



Industrya



# Application deck Re-Juice Storage

## Company identity card



Re-Juice Storage

<https://www.rejuice-storage.com/>

Re-Juice storage supply battery energy storage systems made with second life batteries from electric vehicles to SMEs or buildings.

Key figures:

	2017	2018	2019	2020
Turnover				
Net profit				
Equity				
Workforce		1	1	1

Market : Energy storage system

Definition

Size :

Trend :





Building Green Energy Storage Solutions  
with recycled EV batteries

# Team



Denis JIDOVTSSEFF - Co-Founder  
R&D Engineer  
Energy Specialist  
Product developer

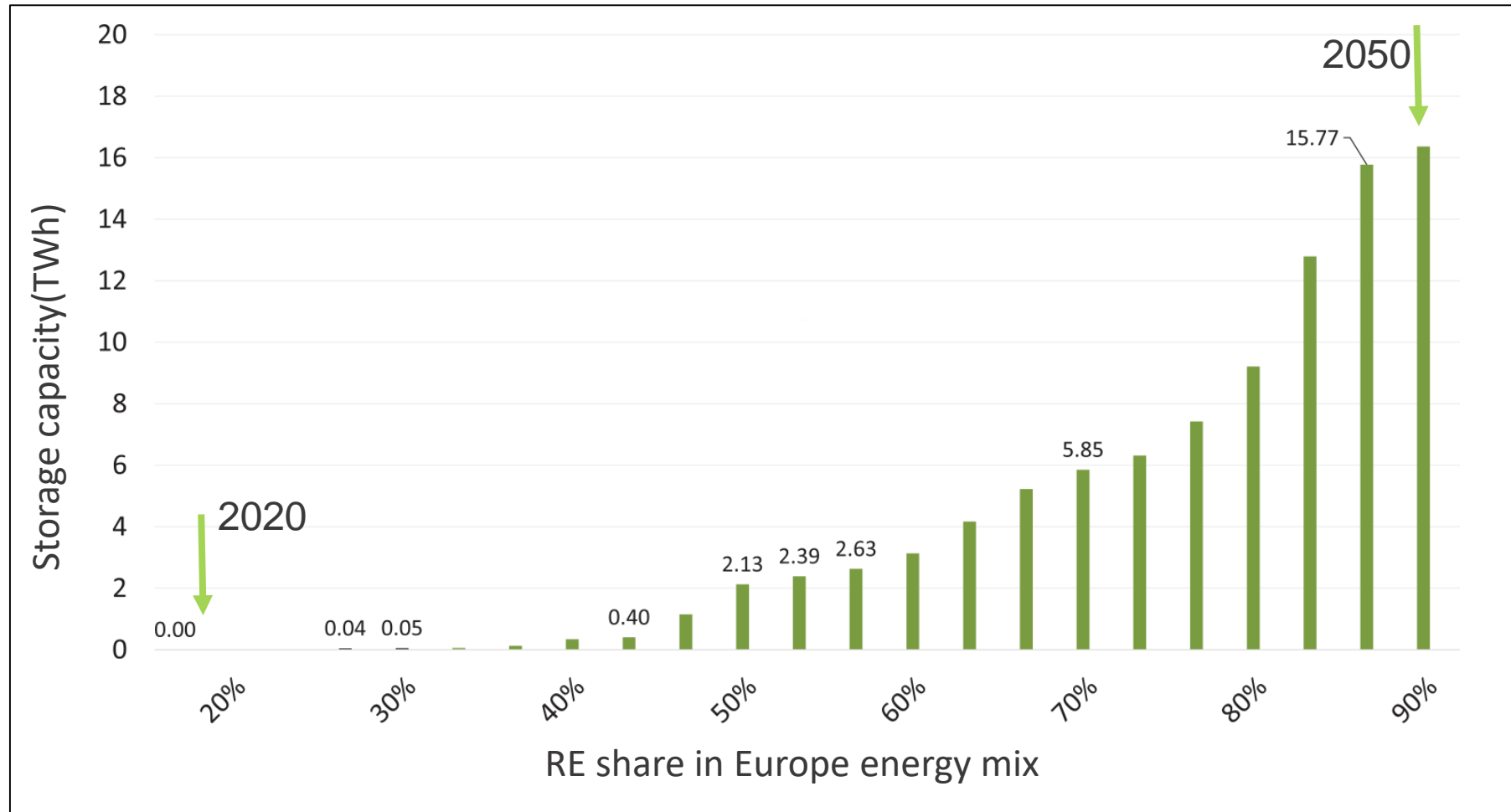
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Grégoire MASQUELIER - Co-Founder  
Engineer and Project Manager

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# Storage needs linked to renewables



Source: On the economics of electrical storage for variable renewable energy sources  
Alexander Zerrahn a , \*, Wolf-Peter Schill a , Claudia Kemfert

# Identified problems

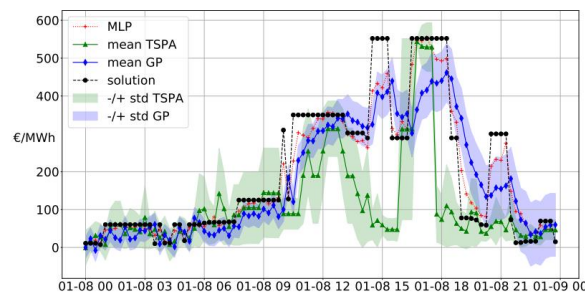
## Renewable energy is not controllable

Over-production is not monetized  
=> Limitation of production

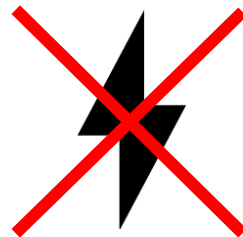
## EV charge is a challenge

Local Grid Infrastructure is not ready for fast EV charging  
=> Connexion to grid is limited in max power

## Grid is less stable due to increase of renewable



Price fluctuations



Outages

## Sustainability of our lifestyle



55 kg Cobalt  
18 kg Lithium

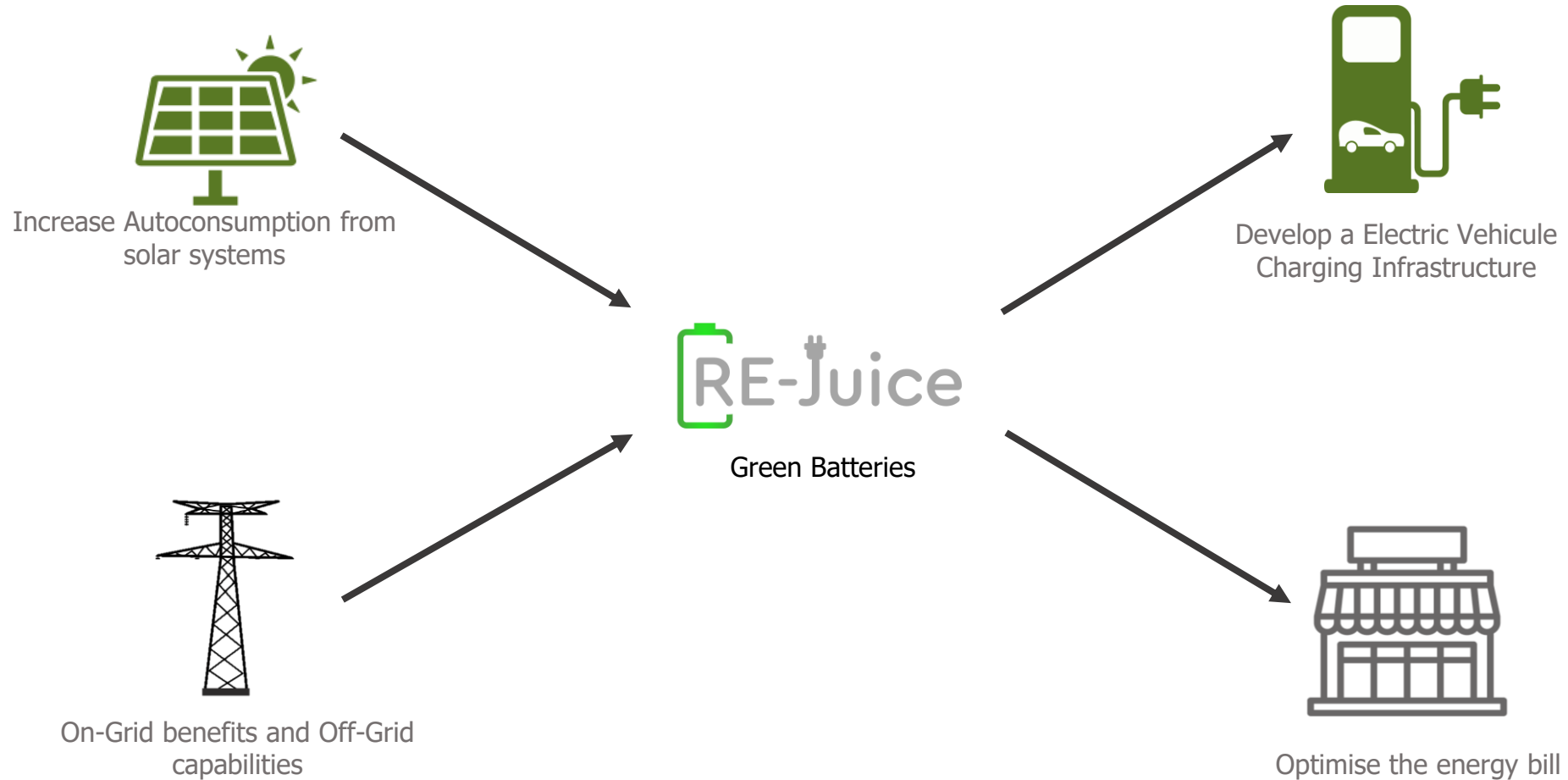


New NMC batteries



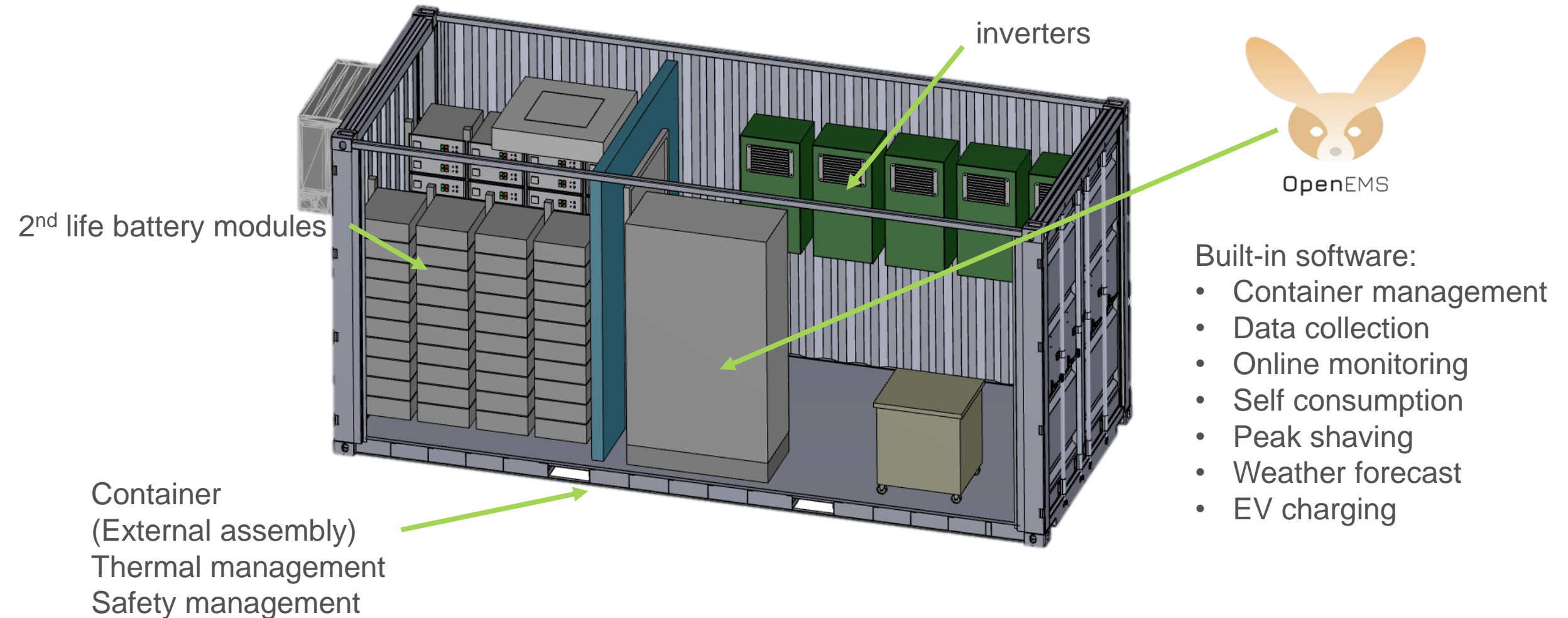
20 T CO<sub>2</sub>

# One solution





# Our product



# Second Life Batteries from Electric Vehicles

Used EV Batteries:

- New/recent cars: Warranty returns, accidents,...
- Old EV: After Normal Vehicle lifetime: 80% of remaining capacity
- Replaced batteries for upgrades (ex: Zoe)

## 1. End of First Life

Battery remaining capacity is more than 80%



## 2. Batteries are collected and dismantled

Battery remaining capacity is more than 80%

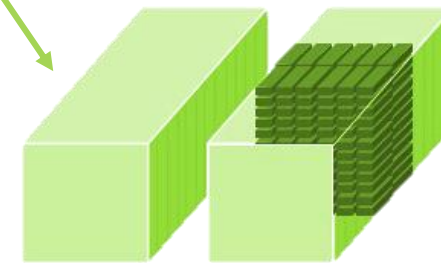


## 3. Each Cell is tested and sorted

By an patterned method



## 4. Bad Cells are send for recycling



## 5. Re-assembly in Standard modules

# Batteries challenges

## Public Assumptions

Batteries are complicated to set up and to use

Batteries are not ecological

Batteries are expensive

Batteries are not reliable

## Rejuice solution

Modular Capacity



200 kWh capacity  
150 kW power

Integrated Intelligence



EMS  
Integrated



Online  
Monitoring

Sustainable



Save per 200kWh  
36 kg **Lithium**  
110 kg **Cobalt**  
40 tons **CO2**



Recycling  
Included

Market



Pricing: similar to  
new batteries

Guarantee and Recycling



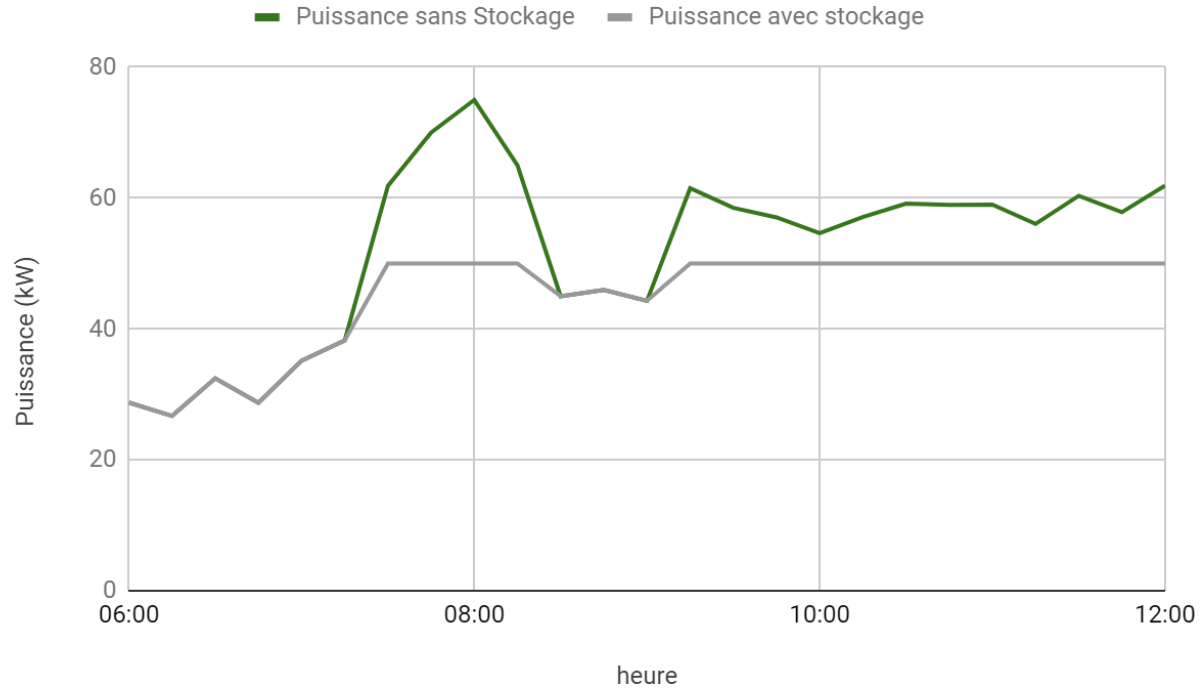
4000 cycles  
10 Year



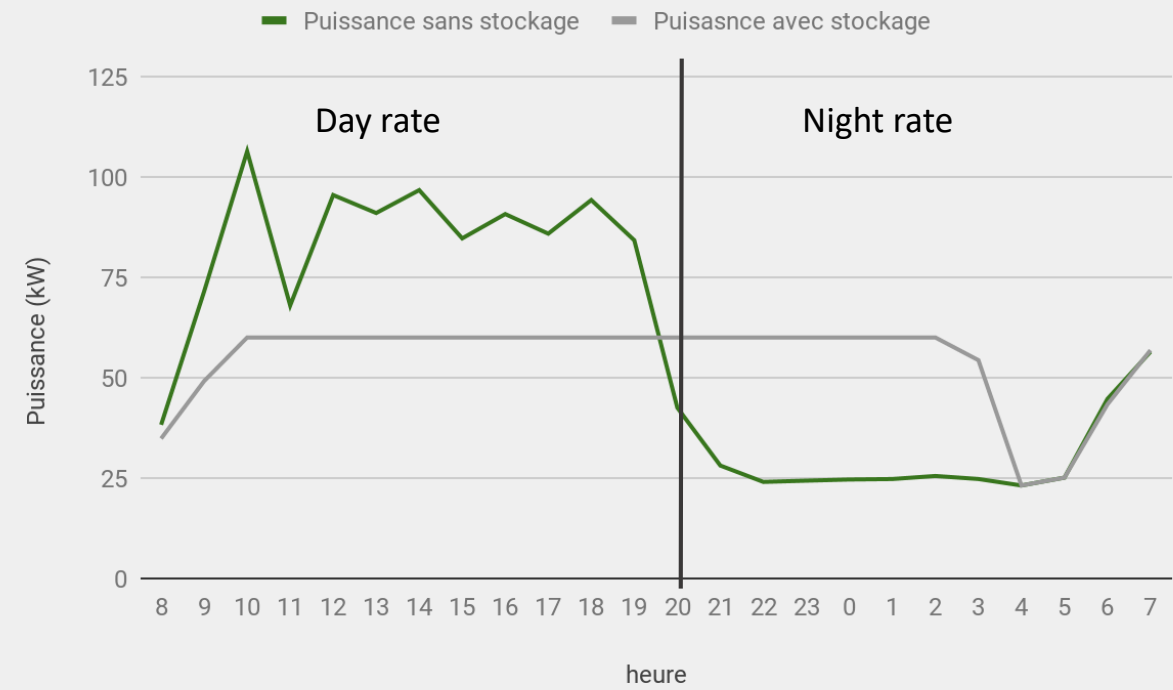
CE marking

# Battery uses

## Peak shaving



## Time shift



# Battery uses: Quality of Electricity and UPS

## 4 **quality** factors of Electricity

1 – Tension loss

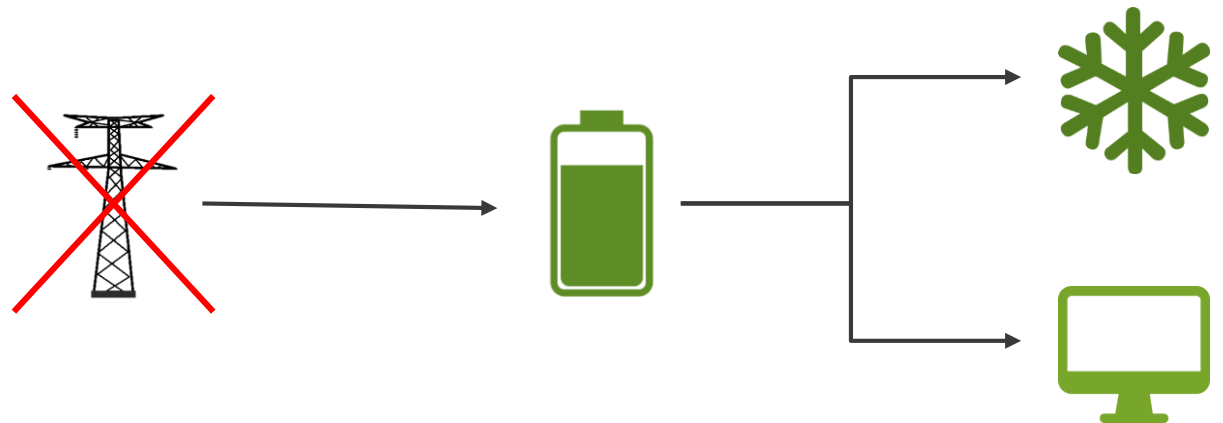
3 – Noise

2 – Tension overshoot

4 – Distorsions



## Off-Grid Capability



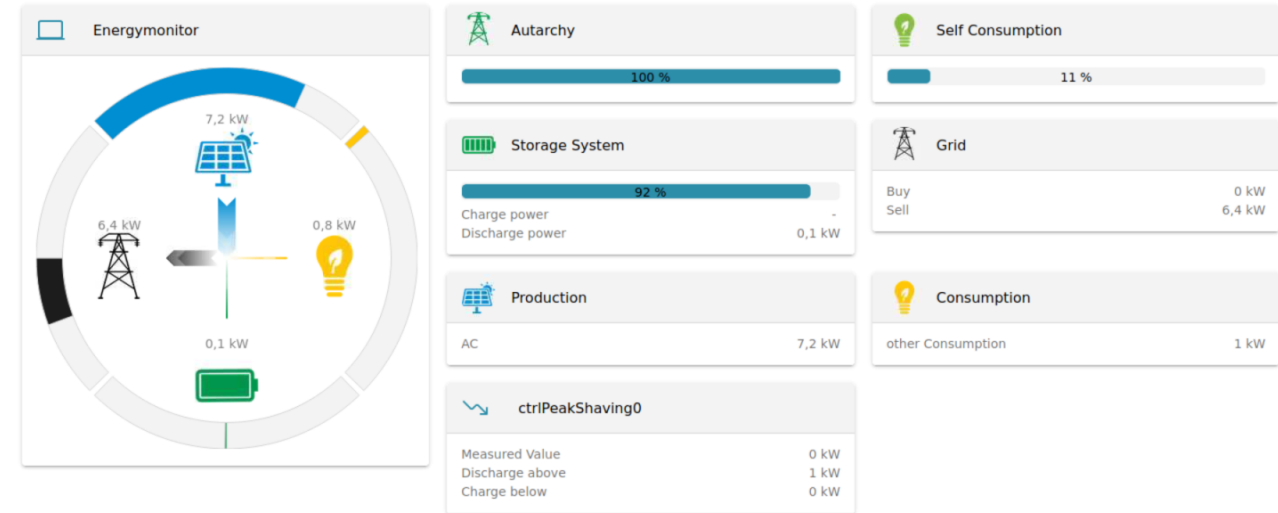
# Prototype

## Re-Juice's prototype



18 kWh  
7.5 kW

Key learnings:  
Communication protocols  
Remote access  
Online Monitoring  
Battery troubleshooting  
Thermal management  
User Interface  
Battery performance tests  
Integrated EMS  
SOC calculation





# ReMobHub Project

Re-Juice is building a Pilot!

CooPilot Project, Re-Juice is developing the containerized storage to power a fast charging station for John Cockerill.

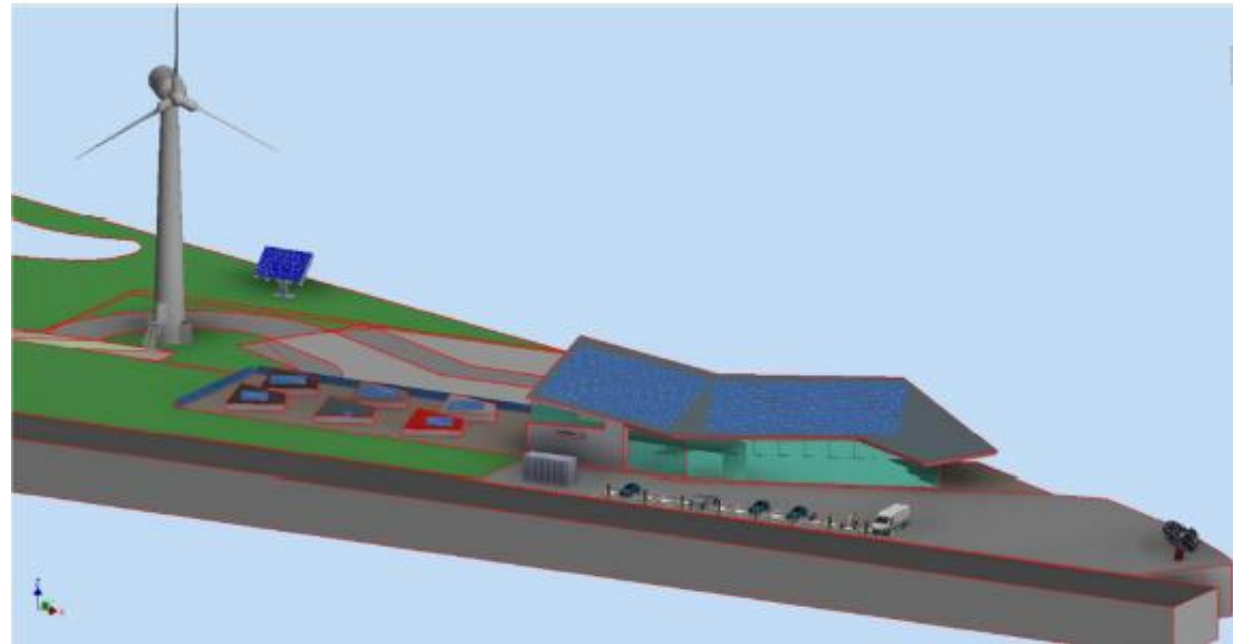
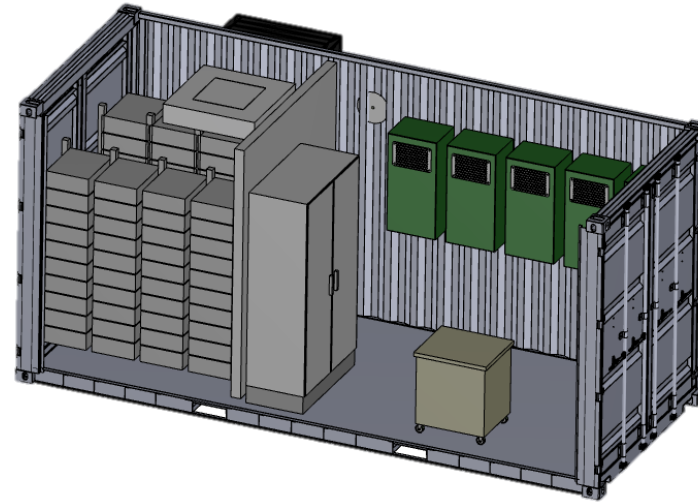
200 kWh

150 kW

Location: Belgium

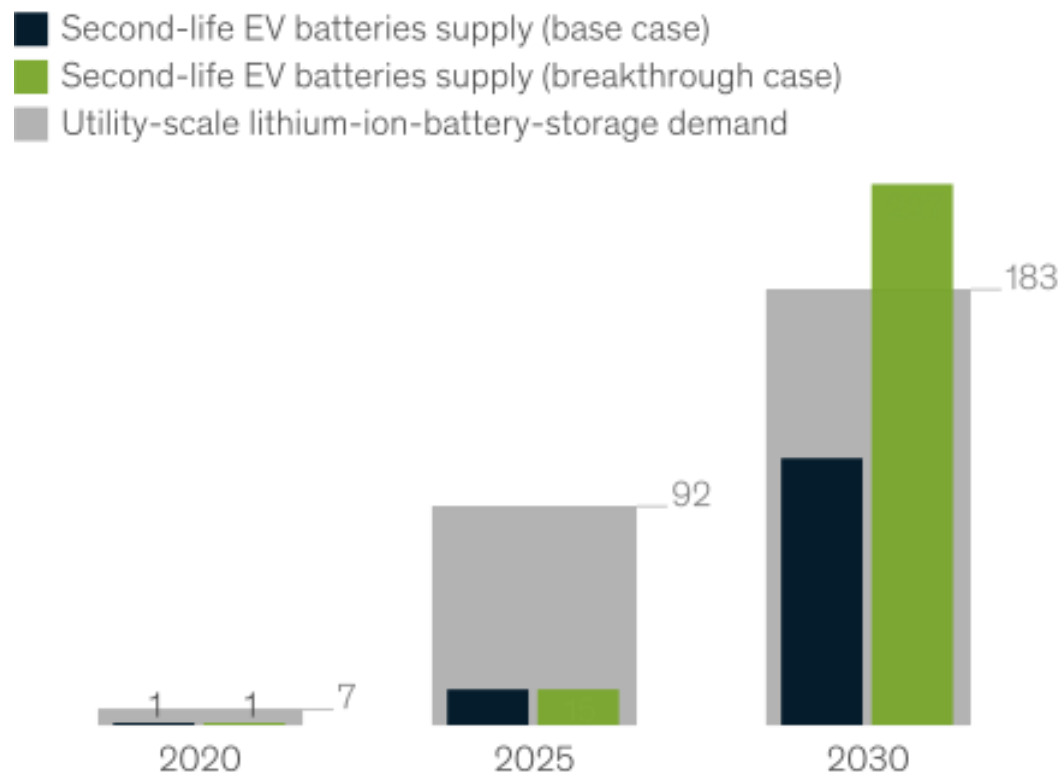
Other project member:

CE+T Power, Enersol (Leader)

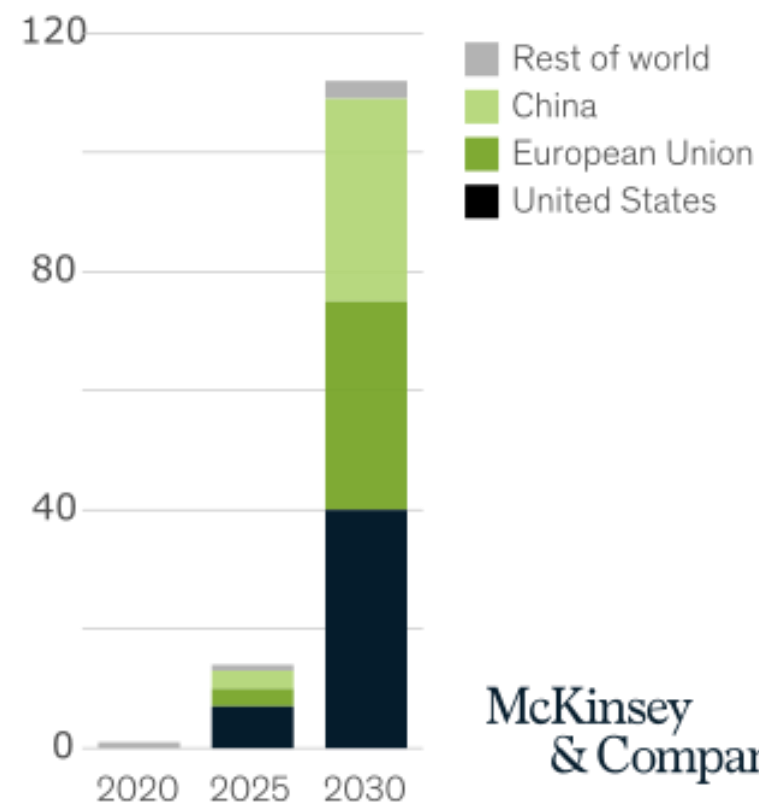


# Future market demand and offer

**Utility-scale lithium-ion battery demand and second-life EV<sup>1</sup> battery supply,<sup>2</sup> gigawatt-hours/year (GWh/y)**



**Second-life EV battery supply by geography (base case<sup>2</sup>), GWh/y**



McKinsey  
& Company

<sup>1</sup>Electric vehicle.

<sup>2</sup>Only for batteries from passenger cars.

# Stationary batteries

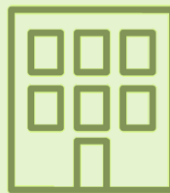
10 kWh



Self-Consumption

Mature Market, very competitive

500 kWh



Self-Consumption  
Peak Shaving  
Load Shifting  
Emergency Backup



EV Charging

More possibilities for  
revenue stacking

10.000 kWh



Grid Services



Renewable  
Power plant

Market entry level too high  
Cost Driven

# Our customer target

Retail

SME

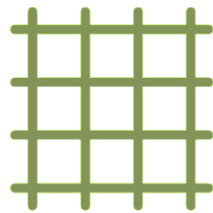
Logistic centers



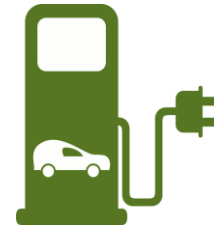
Peak Shaving  
Load Shifting  
Emergency Backup  
Renewable Stabilization



Capacity reserve  
Ancillary services  
Line discharge



Microgrid



EV Charging



Renewable Power  
plant

# Customer Targets details

## Retail sector

- More than 15,000 stores in Belgium
- Huge interest on EV charging infrastructure
- Brands interested with sustainable development is important
- High solar power potential with the parkings

## SMEs

- Facility + parking are a high solar power potential
- EV fleet for SME is increasing more rapidly
- Need of power safety (UPS)

## Logistic Center

- Night Logistic centers have a delayed consumption
- High numbers of electric lifts
- Need of power safety

# Competition





# Two main technologies

	Reassembly	Repurpose
Companies	EATON, watt4ever, ecar-accu power vault	Connected energy, green vision, fenecon
Installation size	5-20 kwh EATON : 20 – 1000 kwh	20 kwh -1 MWh
Usage	Self consumption domestic	FCR, utility
Cost	>600 €/kwh	
Lifetime	Up to 4000 cycles	1000 cycles ,
Maintenance	Batteries pack weight limited, < 45 kg	Heavy packs > 100 kg, need special toolings

# Competitive Advantage

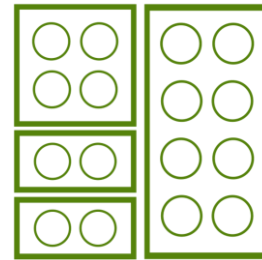


OpenEMS

Integrated EMS using  
opensource Framework



UPS with no break ability



Modular and compact design  
standardized formats



Containerized or inside the  
building

# Technological partners

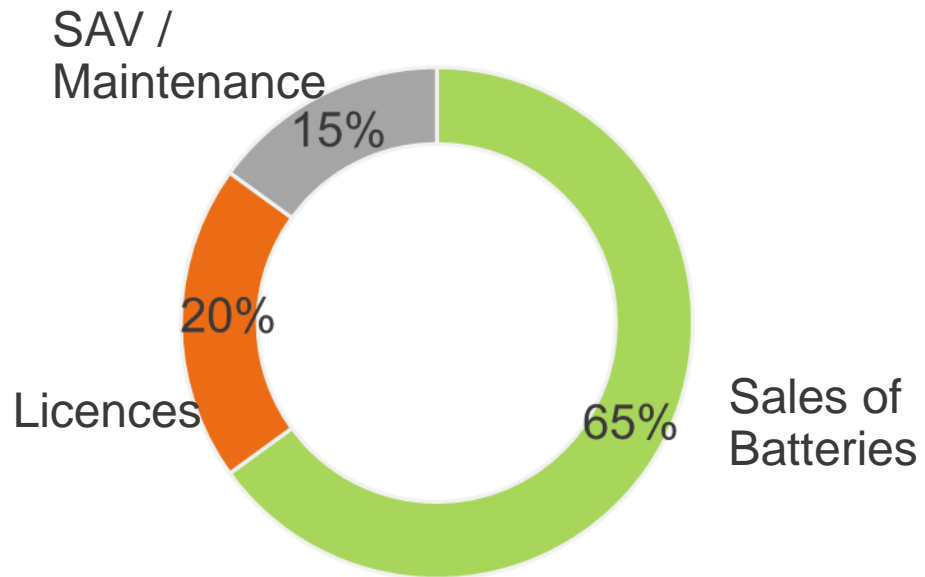


High quality inverters and UPS



Second life battery modules  
and battery recycling

# Business Model



Price target for container  
( exclude installation cost)

**370€/kwh**

Cost new battery container

**China sourced : 230€/kwh**  
**EU sourced : 400€/kwh**

## Cost Breakdown

Second life battery	162 €/kwh
Inverter	50 €/kwh
Casing	20 €/kwh
Other components	16 €/kwh
Man Work	30 €/kwh
total	278 €/kwh

# Industrialization

## STEP 1

< 1 Mwh /Year

- Purchase batteries and inverter to our partners
- Subcontracting the battery assembly to an electrotechnical company

## STEP 2

> 1 Mwh /year

- Purchase batteries and inverter to our partners
- Assembly of the batteries in our workshop

## STEP 3

> 10 Mwh /year

- Purchase batteries and inverters to our partners
- Storage of components for better fabrication delay
- Semi automatic assembly of the batteries in our workshop

# Marketing / communication

- Social networks (linkedin,,,,)
- Final customer direct contact
- Webinars
- Publications
- Fairs ( when open after COVID-19)



# Sales Channels

- B2C installators for SMEs
  - Partnership with Enersol
- Direct sale for groups (like LIDL, or Carrefour )





# Business plan

	2021	2022	2023	2024	2025
<b>Incomes</b>	<b>127.700 €</b>	<b>253.480 €</b>	<b>962.160 €</b>	<b>2.373.000 €</b>	<b>4.616.200 €</b>
audits	1.000	10.000	50.000	100.000	200.000
Project Management	11.100	20.880	76.560	183.000	349.200
Batteries Manufacturign	111.000	208.800	765.600	1.830.000	3.492.000
Installation of the Battery	2.600	10.800	60.000	240.000	550.000
Commissioning	2.000	3.000	10.000	20.000	25.000
Maintenance	-	-	-	2.000	
Installed Capacity		500	2.000	5.000	10.000
Unit Price Kwh		465	426	407	387
Average Installation		167	200	250	400
<b>Costs</b>	<b>313.700 €</b>	<b>485.500 €</b>	<b>1.070.500 €</b>	<b>2.085.500 €</b>	<b>3.630.500 €</b>
<b>Direct Costs</b>	<b>116.200 €</b>	<b>174.000 €</b>	<b>638.000 €</b>	<b>1.525.000 €</b>	<b>2.910.000 €</b>
Purchase of battery components	111.000	165.000	578.000	1.285.000	2.360.000
Main d'œuvre assemblage / installation	5.200	9.000	60.000	240.000	550.000
<b>Indirect Costs</b>	<b>197.500 €</b>	<b>311.500 €</b>	<b>432.500 €</b>	<b>560.500 €</b>	<b>720.500 €</b>
Staff	155.000	220.000	285.000	380.000	540.000
Staff (ETP)	2,5	3,8	5,0	6,8	9,5
infrastructure	-	20.000	90.000	120.000	120.000
Other costs	42.500	71.500	57.500	60.500	60.500
<b>Ebit</b>	<b>-186.000 €</b>	<b>-232.020 €</b>	<b>-108.340 €</b>	<b>287.500 €</b>	<b>985.700 €</b>
<b>Cumulative</b>	<b>-186.000 €</b>	<b>-418.020 €</b>	<b>-526.360 €</b>	<b>-238.860 €</b>	<b>746.840 €</b>

# Roadmap







1

## Concept

- Product Concept 
- Market 
- Value Chain 
- Business Model 
- Customers 


2

## Supply Chain

- Components 
- Partners 
- Distribution 
- Prototype 
- Staff 
- Financing 

3

## Product and Belgium

- Pilot 
- Co-Developpement
- Marketing with targeted customers

4

## Expansion

- International Expansion
- Assembly Workshop
- Series product

# Intellectual property

- Current Developpement has been under John Cockerill Contract
- Agreement with John Cockerill to be discussed