



# SMART ENERGY

INTEGRATED ENERGY EFFICIENT  
SOLUTIONS



LIC SUSTAINABLE SOLUTIONS

[WWW.LIC-EU.COM](http://WWW.LIC-EU.COM)

THE NETHERLANDS  
SPAIN  
GERMANY  
COLOMBIA  
QATAR  
HONG KONG



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***The current climate crisis sets a social responsibility for everyone to change from conventional to conscious***

Renewable energy, in addition to being a more environmentally friendly source of energy, is also an investment for saving energy costs and creating a new source of income.

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**BAS VAN BAKEL**

CEO

*LIC Sustainable Solutions Group*



# PHOTOVOLTAIC MODULES

From sunlight to green energy. From waste to clean fuel. Power, generated wisely, completes the LIC range of sustainable solutions. From the production of electrical energy to hydrogen for transport and energy storage, LIC puts it at your fingertips.

LIC Sustainable Solutions develops and produces photovoltaic modules with world-class quality, ensuring secure long-term investments for our customers around the world. By utilizing top-tier module components and working with the industry's premier providers of system solutions, LIC is able to stay ahead of the demand curve and offer innovative, tailored PV-technology to meet customers' unique performance and aesthetic needs.

## 1. THE BEST EFFICIENCY

- The solar panels manufactured by LIC have an efficiency of around 20%, a significant percentage compared to the competition.

## 2. SAVINGS

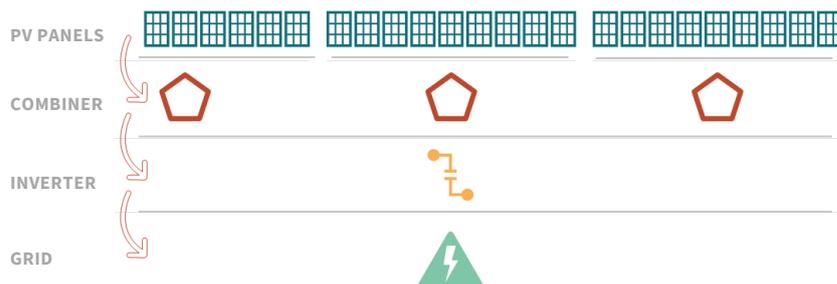
- The installation of photovoltaic modules significantly reduces the energy bill.
- The return on investment is approximately 3 years.

## 3. RENEWABLE ENERGY

- Switching to photovoltaic energy not only reduces costs and generates savings, but is also environmentally friendly.
- With a 100kWp installation, it is possible to generate 160,000kWh per year of sustainable energy.

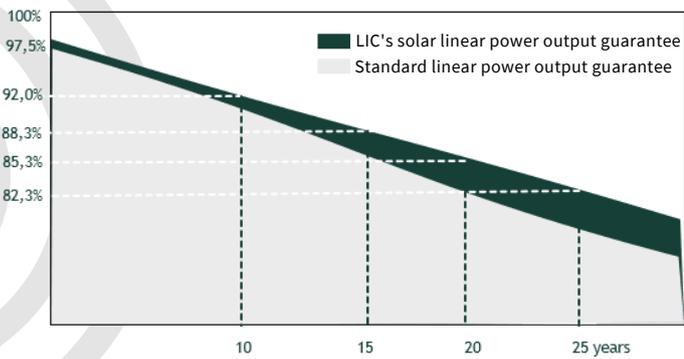
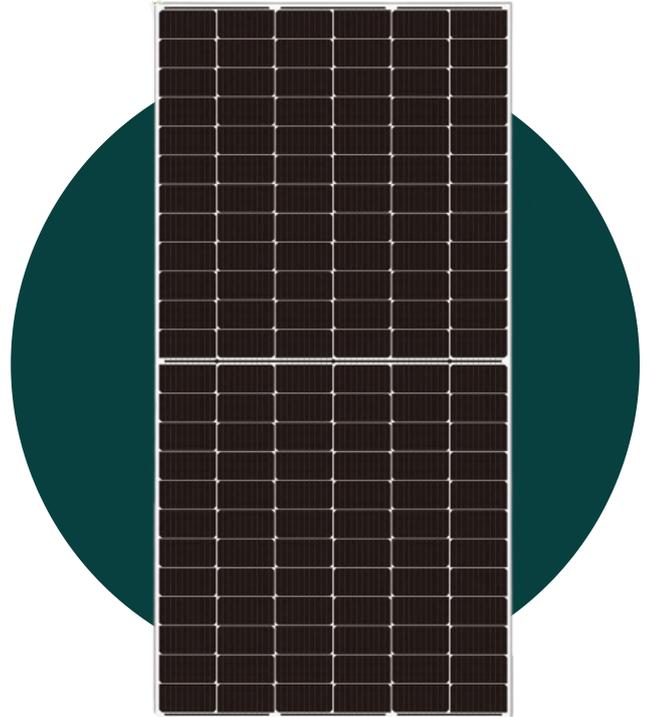
## 4. HOW DOES IT WORK?

- The solar panel composed of semiconductor materials receives the sun's radiation.
- The positive and negative charge resulting from the radiation reach the combiner, which generates a direct current.
- The energy circulation occurs in a chain and flows through the entire panel until it reaches the inverter, which transforms direct current to alternating current.
- Finally, this energy can be used for electrical consumption.



# OUR TECHNOLOGY

- Half cell technology
- Passivated Emitter and Rear Cell technology (PERC)
- Advanced glass and solar cell surface texturing
- Certified to withstand high wind loads (2400 Pascal)
- Improved temperature coefficient decreases power loss in high-temperature environments
- Designed for high voltage systems of up to 1500VDC
- Certified CE, MCS, IEC, TUV, ETL



## Eg. RETURN OF INVESTMENT

📍 Spain

\*Example based on real cases of a 100kWp installation, annual consumption = 1,864,197 kWh, electricity bill = € 228,999.66 / year and annual generation = 159,345kWh

INVESTMENT	ANUAL SAVINGS	ROI
€75.000,00	€19.538,05	<b>3.84 years</b>

## ECONOMIC PROPOSAL

LIC offers one of the most competitive prices in the industry for a value of:

Turnkey  
**€0,75**  
 per Watt



**MATERIAL WARRANTY**  
25 years



**MODULE EFFICIENCY**  
21.08%



**OUTPUT WARRANTY**

10 years	92%
15 years	88%
20 years	85%
25 years	82%



# WASTE TO ENERGY

From sunlight to green energy. From waste to clean fuel. Power, generated wisely, completes the LIC range of sustainable solutions. From the production of electrical energy to hydrogen for transport and energy storage, LIC puts it at your fingertips.



LIC Sustainable Solutions develops and designs a diversity of solutions for the generation of sustainable energy. In our service portfolio we have incorporated high-quality waste to energy solutions that ensure long-term investments of our clients around the world.

LIC seeks to help landfills transform waste into energy as a sustainable alternative and as a new source of income. Working with top-level components and most prestigious solution system providers in the industry LIC manages to maintain advantage over the supply and demand curve of the innovative gasification technology.

## 1. CLIMATE EMERGENCY

- Several of the main cities around the world have declared a climate emergency.
- Currently, the waste generated around the world is growing in volume and becoming more difficult to eliminate.
- Recycling rates are low and landfills are on a brink of collapse.

## 2. ENVIRONMENTAL POLICIES

- Environmental policies are currently being incorporated towards the zero waste hierarchy and a circular economy.

## 3. TAX ON LANDFILLS

- Taxes on landfills continue to increase affecting the cost of landfill disposal and incineration of waste.
- Legally it is becoming harder to create new landfills.

## 4. REDUCTION OF CARBON EMISSIONS

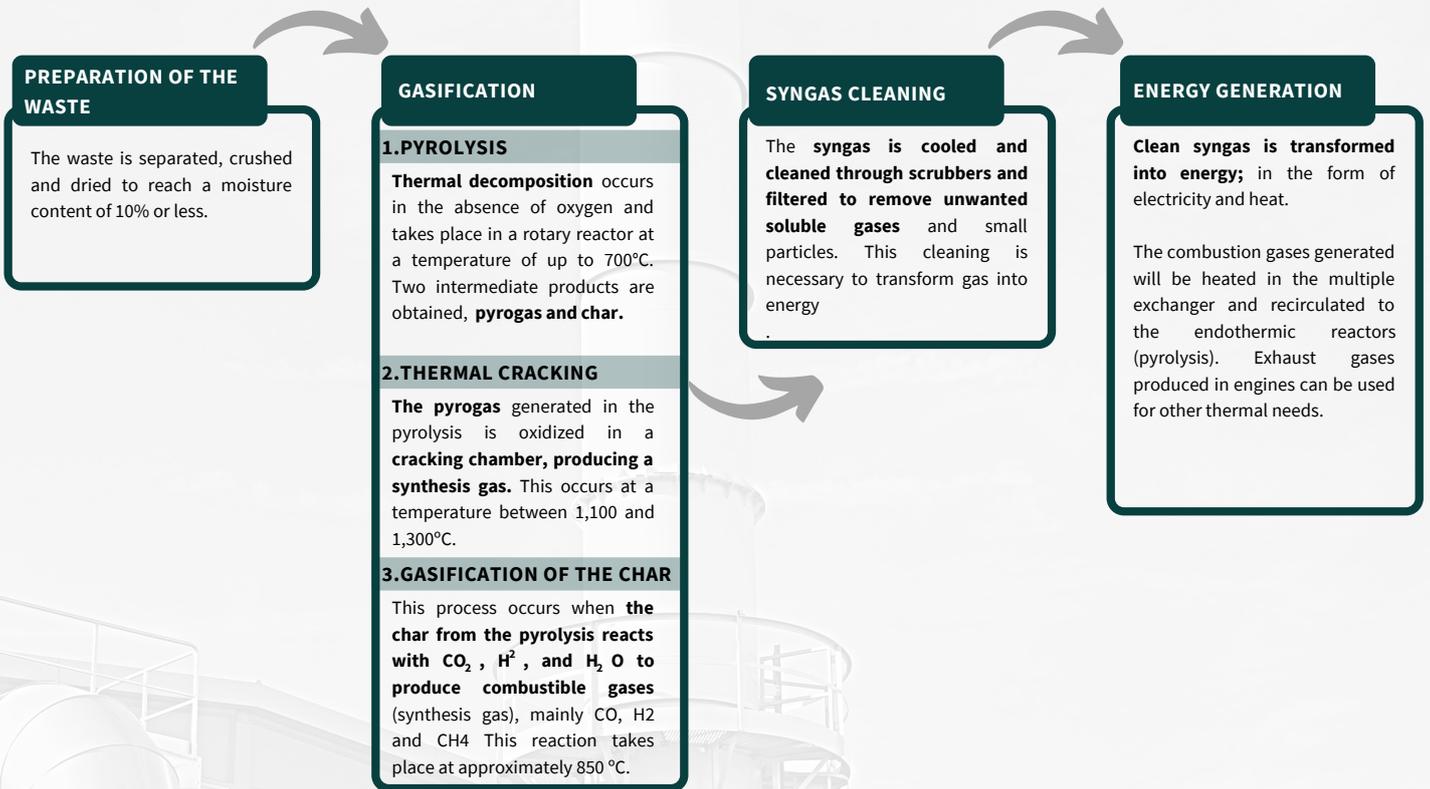
- Improvement of energetic efficiency.
- Generation of renewable energies towards a low carbon economy.

## 5. HOW DOES IT WORK?

- The repurposing of waste seeks to promote a circular economy.
- This process takes waste that would otherwise be polluting and uses it to convert into energy.
- The incorporation of this system and promoting a low-carbon economy is a social responsibility. At the same time, companies obtain economic benefits in savings of energy costs and a source of revenue with the commercialization of the produced energy.



# GASIFICATION PROCESS



## LIC'S SERVICE

LIC offers an integrated, sustainable and profitable long-term waste management service.

### 1. ANALYSIS

We identify users with waste management problems and evaluate the viability of the project:

- Characteristics of the waste
- Cost saving analysis
- Energy demand
- Land availability
- Technical viability

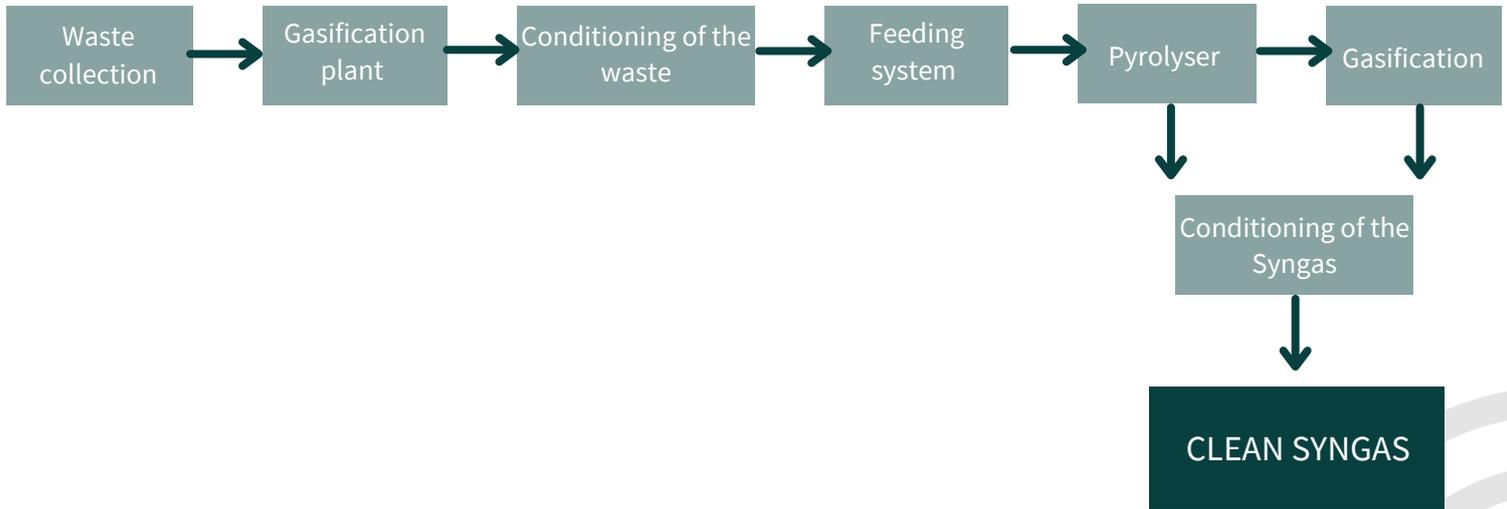
### 2. DESIGN

We design the technical solution, carry out tests on the waste and complete all the necessary work to obtain the permits and establish the contracts to develop the project.

### 3. DELIVERY

We deliver the turnkey solution, making the investment, building and operating the plant. We fully manage client's waste from the very beginning of the installation.

# PROCESS



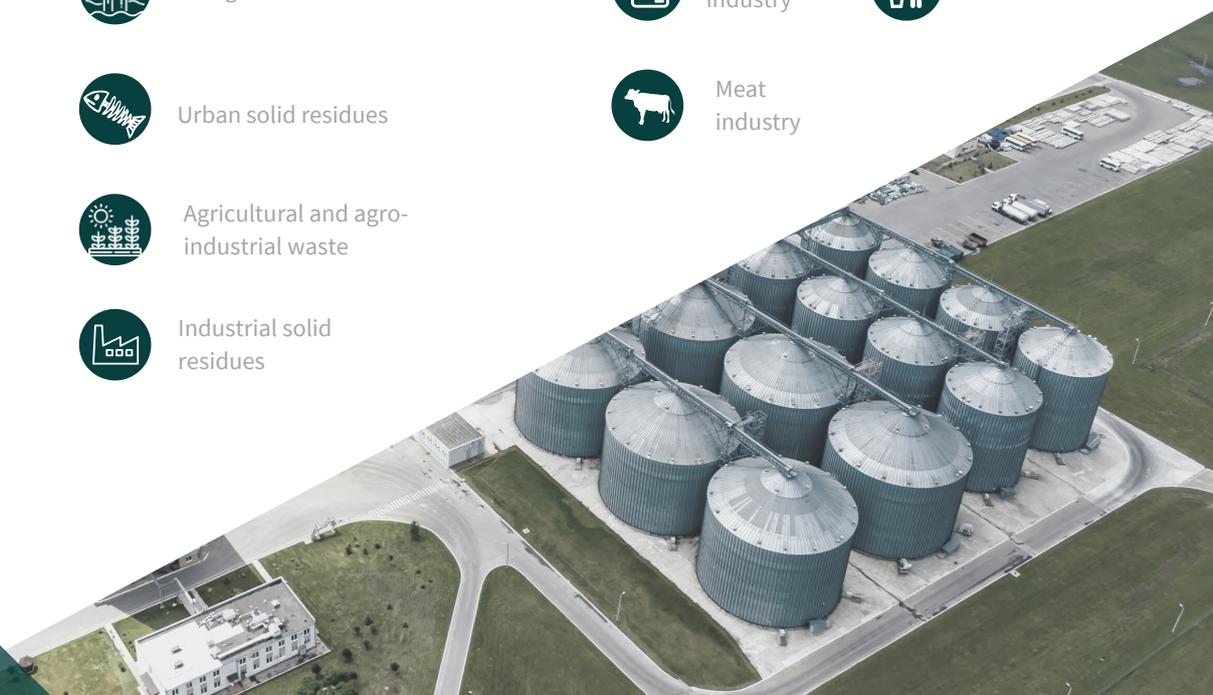
# TYPE OF INDUSTRIES AND WASTE

## PROCESSABLE WASTE

- Forest and agricultural biomass
- Energy crops
- Coal and wood
- Plastics
- Tires
- Sludge
- Urban solid residues
- Agricultural and agro-industrial waste
- Industrial solid residues

## INDUSTRIES

- Brewing industry
- Paper industry
- Meat industry
- Agricultural industry
- Waste collectors





# URBAN SOLID WASTE SORTING PLANT PROJECT REFERENCES

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## ENVIRONMENTAL COMPLEX

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 Mancomunidad de la Vega (Seville, Spain)

- **h/year capacity** = 60 tn/h//120.000 tn/year. Formed by two lines of 30 tn/h.
- **Space** = 3.000 m<sup>2</sup>, includes the area occupied by the reception pits.

## URBAN SOLID WASTE MANAGEMENT FACILITY

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 Villarrasa (Huelva, Spain)

- **h/year capacity** = 80 tn/h//200.000 tn/year. Formed by two lines of 40 tn/h.
- **Space** = 3.700 m<sup>2</sup>, includes the area occupied by the reception pits.

## ENVIRONMENTAL COMPLEX

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 Palencia, Spain

- **h/year capacity** = 35 tn/h//75.000 tn/year.
- **Space** = 2.400 m<sup>2</sup>, not including reception pits.

# LIC LED

LIC Sustainable Solutions is a Dutch organization that specializes in the development, production, and implementation of standard and customized LED applications.

LIC designs its own lighting plans based on products from its own portfolio. If not available, we develop the application that is unique and perfectly tailored to the situation. LIC has offices in the Netherlands, Germany, Spain, Colombia, Panama, Qatar and Hong Kong from where projects are carried out in more than 20 countries on 4 continents.

The product range has expanded rapidly in recent years to give more substance to sustainable solutions in terms of energy-saving, sustainable energy generation, and power quality.

# LIC RENEWABLE ENERGY

## **From waste to clean fuel**

We develop and manage technologies and infrastructures, resulting in the creation of a value cycle that converts waste into clean ready-to-use energy. A new chemical conversion process (for example) transforms the world's polyolefin waste, a form of plastic, into useful products. The conversion process incorporates selective extraction and hydrothermal liquefaction. Once the plastic is converted into naphtha, it can be used as a feedstock for other chemicals or into specialty solvents.

## **From sun to green energy**

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## TECHNOLOGY



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