VOLTS
energy storage

INTELLIGENT MANAGEMENT OF ELECTRICITY SUPPLY IN HOUSES AND APPARTMENTS

VOLTS energy storage systems

About company

Volts Battery Ltd. is an innovative company that develops and manufactures smart energy storage devices VOLTS for a detached houses. The company's offices are located in Finland, the UAE, and also in Russia.

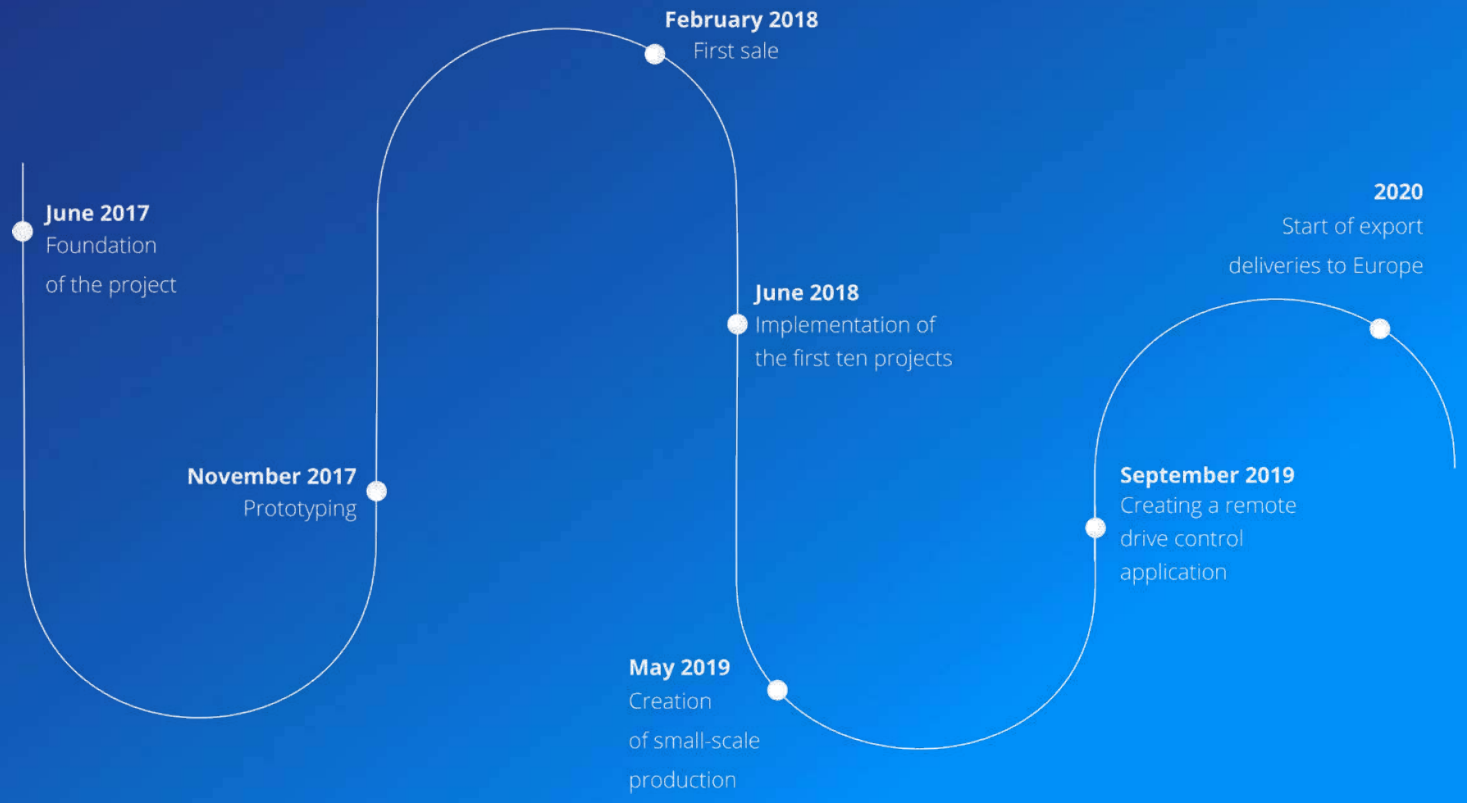
The project makes paradigm shift for the power supply system. Home storages will do for the hoouses what batteries in laptops for personal computers did few decades ago - it will give autonomy, independence and security. The project is based on unique energy efficiency management algorithms created by the VOLTS team that distinguish our product from traditional backup power systems.

Connecting solar panels to VOLTS makes it possible to create your own fully autonomous and energy-efficient power supply for the whole house.

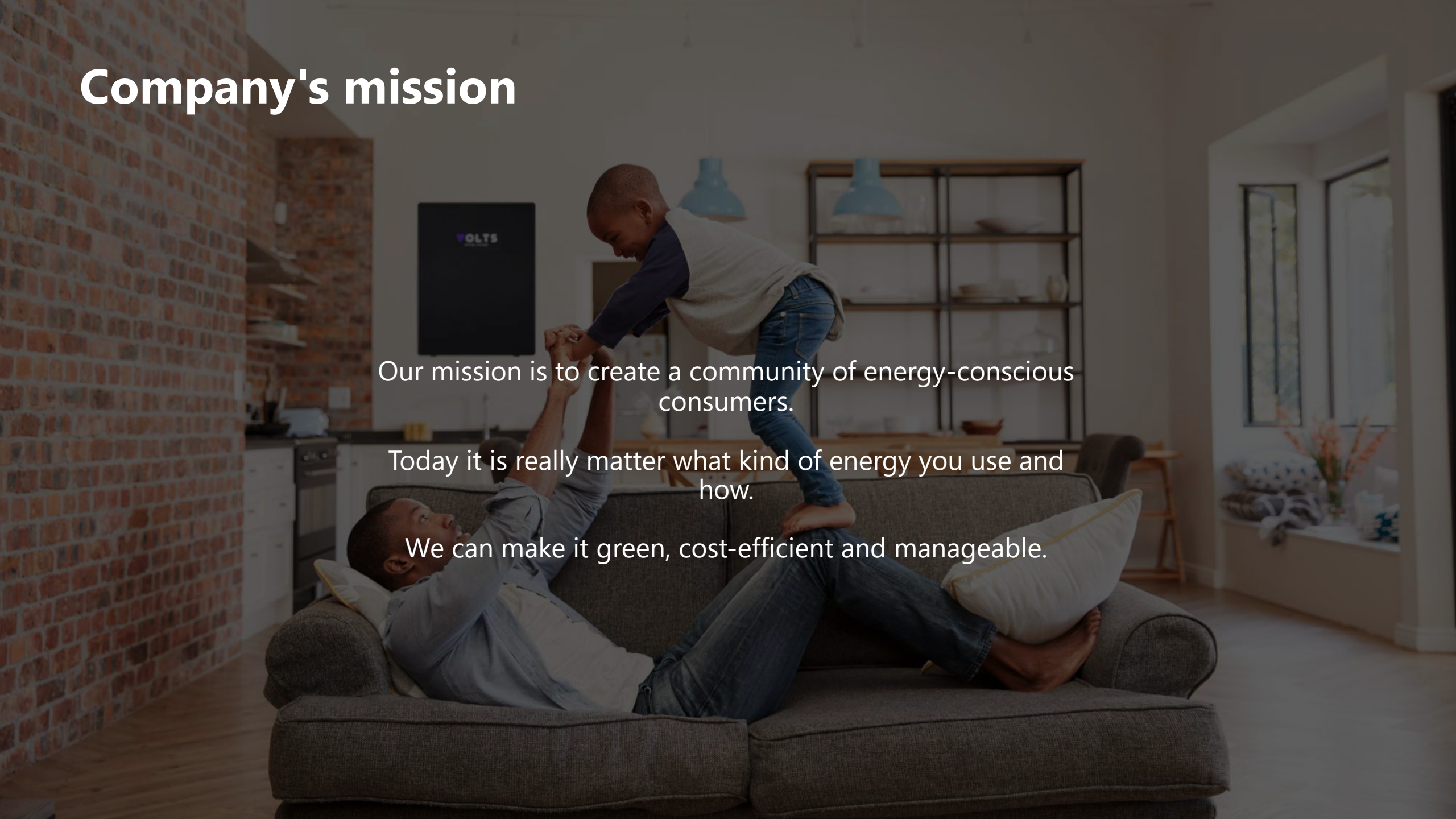
About company

VOLTS Battery Ltd. is a developer and manufacturer of energy storage devices for the home.

VOLTS storages are a comprehensive solution to variety of problems with the power supply of a house with the ability to connect solar panels and charge EV.



Company's mission



Our mission is to create a community of energy-conscious consumers.

Today it is really matter what kind of energy you use and how.

We can make it green, cost-efficient and manageable.

Press

Volts, the third start-up to receive Catalyst support, is developing a smart battery management system that can power an entire house from a renewable energy source.

TradeArabia
BUSINESS NEWS INFORMATION

tradearabia.com

The Catalyst, the sustainability-focused accelerator supported by Masdar and BP, has announced three new companies for its second cycle of funding, training and mentorship.

GULF NEWS

gulfnews.com

Today the production of VOLTS is gaining momentum: about 50 systems have already been sold, which are purchased by homeowners and small business owners

Коммерсантъ.ru

kommersant.ru

VOLTS Battery: this market is so young that no name has yet been found for it

vc.ru

vc.ru

About the product

Has expandable capacity 2-12 kWh

All-in-one unit

Open sourced API

Microgrid scalability

Up to 24 hours of autonomous work

10years of warranty

Three levels of problem solving

DETACHED HOUSE

The emergence of pv panels, electric cars and other smart home solutions upsets the balance of power consumption and management in a private house. VOLTS algorithms tune the home energy system control so that both EV charging and traditional energy appliance become efficient and automated for the owner. The car battery can also act as a temporary source of energy during periods of peak loads or low generation at home.

COMMUNITY OF NEIGHBORS

If community has sufficient number of VOLTS and electric cars, it becomes possible, using algorithms and collected data, to redistribute the power from VOLTS and the remaining power in electric car batteries between community members. We help to share electricity consumption more efficient.

ENERGY SYSTEM

With the help of our open source API, it would be possible to provide access to home storage and electric car batteries for the power grid, thereby giving it the ability to manage consumption and generation during peak periods at the system level.

Manage in one click

Smart control via mobile app, online monitoring, remote control, energy consumption statistics.

Online monitoring

Forecasting the reservation time

Remote management

Electricity consumption statistics

Solar station

One of the main tasks of the company is to change the energy consumption paradigm

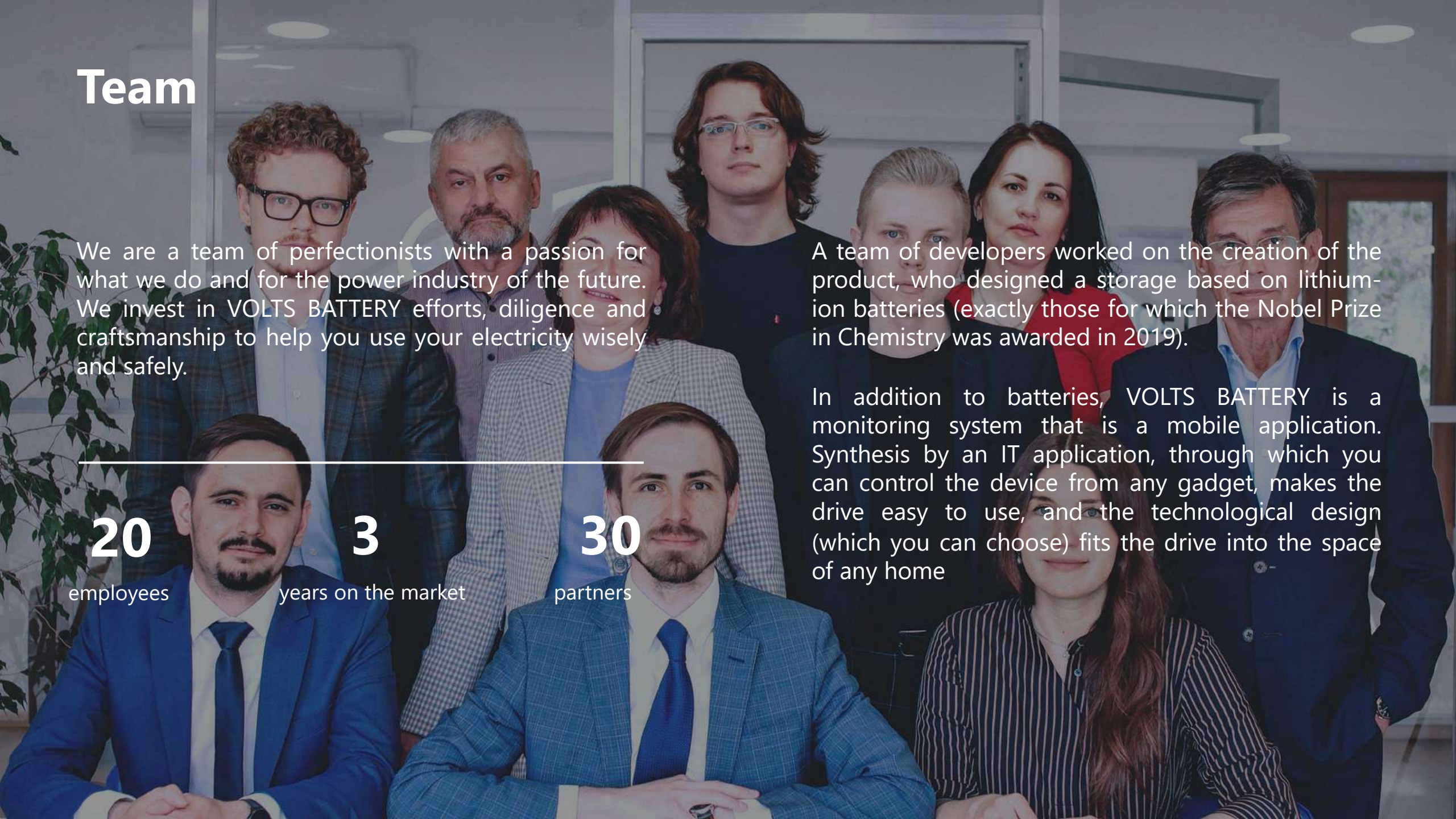
transition from
the **consumer** model

to the
smart consumer or **prosumer** model

Competitor analysis

Producer	VOLTS	Tesla	Soltaro	BYD	Sonnen	LG Chem	
Model	Energy Storage	Powerwall 2	AIO2	B Box Pro 13.8	Eco 9.43	RESU 13	
Country	Finland	USA	Australia	China	Germany	Korea	
Product retail price for 1 kWh, USD	**$650/kWh**	**$730/kWh**	**$870/kWh**	**$640/kWh**	**$984/kWh**	**$714/kWh**	
Cost per total warranted kWh	**$0,18/cycle**	**$0,26/cycle**	**$0,48/cycle**	**$0,20/cycle**	**$0,27/cycle**	**$0,23/cycle**	
All In One unit	✓	✗	✓	✗	✗	✗	VOLTS is easy to install plug-n-play system. Solar inverter and EV charger inverter included.
Expandable capacity	✓	✗	✓	✗	✓	✗	VOLTS makes capacity expanding as easy as changing battery in smartphone.
Capacity kWh	from 2 to 12 kWh	13,5 kWh	from 4,5 to 9 kWh	13,8 kWh	13,5 kWh	12,4 kWh	
Easy installed lego-like modules	✓	✗	✗	✗	✗	✗	Customer doesn't need to wait for support to enlarge VOLTS capacity
Customising design	✓	✗	✗	✗	✗	✗	VOLTS is presented in 6 different colors, and we have plans to make front panel deep customized.
Open sourced API	✓	✗	✗	✗	✗	✗	VOLTS open source API makes it easy to connect with any smart home and city solutions
Microgrid scalability	✓	✓	✗	✗	✓	✗	VOLTS connects all storages in microgrid to make decentralized and really smart electricity supply management inside the community
Smart EV Charger	✓	✗	✗	✗	✗	✗	VOLTS develops smart EV charger that makes car battery an active grid member.

Team



We are a team of perfectionists with a passion for what we do and for the power industry of the future. We invest in VOLTS BATTERY efforts, diligence and craftsmanship to help you use your electricity wisely and safely.

20
employees

3
years on the market

30
partners

A team of developers worked on the creation of the product, who designed a storage based on lithium-ion batteries (exactly those for which the Nobel Prize in Chemistry was awarded in 2019).

In addition to batteries, VOLTS BATTERY is a monitoring system that is a mobile application. Synthesis by an IT application, through which you can control the device from any gadget, makes the drive easy to use, and the technological design (which you can choose) fits the drive into the space of any home

VOLTS Battery projects

Autonomous farm

Object type: country house, 200 m^2

Daily electricity consumption: 12-14 kWh

Installation year: 2018

Why do owners need VOLTS?

The house is located in the middle of a field, away from settlements and roads. Electrical networks are not stretched to the site. Having decided to avoid the costly arrangement of an individual network power supply system, the customer opted to create an autonomous solar station using VOLTS Battery drives.

Electrical equipment: indoor and outdoor lighting, water pumping unit, refrigerator, boiler, washing machine, kettle, electric stove, septic tank pump, ventilation.

Solution:

Total VOLTS capacity: 10 kWh

Backup time: full autonomy

Solar panel power: 2.5 kW

Roof area: 14.4 m^2

Daily generation: 12-14 kWh

VOLTS Battery projects

Public building

Object type: country house, 500 m^2

Daily electricity consumption: 10 kWh (first floor)

Installation year: 2019

Why do owners need VOLTS?

Electricity reserve in case of outages, ensuring the energy autonomy of the first floor of the building, voltage stabilization, accumulation of electricity from solar panels.

Electrical equipment: interior and exterior lighting, gas boiler automation, heating circulation pumps, ventilation system, audio system and lighting equipment of the assembly hall, etc.

Solution:

Total VOLTS capacity: 8 kWh

Backup time: full autonomy

Solar panel power: 2.5 kW

Roof area: 14.4 m^2

Daily generation: 8-10 kWh

VOLTS Battery projects

Country house

Object type: country house, 300 m^2

Daily electricity consumption: 22 kWh

Installation year: 2020

Why do owners need VOLTS?

Electricity reserve in case of outages and increasing the technical autonomy of the building, accumulation of solar panels electricity

Electrical equipment: heating circulation pumps, indoor and outdoor lighting, refrigerator, washing machine, air purifier and humidifier, kettle, TV, computer, etc.

Solution:

Total VOLTS capacity: 8 kWh

Backup time: 17-21 hours

Solar panel power: 3 kW

Roof area: 17.3 m^2

Daily generation: 11-13 kWh

VOLTS Battery projects

Country house

Object type: country house, 250 m^2

Daily electricity consumption: 14 kWh

Installation year: 2019

Why do owners need VOLTS?

Periodic accidents and power outages in the village, the desire to increase the technical autonomy of the house, the accumulation of electricity from solar panels, reasonable consumption, integration with the "smart home" system.

Electrical equipment: gas boiler automation, circulation pumps, indoor and outdoor lighting, refrigerator, washing machine, TV, computer, etc.

Solution:

Total VOLTS capacity: 4 kWh

Backup time: 8 hours

VOLTS Battery projects

Country house

Object type: country house, 150 m^2

Daily electricity consumption: 12 kWh

Installation year: 2020

Why do owners need VOLTS?

Frequent power outages in the village and power surges. Electricity reserve in case of outages.

Electrical equipment: gas boiler automation, circulation pumps, indoor and outdoor lighting, refrigerator, washing machine, TV, computer, etc.

Solution:

Total VOLTS capacity: 4 kWh

Backup time: 8 hours

VOLTS
energy storage

UAE	Abu Dhabi
Finland	Helsinki
Russia	St. Petersburg

voltsbattery.com
office@voltsbattery.com

VOLTS
energy storage

SMART RESIDENTIAL ENERGY STORAGE

CATALYST

Already invested in VOLTS

Household owner desires to…

Have a reliable and independent Energy System

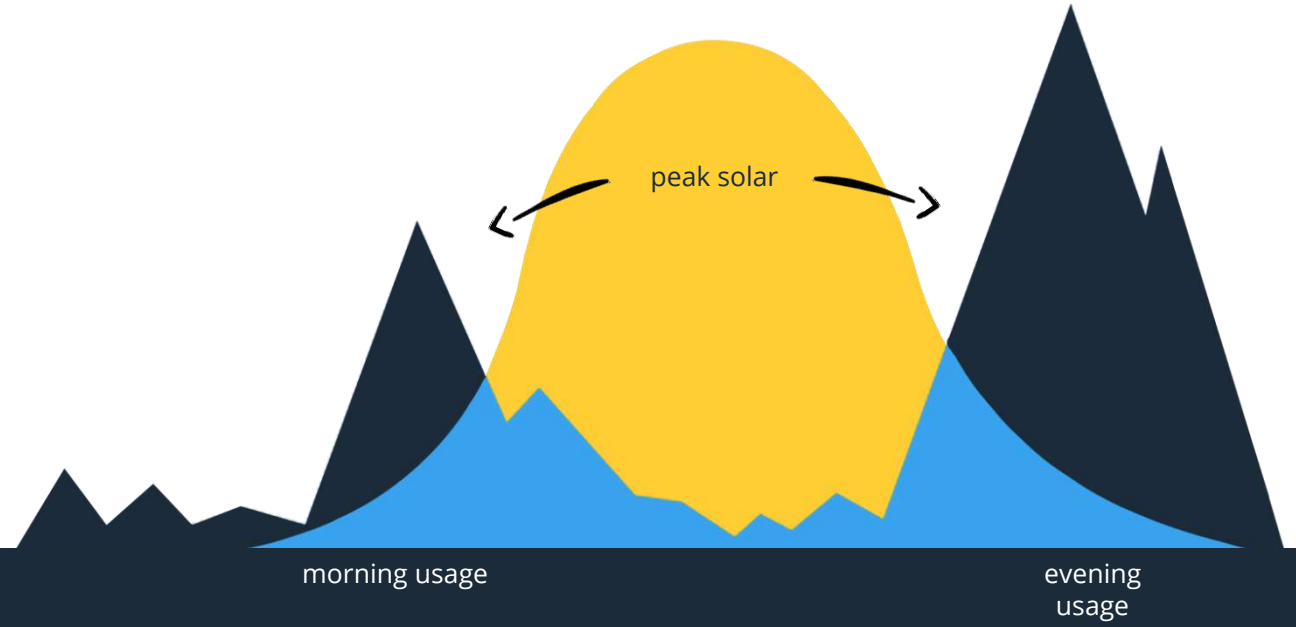
Effectively utilize solar production capacity

Have an intelligent Energy System

Make a positive impact

VOLTS
energy storage

Covering all household energy needs with solar power



- Underused solar capacity that can be stored in Volts energy system
- Usage of stored power
- Usage of direct power from PV panels

2-12kWh

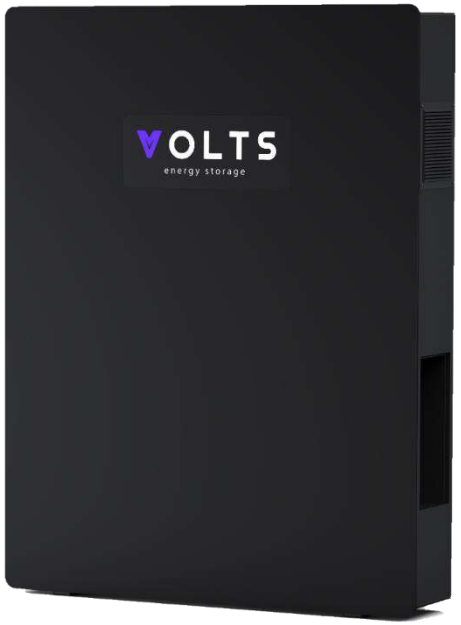
per unit

108 kWh

per system

VOLTS
energy storage

Customer-centric hardware technology



Design compatible with any interior

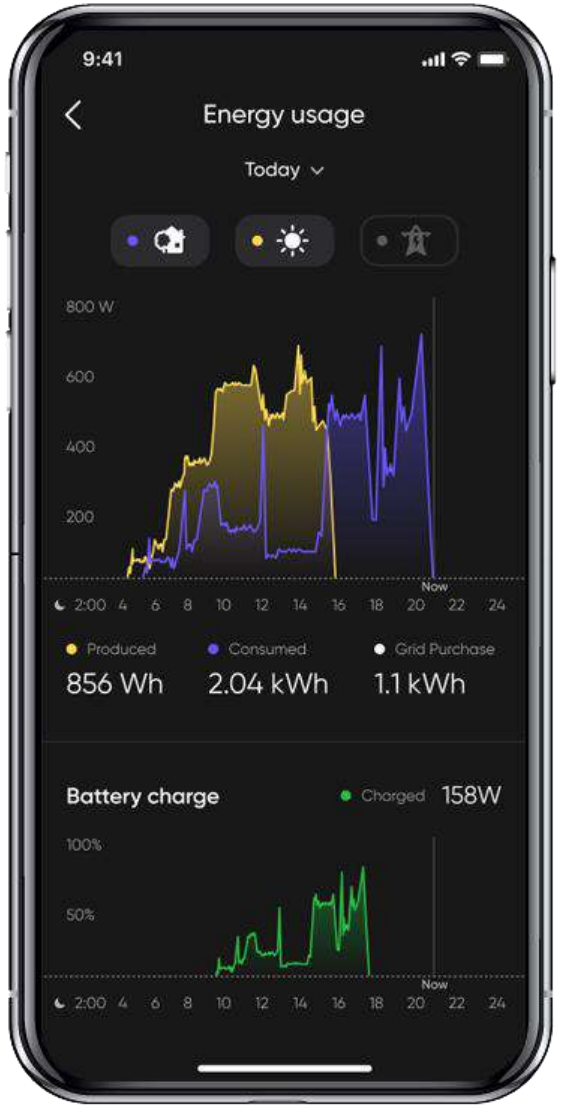
Positive environmental impact

Completely silent

Easy to install
No maintenance

VOLTS
energy storage

Complete control via smart app



- Energy consumption statistics
- Reservation time forecast
- Smart management
- Online monitoring

VOLTS
energy storage

Intelligent operational system

Open API connection

Current electricity tariffs

Weather forecasts)

Other services (Alexa Voice Helper, IoT gadgets)

VOLTS Cloud Server with ML analysis

HTTPC (S) protocol

Mobile App

Consumption and PV-generation statistics

Online electricity power flows

MQTT protocol

- Electricity consumption
- Quality of electricity
- PV generation

- State of battery charge (SoC)
- Battery DOD (depth of discharge)
- Remaining battery capacity (RC)
- Battery state-of-health (SoH)

VOLTS energy storage

Highly differentiated value-proposition

Producer	VOLTS	Tesla	Soltaro	BYD	Sonnen	LG Chem
Model	Energy Storage	Powerwall 2	AIO2	B Box Pro 13.8	Eco 9.43	RESU 13
Country	Russia/UAE	USA	Australia	China	Germany	Korea
All In One unit	●	○	●	○	●	○
Expandable capacity	●	○	●	○	●	●
Easy to install lego-like modules	●	○	○	○	○	○
Design customization	●	○	○	○	○	○
Optimization with ML-algorithms (under development)	●	○	○	○	○	○
Microgrid scalability (under development)	●	●	○	○	●	○

VOLTS is easy to install plug-n-play system. Solar inverter and EV charger inverter included

Battery capacity can be easily adjusted to meet all household energy needs

VOLTS makes capacity expanding as easy as changing a battery in a smartphone

VOLTS is presented in 6 different colors. Front panels can be personally customized

VOLTS uses forecasting of energy production/ consumption, dynamic tariffs for efficiency maximization

RESS are connected into a micro grid to enable smart management of community Energy System

VOLTS
energy storage

The right time for expanding global operations

RESS market is expected to grow at a CAGR of 30% YoY and reach $11.2 bln by Y2023

Edge of the grid services market
(Diversification potential)

Global REES market in Y2023 forecast

Global REES market today

* Source: Lux Research, BBC Research

VOLTS
energy storage

Company with global traction

$500k

In total sales

Office in Abu-Dhabi

Masdar CITY

Integration into “Eco-Villa” concept

10

Installations in Europe

Office and R&D center in Russia

40+

Installation projects across Russia

VOLTS
energy storage

Global expansion with Energy-as-a-service business model

EaaS

0$

Easy entry into a household

Customer has no upfront costs

Transforming into an utility company

Electricity is sold on a subscription basis

Securing additional revenue streams

Locking-in the customer and cross-selling other products& services

VOLTS
energy storage

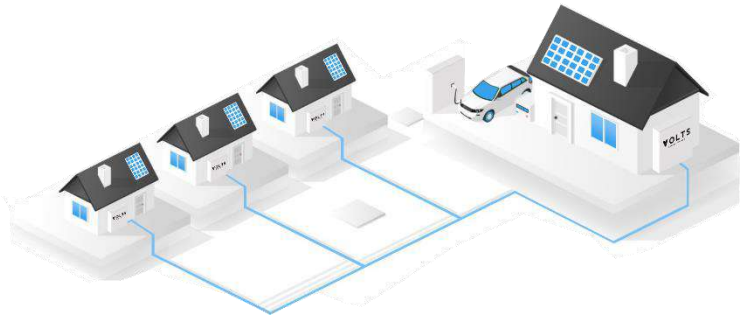
On the way to the NextGen energy system

1st stage Establishment of infrastructure

Installation & management of independent RESS

- Improvement in PV system efficiency
- Reduction in energy consumption

2nd stage Connecting RESS into a network



Development of local micro grids

- Energy system optimization

3rd stage Next Gen energy system

Block-chain based Virtual Power Plant and ancillary energy services platforms

- Demand Response
- Frequency Optimization
- Duck Curve problem solving

VOLTS energy storage

Strategic plan

Short Term 2022

1k installs annually

0,2% of global market

Initial Expansion
Channels development
Tech service development

Open source API dev
Machine learning experiments

Mid Term 2024

16k installs annually

1% of global market

Wide geography expansion
Pilot projects with energy systems

Own production centers
Open source API tool
Starting the AI prediction management tool

Long Term 2026

200k installs annually

5% of global market

Providing services for energy systems, utilities and communities

VOLTS
energy storage

Highly qualified team uniquely capable to take on the challenge

Alexandr Kiyanitsa
CEO

Electricity Education, MBA, Young Chief of the year, Falling Walls 2019

Vladimir Mlynchik
CMO

Electricity Education, MBA, 10 years of electrical business, Entrepreneur of the year 2017 - Ernst&Young

Artem Denisov
COO

Electricity Education, MBA, 10 years of electrical business, Global Entrepreneur Award 2011

Vitaly Mlynchik
Head of Scientific Department

Electricity Education. 30+ years in energy. Several electrical inventions

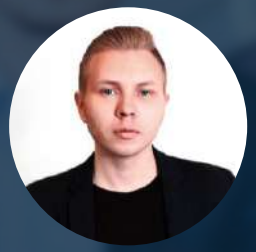
Natalia Ismagilova
Project manager

Master of law
12 years of energy business.

VOLTS
energy storage

Highly qualified team uniquely capable to take on the challenge

Sergey Smirnov
CTO



Alexandr Shabalin
Electronic Engineer

Alexandr Shlyapnikov
Product Designer

Artem Budakov
Programmer

Dmitriy Karasev
Programmer

Konstantin Solovyev
Lead Programmer
(freelance)

Asludin Magomedov
CBDO

Svatoslav Yurchenka
Business Developer

Aleksandr Ochkov
GR

Gleb Kirpikov
Financial Analyst

Roman Sdobnikov
Project Manager

VOLTS
energy storage

VOLTS
energy storage

VOLTS UAE Ltd

office@voltsbattery.com
Voltsbattery.com

CATALYST

Already invested in VOLTS