



# MEDATech Engineering

Capabilities | 2022





**Who we are**





A large yellow mining machine is positioned in a dark, rocky tunnel. A worker in a hard hat and safety gear stands on a platform of the machine, holding a clipboard. The machine has various hydraulic arms and hoses. The tunnel walls are rough and uneven.

# Innovation is Who We Are

## An Innovator First

- Fast to fail
- Faster to succeed

**M****OBILE****E****QUIPMENT****D****ESIGN &****A****UTOMATIO****T****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



# Our Team

We are 35 people strong.  
Our management team:

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



**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.



## Electric motors, generators, power electronics and control systems

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



## On-board chargers and power electronics

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



## 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.

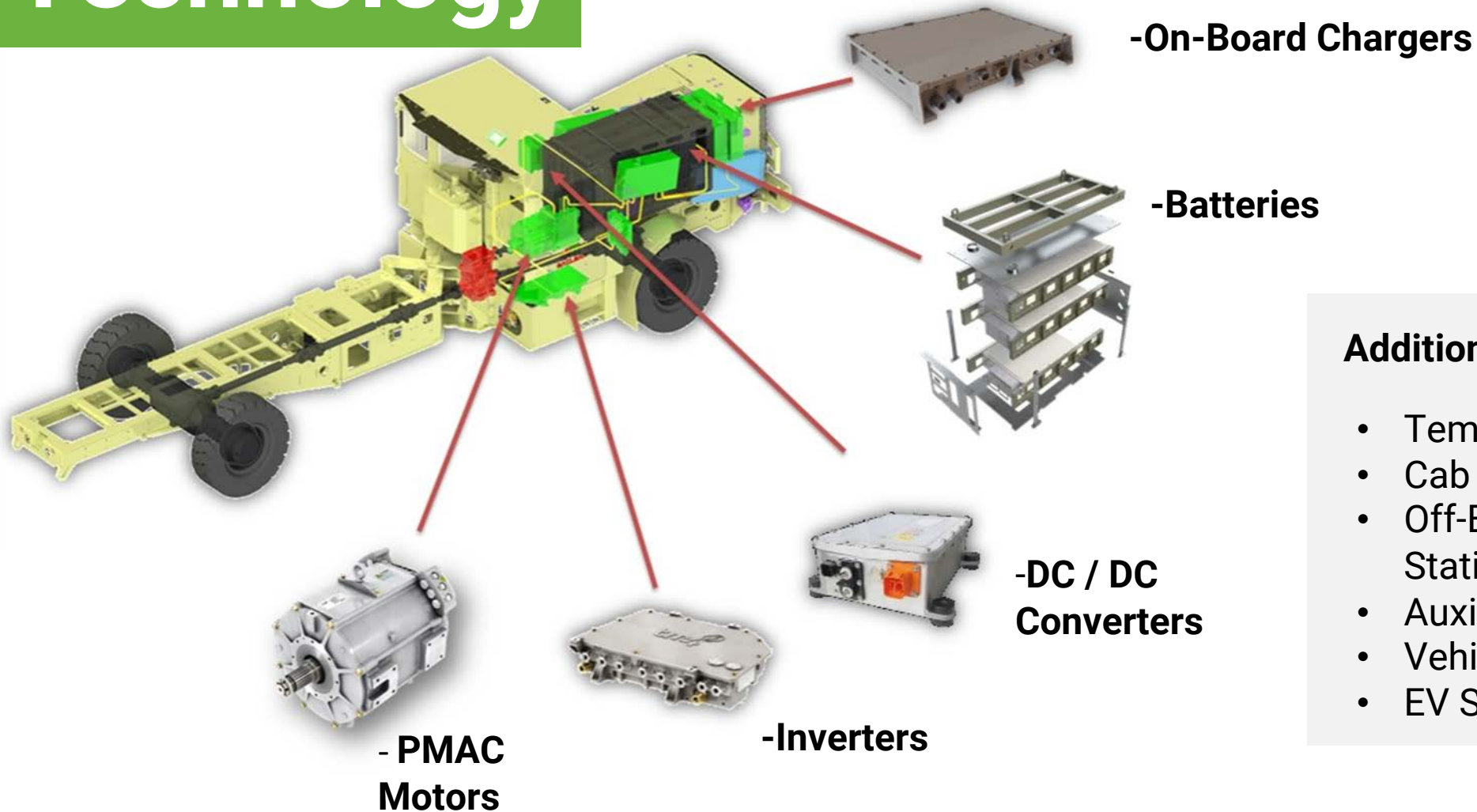


The background image is a collage of three photographs from an underground mining operation. The top-left photo shows a yellow hydraulic excavator with a bucket raised, working on a dark rock face. The top-right photo shows a worker in an orange safety suit and white helmet standing on a red and yellow platform, holding a clipboard and looking at a bright light source. The bottom photo shows a large yellow wheel loader with its bucket raised, parked in a tunnel. The text 'Technical Capabilities' is centered over a semi-transparent white rectangle in the middle of the collage.

# **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

ALTDRIIVE™ kit production for BEV

Design/ Build of First ALTDRIIVE™ 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 GHH EV Scoop

2021

EV Fleet Optimization Software (EV-FOS)  
Ultra Fast Charging 600 to 1200KW



MEDATECH



# 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

MEDATech Engineering

**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

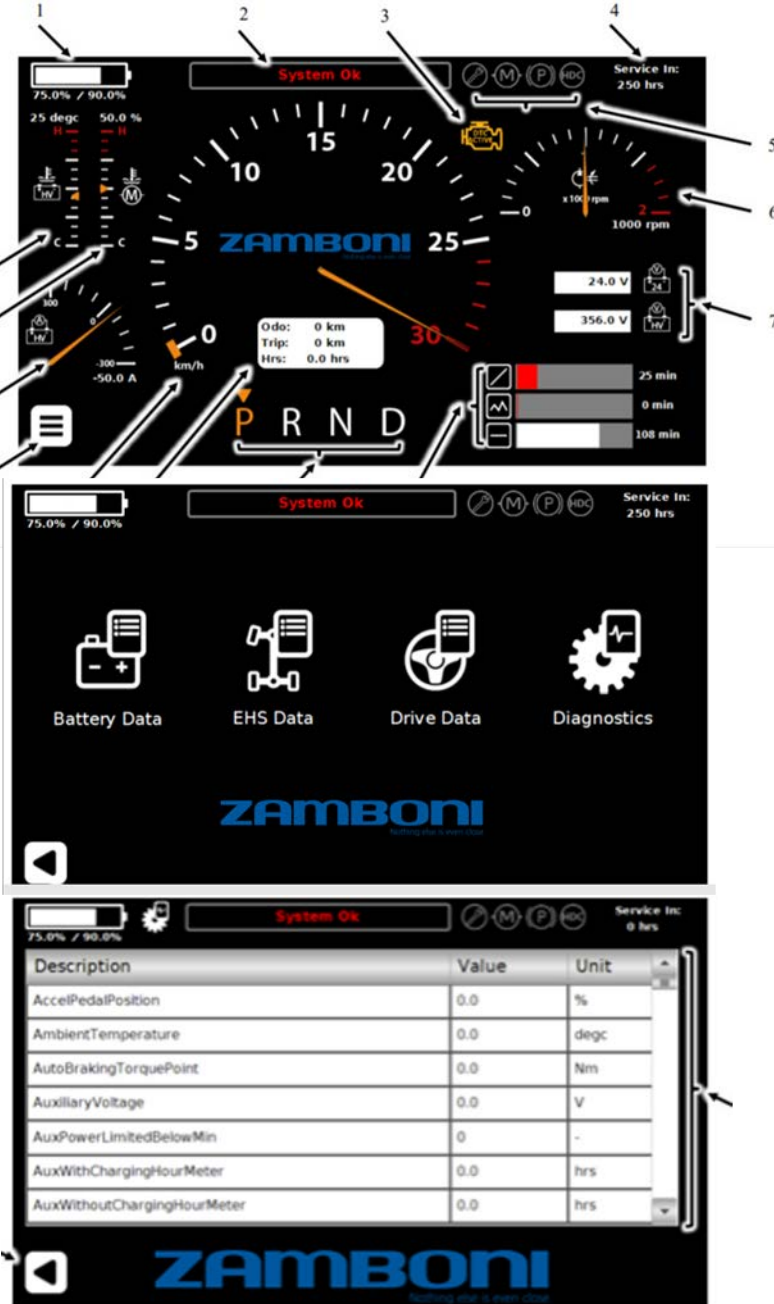


Figure 3: Diagnostic Data Screen





# 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

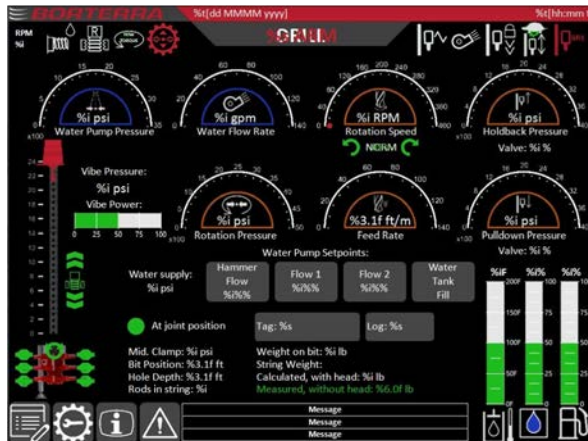
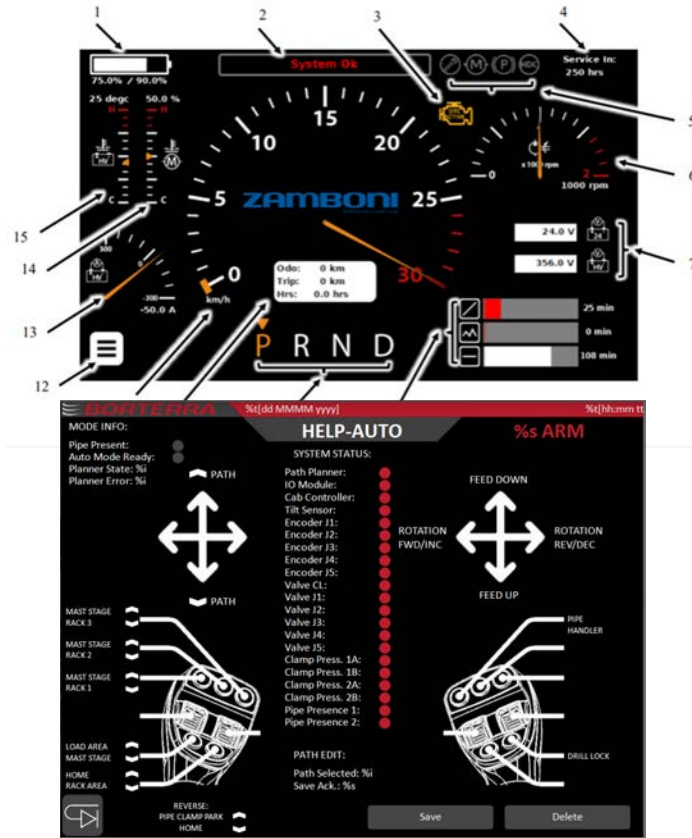


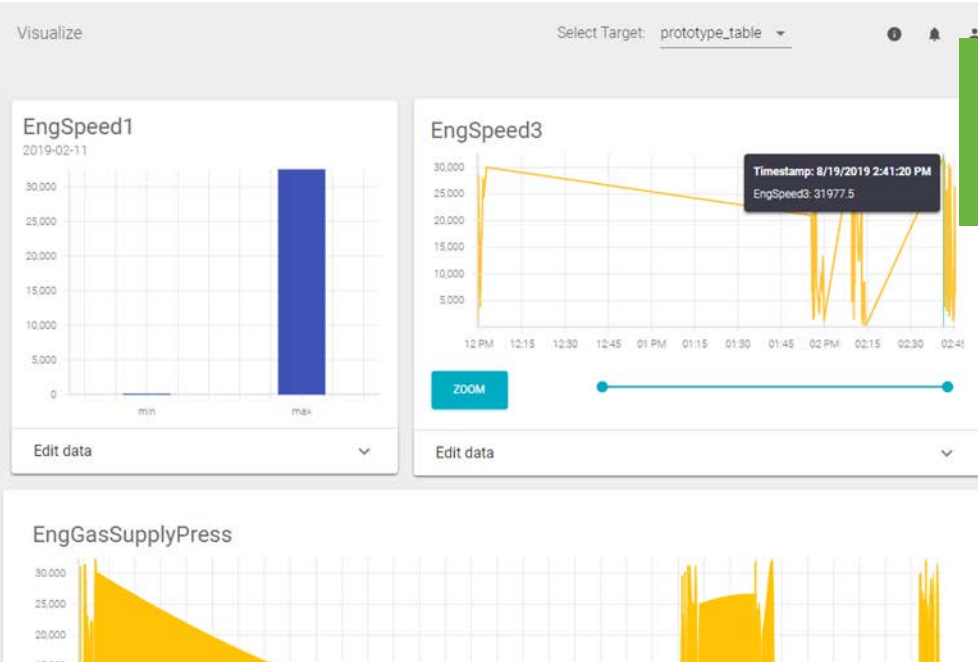
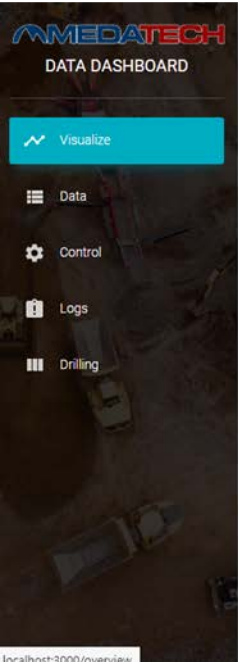


# Control System Development

**Bridging the gap between operator and machine:**

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

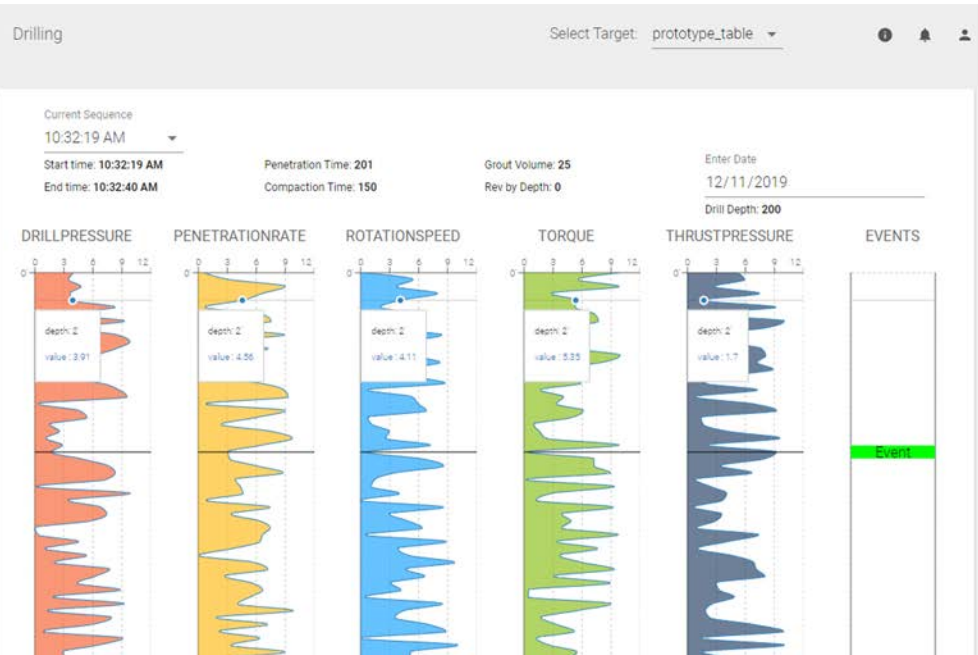
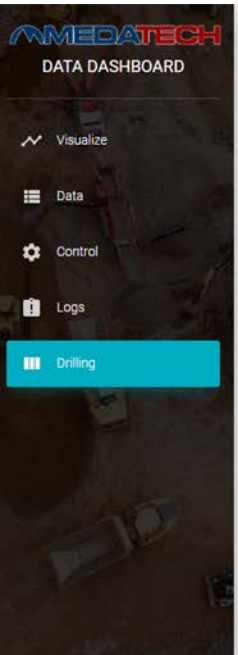




# Web-Based Telematics

## 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

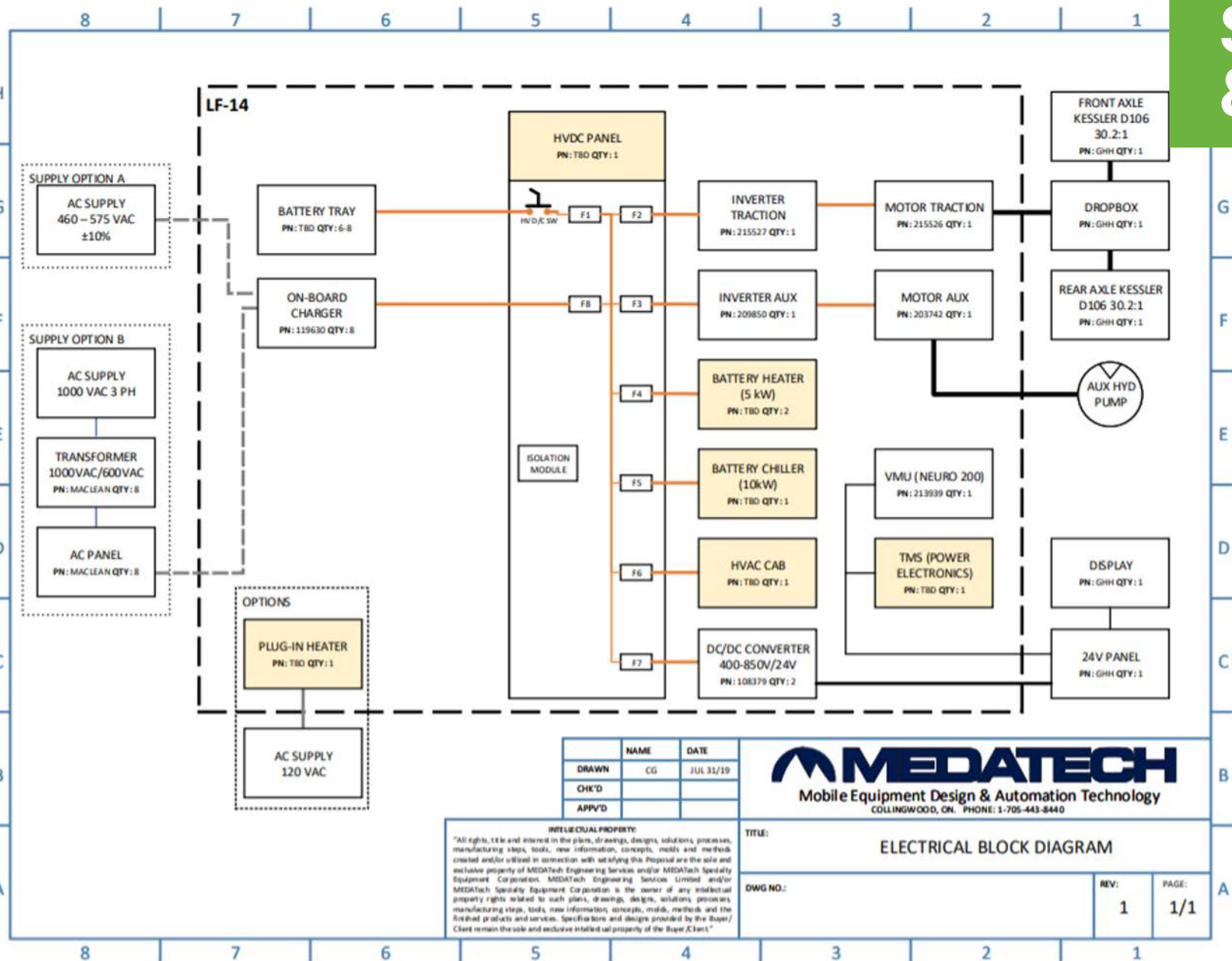




# System Design & Architecture

## From consulting to software development, system architecture & prototyping:

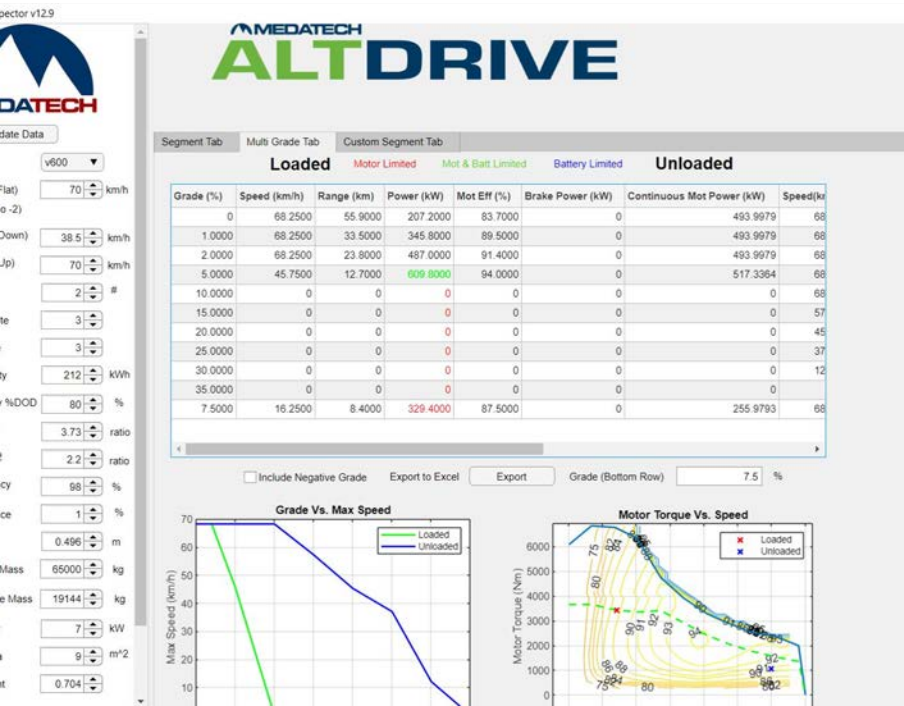
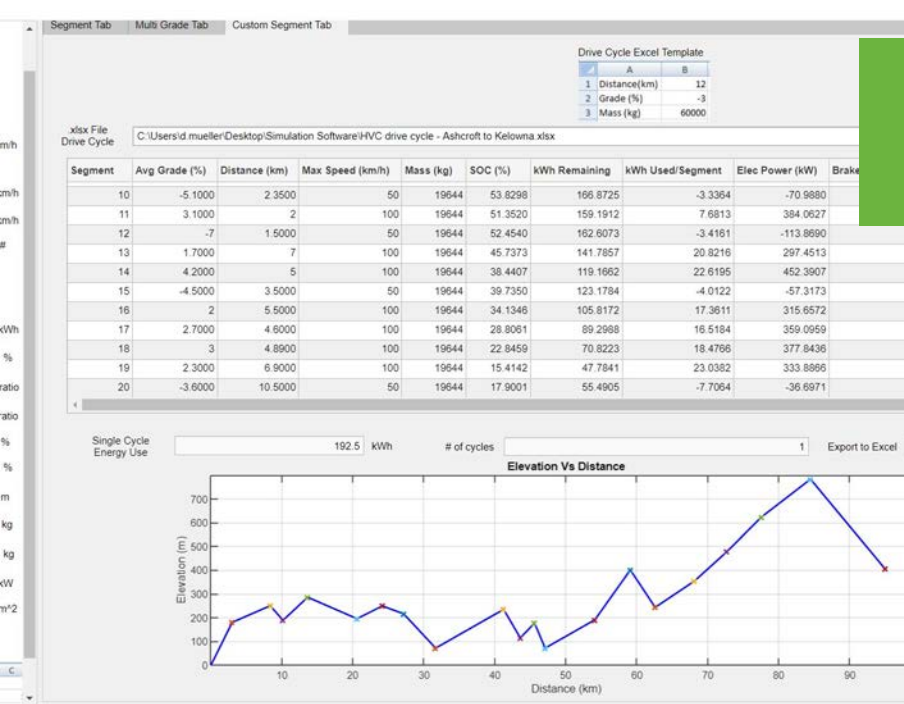
- Requirements & functional specifications
- Architecture & diagramming
- Model-based design and simulation (MATLAB®/Simulink)
- CAN-based control system engineering
- Functional safety systems & standards
- Electromobility simulations for EV component integration
- Software development



# 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

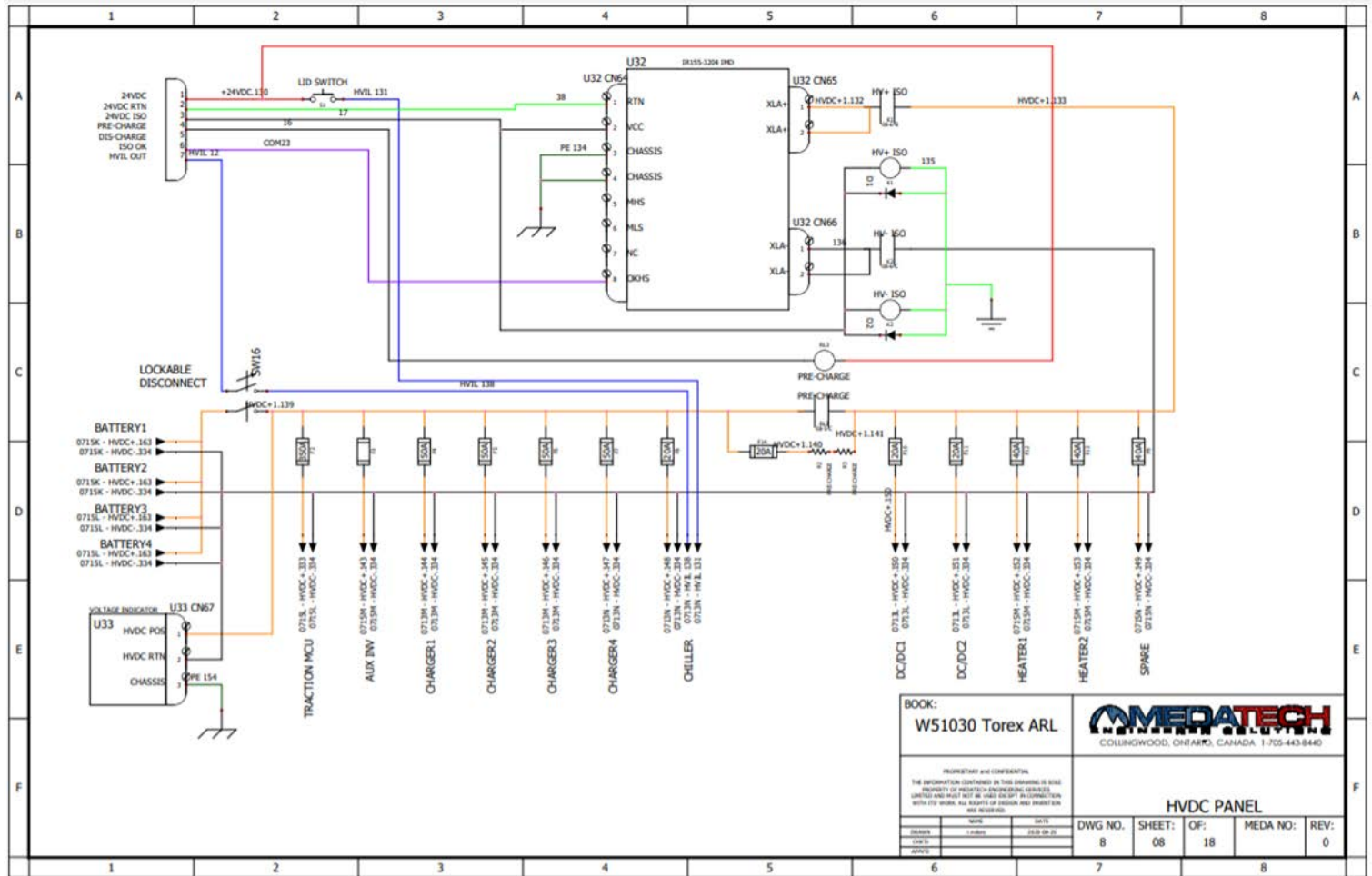
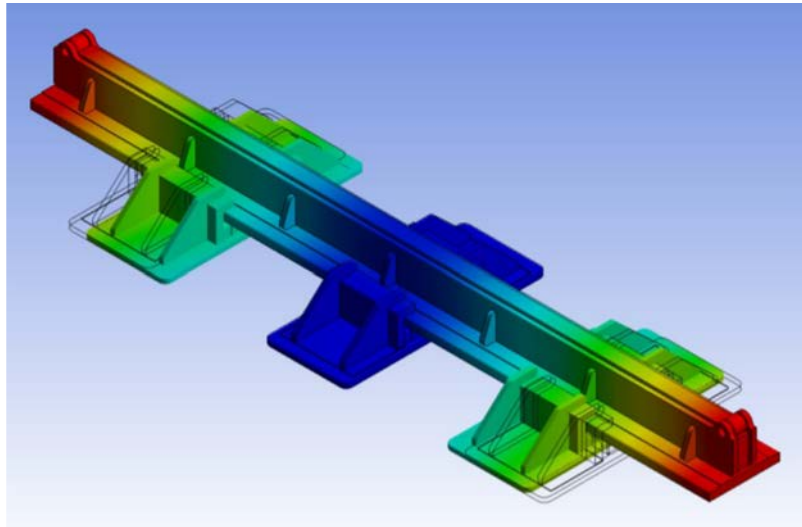


# Mechanical and Electrical Engineering

## 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?

1(705) 443-8440  
[sales@medatech.ca](mailto:sales@medatech.ca)