Smart monitoring for agricultural and industrial applications

Less Cloud

Smart Phone · Computer · API
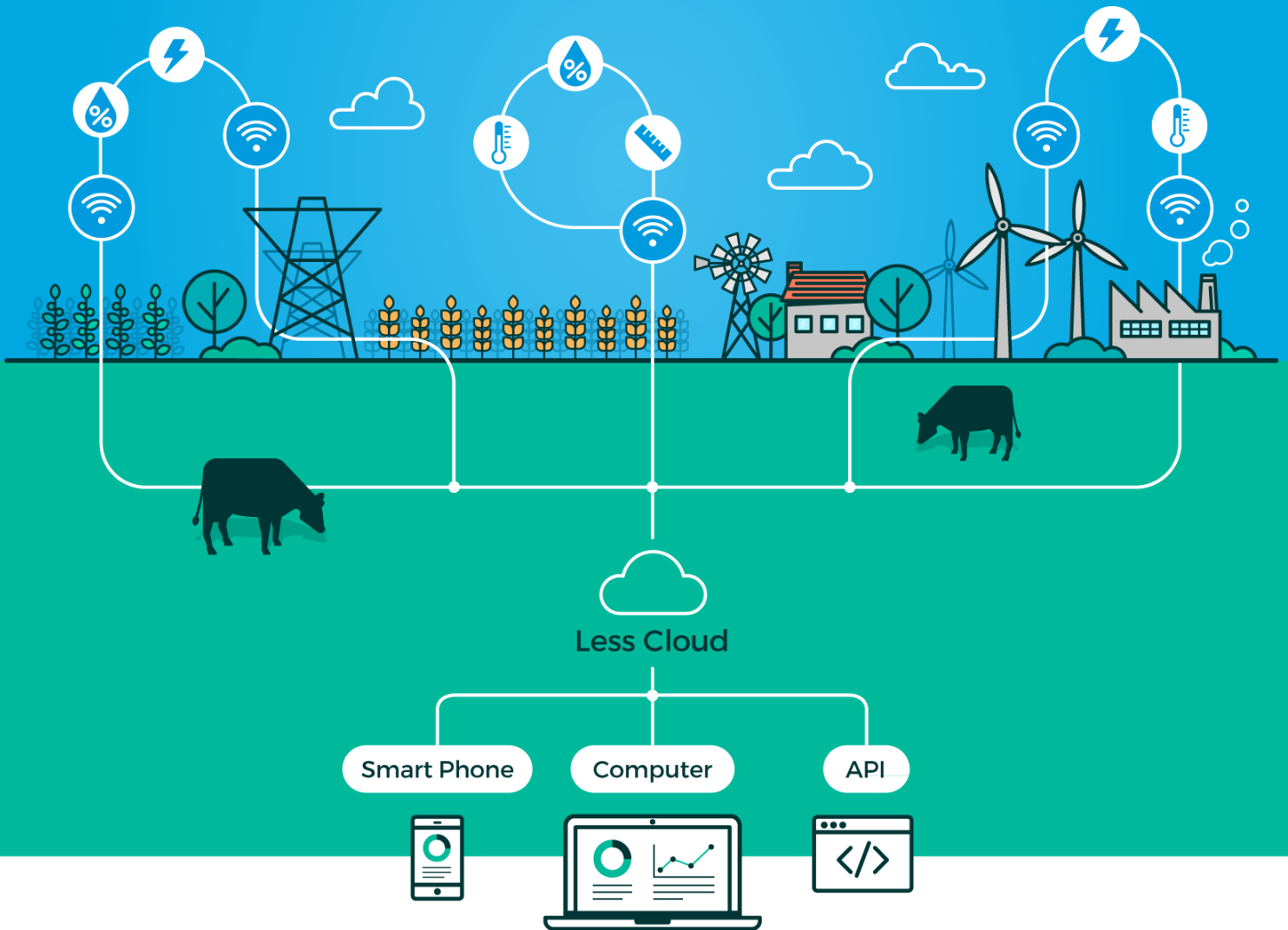
LESS offers a suite of products that use IoT technologies to improve profitability of agricultural and industrial processes through smart monitoring. The solution consists of a network of devices that perform sensing of relevant conditions and send the data to the cloud application for visualization, analysis and decision making. Likewise, the cloud application provides an Open API for integration with external systems and driving automatic actions. LESS devices out of the box support all the important communications protocols including LoRa, GSM, Wi-Fi, and Ethernet.

Below please find the descriptions of our current products for soil analysis, rice field irrigation, grain silo monitoring, livestock tracking as well as products for industrial applications such as shipping logistics and environment monitoring

Soil Analysis
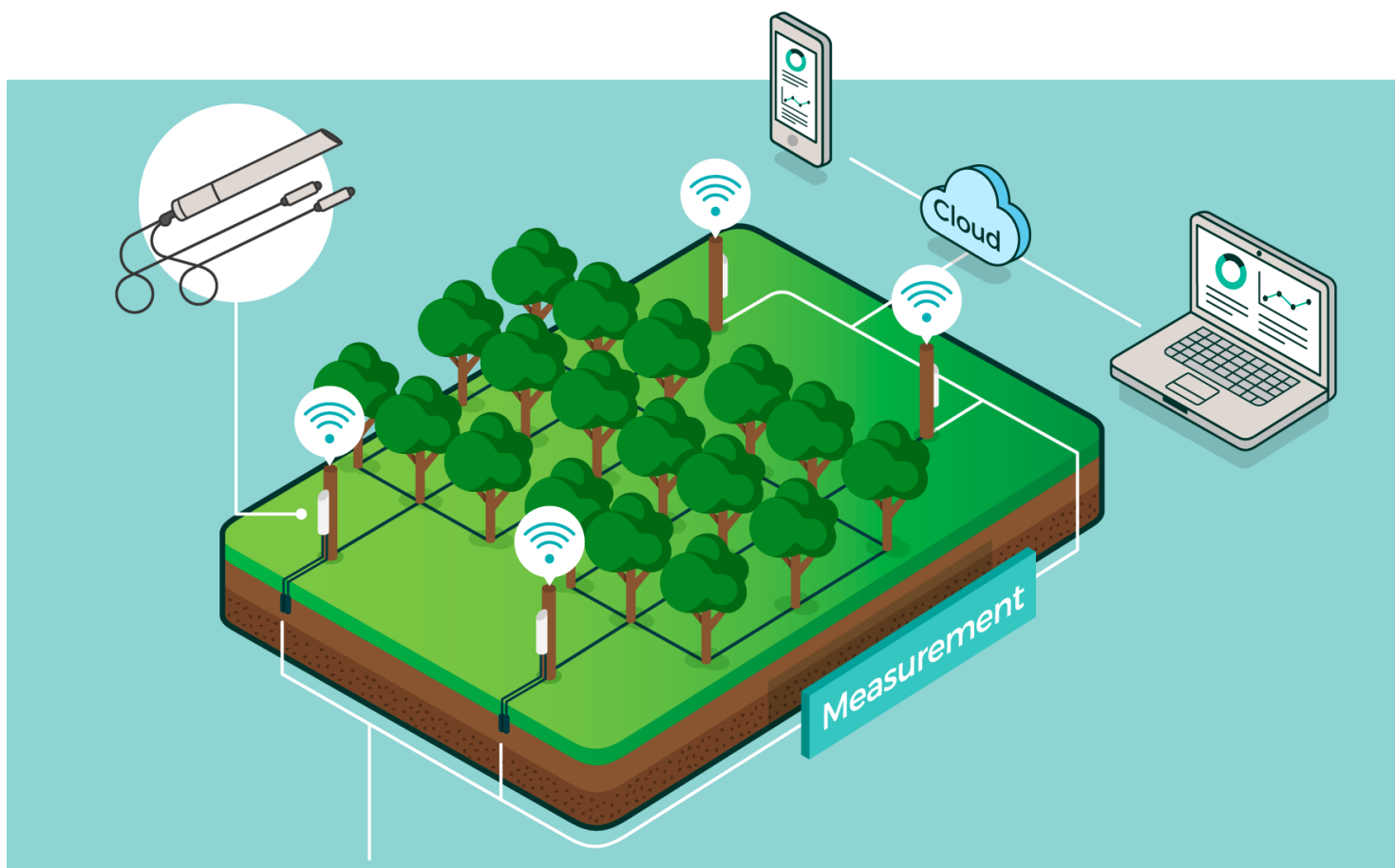
Measurement

Soil Moisture

Soil Salinity

Ambient Humidity

Soil Temperature

Ambient Temperature

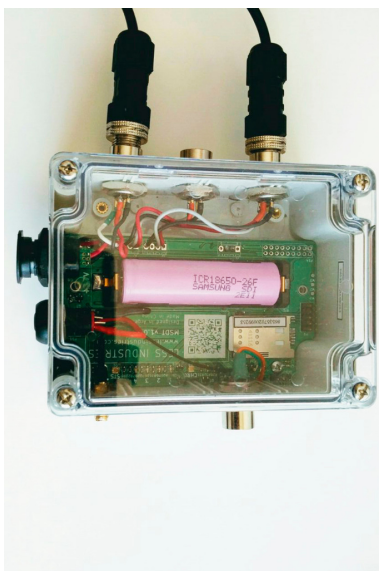**Dendrometer**

Solar powered with rechargeable battery for backup.

The irrigation solution has two soil moisture sensors that allow moisture measurement at different depths. Furthermore, it also measures the ambient temperature and humidity to give you an advance warning of frost conditions. The device can last up to a year on a single battery charge. The battery is rechargeable and the charger is included. The soil analysis device has up to three sensors that measure soil moisture, conductivity and temperature. This allows the client to measure soil conditions at multiple different depths. Furthermore, it also measures the ambient temperature and humidity to give you an advance warning of frost conditions. The device is powered by a solar panel and has a battery for backup. The battery can also be recharged independently.

Monitoring water levels in rice fields

Measurement

Cloud
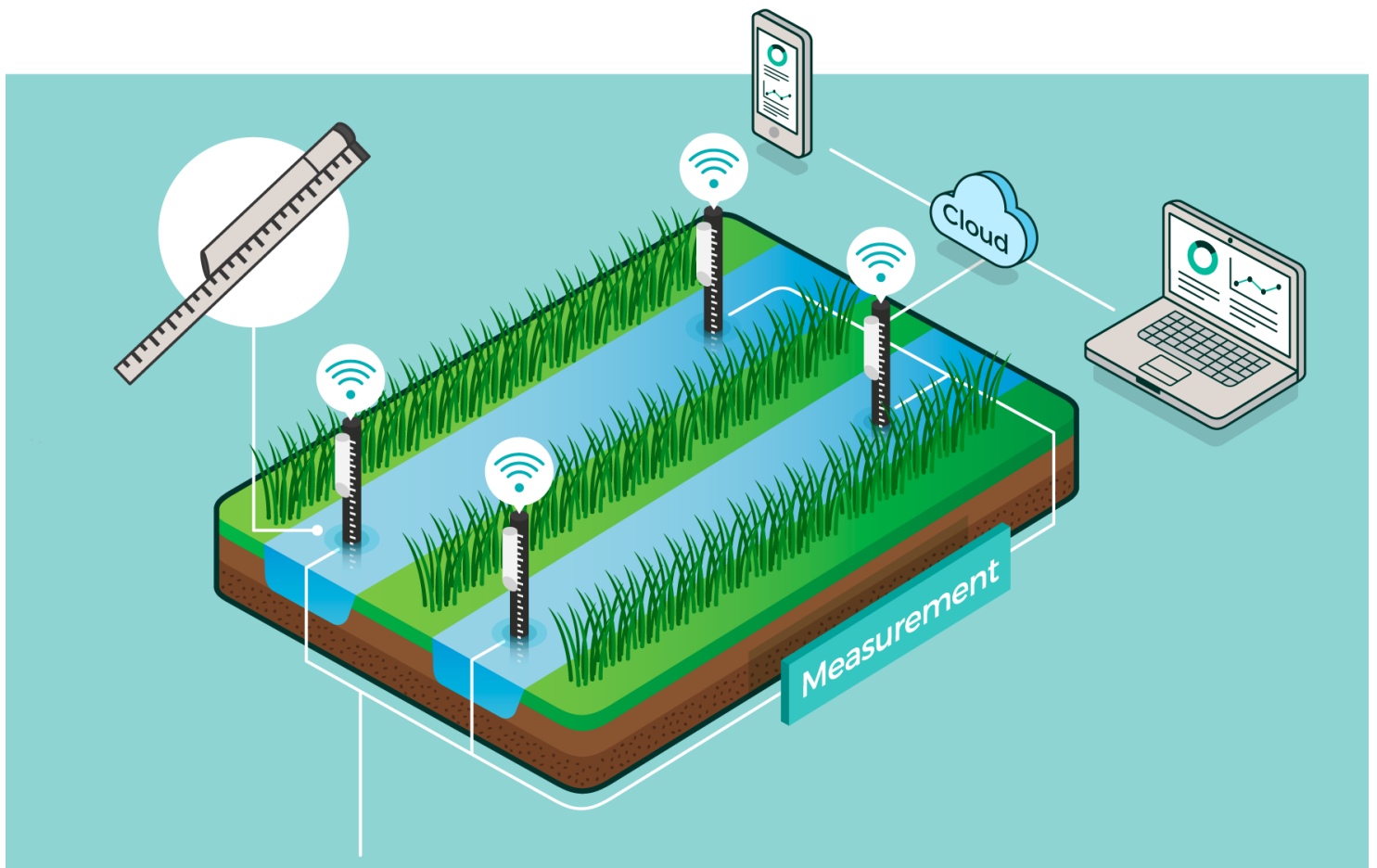
| Water temperature | Water Level | Rechargeable battery. Lasts up to a year on a single charge. |

Controlled flooding is a key part of rice cultivation. The rice monitoring solution gives you the ability to instantly measure the water level as well as water temperature during rice field flooding, thus allowing fine-grained control of the flooding process and providing timely alerts regarding key conditions. The device can last up to a year on a single battery charge. The battery is rechargeable with a standard USB charger.
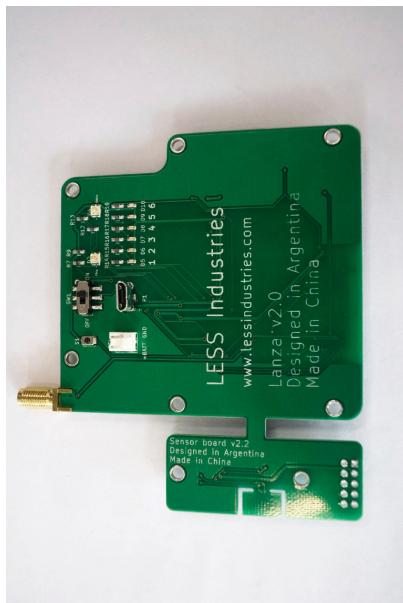
Monitoring of outdoor grain silos (silo bags)
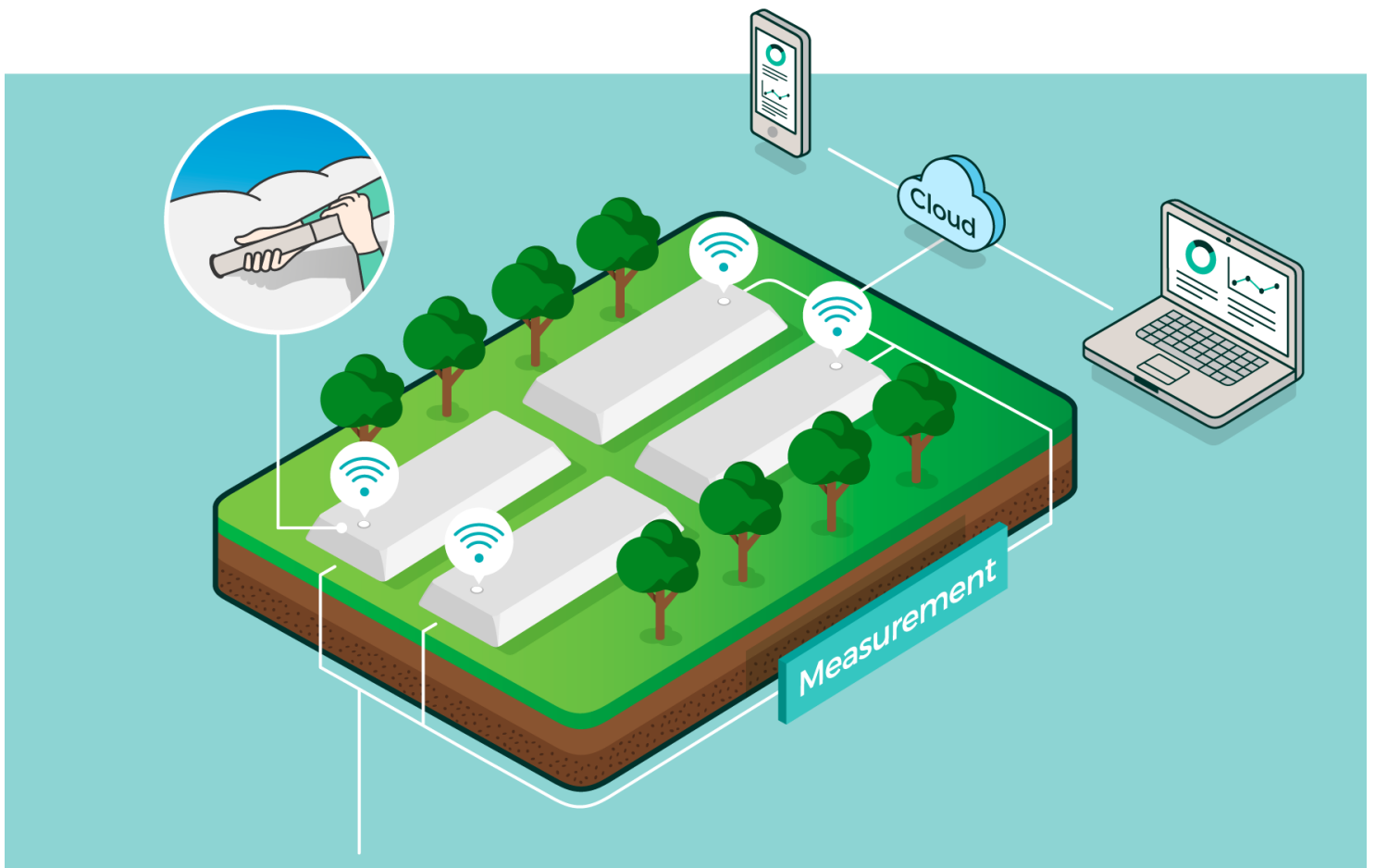
Measurement

Humidity

Temperature

CO2

Rechargeable battery. Lasts up to a year on a single charge.

This solution allows farmers to monitor the condition of the grain stored in outdoor grain silos using an algorithm that combines the measurement of CO2, temperature and humidity to identify the presence biological processes that may lead to grain spoilage. The device is installed in the interior of the grain silo since it does not require a battery change during the entire season. The battery is rechargeable with a standard USB charger.

Livestock Tracking
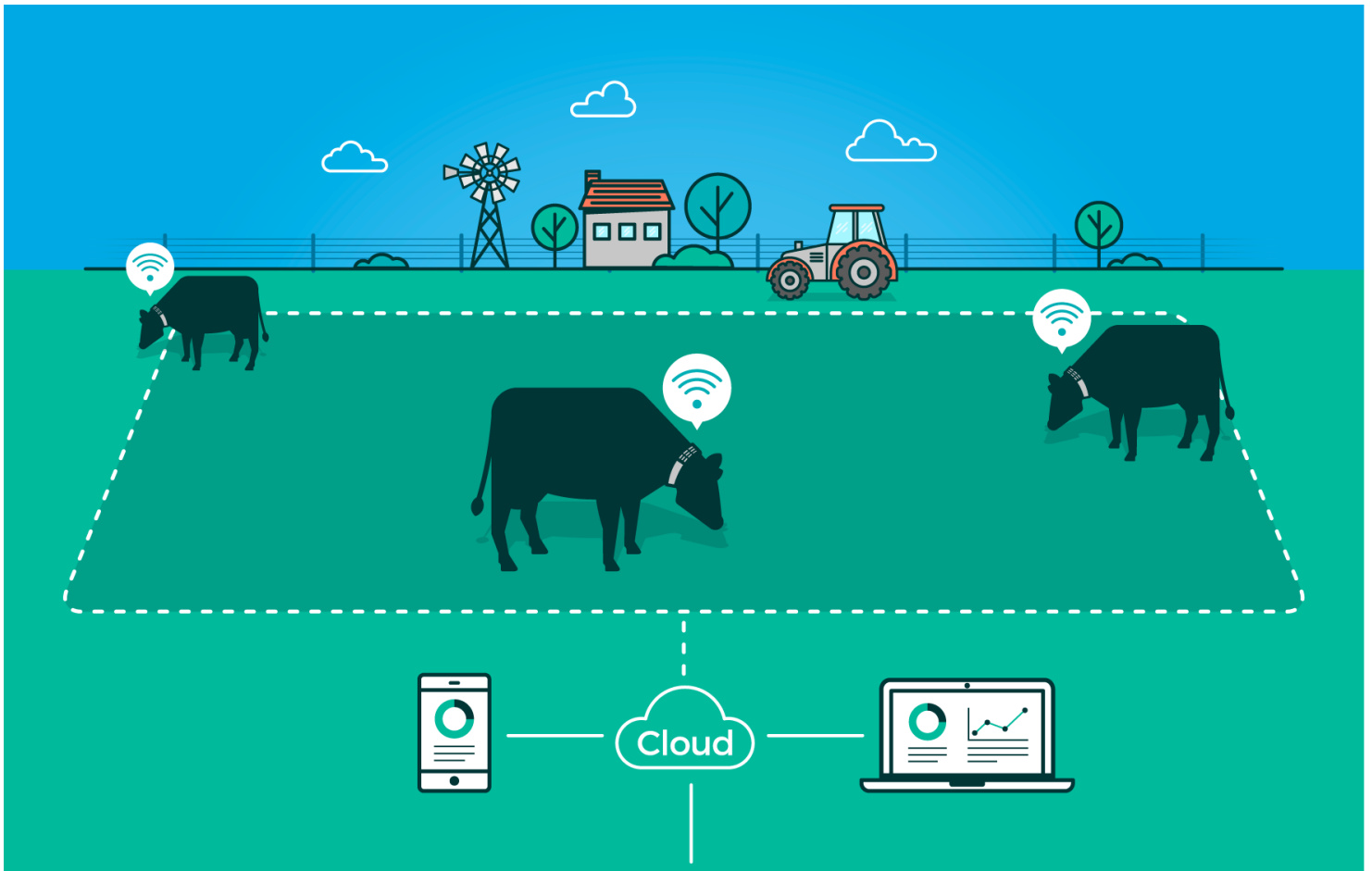

Geolocalization

Temperature

Solar powered with rechargeable battery for backup.

The livestock tracking solution allows the farmer to continuously track the position of livestock such as sheep and cows. The device is solar powered collar which is placed on the animal. The software provides a geofencing feature where the farmer can define a virtual perimeter and be notified if an animal goes outside the designated zone. The daily movement by the animal can also be used to assess the health of the animal. The collar provides an anti-theft feature whereby the farmer is notified if it is removed from the animal.

Industrial Solutions: Cable Theft Prevention

Measurement

Cloud
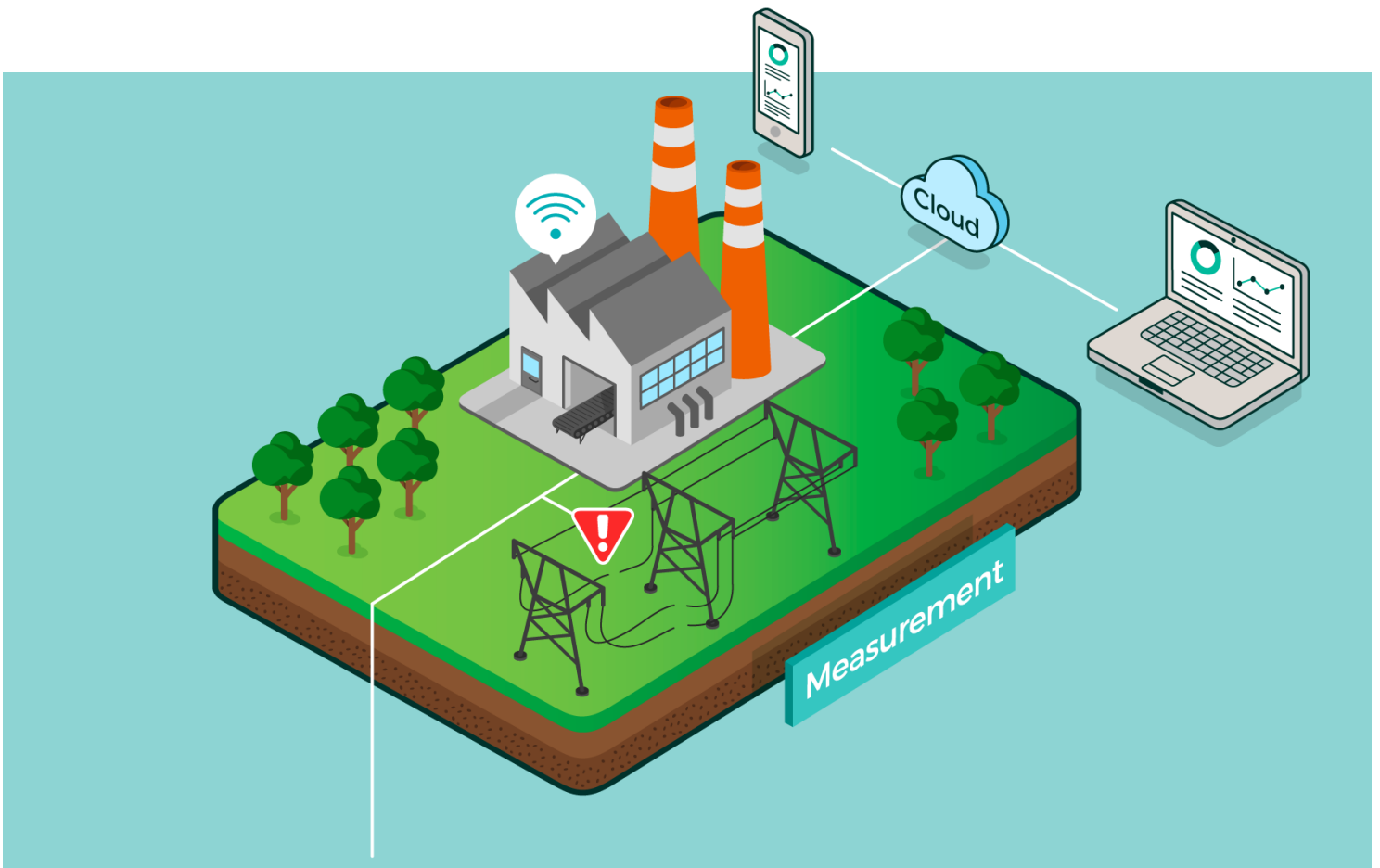
Geolocalization

Accelerometer

Rechargeable battery. Lasts up to a year on a single charge.

The cable theft prevention device uses an accelerometer to detect the motion of the electricity transmission cables that may indicate theft and sends a real time alert by SMS, email or other chosen medium. The software is designed to filter out movements that are due to wind or other naturally occurring factors. The specially designed protective case ensures that the device can function correctly in inclement weather conditions. The battery is rechargeable with a standard USB charger.

Industrial Solutions: Monitoring Shipping Conditions

Measurement
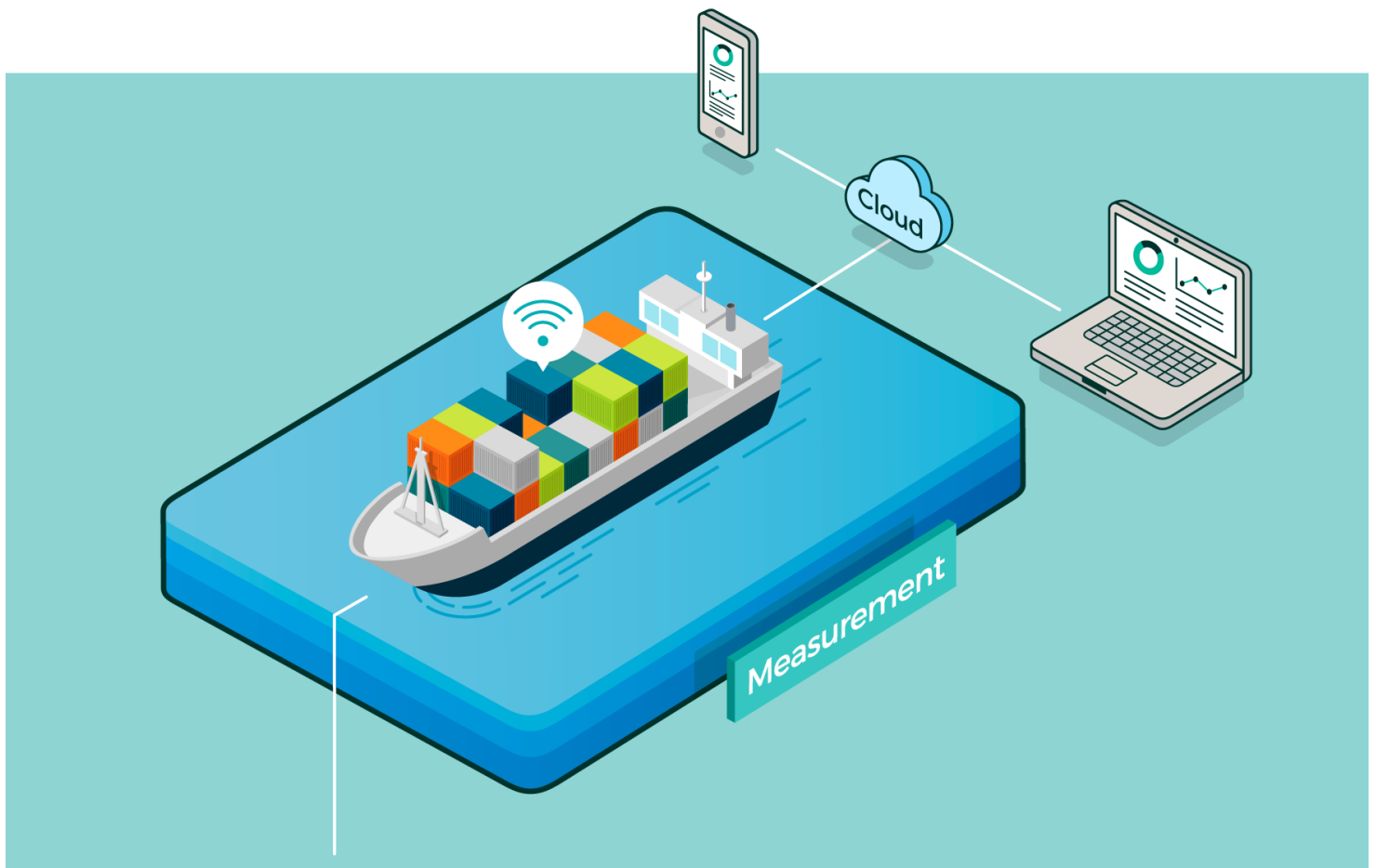
- 📍 Geolocalization
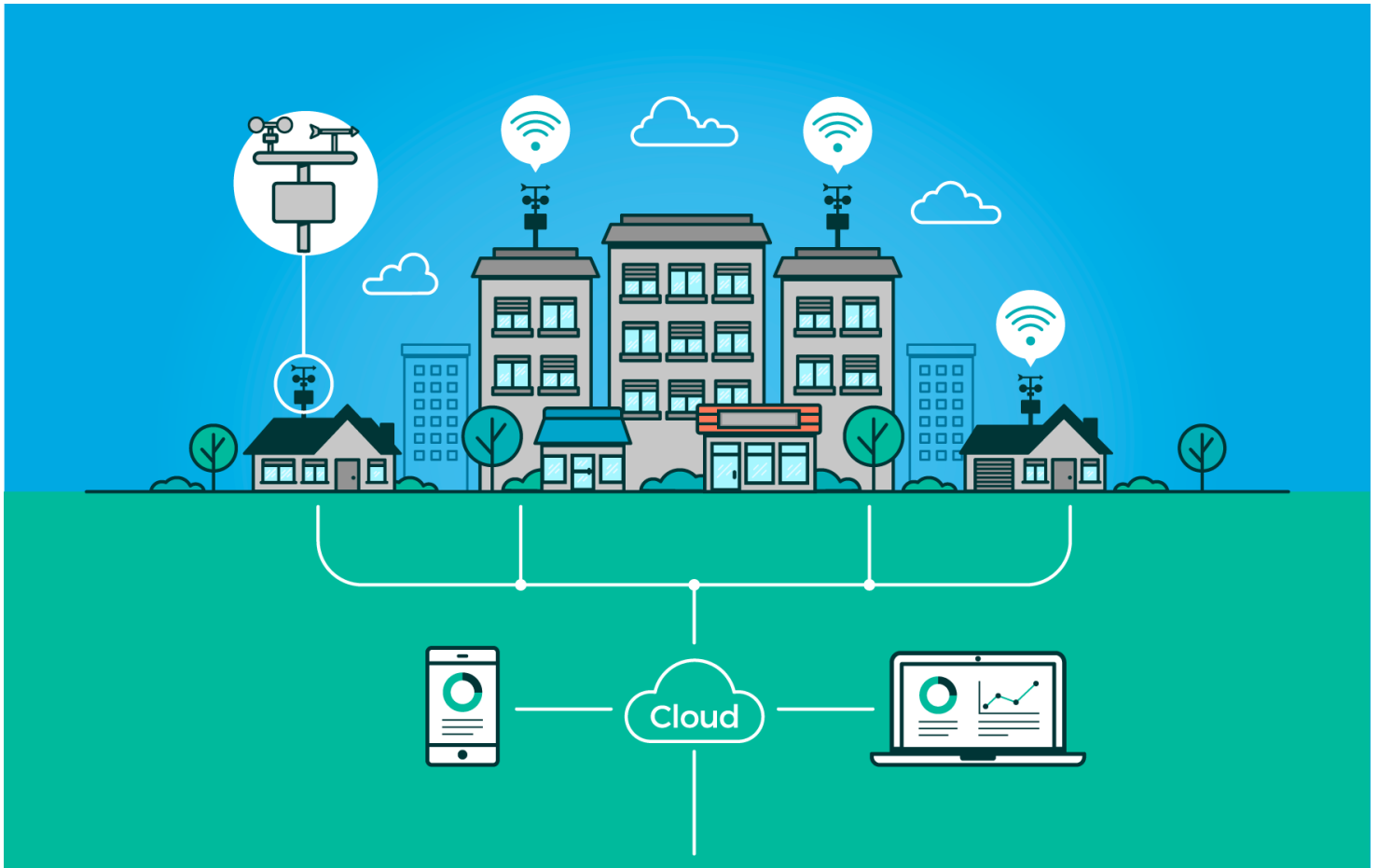- 🌡️ Temperature
- 💧 Humidity

Rechargeable battery. Lasts up to a year on a single charge.

This solution allows tracking of cold chains in transportation of fruit and other perishable goods during container shipping by sea or delivery by truck. The device records the geographic coordinates and observed conditions at each point of the journey. The software has a store-and-forward feature whereby the device can be out of cellular signal range but will still keep recording the data. The data is then forwarded to the cloud whenever the connection is re-established, for instance, when the ship arrives at the next port of call. Having precise measurements ensures that the goods arrived in good conditions and allows more efficient insurance and certification contracts.

Industrial Solutions: Weather Station

- **Humidity**
- **Temperature**
- **Rain Meter**
- **Barometer**
- **Anemometer**
- **Light Intensity**
- **Solar panel or plugged-in.**

Next generation weather station that allows real time cloud-based monitoring of multiple environmental conditions including atmospheric pressure, wind speed and direction, precipitation, humidity, temperature, solar light intensity, noise pollution and others. This is an ideal solution for fine-grained monitoring of environmental conditions in cities and industrial locations. The station can be mounted statically or on a vehicle, for example, for giving field conditions of mobile agricultural equipment. The cloud software can combine data from station in multiple locations and employ customizable averaging algorithms and alerts.
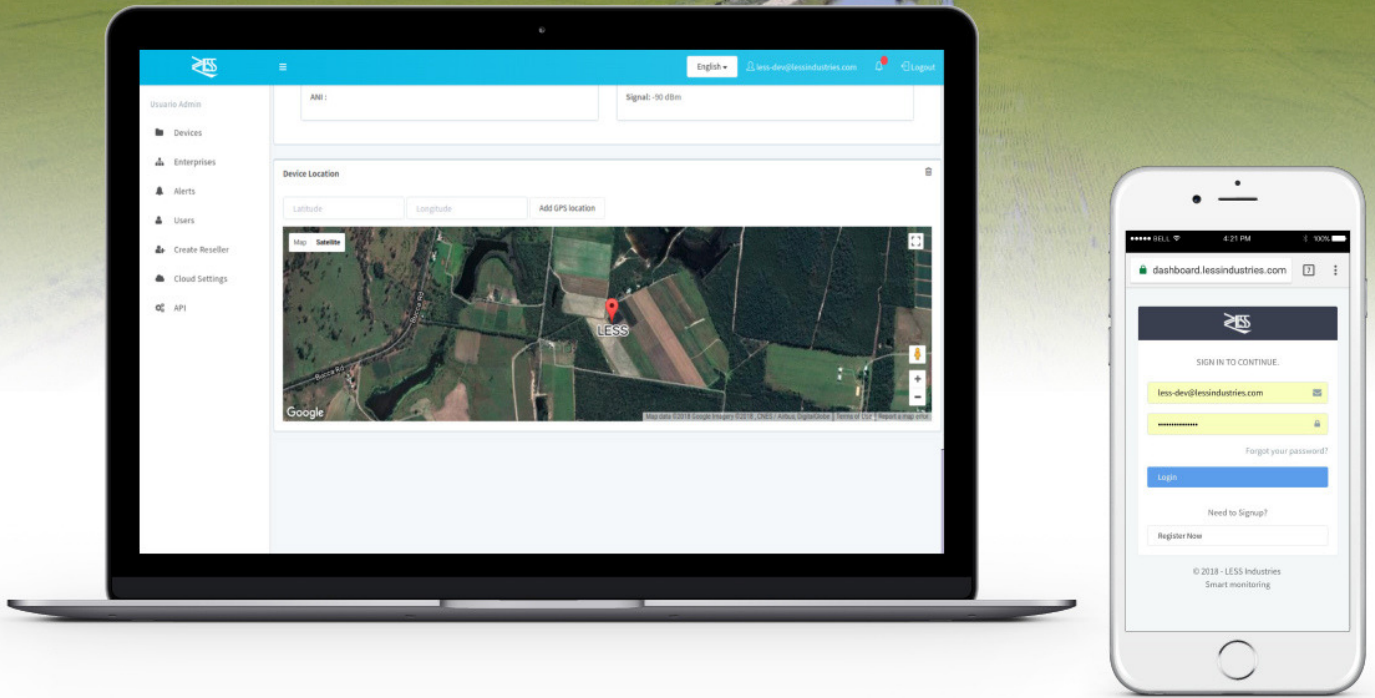
Web Access

Less Cloud:

- Alerts based on flexible algorithmic conditions.
- Secure access through computer, smart phone or API.
- Open API for integration with third party systems.
- Configurable alerts for each variable.
- Dispatch of alerts through email or SMS.

Advantages of Less Technology:

- Simple to use devices that are calibrated and configured automatically.
- Adjustable frequency of data measurement and reporting cycles.
- Extra memory for queuing messages during low connectivity periods.
- Robust device constructions for use in harsh and remote environments.
- Low cost and easy to install.

Technical Specifications:

Connectivity:

- LoRa
- GSM Quad Band
- Wi-Fi
- Ethernet

Power Supply :

- Solar panel
- Battery
- Plugged-in
- Energy harvesting

Temperature:

- Absolute range: -40 to +125 °C.
- Resolution: 0,01 °C.
- Repetitivity: 0,1 °C.
- Uncertainty: +/-0,3 °C @ 0 °C a 55 °C.

Relative Humidity:

- Range: 0 to 95% RH.
- Resolution: 0,7 %RH.
- Repetitivity: 0,1 %RH.
- Uncertainty: 2 %RH @ 0 °C a 55 °C.

Vibration/motion:

- Acceleration: ±2g, ±4g ±8g adjustable modes.
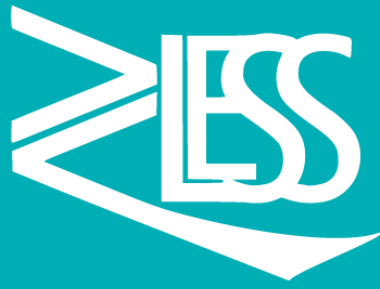- Output data rate (ODR): De 1,56 Hz a 800 Hz.
- Programmable interrupts.

Soil moisture:

- Acceleration: ±2g, ±4g ±8g adjustable modes.
- Output data rate (ODR): De 1,56 Hz a 800 Hz.
- Programmable interrupts.

Water level.

Other sensors can be integrated upon request.

Technical Specifications:Are you interested in learning more about our products?

0467 514 115

+54 11 4923 1648

+56 9 5403 7991

info@lessindustries.com