 current posts, but also expand on them by attracting new, complementary talents.

To exist, our "SYMBIOSE" project must be ambitious, double the size of the current factory and focus on breaking away from traditional industry, becoming a symbol of the reindustrialisation of our French electronics industry, centred on three fundamental areas:

Technological and digital breakthrough

SYMBIOSE will be the symbol of the electronics industry of the future and the first electronics factory of this type built from A to Z. The spearhead of a now dynamic electronics sector with long-term prospects, the factory will actively contribute towards reviving a French industrial solution. Our ambition is to build a reference model for Europe, in a connected, open and co-operative ecosystem.

Taking responsibility for the environment

Building well, attractively and responsibly. SYMBIOSE must integrate the latest intelligent, sustainable solutions: renewable energies with connection to the regional Smart Grid, recycling of everything which enters the factory, benefit from short circuits, optimised connection to world supply chains, etc. SYMBIOSE will become a reference for reducing environmental impact when it is built and also sustainability in terms of the way it operates.

Social innovation

With this 4.0 factory in Maine-et-Loire, we would like to maintain and especially expand qualified posts, sustainable in rural surroundings, the symbol of real quality of life. The LACROIX Group has always encouraged the training, qualification and progression of its teams. SYMBIOSE will attract talents, offering real careers to the young, engineers, technicians and operators alike, in an environment in which digitisation and automation of tasks will encourage qualifying and worthwhile missions.

Over and above its own business, SYMBIOSE will actively participate in the territorial ecosystem and create induced posts, co-operation with schools, universities, research centres, industrialists from every sector, and those embarking on a career.

Human beings, more than the environment and technology, are at the heart of the project.

So what will this factory of the future envisaged by the LACROIX Group look like?

Our Ambition

— We want to:

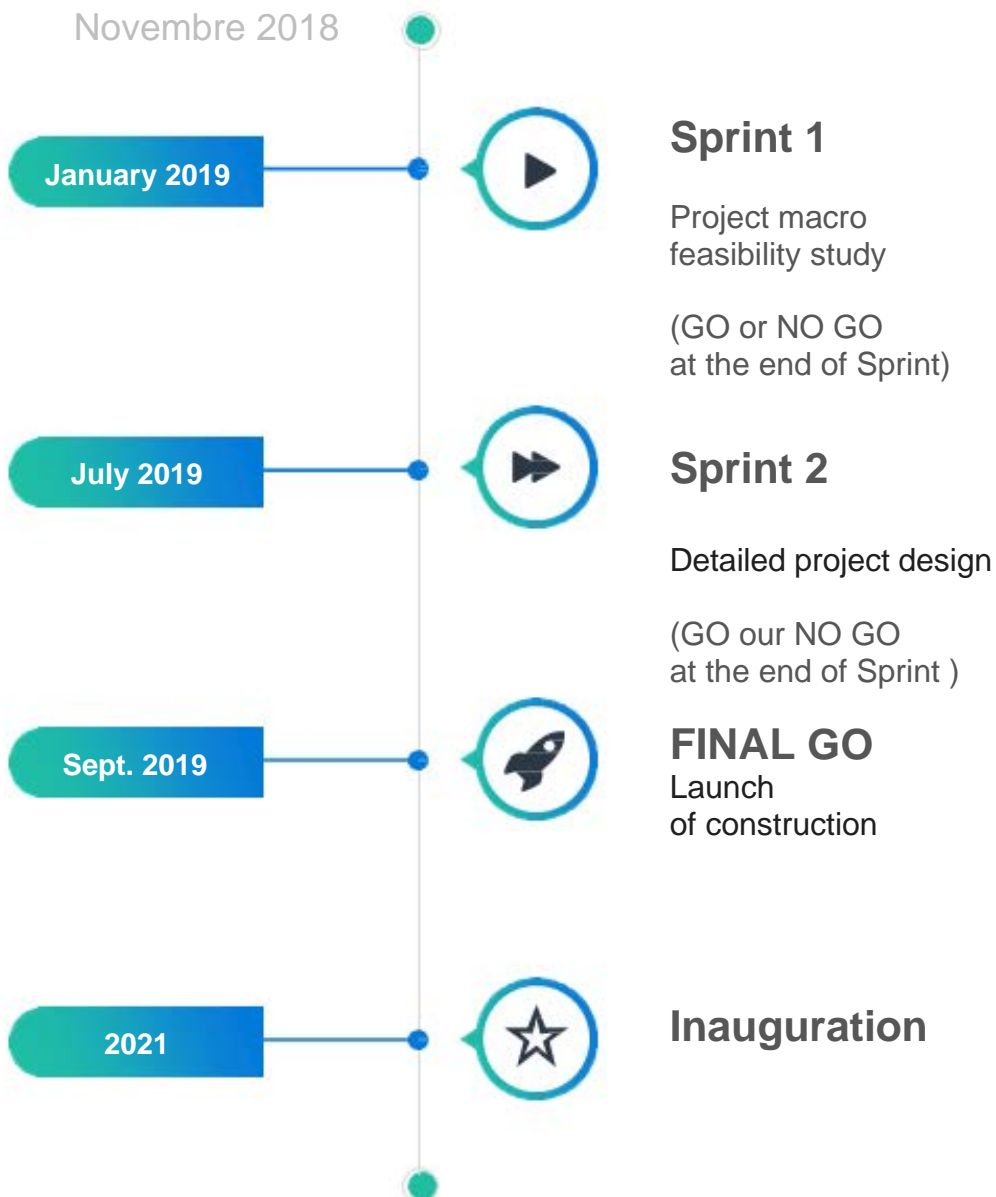
Create THE new electronics factory, in France

Invent the factory of the future: human, digitised, connected, automated and environmentally-friendly

Contribute towards bringing the LACROIX Group and its ecosystem into line with world dynamics



The project feasibility study in 3 steps





Symbiose, an industrial breakthrough

— The 1st French electronics factory of the future built from A to Z

Let us spend a moment thinking about the electronics industry space of tomorrow. Although it is already at the heart of all new technologies, the electronics industry is revolutionising.

How a partner like the LACROIX Group can help its customers pursue their projects through this new factory, considered an open system co-operating with other factories across the world.

Connecting via a simple, intuitive interface to track product development from design to delivery, completely transparently.

In a few minutes, being able to define your requirement and calculate a price estimate and timeframes.

Always having a technical advisor available to help. They themselves are in contact with their network of partners. They are good for obtaining rapid responses on highly complex subjects.

From the moment an order is approved, the project is entrusted to the right people in engineering departments. Assisted by complex algorithms, the technical advisor selects the best hardware, software and mecatronics combinations for obtaining the highest performance product. It is projected in the order production phase using a digital clone of the factory selected. In anticipation of mass production, it saves everyone time and money.

Deciding to increase production quantities and using the simulation tool proposed by the LACROIX Group, in real time, accessing a delivery schedule which may be approved as a whole, directly.

The production machines are all connected to the Cloud, so you can determine order progress. They too are interconnected; the machines are regulated in real time. Artificial intelligence means that they can conduct predictive tests, helping to increase quality and reliability of delivery times.

Assembly posts are constructed according to needs and the operator is assisted by several machines. With augmented reality, the operator knows exactly where to put mechanical parts. A co-operative robot also helps them with repetitive tasks.

The order is finished. All you have to do is consult the LACROIX Group's portal to find out the product delivery date.

By breaking away from traditional industry, the factory will become a symbol of the reindustrialisation of the French electronics industry.





Symbiose, taking responsibility for the environment

Intelligent construction which integrates environmental realities with gentle maintenance in which ecology is a shared reality.

— A building which is sustainable, high performance and easier to maintain

Through digital, it is now becoming increasingly possible to design, build and run a "smart" building at a cost at least 30% lower than currently.

Thus, the building forms an integral part of our 4.0 project as the electronics industry of the future is not limited to digitisation and automation.

Creating a "green factory" requires us to think of the project in its widest sense: employee wellbeing, flow optimisation, energy management, incoming and outgoing flow management, data security, flexibility, site upgradability, ...

Of course, the project's success will depend on the solutions which we are going to use for the following key imperatives:

Organisation

BIM (Building Information Modelling) is essential.

Often placed on a par with software or technology, we think that it is much more than that. BIM is actually a follow-on from the work processes or methods used throughout building design, construction and use. BIM defines who does what, how and when.



Technology

We must use the latest technologies for our project, for example, integrating augmented reality, increasing building connectivity, maximising their energy performance.

We must also look at communications architectures, anticipate the added value of technical floors, optimise extraction networks, include the skills of an acoustical engineer in the design...



Energy

We want to think up and explore maximum innovation; for that, an energy provider is vital to the project team.

A few examples which would at this preliminary stage be interesting to explore include:

- Intra-sensitisation in line with the definition of use of GTB (Technical Building Management).
- Installing metering by zone.
- Introducing real time energy simulation.
- Using solar panels.
- Recovering heat from furnaces.
- Rethinking office air conditioning, fitting thermal beams, ...
- Rethinking workshop air conditioning: textile or pre-formed metal sheaths, ...
- Recovering and reusing rain water.
- A ground-coupled heat exchanger, geo-cooling,...

So many things which we must adapt and optimise for the requirements of our sector, to really make the project a new standard for the electronics industry in France.



Environment

Here again, we want to be inspired by the latest constructions and remain open to all new ideas:

Bioclimatic design: vegetalisation...

Advice from a Fengshui Master.

Flower meadow... Internal green space.

Covered way, ...



Symbiose, une innovation sociale

A unit built for and with teams, integrating training, personal and collective development, and the quality of life offered by rural areas (Maine-et-Loire).

— A co-operative project

How?

Firstly, by letting all employees at the current Montrevault-sur-Èvre site become project **stakeholders**.

Then by inviting territories, institutions, partners and industrialists to **participate** and **contribute towards investing** alongside the LACROIX Group in creating the new electronics factory of the future.

Finally, by **facilitating** the move from Montrevault-sur-Èvre to the new site and on an innovative, reference project...

...to, jointly, make the new factory project a reality.



Placing humans at the heart of the connected, communicating building

The connected, communicating building also seeks to improve its occupants' quality of life, at the same time guaranteeing digital security.

On account of its capacity to increase the comfort of spaces and aggregate services, the building must meet our employees' new expectations in terms of quality of life at work and human resources.

In France, for 86% of employees, the workplace has a significant impact on their wellbeing, for 80% on their efficiency and for 72% on their motivation*.

So we foresee a factory capable of offering efficient connectivity, capturing information intended to enrich experience within the spaces and manage many environmental parameters: light, air quality, acoustic comfort, adapted ventilation, etc.

The aim is to offer healthy spaces which regenerate wellbeing and motivation.

Of course, the issues of ease of movement, connectivity, open and communicating systems, consideration of new work methods and flexibility will be integrated into this team-orientated project.

The quality of the workplace offered by the site must even become a distinguishing factor if it is to attract talents. It may also convey the image of a modern company, which values its employees and so is more attractive. This factor is crucial in the context of recruiting into sectors under tension, especially when it comes to a new factory with twice the capacity of the current one and so necessarily demanding more talents.

From the day we embarked on this feasibility study, we decided to adopt the defining framework of the R2S-Ready2Services Label. It serves as new technical referencing for use by professionals wanting to join in with the process of creating a "connected building, and a communal, human building".

*The workplace, a make-or-break factor in employees' everyday lives. Actinéo/TNS Sofres summary note, 9th May 2011



— Training and assistance with change

The project is a wonderful opportunity to launch our 460 site employees into a programme of training and assistance with change, to prepare all of our talents for their future working tool.

By pursuing a structuring programme now, by testing and experiencing new uses, new machines and new processes on the current site, we are preparing teams to take possession of the new factory of the future so that they need worry no more.

— An interoperable system for opening up to our ecosystem

At a time when, on a daily basis, we are connecting more and more with our ecosystem of universities, schools, research centres, companies and those who are embarking on a career, the new building's technical infrastructure needs to be flexible and upgradable.

Accordingly, we need to distinguish between three clearly independent spheres which may all be upgraded without affecting the consistent running of the whole and so without generating any additional costs: the application sphere (services), the communication sphere (the building's network infrastructure) and the hardware ecosystems sphere (equipments). All three communicate, interact and exchange data which converges via the building's IP network.

Through systems interoperability, because the building is no longer rigid, it meets current needs and is at the same time capable of satisfying future uses.

Quality of life in Maine-et-Loire

Renowned for being a pleasant place to live, every year, the département of Maine-et-Loire is classified as one of the French départements where it is good to live and also work. Some people would say that it has a particular way of life which they have managed to cultivate in the Grand Ouest, a mixture of pacified human relations and attention focussed on nature. Others talk of real human richness which makes relations between people very easy, with deep-seated humanism, albeit difficult to gauge, leading to a very good feeling.

Opening up to the outside

Finally, still focussing on opening up, sharing and discovering new uses, we are planning on focussing the factory of the future on the outside world, by providing dedicated interactive spaces.



Symbiose, a factory for France

— A project in the Pays de la Loire Region

It is a project to move from the Group's current factory in Montrevault-sur-Èvre (Maine-et-Loire) for several key reasons:

- the framework is obsolete,
- the factory is unsuitable for the industrial processes of the future,
- the infrastructures are not attractive to new talents.

Why move somewhere so close to the existing factory?

To maintain the 460 current posts but also expand on them by attracting new and complementary talents.



A symbol for French industry

Model industrial site amongst the LACROIX Group factories (France, Poland, Germany, Tunisia, Spain, Mexico, USA)

It would also be France's reference factory in the electronics sector.

"The roots and expertise of the current Montrevault-sur-Èvre factory have led France to be favoured for the project which will become a real showcase of French industry".

Vincent Bedouin
PDG LACROIX Group

Présence de LACROIX Group dans le monde



The current Montrevault-sur-Èvre site

— Key figures

Building
creation
1910

Surface
12 000
m²

460
Employees

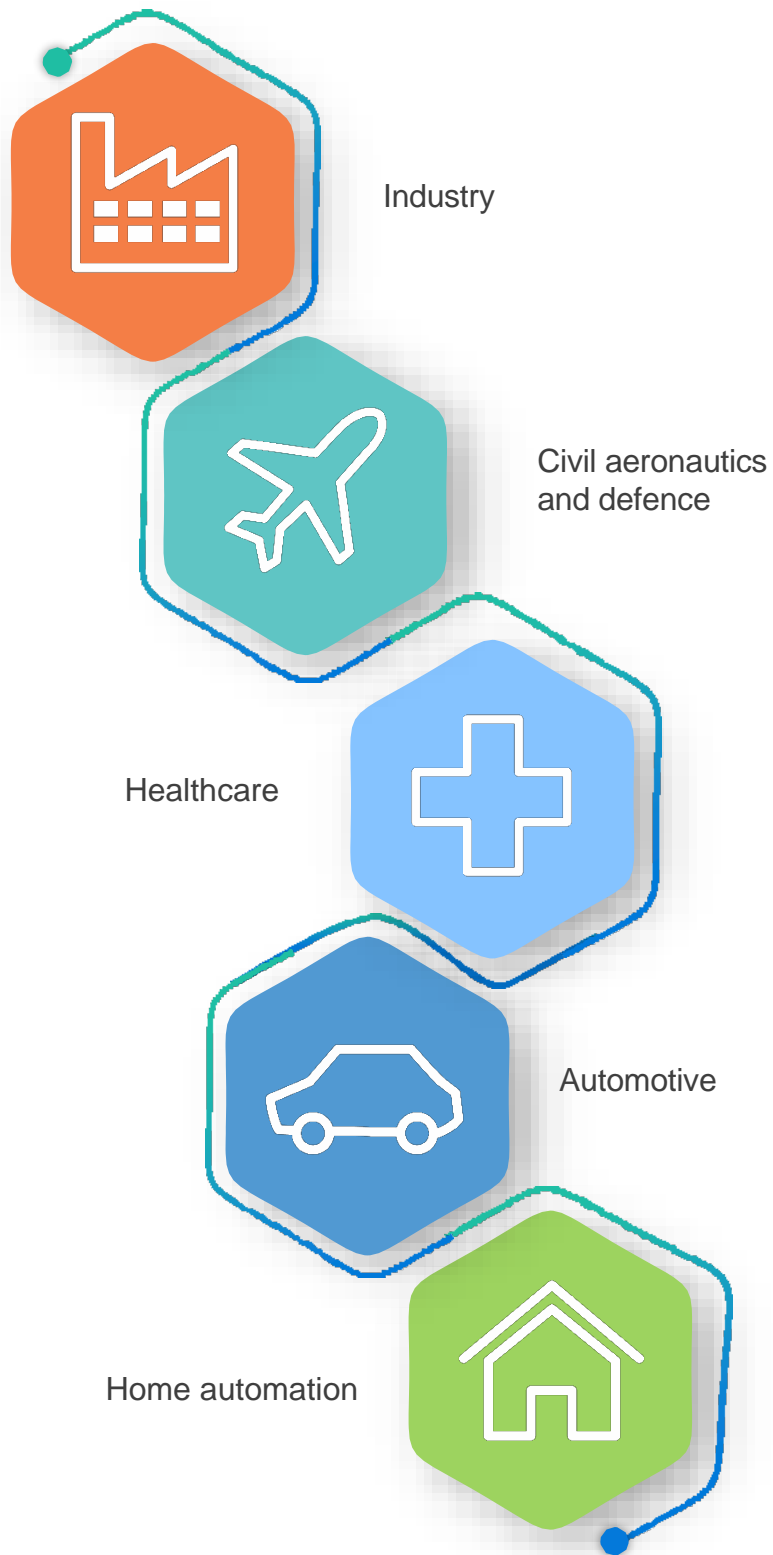
5
SMD lines



8 certifications

- ISO 9001
- ISO QS 9000
- ISO 14 001
- ISO TS 16 949
- ISO EN 9100
- IPC A 610 norm (formation)
- ISO 13 485 (Part 145 & 21G)

— 5 markets served



Symbiose

Why did we choose the name?

Definition:

Symbiose (from the Greek σύν sýn, whole and βίος bíos, living) is the sustainable association between several bodies, profitable to each.

The bodies concerned are qualified as symbiotes.

Because "living well together" is the bedrock of our project.

LACROIX GROUP

Who are we?



An international state-of-the-art equipment manufacturer, our ambition is to use our technical and industrial expertise to serve a connected and responsible world.

Listed as a family ETI, we combine agility vital to innovating in an ever-changing technological world with the long-term vision of investing in and building for the future.

The LACROIX Group supplies connected, secure equipment for intelligent highway infrastructures management (signing, traffic management, street lighting, V2X) through LACROIX City, and for managing water and energy infrastructures through LACROIX Sofrel.

The LACROIX Group also develops and produces electronic equipment for its customers in the automotive, home automation and aeronautics sectors, industry and healthcare through LACROIX Electronics.

Our values: Boldness, Openness, Commitment, Team spirit and Respect.

Our registered office is based in Saint-Herblain, Pays de la Loire, France and we operate in France, Spain, Germany, Poland, Italy, Tunisia, Singapore, the USA and Mexico.

With sales of €441 M, the LACROIX Group is directed by Vincent Bedouin, and its capital stock is held 70% by family and 30% listed on compartment C of Euronext.

441 M
sales

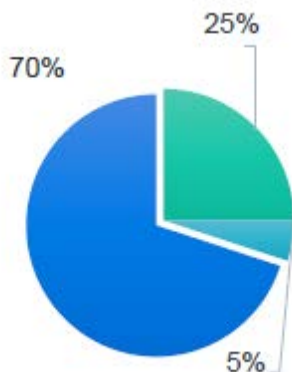
4000
employees



Vincent Bedouin, CEO of the LACROIX Group and Vice-Chairman of the Strategic Committee of the French branch dedicated to the electronics industry

A Graduate of Lyons Management School (EM), he began his career in the Telecoms & Multimedia sector. He joined Vivendi Universal Net in 2001, and successively occupied the posts of Product Leader and then Major Accounts Manager until 2003. In 2004, he joined the LACROIX Group at LACROIX Electronics as Strategic Marketing Manager before moving to its General Management in 2006.

In September 2013, he became General Manager of the LACROIX Group. In October 2015, he assumed the mandate of Chairman of the Board of Directors. Since 26th July 2018, he has been its CEO. In April 2017, he was also appointed Chairman of WE Network (www.we-n.eu), the cluster for players in the Grand Ouest's electronics sector and has been an organising member of World Electronic Forum 2017. In May 2018, he assumed the Vice-Chairmanship of the Strategic Committee of the French branch dedicated to the electronics industry.



- Public
- Treasury shares
- Bedouin Family

Contacts



Stéphane KLAJZYNGIER

Executive General Manager of LACROIX
Electronics



Landry CHIRON

Executive VP Communication
LACROIX Group

SYMBIOSE project spokesman
l.chiron@lacroix-group.com
06 08 91 03 86



8, impasse du Bourrelier • BP 30004
44801 Saint-Herblaincedex • France
Tel. +33(0)2 40 92 37 30
info@lacroix.fr
N°Siren 855 802 815 • RCS Nantes

www.lacroix-group.com

A large graphic of a human head silhouette in profile, facing right. The interior of the head is filled with a blue-tinted cityscape at night, with lights from buildings and streets. Overlaid on the cityscape and the head's outline is a network of white lines connecting various circular icons representing different technologies and concepts like a lightbulb, a gear, a network node, a speech bubble, and a power symbol.

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WORLD