

# Driving the Energy Transition with Intelligent Electrification

Corporate Presentation

Q2 2023



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OPTIMIZING POWER

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# Exro Overview

Visibility into the company and why it matters



Our technology is the next generation  
of control for motors and batteries



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# What We Do

Deliver next generation power control technology that expands the capabilities of electric motors and batteries enabling e-mobility and energy storage applications to deliver more with less  
“**MINIMUM ENERGY – MAXIMUM RESULTS**”

## **Proprietary technologies:**

- Coil Driver™ traction inverter
- Cell Driver™ energy storage
- 40+ issued and pending patents

**100+ employees**

## **Public company in US & Canada**

- TSX: EXRO; OTCQB: EXROF
- NASDAQ ready

## **Software and electronics R&D, design, and manufacturing**

- Demo units on road since Q1 2022 on three continents
- Targeting net-zero manufacturing
- Q3 2023 production launch

*Power electronics technology platforms for e-mobility and energy storage*



# Investment Highlights

Accelerating the transition to clean energy by solving the most challenging problems in electrification

**Innovative drive solutions** that address major e-transition challenges in mobility & storage

**Scalable inverter technology** co-developed with diverse industry partners

**Macro sustainability tailwinds** driving growth in multiple addressable markets

**Positioned for significant revenue growth** beginning with start of production in Q3 2023

**Upside potential** through continued focus on innovation into e-transition market verticals





# Capital Structure

Clean structure provides strong foundation for growth



## Public company in US & Canada

Basic shares outstanding	151,791,177
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Stock options outstanding	9,718,126
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Warrants outstanding	17,073,322
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Fully-diluted shares outstanding	178,582,625
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→ TSX: EXRO

→ OTCQB: EXROF

→ NASDAQ ready

Capitalization and cash position as of April 1 2023

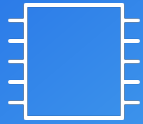
\*Exro Technologies has applied to list on NASDAQ on November 8<sup>th</sup>, 2021.

For more information, read our press release "[Exro Technologies Announces Application to List on Nasdaq](#)".



# Our Core Technology

The Exro ecosystem



## Motor Control

Exro Coil Driver™ brings electric gearing to EV's



## Battery Control

Exro Battery Control System provides cellular level control to batteries



## Powertrain Optimization

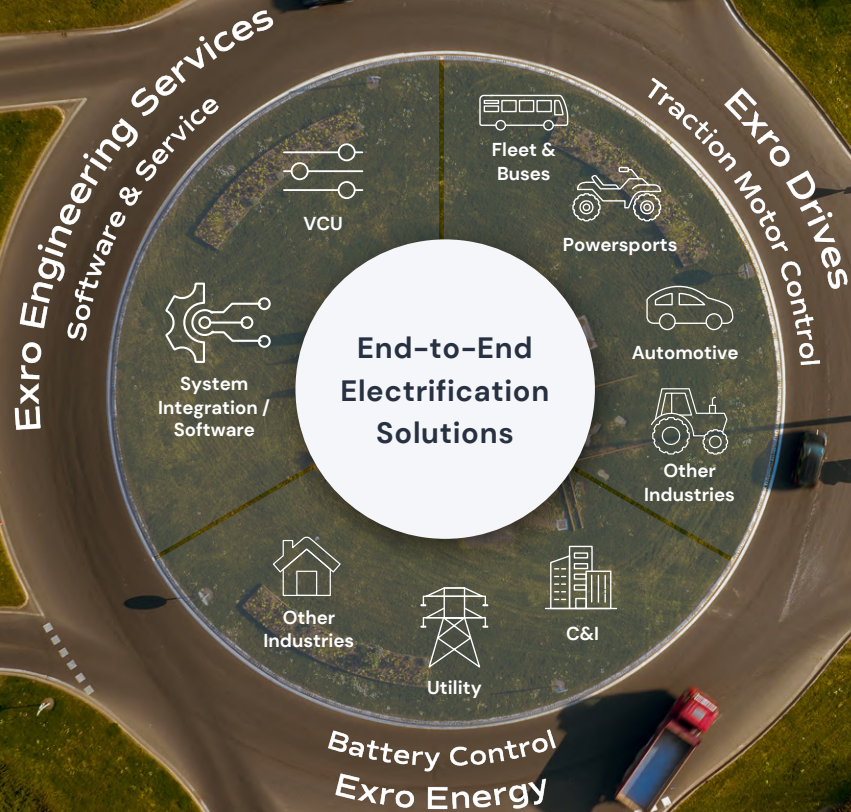
Exro Vehicle Systems offers comprehensive engineering services

*Building the Exro ecosystem with end-to-end solutions —  
from design to repurpose*





# Building an Eco-System of Electrification





# Our Core Technology

Bridging the electrification gap with power electronics expertise

## MOTOR CONTROL

**Exro Coil Driver™ brings electric gearing to EVs** by enabling multiple speed-torque combinations in a single motor with Coil Switching technology

- Enable greater flexibility for optimizing powertrain solution
- Suitable for multiple motor designs and integrated axle designs (E-axes)
- Scalable motor controllers from 48 to 800V+
- HV coil driver utilizing SiC technology
- Agnostic to energy supply and motor type

## BATTERY CONTROL

**Exro Battery Control System extends batteries into a second life** by enabling next-generation battery management with cell-level control

- Stationary Energy Storage solutions for commercial and industrial applications
- Unique cell-level control ensures unparalleled safety and up-time
- Suitable for solar and EV charging applications
- First or second life battery energy storage systems

## POWERTRAIN OPTIMIZATION

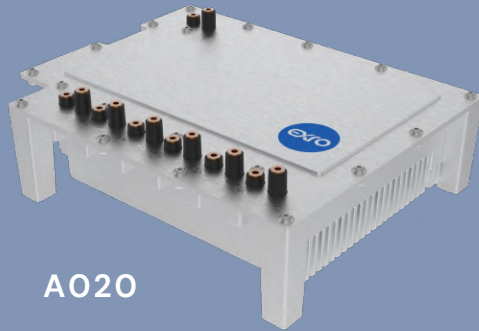
**Exro Vehicle Systems (EVS) offers full engineering services capabilities.** In house design and power electronics expertise provide optimum efficiency designs

- Full Engineering Design Services to develop next generation cost saving power train designs
- Co-development platform design to customize inverter controls that reduce reliance on multiple motors and/or gearboxes
- Optimize battery usage
- Licencing opportunities available



# Realizing our Market Potential through Products that Demonstrate our Technology

COIL DRIVER™  
LOW VOLTAGE:  
100V



COIL DRIVER™  
HIGH VOLTAGE:  
400V, 800V



CELL DRIVER™  
ENERGY STORAGE



# Exro Motor Control Solution

The World's First Intelligent Coil-Switching Drive

## Exro Coil Driver™

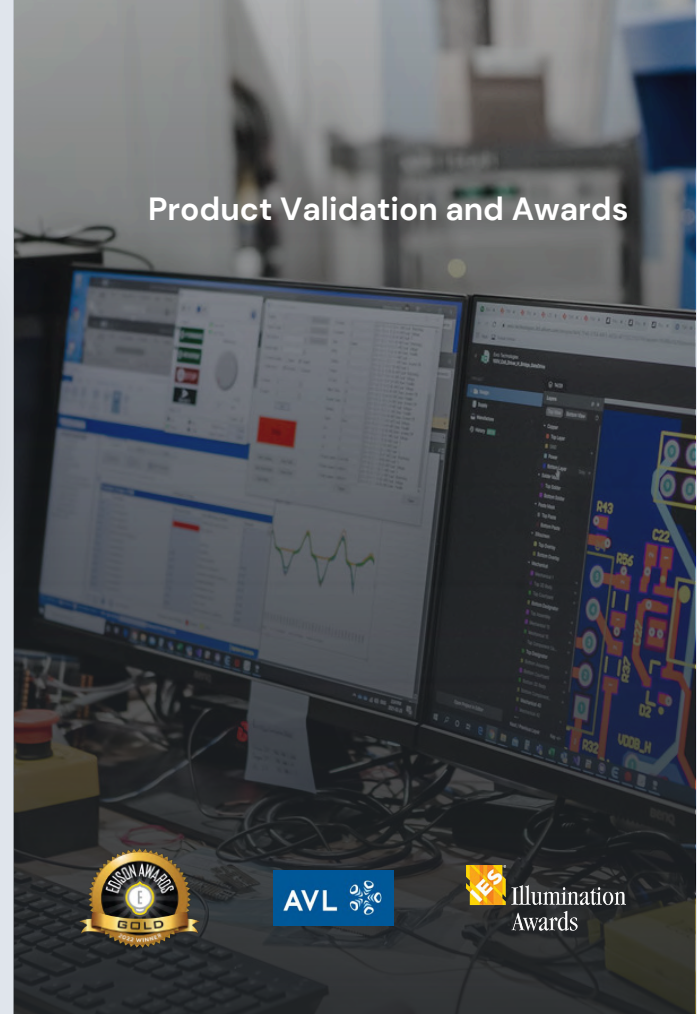
Unique coil-switching technology optimizes the performance and efficiency of powertrains and other systems including electric motors and batteries

- **De-risked** technology that accelerates the transition toward electrification in mobility by solving performance-cost trade-offs
  - Expanded motor capabilities
  - Electric gearing
  - Scalable and cost-efficient performance
- Gold award winner for the 2022 Edison Best New Product Awards™ in manufacturing, logistics and transportation
- 2022 Illuminations Award winner for Business Innovation from the National Electrical Manufacturers Association

*Exro Coil Driver™ is motor type agnostic*

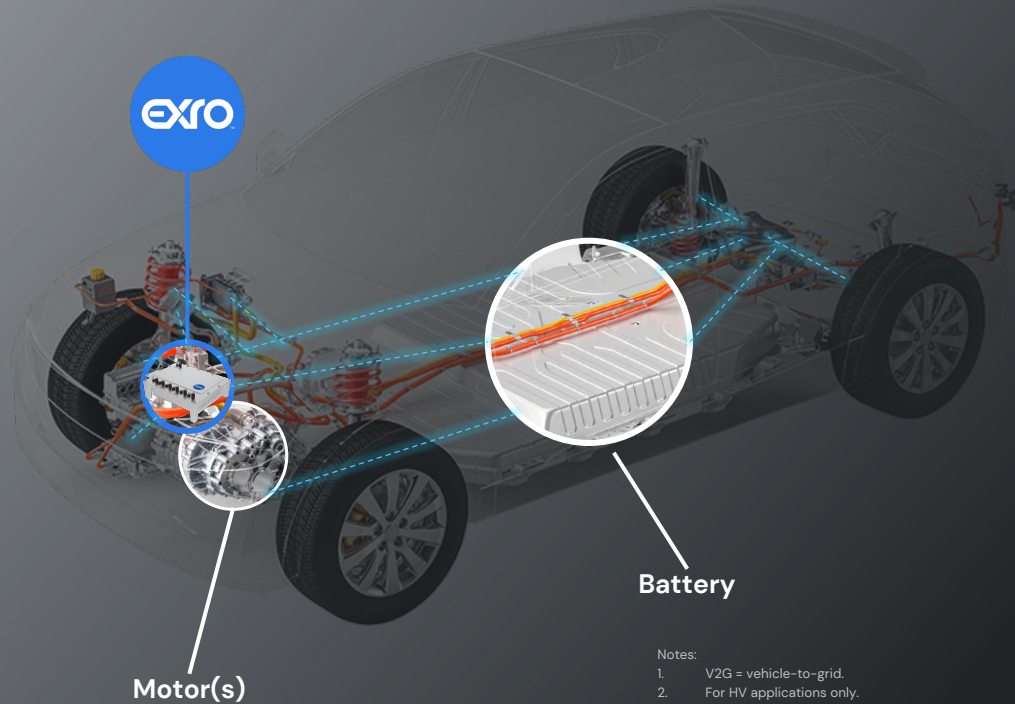


## Product Validation and Awards



# Say 'Good-Bye' to the Industry Standard 3-Phase Drive...

...And 'Hello' to the Next Generation of Traction Inverters



- Inverters are the **heart of electric vehicles**, providing the **link between the battery and the electric motor**
- **Advances in inverter technology have ALL been component related (IGBT-SiC)**, sharing the same core 3-phase architecture that limits what can be achieved with a fixed winding on an electric motor
- Exro's Coil Driver does everything a standard 3-ph drive does, however, its next-generation architecture allows powertrains to unlock their full potential

Notes:

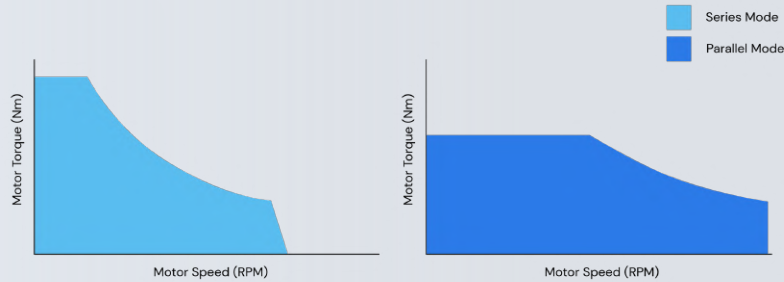
1. V2G = vehicle-to-grid.
2. For HV applications only.
3. TCO = Total cost of ownership.
4. Comparison based on 800v systems.



# How it Works

Coil Driver™: Not a standard 3 phase inverter

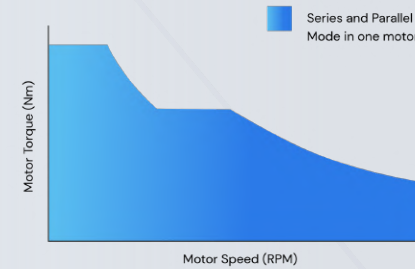
## TRADITIONAL TORQUE CHARTS



### Traditional OEMs needed to make a choice

- Two separate modes, two separate motors
  - Series mode = high torque applications
  - Parallel mode = high speed applications
- Left a gap to fill for performance

## COIL DRIVER TORQUE CHART



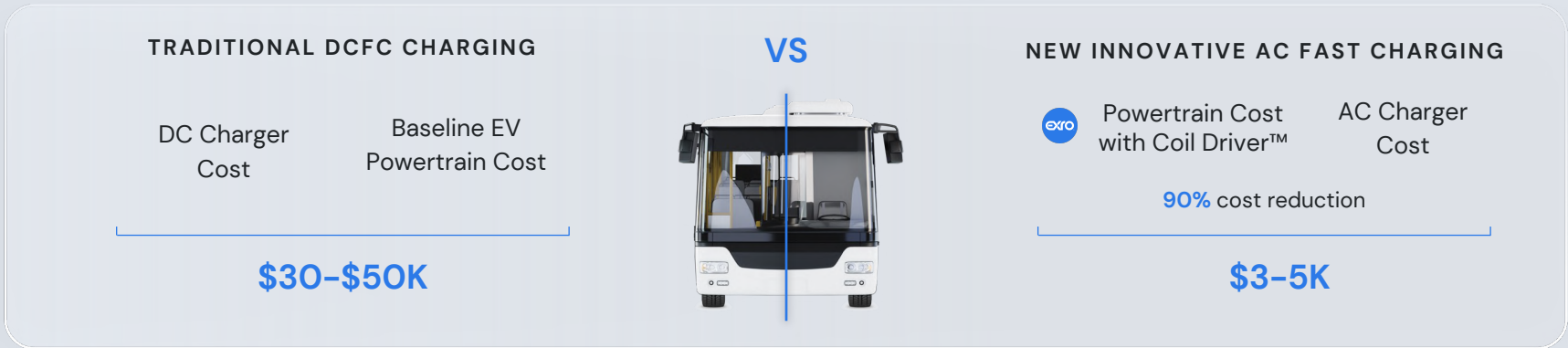
### Electric drives are now transforming for EVs

- Coil Driver brings a next-generation of power electronics that fills the gap
- Electric drive technology are differentiators for EVs
- Now one inverter can do the job of two



# Coil Driver™ Supports AC Fast Charging and V2X Capabilities

Unlocks attractive fleet electrification economics



## BENEFITS FOR OEMS AND AUTOMOTIVE MANUFACTURERS

- Native technology can deliver up to level 4 fast charging capabilities and capable of V2X <sup>(2)</sup>
- Eliminates need for motor drive and on-board charger
- AC vs. DC significantly reduces environmental impact due to smaller infrastructure foot-print

## BENEFITS FOR EV FLEET AND CHARGING OPERATORS

- Materially reduces TCO for fleet operators
- Unlocks access to AC fast charging network meeting larger per-mile energy demands of E-MHDV <sup>(1)</sup>
- V2X capability has potential to further reduce TCO by transforming EV fleet into revenue-generative asset



Notes:

1. MHDV = Medium- & Heavy-Duty Vehicles.
2. V2X: vehicle to everything.

# Why it Matters

Significant Value Proposition for E-Mobility Market



\*Potential based on similar application in HD-UDDS drive cycle

Notes:  
1. Heavy-duty urban dynamometer driving schedule.  
2. Total cost of ownership.



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# De-risked Technology

Technology Readiness Level (TRL) of Coil Driver approaching 9

Deployment	9	Actual system proven in operational environment
	8	System complete and qualified
	7	System prototype demonstration in operational environment
Development	6	Technology demonstrated in relevant environment
	5	Technology validated in relevant environment
	4	Technology validated in lab
R&D	3	Experimental proof of concept
	2	Technology concept formulated
	1	Basic principles observed

**Currently the Coil Driver is TRL 7→8**

**We anticipate TRL 9 in Q3/23** with production products delivered to customers for vehicles.

**The technology has been proven in more than 5 different voltage/current range drives on multiple different machines** (axial flux, radial flux, IPM, SPM, etc.)

Essentially, the Coil Driver technology has been validated and proven, i.e. **there is no “technology risk”**.



# De-Risked Product Development

Functional demonstration vehicles plus pilots in vehicles on three continents



Simulation • Product Testing • On-Road Validation

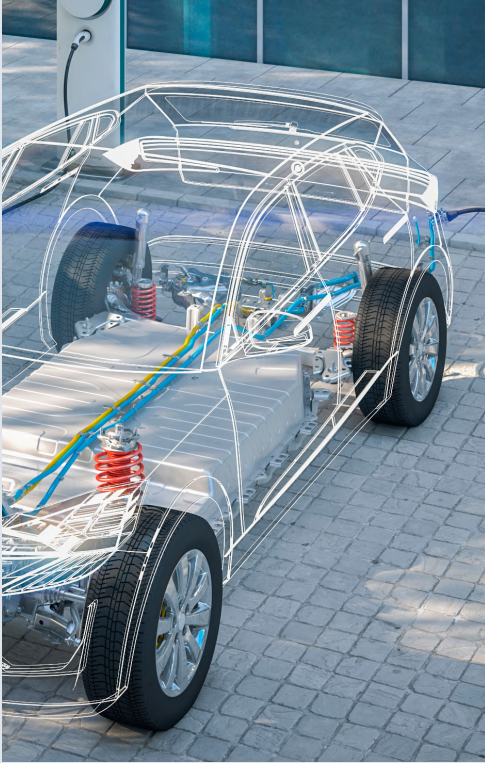
*Vehicle demonstrators provide insight into how these EVs can outperform their equivalents, simply by adding Exro technology inside*





# Driven by Disciplined Innovation

Minimum energy for maximum results



## What we have done

- Enhanced performance at high speed, better start ability and gradeability at low speed
- Improved operational efficiency & extended range
- Motor and energy supply agnostic, adaptable across mobility applications
- Scalable technology – developed systems from 48V-20 KW to 800V-1.3 MW

## Where we are going



Expanded production capabilities



Enabling Rare Earth free solutions



Cost out features - charging



# Exro Energy Storage Solutions

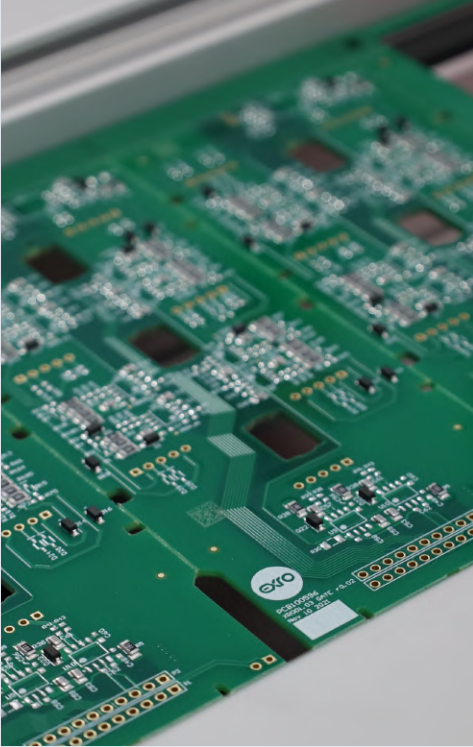
Safer, more efficient battery energy storage systems focused on C&I applications

## Exro Cell Driver™ (90kW/192kWh)

- Industries first bottoms-up designed system with a focus on **performance, safety, and reliability**
- **Integrated battery and power electronics platform** that provides a greater depth of control in **batteries for first & second life applications**
- **Go-to-market strategy to target C&I customers through renewable integrators**

*Exro battery control is battery type agnostic*

# Exro's Technology Advantages



## CELL LEVEL CONTROL

- Enhanced safety with individual cell monitoring
- Full cell control with ability to adjust current per cell
- Increased depth of discharge
- Negate cell balancing circuits and traditional BMS
- Dynamically isolate defect cells or modules while operating ESS

## MODULAR SYSTEM ARCHITECTURE

- Reduce system maintenance and down-time in case of failure with quick modular replacement
- Minimal installation time

*Design ready for 2nd life cell utilization = significant cost benefit*



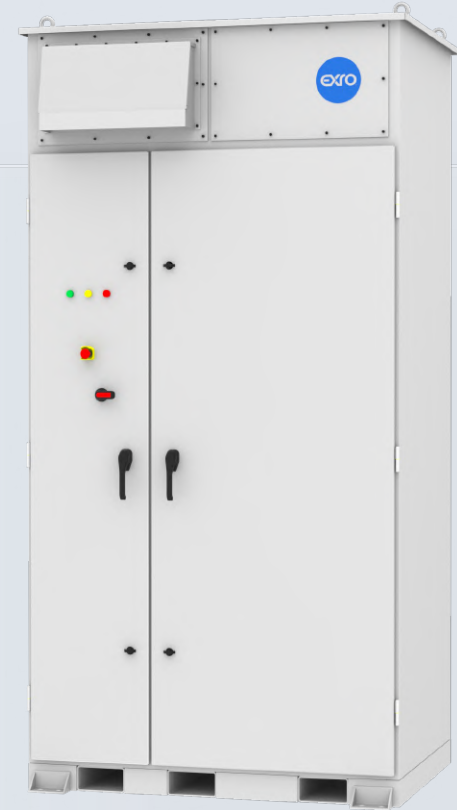
# The Exro Benefit

Differentiated technology for a multi-billion-dollar industry

The Exro Cell Driver™ is a fully integrated energy storage system for commercial and industrial applications. Incorporating the Cell Driver™ into a charging depot energy system has the following benefits:

- Reduce electricity demand charges through peak shaving.
- Support vehicle charging while time-of-use rates are high.
- Minimize downtime during grid outages.

*A recent analysis we conducted showed that a **single Cell Driver™ was able to reduce a commercial building's annual electricity bill expense by 41%.***



TECHNOLOGY ECOSYSTEM BUILT ON  
POWER ELECTRONICS

# Powertrain Optimization

Exro Vehicle Systems (EVS), Ann Arbor, MI

- EVS provides critical electric vehicle integration support and provides a platform to onboard clients early in the design
- Supporting leading tier-1 automotive suppliers to provide engineering design and consulting services

## Capabilities

### CONSULTING

Market analysis, systems architecture definition, component selection, safety-critical analysis, strategic sourcing

### ENGINEERING

System definition, detailed engineering design & development, verification & validation of electrified power systems, production software systems

### TESTING

Relevant capital equipment available to test electronics, software, batteries and vehicles

Packaged system solutions from a variety of top supplier and preferred partners



Pictured: Exro functional demonstration vehicles.





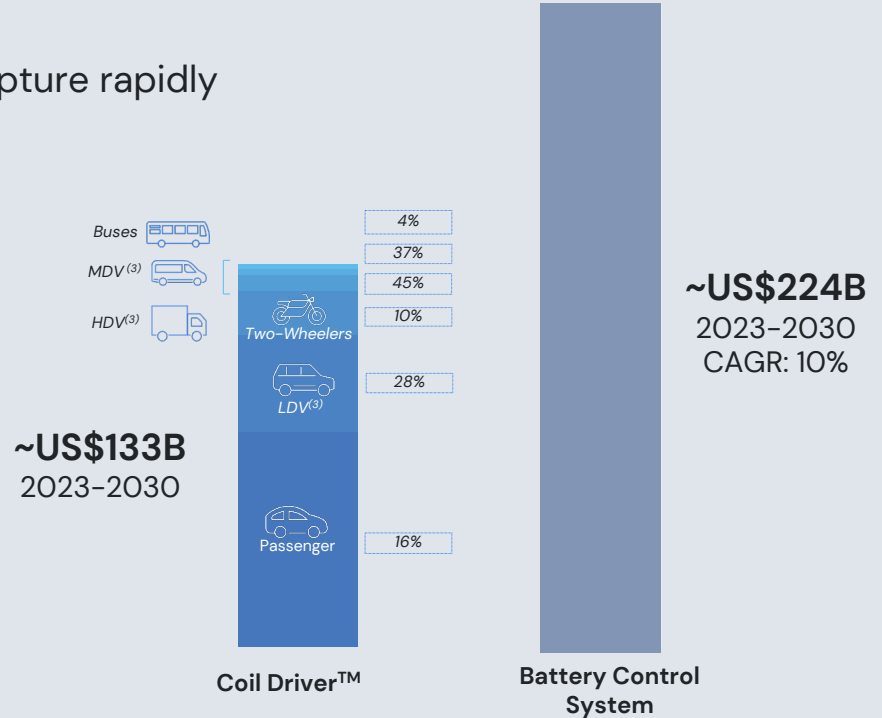
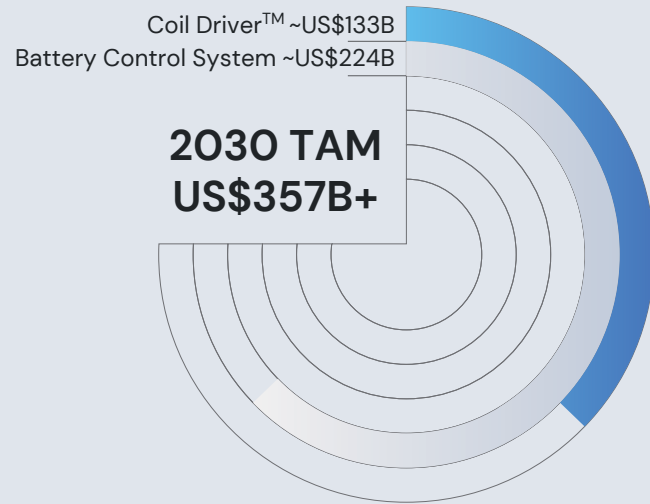
# Outlook

Market Strategy | Our Capabilities | Our People



# Large TAM Opportunity Supported by Secular Tailwinds

Exro's Coil Driver and BCS are positioned to capture rapidly expanding use case markets



*Exro's propulsion-agnostic design significantly increases its market opportunity across all e-mobility classes*



Notes:

1. Bloomberg NEF Electric Vehicle Outlook 2022.
2. Bloomberg NEF Global Energy Storage Market 2022.
3. HDV: Heavy-Duty Vehicles; MDV: Medium-Duty Vehicles; LDV: Light-Duty Vehicles.



2023 – 20230 CAGR to reach projected market size

# A Systematic Go-to-Market Strategy

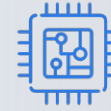
Roadmap to capitalize on a rapidly growing and changing electrification ecosystem



Attack market in waves: build on momentum with key ecosystem players



Expand technology offering through core products partnerships



Continue successful track record of innovation



Increase penetration of engineering, testing and consulting with OEMs



Expand other ancillary revenue opportunities

# Building Credibility Through Commercial Execution

Demonstrating our innovation through increasingly strong partnerships

## LOW VOLTAGE



## HIGH VOLTAGE



## CELL DRIVER



NDA Europe  
(off-highway)

## STRATEGIC



NDA Europe #2  
(truck/bus)



*\* PO's and MSA's with just 3 customers announced to date represent >US\$100 M in revenue*

# Start of Production Q3 2023

World-Class Manufacturing Center in Calgary, AB

## North American Supply Chain Solution

- Capacity of ~100,000 Coil Drivers™/year/8 hr shift
- Class 10,000 clean room with SMT line(s)
- Net-Zero targeted building
- Launch of commercial production Q3 2023



### ISO 9001

Quality Management System

### ISO 26262

Automotive Functional Safety

### ISO 14001

Health & Safety

### IATF 16949

Global Automotive Quality Management System

### ISO 45001

Environmental Management



# Next Two Quarters Roadmap



- Samples to customers – Low Voltage AO20
- Complete system testing on final DFM High Voltage LO40 with Motors
- Complete demo trucks for on road validations
- Complete UL Certification on Cell Driver
- Durability testing on Products

Q3

- Start of production on Cell Driver with pilots to integrators and partners
- Start of production for Coil Driver – Low Voltage followed by High Voltage
- Moving large customers out of NDA into commercial agreements





# Comprehensive Intellectual Property Protection Program

Exro's patented control technology expands the capabilities of electric motors and batteries

## 40

### PATENTS PUBLISHED AND PENDING

- 25 issued patents and 15 pending applications
- IP wholly owned in 13 patent families providing or seeking global protection in strategic countries
- Global portfolio coverage including US, CA, CN, DE, DK, EP, FR, GB, HK, IN, IT, JP, SK
- Trade secrets to protect proprietary software and algorithms

# Managing Risks Through Well Defined Supply Chain Program

## 10+ Years of Relationship with Leading Suppliers

- Commitment to long-term partnerships with quality suppliers, which includes global Tier 1 OEMs
- Development partners lead to long-term partnerships with suppliers

## Strong Demand Plan

- Production agility leading to scalability
- Early purchases for product development bear fruit for supplier relationships

## Global Chip Shortage Mitigation Program

- Secured major components for 2023 production
- Supplier redundancy limits concentration risk and ensures timely sourcing



# Environmental, Social, Governance

Committed to the highest standards

## ENVIRONMENTAL

**Environmental matters are at the core of Exro's operations and are embedded across the organization's activities**

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- World class targeting net-zero automated manufacturing facility in Calgary, AB
- Optimized energy efficiency, with all lights converted to LED format in its main facility
- Responsible sourcing and procurement, with exclusive utilization of recyclable, renewable products in the workplace

## SOCIAL

**Exro fosters a cohesive and inclusive corporate culture, enabling positive social change**

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- Manufacturing facilities ISO 9001, 14001 and 45001 certified, implementing safety best practices
- Emphasis on gender equality and diversity, with an employee diversity target in place
- 2022 net employee score of 90%+
- Partnerships with leading global Tier I automotive suppliers to ensure sustainability integration across the supply chain
- Involved in community support and charitable endeavors

## GOVERNANCE

**Rigorous and impactful governance is foundational to Exro's board and executive team mandates**

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- Board Diversity, both in backgrounds, gender, and area of expertise
- Business ethics underscored by robust internal policies and track record of the team
- Comprehensive risk management oversight
- Sound corporate governance, underpinned by diligent executive team

# Management

Strong team in place to see Exro through accelerated growth



## Sue Ozdemir

Chief Executive Officer

- Former CEO of GE's Small Industrial Motors Division – General Electric (NYSE: GE) (“GE”).
- \$160M revenue enterprise



## John Meekison

Chief Financial Officer

- 20+ Years Experience as CFO in Capital and Small Cap Markets.
- Previous Capital Experience – Haywood Securities



## Darrell Bishop

Chief Investment Officer

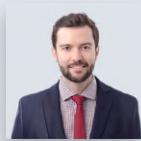
- 10+ Years Experience in Investment Banking and Capital Markets
- Previous Capital Experience – Peters & Co Limited, Haywood Securities, National Bank
- Mechanical Engineer & MBA



## Eric Hustedt

Chief Technology Officer

- 20+ Years Experience – Automotive Inverter Design and Manufacturing
- International Rectifiers Automotive
- KSR International, Vishay Intertechnology (NYSE: VSH)



## Josh Sobil

Chief Commercial Officer

- 10+ Years Experience in electric motors and power electronics as Siemens (NSEI: SIEMENS) segment leader from 2016–2019 and sales leader at GE (NYSE: GE)
- Mechanical Engineer & MBA



## Simon Strawbridge

Chief Operating Officer

- 20+ Years Experience – Automotive Inverter Design and Manufacturing
- KSR Electronic Systems, Electronic Motion Systems



# Board of Directors

Extensive automotive industry experience & connections



## Rod Copes

Interim Chairman

- Former Chief Operating Officer at Rivian electric vehicles; Former division President at Harley-Davidson
- 30+ years automotive executive



## Sue Ozdemir

Chief Executive Officer

- Former CEO of GE's Small Industrial Motors Division - General Electric (NYSE: GE) ("GE").
- \$160M revenue enterprise



## Jill Bodkin

Director

- Former Director at Westport (NASDAQ: WPRT)
- Former Partner at E&Y



## Terence Johnson

Director

- Former Vice President at Audi, Volkswagen, General Motors
- 35+ years automotive sales experience





# Why We Win

## TECHNOLOGY

- Industry disruptive technology
- Efficient but dynamic
- Award winning

## ENGINEERING & DESIGN

- Best in class engineering
- Unique intellectual property
- Increasing performance and reducing cost



## IN-HOUSE TESTING & MANUFACTURING

- Unique north American world-class manufacturing facility
- In-house dyno testing
- Rapid product development and commercialization

## OUR CULTURE

- Significant barriers to entry
- Strong management team
- Strong net employee score/engagement

# Thank you

## **Sue Ozdemir**

Chief Executive Officer

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Calgary, AB, T2G 5N6 Canada

## **John Meekison**

Chief Financial Officer

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## **Darrell Bishop**

Chief Investment Officer

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