

A large yellow Caterpillar haul truck is the central focus of the image, parked on a dirt road at a mining site. The truck is viewed from a front-quarter perspective, showing its massive front grille, headlights, and heavy-duty tires. The background features a clear blue sky with scattered white clouds and a large pile of earth or ore. The overall scene is bright and industrial.

MEDATECH
ALTDRIIVE

MEDATech Engineering

Capabilities | 2022



Who we are





Innovation is Who We Are

An Innovator First

- Fast to fail
- Faster to succeed

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**N
ECHNOLOGY**

MEDATech has been designing and building custom-engineered mobile equipment and systems for customers across the globe since 2003.



Engineering services: from consulting to software development to engineer/design/build



Advanced drilling equipment



All-electric powertrains



Company Profile

— MEDATech's core business is mobile equipment design, prototyping & testing services for the construction, mining, transportation & energy sectors. We have offices in Collingwood ON (HQ), Calgary AB and Ocala FL.

Team Experience

—

We solve a wide range of technical problems involving mechanical, hydraulic, electronic equipment and rechargeable energy systems.

- **Our strength** Product development
- **Our value** Quickly making your product vision a reality

Strategic Focus

- Develop long term partners – Technology, Manufacturing and Customers
- Highly dependable, innovative solutions
- Focus on safety, economy and productivity
- AGILE methodology: develop prototypes within aggressive timelines

Our Team

We are 35 people strong.
Our management team:

- Engineers, technicians, operators and mechanics
- Years of experience in all facets of machine control



Robert Rennie
President & Owner



Mark Seeber
Senior Technical Advisor



John Arnold
General Manager

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Darren Mueller

ALTDrive Product Manager
Engineer - Mechanical



Andrew Severs

MEDATech Product Manager
Engineer - Mechanical



Paul Cholewa

E Innovation Advisor
Controls & Software



Scott Dalrymple

Borterra Product Manager
Engineer - Mechanical

Our Clients



Our Partners



Battery systems

XALT solutions are defined by the remarkable combination of exceptionally high energy and performance density with an extremely compact design, modular structure, and maximum flexibility.



On-board chargers and power electronics

One of the world's largest providers of power conversion and power management solutions.



Electric motors, generators, power electronics and control systems

Suitable for the commercial, automotive, marine, mining, rail, motorsports and recreational vehicle markets.



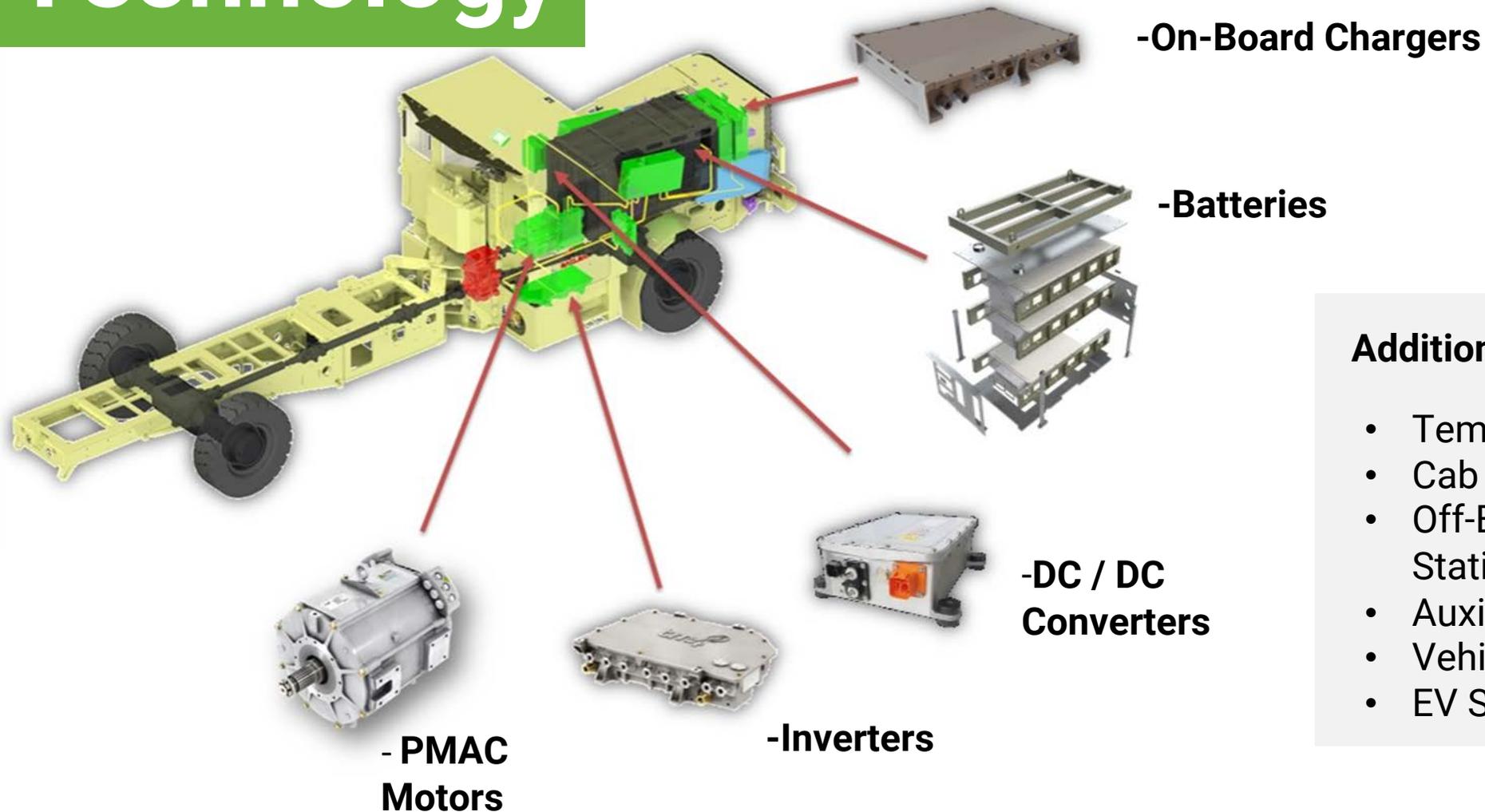
Charging solutions & robotics

ABB Charging Solutions and ABB Robotics supply ABB Robotics is a pioneer in robotics, machine automation and the full range of fast and ultra-fast EV charging solutions.



Technical Capabilities

Our Technology

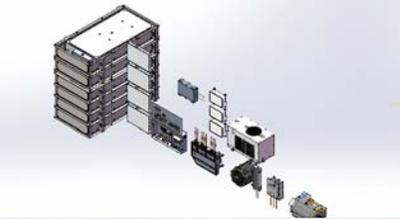


Additionally, MEDATech solves:

- Temperature Management
- Cab HVAC
- Off-Board Fast Charging Stations
- Auxiliary Hydraulics
- Vehicle Control (VMU)
- EV Software

Highlights

EV HEAVY EQUIPMENT ENGINEERING, DESIGN AND BUILD



2015

Begin Development of Altdrive™ technology, Patent Pending
Design/Build Maclean EV Bolter

2016

Design/Build Maclean EV Boom Truck

2017

ALTRIVE™ kit production for BEV

Design/ Build of First ALTRIVE™ Road Grader

2018

Design/Build of Minecat UT150 Pickup Truck

2019

Design of Minecat MC150 Utility Tractor

Design/Build MK-42 EV Haul Truck

2020

Design/Build Western Star 4900XD EV Haul Truck

Feasibility CAT 777 EV Haul Truck

Design/Build GHM EV Scoop

2021

EV Fleet Optimization Software (EV-FOS)

Ultra Fast Charging 600 to 1200KW

Our Technology



APPLICATION ANALYSIS

Advanced software simulations for optimized drive solutions

ENGINEER

Complete ground-up engineering work: Mechanical, Hydraulic, Electrical & Software engineering

BUILD

Complete ground-up prototype build

TEST

Perform testing & commissioning

DRAWINGS

Provide as-built drawings, documentation and models

SUPPORT

Provide ongoing engineering support

Our Technology

MEDATech handles every aspect of EV-powered vehicle design and creation.

- Project Management
- Battery Packaging
- Electrical & Mechanical Engineering
- Human Machine Interface (HMI)
- Vehicle Control (VMU)
- Cab Controls and HVAC
- EV Software
- Telematics
- System Design
- Autonomous System Design



**HV Battery
Drive Systems
+ TMS**

**Cab Controls
and HVAC**

**Auxiliary
Drive Control
Design**

**Vehicle Drive
Control and
Data Logging**

**Implement
Control System
Design**

**Drive-by-Wire
Steering Control
Design**

Our Technology

MEDATech solves:

- Battery-electric drives
- Human-Machine Interface (HMI)
- Vehicle Management Units (VMU)
- Temp Management Systems (TMS)
- Cab controls and HVAC
- Off-board fast charging stations
- Auxiliary hydraulics
- EV software

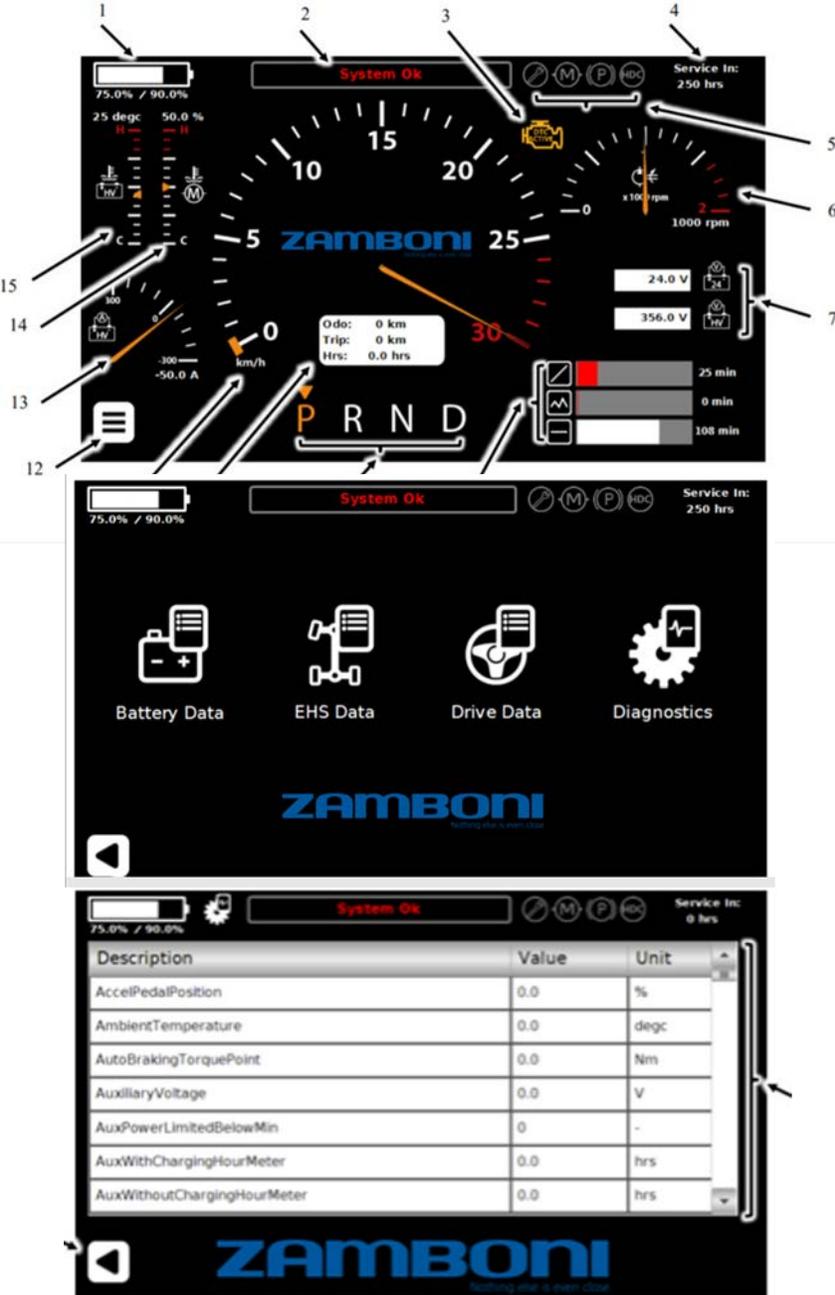


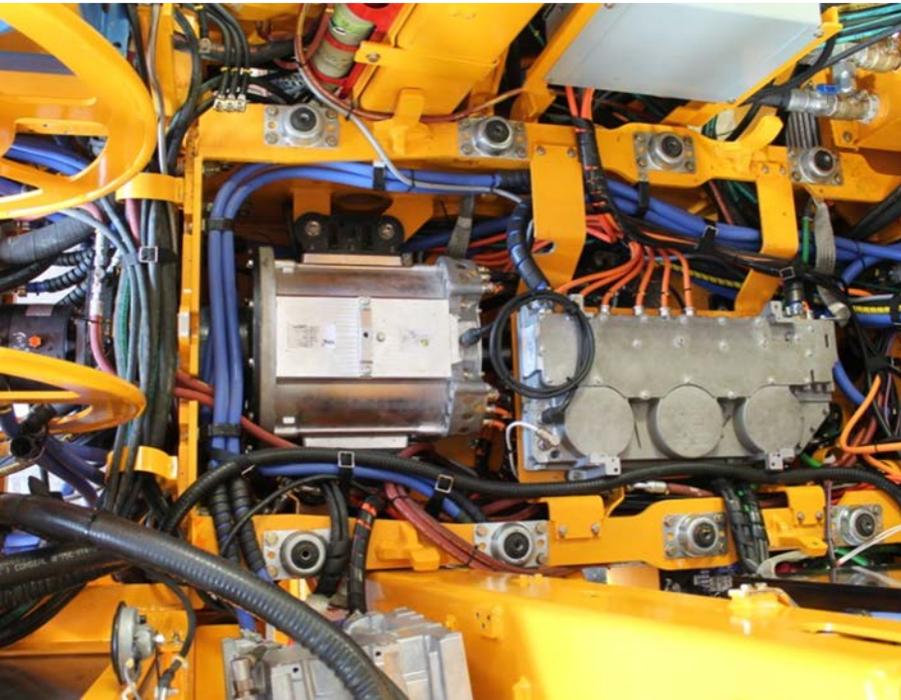
Figure 3: Diagnostic Data Screen



EV Off Hwy Rugged Work Cycles – Our Specialty

High-Power Electric Vehicle Technology

- 500KW output
- 308 KWH capacity
- 100-200 KW onboard charging capacity
- Autonomous ultra-fast 600KW charging



Ultra-High-Power Electric Vehicle Technology



Off-Hwy Heavy Hauling

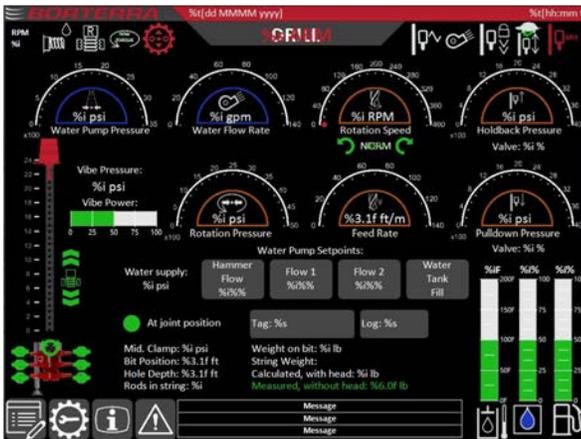
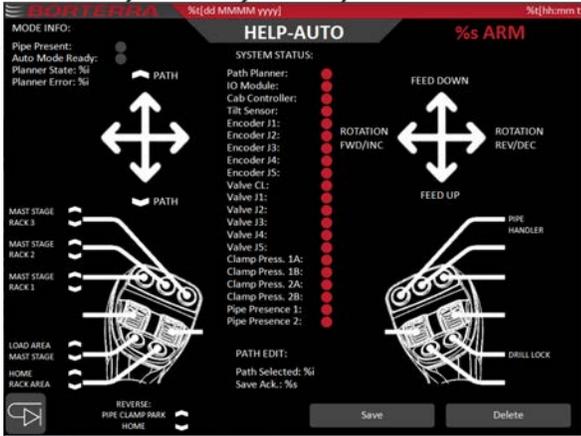
- >700 KW output
- >480 KWH capacity
- 100-200 KW onboard charging capacity
- Autonomous ultra-fast 600KW charging

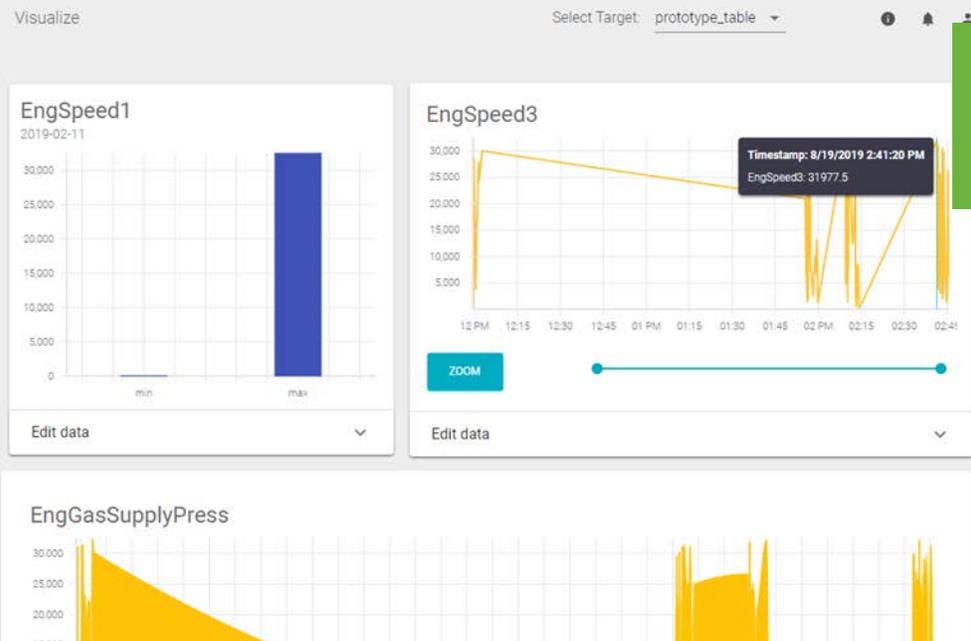
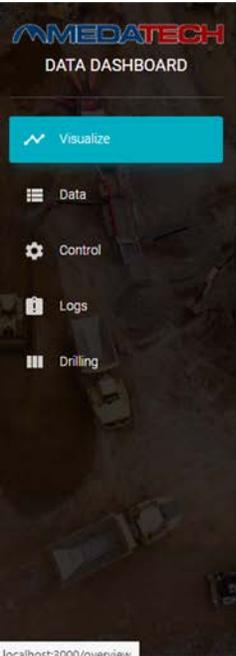


Control System Development

Bridging the gap between operator and machine:

- Human-Machine Interface (HMI)
- Electrical control systems
- Test and validation (Electronic testing Lab)

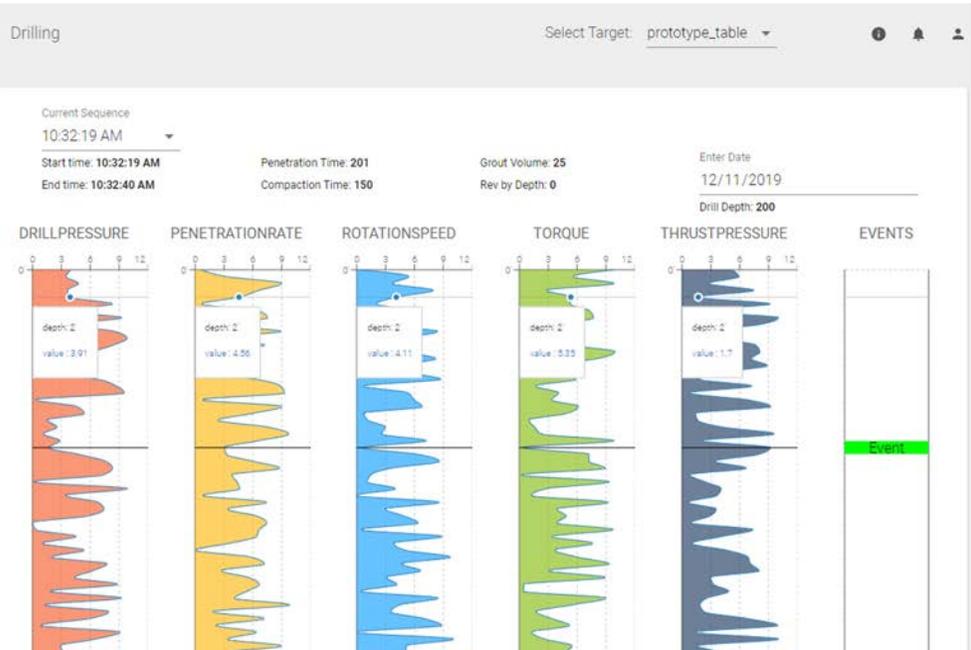
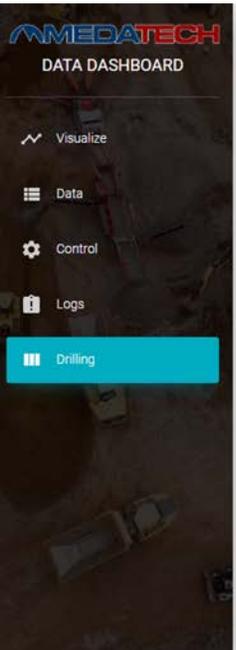




Web-Based Telematics

Delivering cloud-stored data for advanced analytics and modeling:

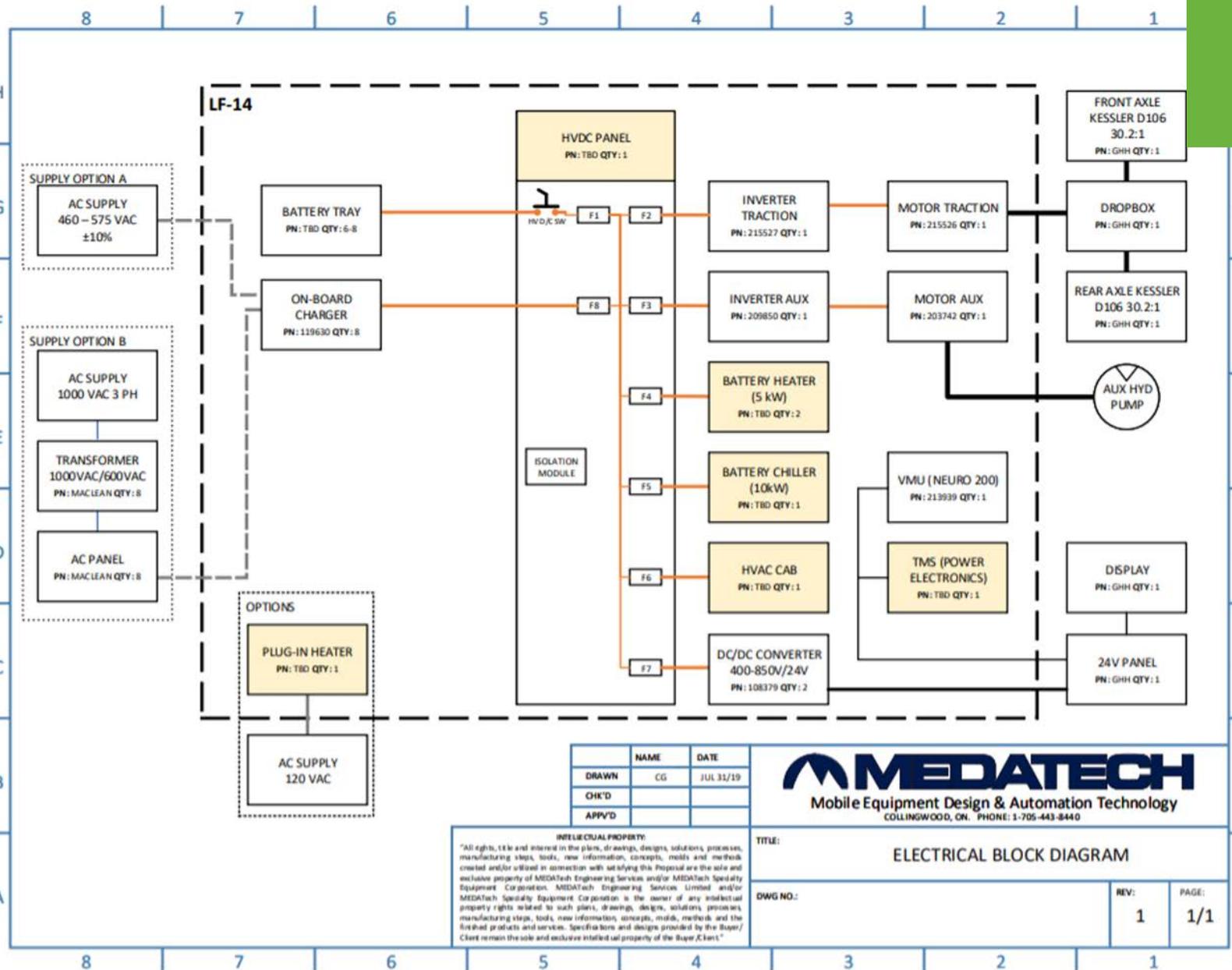
- In-house-designed Graphical User Interface (GUI)
- Drag-and-drop DBC files
- Application-specific data visualization, including charts & plots
- Download tabular data & event logs



System Design & Architecture

From consulting to software development, system architecture & prototyping:

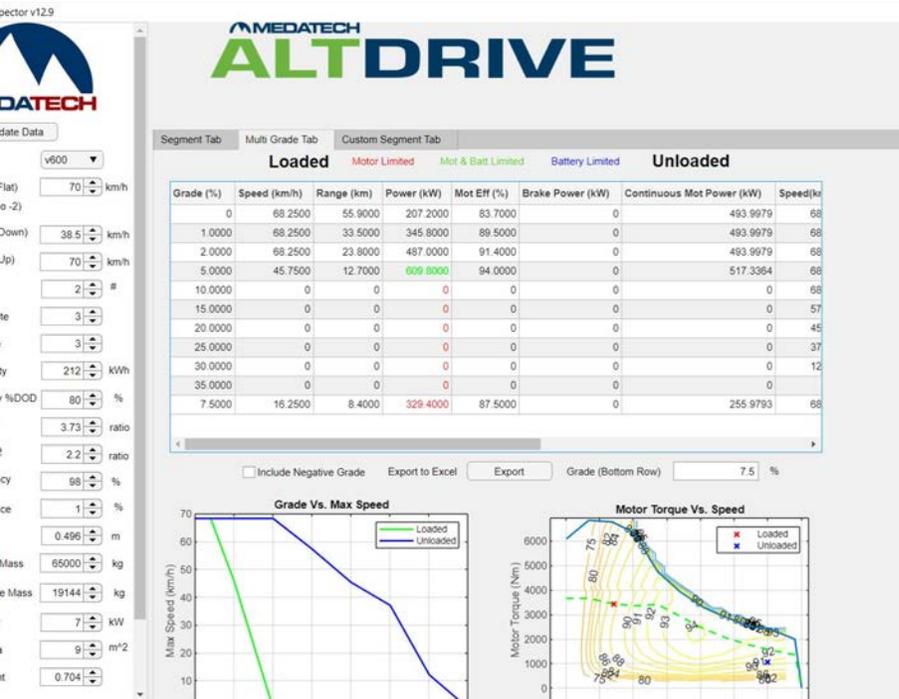
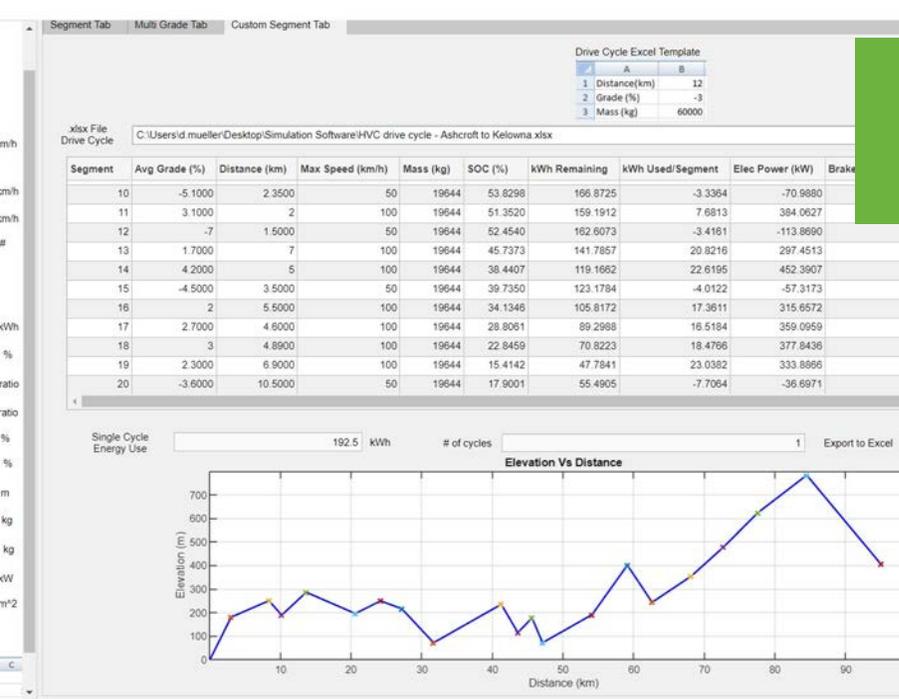
- Requirements & functional specifications
- Architecture & diagramming
- Model-based design and simulation (MATLAB®/Simulink)
- CAN-based control system engineering
- Functional safety systems & standards
- Electromobility simulations for EV component integration
- Software development



EV Simulation

In-house software design:

- Validate drive power/energy requirements
- Validate auxiliary power/energy requirements
- Calculate required gear ratios
- Battery and motor efficiencies
- Analyze and compare duty cycles





Material Handling & Robotics

Borterra RodBot™
Smart Material
Handling Systems

Fully Digital Control Technology

Advanced smart-control systems for any application

- Design & engineering
- Bench testing & installation
- Support & service

Telematics system technology

- Fully-engineered telematics systems for any application
- Simple web user interface/dashboard





Full System Design/Build Services

Technical capabilities:

- Full dynamic structural analysis
- Model-based design and simulation (MATLAB® / Simulink)
- CAN-based control-system engineering
- Full electrical-system design for high voltage and control systems
- Vehicle dynamic analysis
- Specialty engineering

Software Development

A key strength

- Local / IoT solutions
- Automatic & virtual testing and validation

Project Management

Seamless project management

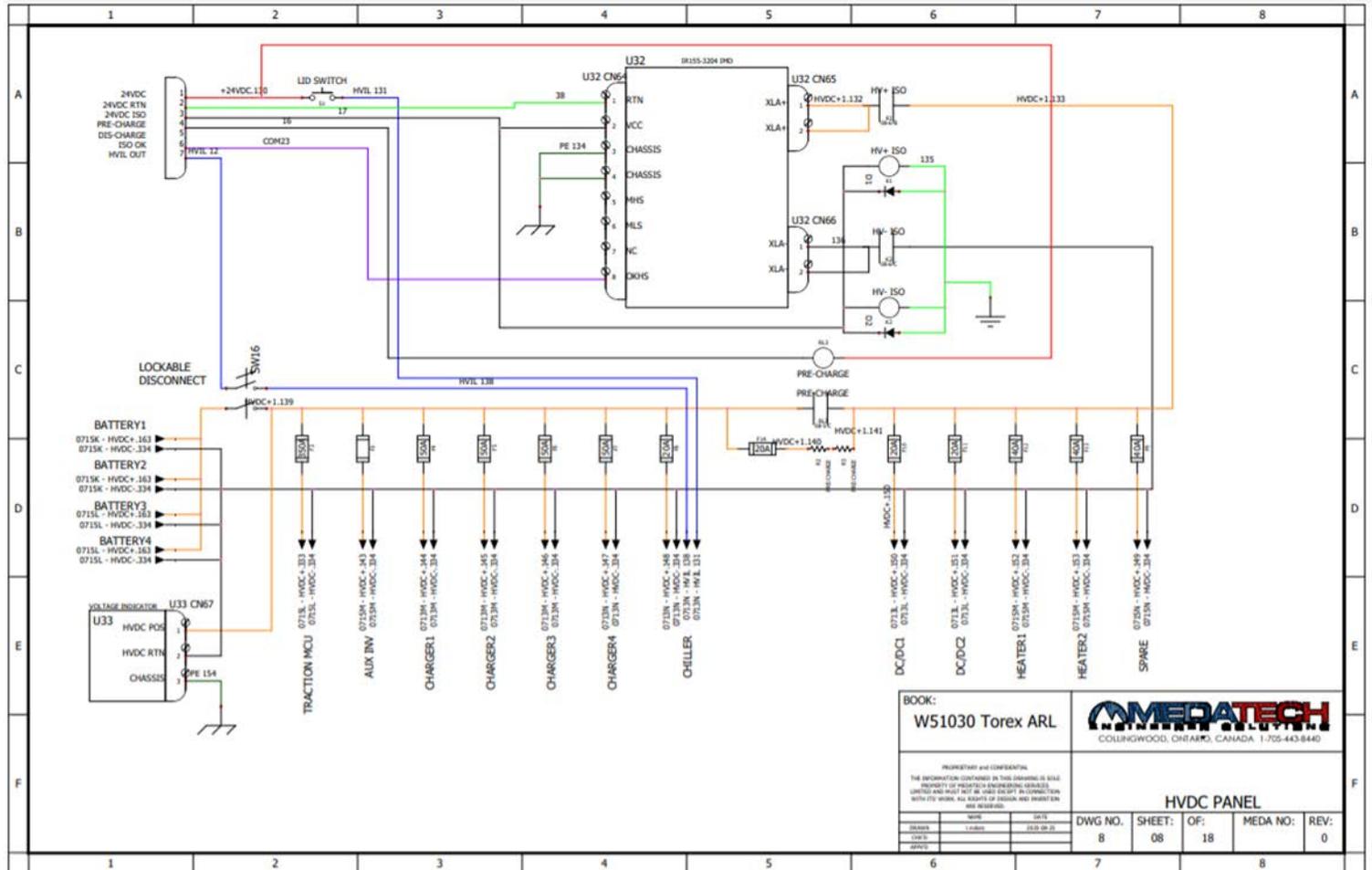
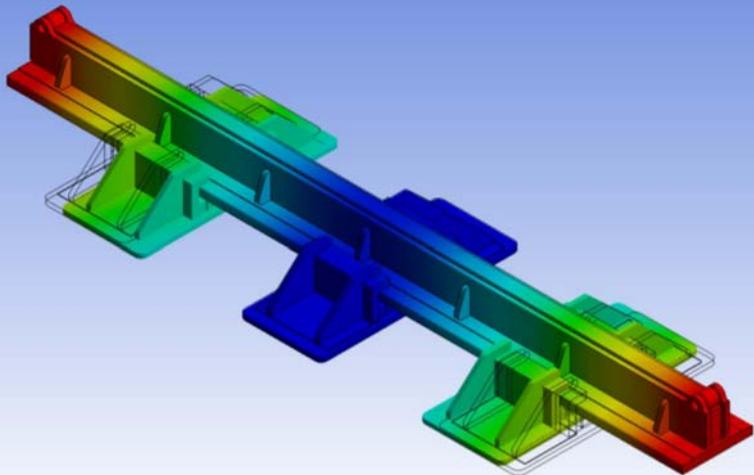
- For OEM/supplier design/build project teams
- Testing & validation
- Support for the complete vehicle

Mechanical and Electrical Engineering

— Mobile engineering: from concept and design to build and testing

- Schematics & panel design:
high/low voltage power distribution
- Component selection
- Mechanical / hydraulic engineering
- 3D modelling
- Structural analysis
- Functional safety implementation

Mechanical and Electrical Engineering





**How can we
help you?**

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sales@medatech.ca**