



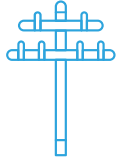
Enabling EV fast-charging
Anywhere



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Power Booster – Enabling Fast-Charging Anywhere



Installed where grid is
power-constrained



Charged during
idle times



Enables up to x3
faster charging



Ultrafast Charging
>200km in 15 minutes



Less waiting
in line



Vast Deployment
of Fast-chargers



Charge
more cars



Accelerating mobility Electrification



**Flywheel based
POWER BOOSTERS**



**EV Fast charging
ANYWHERE**



**Boost Grid at power-
constrained locations**



**Added Value for
entire ecosystem**



Innovative

Unique & Patented



Safe

CE & UL Certified



Sustainable

No toxic materials.
No re-cycling costs



Cost Effective

Lowest Lifetime Costs

The EV revolution is accelerating...

Forbes

May 5th 2021

”Transportation contributes to about 28% of U.S. carbon emissions. To cut emissions by 50% by 2030, this sector will need to be rapidly decarbonized

“



Mary Barra,
chairman, and
CEO of @GM
June 12th 2019

”

The auto industry will change more in the next 5 to 10 years than it has in the last 50

“

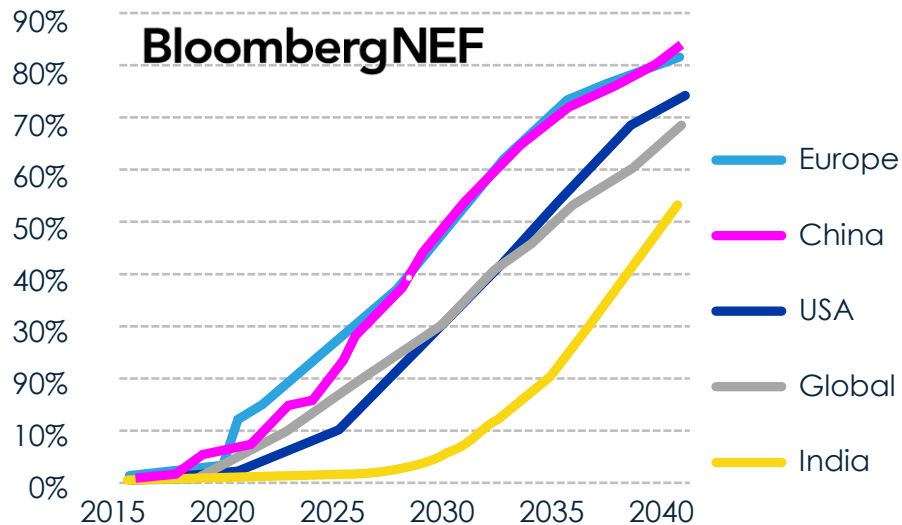
Forbes

May 5th 2021

”EV owners must be able to charge their vehicles conveniently and quickly. Biden's plan provides for \$15 billion to build 500,000 EV charging stations

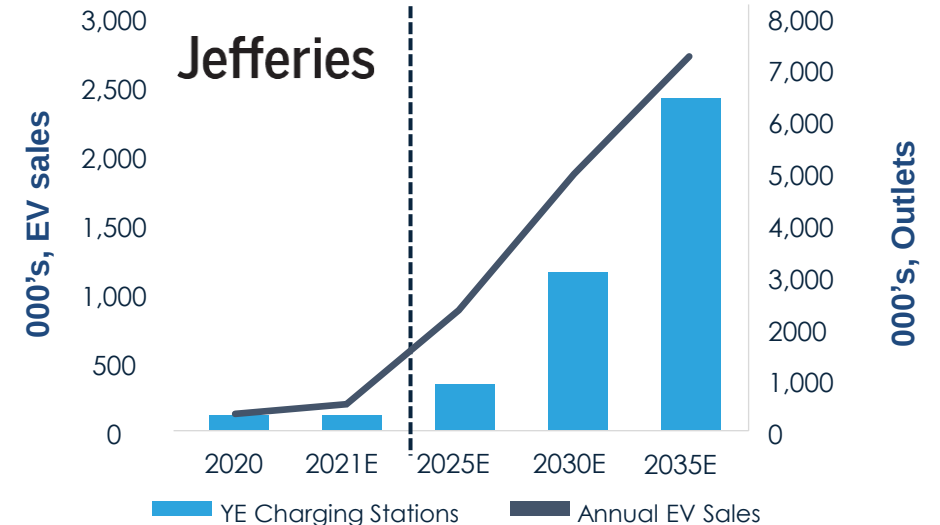
“

Global long-term EV share of new passenger vehicle sales



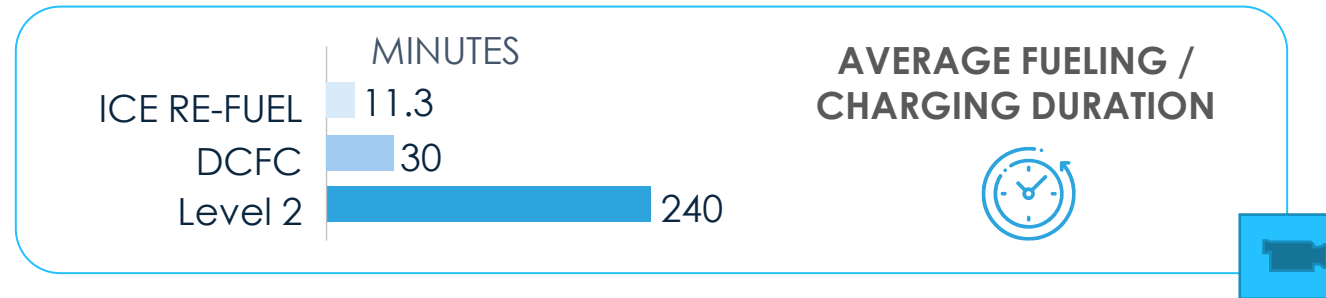
Charging Infrastructure is expected to grow in proportion to EV penetration rate

US Charging Station Outlet Market Growth vs. NA EV Sales



Source: Jefferies estimated US Department of Energy

Fast Charging is Critical for EV adoption



Source: Jefferies estimates

DCFC* not required Level 1	DCFC* a differentiator Level 2 / DCFC			DCFC* a MUST Level 2 / DCFC	
Private Home 	Multi-Family 	Work 	Destination 	On-The-Go 	Fleet Depot 
Over night	Multiple hours/day	4-10 hours	1-3 hours	< 0.5 hour	Minimal

Charging Time  

*DCFC – Direct Current (DC) Fast Charging

Charging Infrastructure – a fast moving market

Public sector

Utilities

Elec. OEM

Retail

O&G

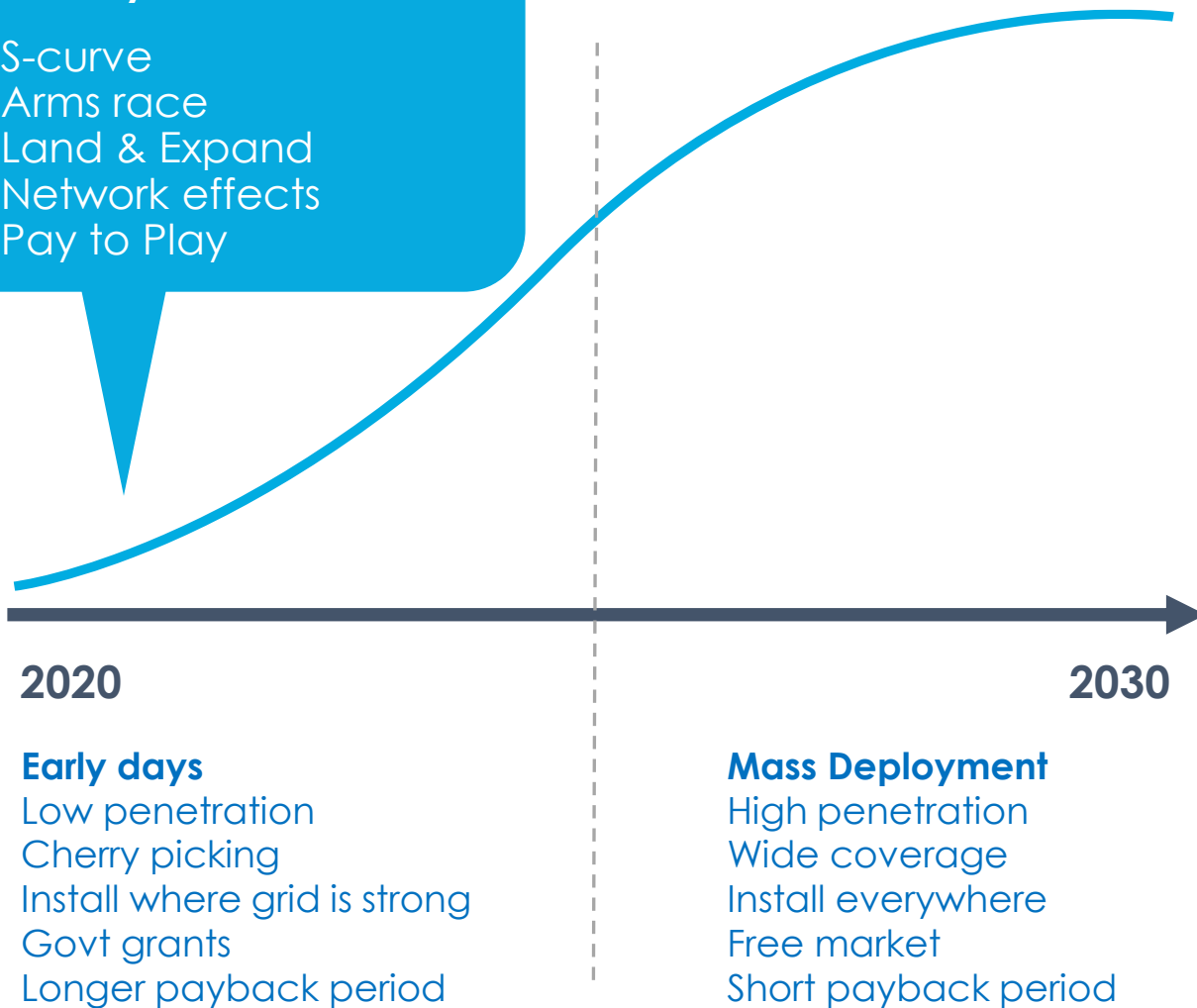
Gas stations

Car makers

New players

Market dynamics in action:

- S-curve
- Arms race
- Land & Expand
- Network effects
- Pay to Play



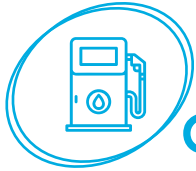
McKinsey
&Company
June 21st 2021

”

“Market leaders in **DC fast charging** can create stickiness by leveraging their know-how for brands, enabling software, and a seamless **customer experience.**”

“

Infrastructure Disruption



Gas Stations

Centralized Approach

- 100% refueling in public stations
- 'Few' 'big' gas stations, serving 100s vehicles a day
- Fast Refueling (5-10 min.) everywhere
- Amenities added around the station



Fast Charging

Distributed Approach

- 20%-40% charging in public chargers
- 'Many' 'small' Stations – 10s EVs/day/charger*
- Fast Charging is rare & not trivial
- chargers ARE the amenity



Distributed Fast Charging Vs Fast Charging Hubs



A Mixed-solution Infrastructure



Fast Charging Hubs

"gas-stations-like" – multiple FC ports,
Located where the grid is powerful



Small Distributed fast charging sites

- At destination (inside cities)
- On-the-go - every 30-50km

Legend

- Intercity Highway
- National roads
-  Fast-Charging Hub (@ powerful grid)
-  Destination distributed FC
-  On-the-go distributed FC

Existing Grid cannot support Fast Charging

Dilemma:
Accelerate DCFC roll-out
or
Defer investment

Grid upgrade challenges



Cost



Time



Complexity

”
“... some fleet operators are taking delivery of EVs only to find that **they face a long wait** to get the necessary charging equipment up and running”
“

EVs are here. Try to keep up.

CHARGED
ELECTRIC VEHICLES MAGAZINE

July 20th, 2021

”
DCFC can draw the **equivalent of a whole neighborhood's** electricity needs at once. “

”
Large investments ...are required in transmission lines, substations, transformers etc. “

Forbes *May 5th, 2021*

The Value of Power Booster - Example



EV Single charge
35kwh => 200km



Charging Time <
15 minutes



Cost To Customer
\$0.6/kWh, ~\$0.1/km



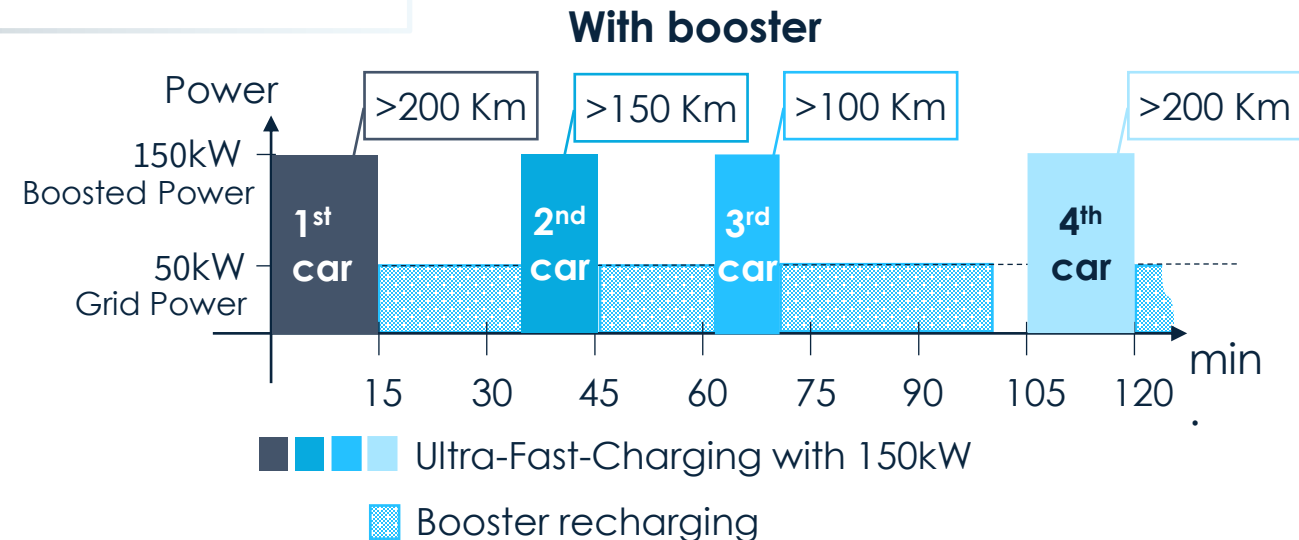
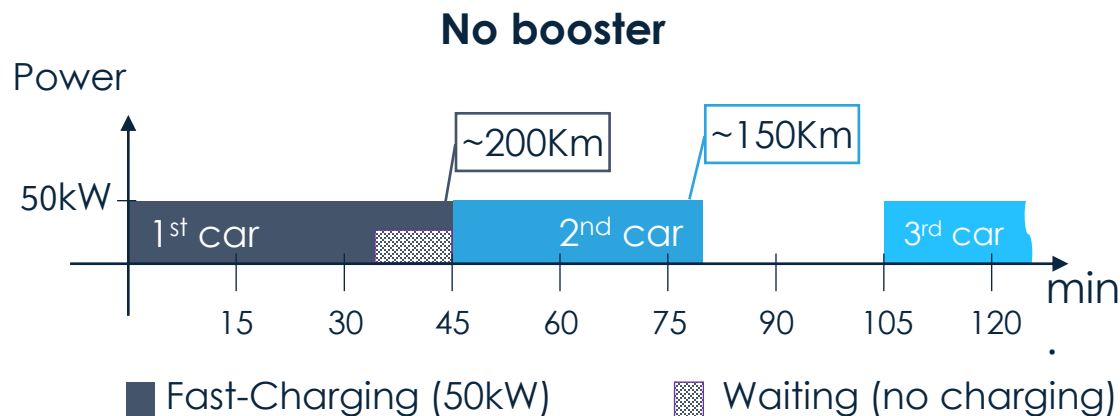
Full Charge Cost
~\$21
(comparable to ICE fueling)

”

Where they do have access to public charging stations, EV owners were most commonly vexed by **out of service** chargers and **long lines**, the 2021 U.S. Electric Vehicle Experience Public Charging Study found.

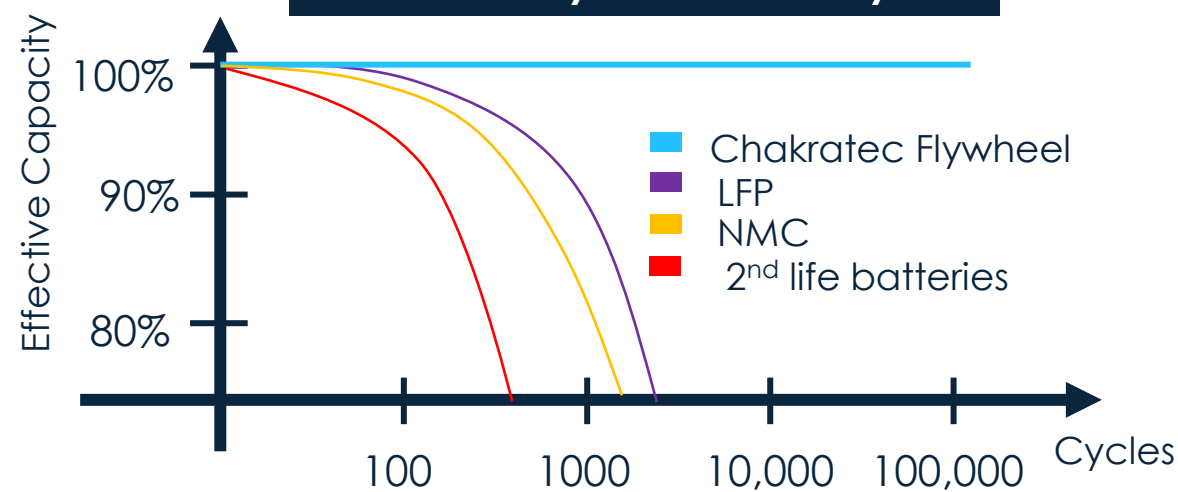
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 **CNBC**
18th Aug 2021

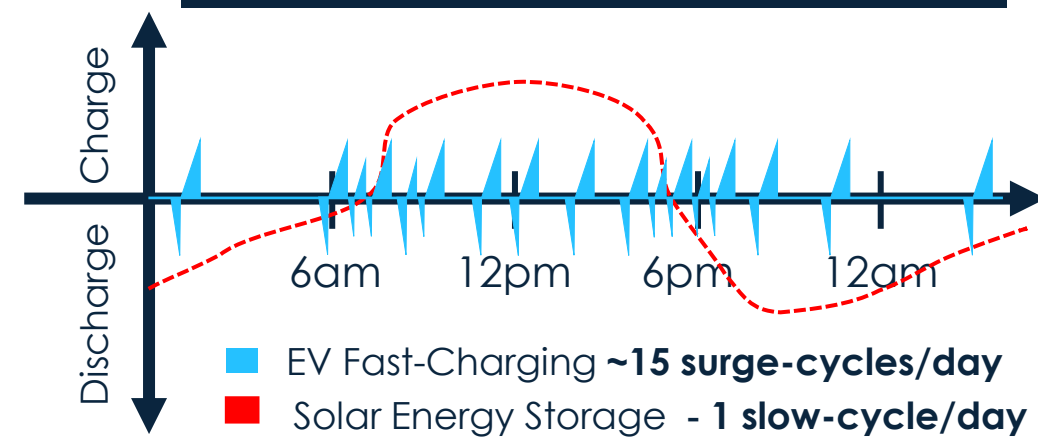


Energy Storage technologies are not created equal...

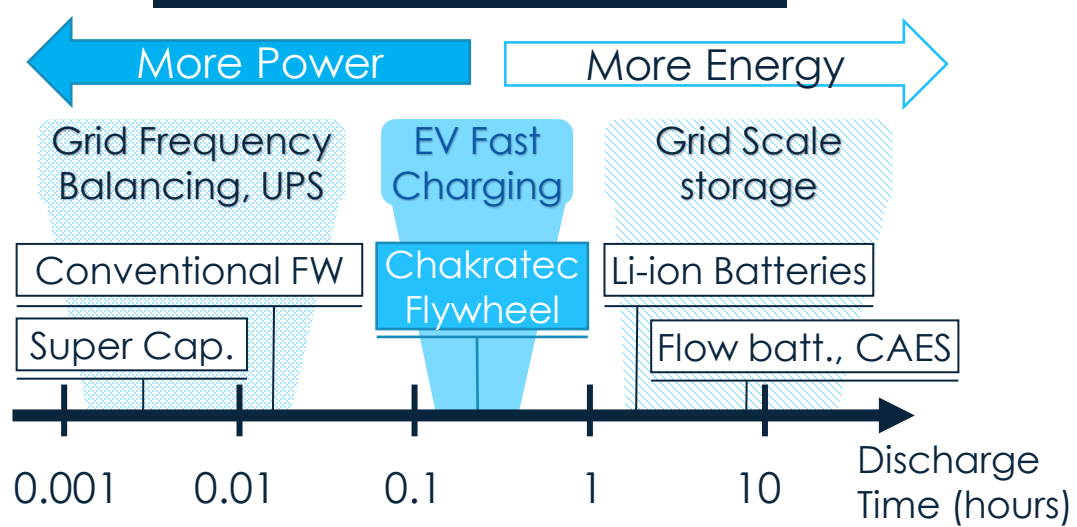
Reliability and Durability



Different applications' profiles



Technology gap

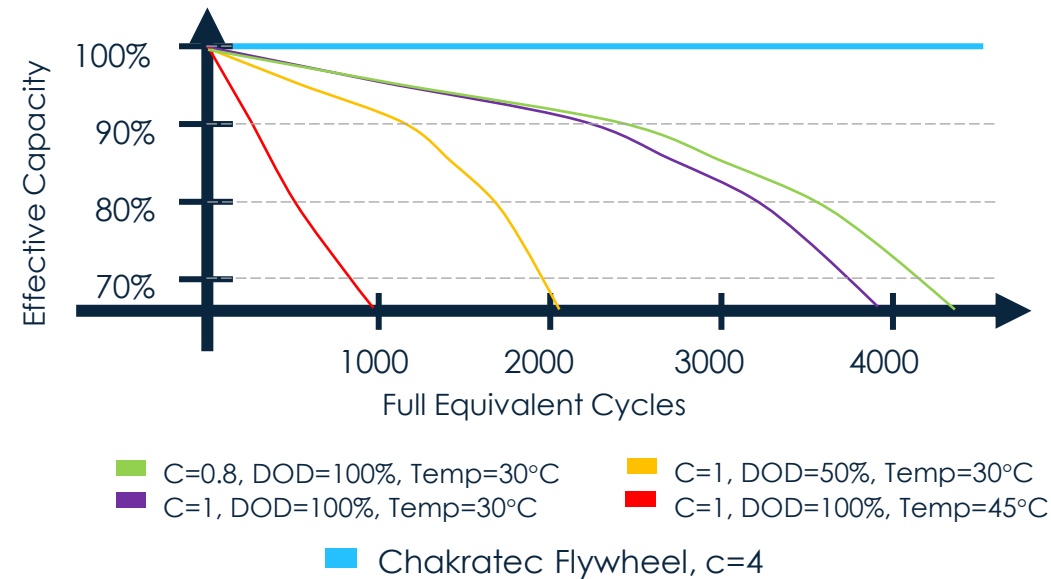


CHAKRATEC
Kinetic Power Booster
Optimized for Fast-Charging needs

Li-ion Batteries shortcomings

Performance

Rapid Aging & Performance Degradation



Environment

Recycling Costs & Environmental footprint



Safety

Flammable & Toxic materials, Safety hazards & limitations



Not Cost-effective



Not Sustainable



Not reliable



Batteries are Not Optimized
For Fast Charging

Chakratec Technology & Product

Core Technology – Flywheel (V8)



- ⚡ Power > 12.5kW
- ⚡ C-rate - 4 (for 15')
- ⚡ Patent-protected
- ⚡ Mature and robust
- ⚡ Inherently Safe
- ⚡ **>10 years guaranteed warranty**

x 8

Stand-alone Product – Kinetic Power Booster (KPB100)



- ⚡ Power > 100kW (for 15')
- ⚡ 200,000 charging cycles
- ⚡ CE (EU) and UL (US) certification
- ⚡ Optional Site Power Management (EMS) Software package
- ⚡ **Enables Fast-Charging (>150kW) at power-limited grid (50kW)**



Innovative & unique, patented.



High Power



High - performance



Durable & Reliable



Cost effective



Flexible & Modular



Sustainable – Non-chemical



Safe (CE & UL Cert.)

Complementary Services

Turnkey **Fast-Charging** Solution

- ⚡ Based on KPB100 product
- ⚡ Including Chakratec micro-grid Power Management SW (EMS)
- ⚡ Complementary HW, SW & Services (by partners)
- ⚡ White label/ Co-branding

Professional Services – **lifetime support**

- ⚡ 'Make-ready' support
- ⚡ Installation support
- ⚡ Relocation support
- ⚡ Technical support
- ⚡ O&M Support
- ⚡ Professional O&M
- ⚡ Extended warranty



Faster, better & lower cost than alternatives

Accelerate Deployment



- ✓ **Faster** alternative to grid-upgrade
- ✓ **Safer & more flexible** alternative to Li-Batteries-ESS

Boost Brand



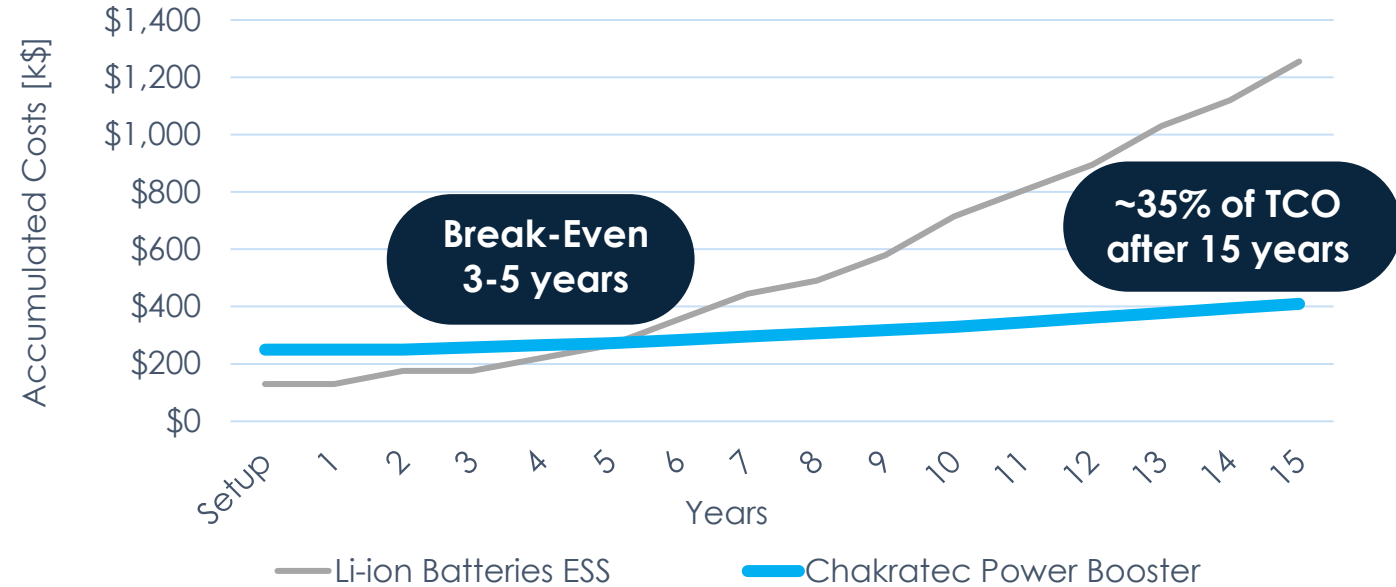
- ✓ **Better** availability and quality
- ✓ **Innovative & sustainable**

Minimize Total Cost of Ownership

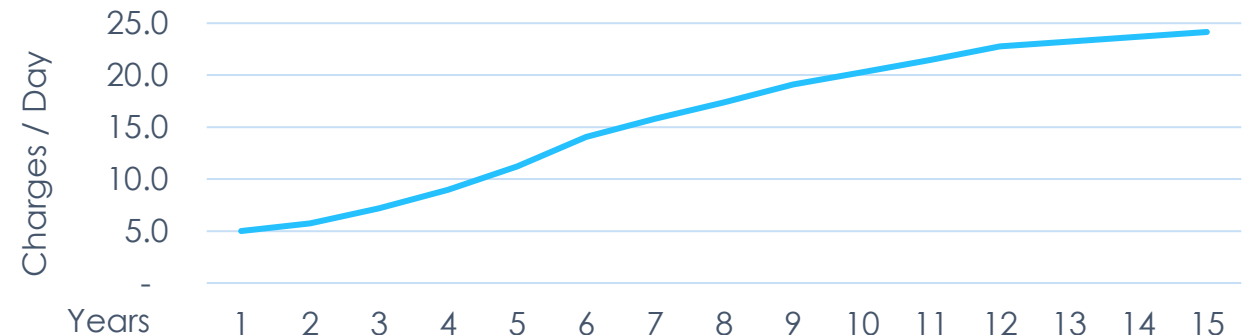


- ✓ Defer Grid investment
- ✓ Gradually increase investment
- ✓ Avoid batteries replacement,
- ✓ Avoid demand charges

TCO of Fast-Charging with Power Booster



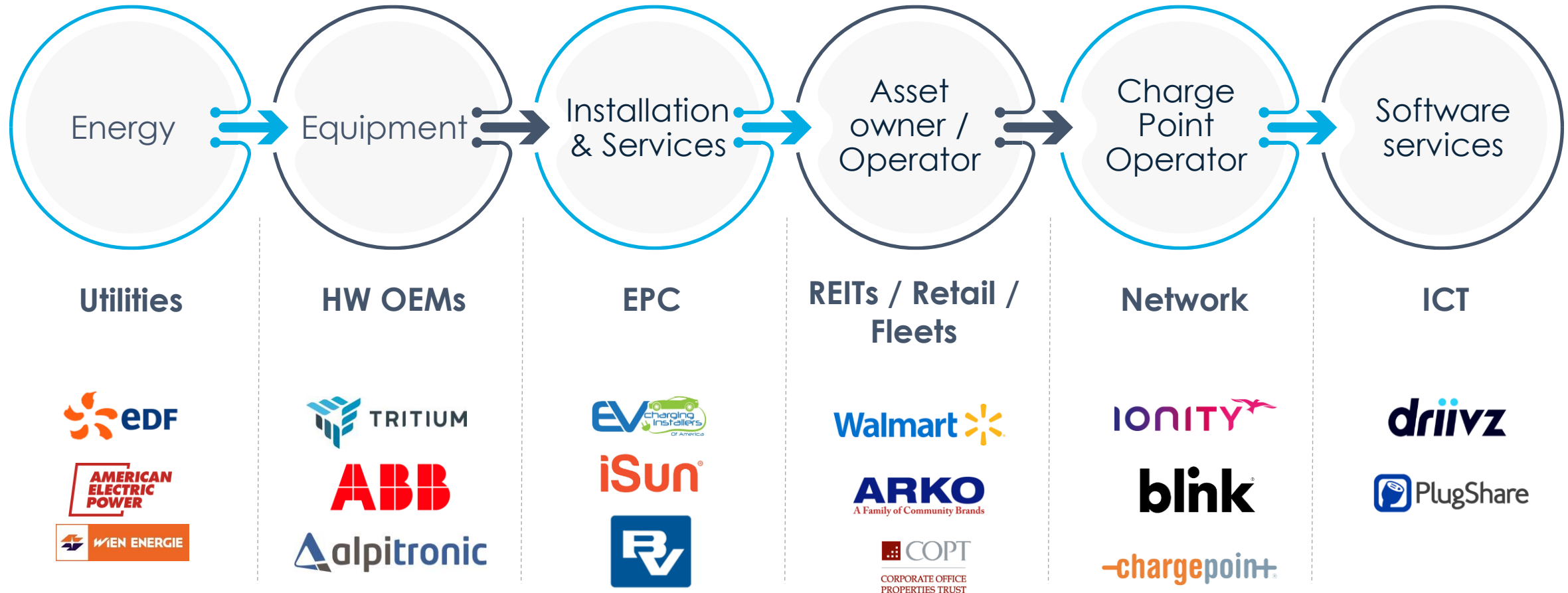
Charging Utilization Forecast



Assumptions of presented example (considering above utilization forecast example):

- Batteries lifespan of 3,500 cycles
- Batteries replacement cost ~33% of the initial system cost

A new Value-Chain is evolving



Benefits To All Stakeholders



Utilities

-  Accelerate Electrification
-  Comply with gov. climate targets
-  Improve grid stability
-  Defer investments
-  Better service

HW OEMs

-  Accelerate DCFC roll-out
-  Increase market share
-  Attract hesitant Customers
-  Simplify 'make ready' process

Network

-  Accelerate network deployment
-  Better service with greater availability
-  Gain remote locations market share
-  Decrease TCO, avoid demand charges
-  Enhance brand

Driver

-  X3 faster charging
-  Avoid queues
-  Charge anywhere you go
-  ICE-like user experience
-  Eliminate Range Anxiety
-  Benefit EV lower costs



Benefits To All Stakeholders



EPCs

-  Increase & accelerate roll-out of FC sites
-  Accelerate & Simplify 'make ready' of sites
-  Enable Modular & flexible configuration
-  Maximize use of government incentives

Retailer

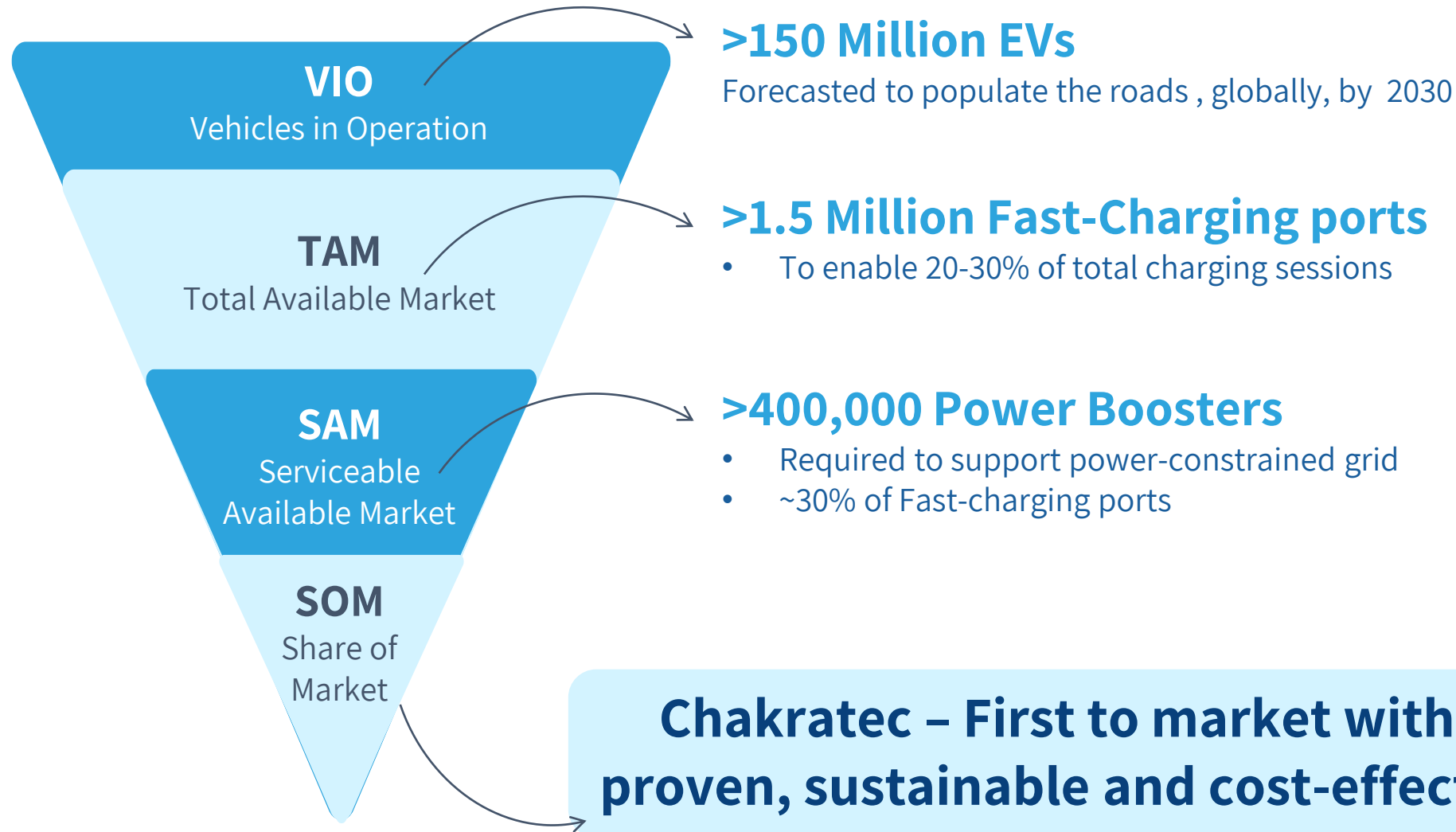
-  Accelerate FC service
-  Attract EV-drivers to generate traffic
-  Reduce CAPEX & OPEX, avoid demand charges
-  Maximize use of government incentives
-  Enhance business brand

Fleet Owner

-  Accelerate fleet Electrification
-  Improve Operational efficiency
-  Decrease TCO, avoid demand charges
-  Defer investments
-  Enhance business brand



Huge Market Potential



>\$60B(*)

**EV Fast-Charging
Acc. Market Potential**

Go-to-Market

Market channels:

Indirect:

- Charge Point Operators
- EPCs
- Equipment providers
- Local Distributors

Direct – Sales offices

Near-term
Focus
Territories



Territory Penetration & Expansion Strategy

Turnkey / Joint solution



Market Introduction

Generate traction:

- Market education
- Build First Pilots

2021: US, UK, Austria.
2022: expand EU penetration



Key Accounts & Channel Development

Enable scale:

- Build relationship w/ key accounts
- Sign agreements w/ channels
- Get into key tenders' consortiums
- Expand partnership / supply chain
- Expand installation / use cases

2021: Germany
2022: US, UK (& EU others)

Products & Services



Scale-up

Execute and expand:

- Sell through channels
- Focus on Products & Services
- Expand Customer base
- Expand customer support
- Scale-up supply chain
- Align roadmap & Expand offering

Increasing Market traction

2018



**Vienna
Airport**



Operating since 2018
Over 700 vehicles charged
EU demo site

2022



Rockhill, SC **ARKO**
A Family of Community Brands

Commercial DCFC pilot
Site construction in progress
Expected COD 2Q2022
Upon success –**+5 sites expansion**
and enter **US distribution agreement**

2019



Prague  **ŠKODA**

Pilot for use case analysis
Over 1500 vehicles charged
Data Collection
System-level maturation

2022



NY/CA **blink**

Joint R&D Funded by BIRD
Planned commercial DCFC pilot
Expected COD 2Q2022
DEV of **joint solution & marketing**

2020



Leipzig 

1st commercial Sale
Underground parking use case
Operational since Dec. '20.
Discussions for **site expansion**



**Customers
across
value chain**



**2022 Installations support
EU expansion &
US penetration**

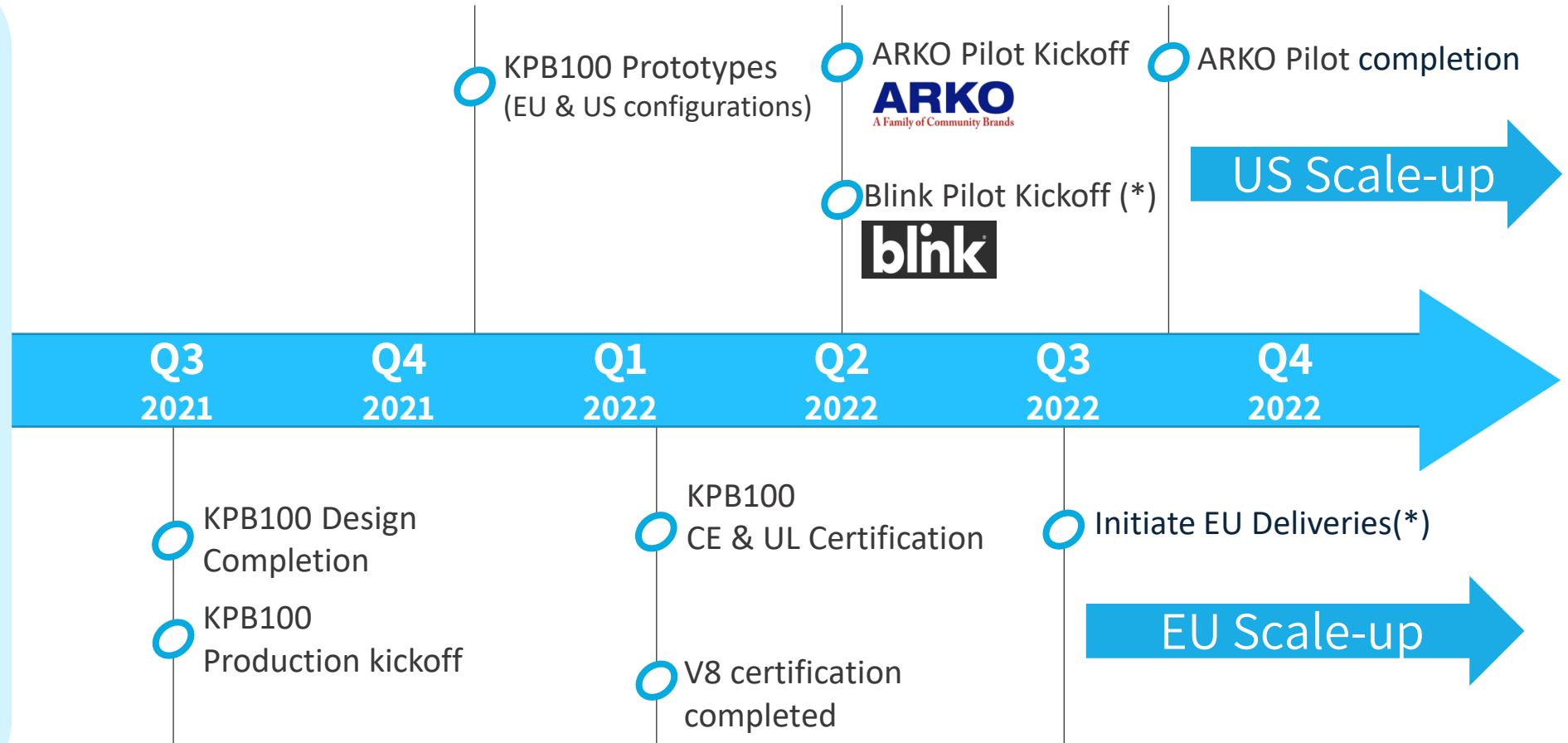


**NextGen
validation
& SCALE**

Recent Achievements & Short-Term Plan

Recent Achievements

- ✓ KPB100 Design completion & Production kickoff
- ✓ Significant progress in V8.1 Flywheel Verification & Certification process
- ✓ Build & training of Flywheel supply chain
- ✓ Cooperation agreement with Flex as the Serial Production partner.
- ✓ Company moved to new location to support expected growth.
- ✓ **Expansion of Marketing & Sales efforts in EU & US.**

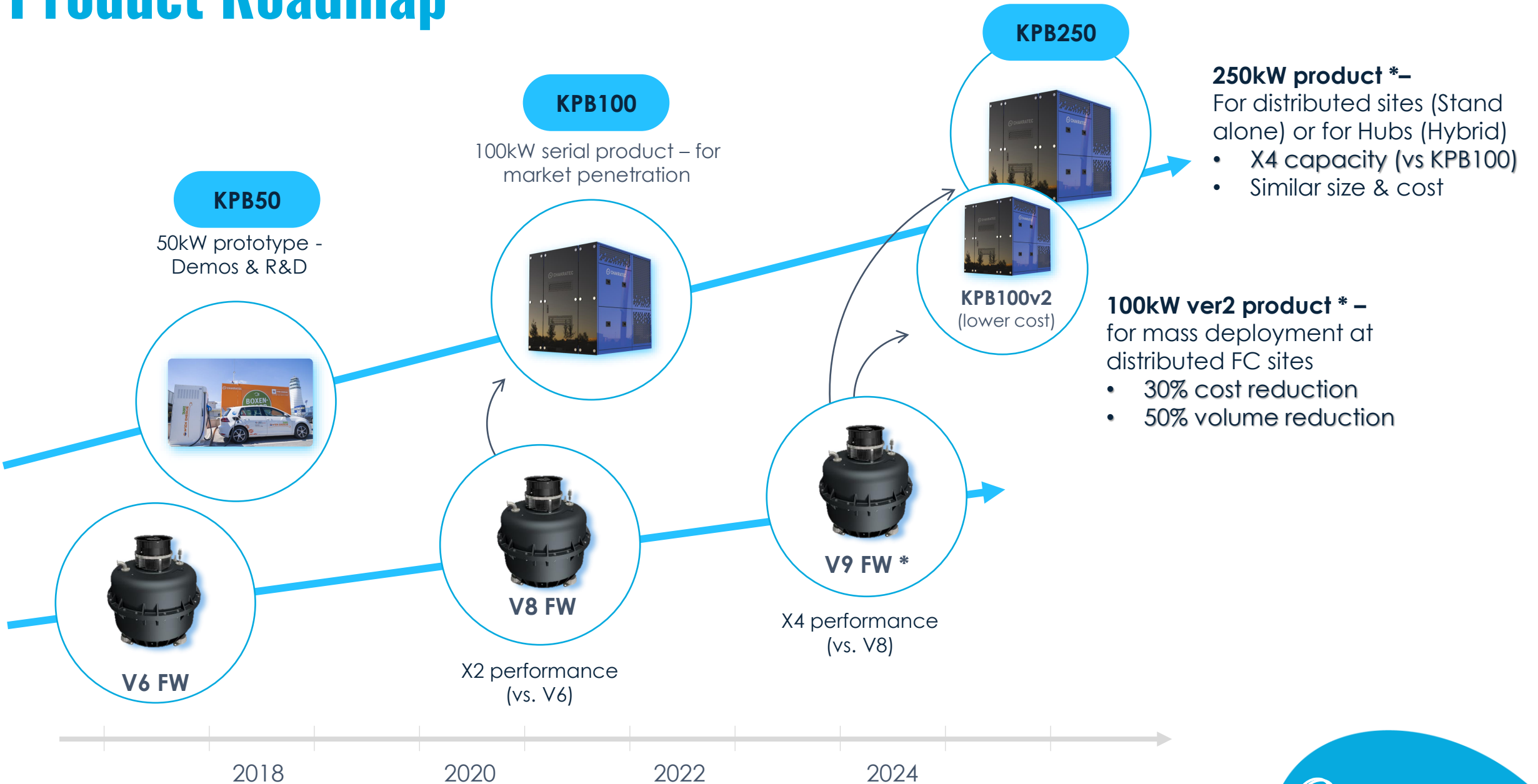


Slight delays (~2 months) due to current supply chain challenges

(*) Company estimation – not finalized yet.

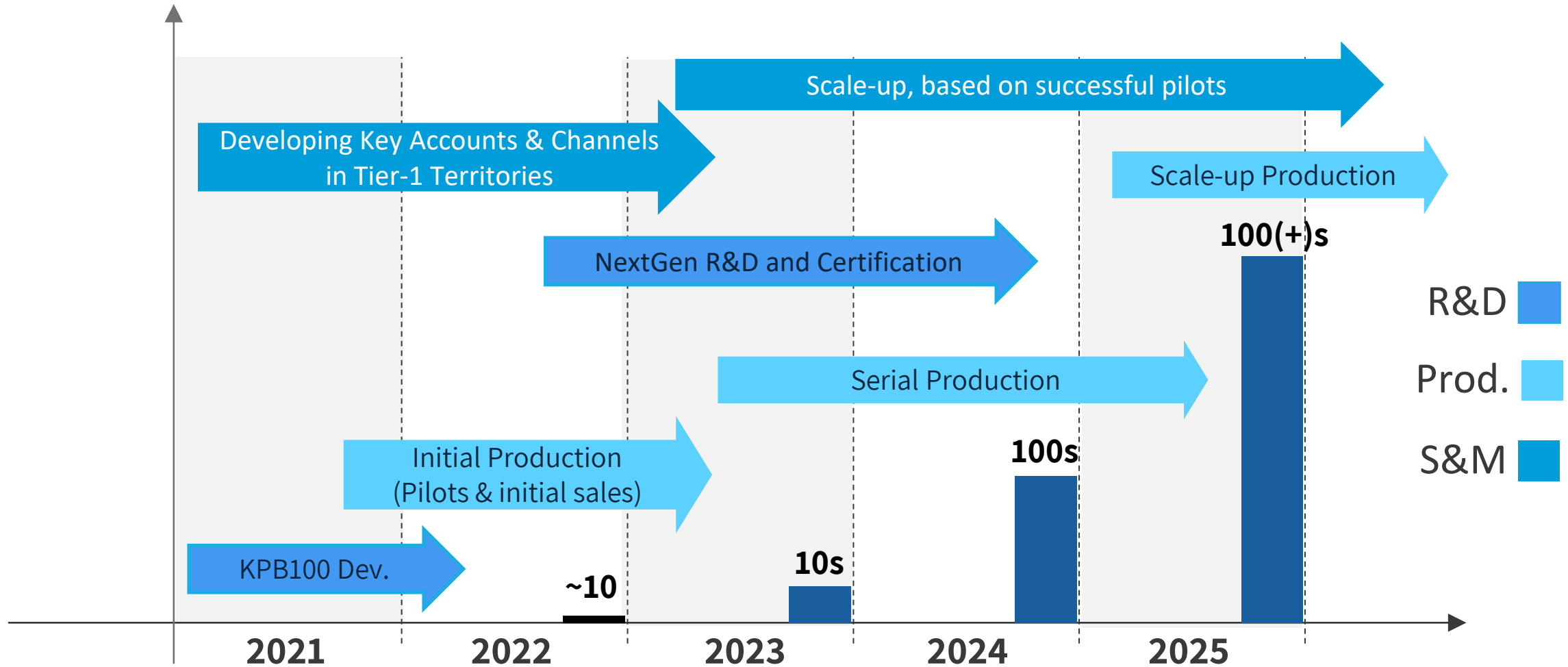
(**) The provided information is forward looking as defined in Securities Law, section 32A. It may not be materialized as presented, as detailed in slide 2 of this presentation.

Product Roadmap



(*) Future products information is still preliminary and may change

Charging Ahead – Become a leading global supplier



Notes:

(*) Quantities refer to systems to be delivered to Customers, based on various business models, and therefore do not represent annual sales forecast.

(**) The provided information is forward looking as defined in Securities Law, section 32A. It may not be materialized as presented, as detailed in slide 2 of this presentation.

Thank You !



**Enabling EV fast-charging
Anywhere**





Enabling EV fast-charging Anywhere

Appendix slides



Range Anxiety

THE WALL STREET JOURNAL.
WSJ

February 27th, 2021



CHARGING AHEAD
DRIVING TOWARD AN ELECTRIC FUTURE



“

*... The road trips made one thing clear –
Range Anxiety is real, and it can be quite traumatic...*

”



The complete article:

<https://www.wsj.com/articles/whats-missing-in-the-electric-vehicle-revolution-enough-places-to-plug-in-except-tesla-11614380406>

Maximize value of fleet electrification



Accelerate fleet electrification



Defer Grid upgrade investment



Minimal TCO, Avoid demand Charges



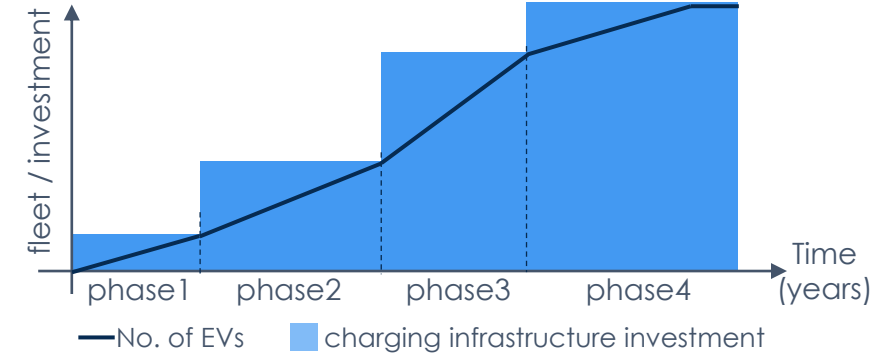
Gradually increase investment



Operational efficiency and flexibility



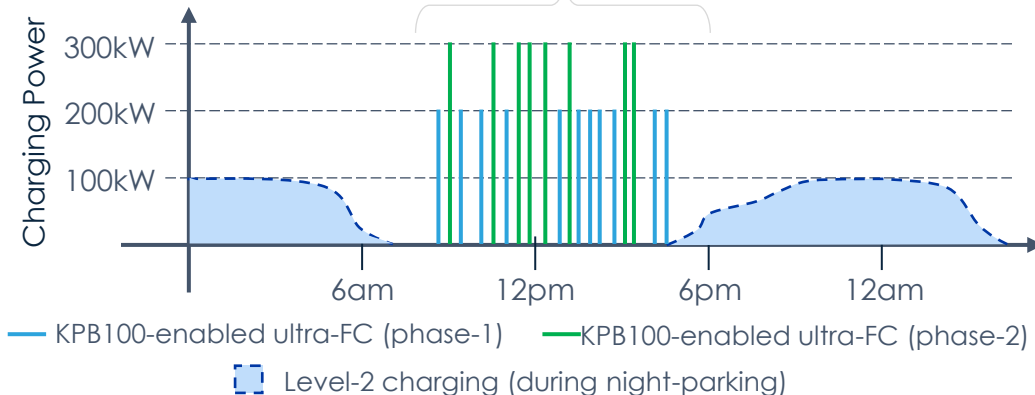
Boost brand with sustainability & innovation



Phase1 & 2

Initiate Electrification, Defer Grid Upgrade

KPB100 enables ultra-FC, 3x over grid limit, avoiding demand-charges

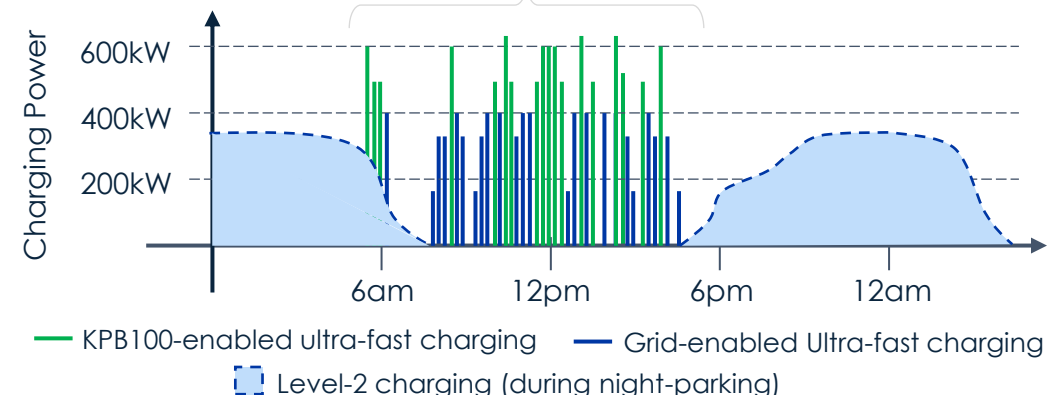


Example Configuration: Fleet < 20 Evs, Grid power – **100kW**,
 Equipment – L2 –chargers + **1 DCFC + 1 KPB100** (phase-1) / **2 DCFC+ 2 KPB100** (Phase2)

Phase3 & 4

Grow With Max. Flexibility & Min. OPEX

KPB100 enables ultra-FC, 50% over grid limit, avoiding demand-charges



Example Configuration: Grid power – **400kW**,
 Equipment – L2 –chargers + **4-6 DCFC + 2-3 KPB100**



Hybrid Booster to support Charging-Hub



The Challenge

Hub Power consumption varies significantly

- At different times of day/year
- Multiple demand spikes



The Solution

Maximizing the benefit of two technologies

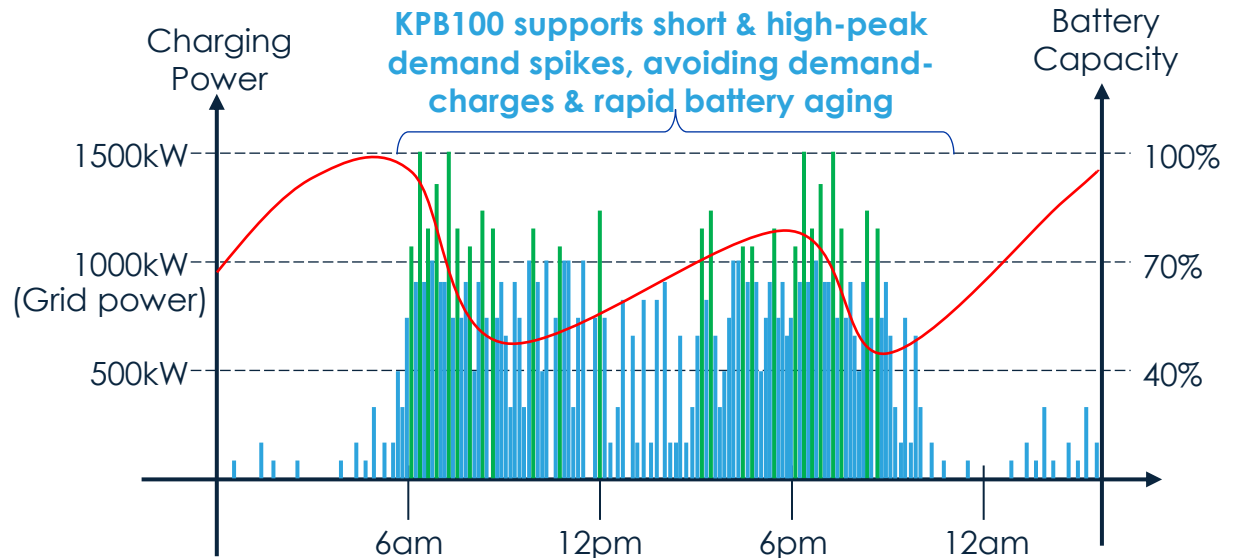
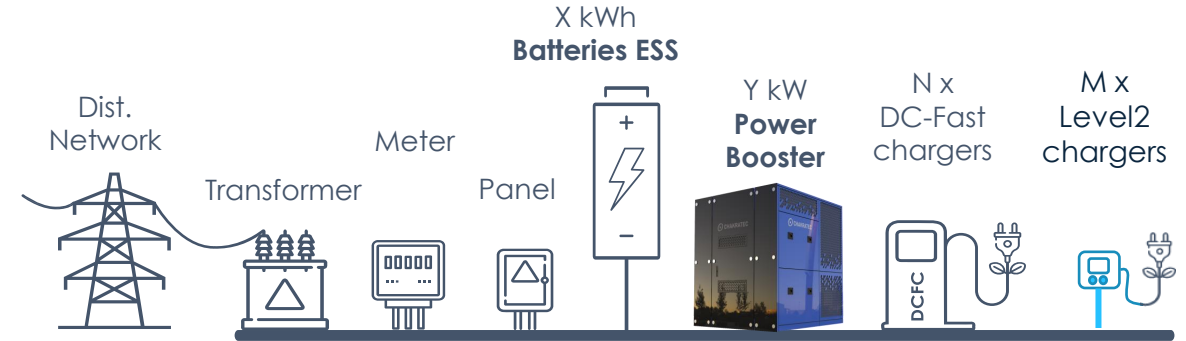
- **Kinetic Power Booster (C-rate of ~5)**
 - support frequent, short, demand spikes
 - multiple high-rate cycles per day
- **Li-Ion Energy Storage (C-rate of ~0.5)**
 - support grid during rush-hours' demand peak
 - 1 full equivalent cycle per day



The Benefits

Hybrid Booster can reduce CAPEX & OPEX

- Avoid / reduce demand charges
- Reduce grid upgrade costs
- Gradually increase CAPEX (ESS and KPB)
- Reduce batteries replacements costs



Example configuration:

- Grid power – 1000kW
- Battery storage – 600kWh, C-0.5
- Power booster – 250kW, C-5

- Power consumed from grid
- Boosted charging sessions
- Battery capacity



Competition - Flywheel-based Solutions

	Chakratec	Beacon Power	Active Power	Amber Kinetics
Discharge Duration	10-30 min.	< 1 min.	< 1 min.	~4 hours
Focus application	EV Fast-Charging	Balancing	EV Fast-Charging	Variable frequency
Speed (rpm)	17,000	~10,000	~10,000	~500-8,000
Rotor material (cost)	Steel Plate (\$1.5/kg)	Steel (~\$4/kg)	Steel (~\$4/kg)	Stainless Steel (~\$4/kg)
Installation	Over ground	Buried	Over gnd.	Buried
Charging Cycles	High (200,000)	High (175,000)	Low	Low (11,000)
Continuous Operation	Yes (air cooled)	Yes (liquid cooled)	No (require relax time)	Yes (low power)

Solutions not optimized for EV fast-charging
Closing technology & maturity gap will require significant R&D

Recently additional competitors announced Flywheel-based solutions targeting EV Fast-Charging application:

www.teraloop.org
www.levistor.com

According to Company's estimate - solutions are still immature



Payment plans

	Monthly Rent	Full Purchase	Purchase with Long-term service commitment
Benefit	Low upfront cost	Minimal total cost of ownership (TCO)	Moderate upfront cost + High certainty of OPEX
System Ownership	Chakratec	Site Owner/Operator	Site Owner/Operator
Commitment Period	Min. 36 months	-	Min. 36 months
Upfront Payment	\$0 to little down	Full system cost	40%-70% of system cost
Monthly Payment	√	With BoostProtection	√
Warranty	√	√	√
Full Service	√	With BoostProtection	√

(*) Presented payment plans are examples and may be changed based on negotiation with various customers / channels

Cooperation with



Pilot location – Rockhill, SC

- ✓ Delivery of Chakratec Power Booster and Setup of EV fast-charging infrastructure – Q2/2022
- ✓ Expected Pilot duration – 3 months
- ✓ Upon success –
 - ✓ +5 sites expansion
 - ✓ Enter US distribution agreement



Planned Site Opening
22.11.22



New site

ACRONYMS

Acronym	Meaning
EV	Electrical Vehicle
DCFC	Direct Current Fast Charger
CAPEX	Capital Expenditure
OPEX	Operational Expenditure
HW OEM	Hardware Original Equipment Manufacturer
O&G	Oil & Gas
LFP	Lithium Ferrophosphate
NMC	Nickel Manganese Cobalt
EMS	Energy Management Software
CPO	Charge Point Operator
EPC	Engineering Procurement Construction
FW	Flywheel

References

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