



Integrated Intelligence in Motion

# Overview Brochure



**TerraTech Electrification Ecosystem** leverages earth friendly technology to increase productivity and provide better and safer jobs.

# Full Electric Motion System Architecture

Scalable. Modular. Configurable.

## Digital Insights >>>

Gives critical machine data for productivity, maintenance, etc. for a higher performing machine.

## EVCM >>>

Central Controller that distributes safe and efficient motor control.

## Servo Drives >>>

Converts operator inputs from EVCM to linear and rotary motion.

## Software >>>

Controls configurability of the machine.

## Traction Motor >>>

Motor and gear assembly designed for tracked vehicles.

## Electric Cylinder >>>

Linear all electric actuation to replace hydraulic cylinders.

## Drive Train Motor\* >>>

Electric motor and Final Drive assembly for wheeled vehicles.

\*Motor not shown in image. Available as needed based on machine architecture.

## Battery Module >>>

Battery and charging system for electric vehicles (Third party manufacturer).



# Designed, Tested and Manufactured for the Construction Industry



## What TerraTech Delivers



### Scalable

One solution that fits across all your machine sizes and types. From compact, to 10 ton to 100 ton.



### Performance

Will meet or exceed current performance of diesel hydraulic machines. Lift capacity, breakout force, Traction force.



### Modular

Designed for all machines. Constructed with standardized mechatronics approach for flexibility and variety in use across all your machines. Build standardization into your product line.



### Configurable

Common Software and hardware that allows you to modify and update the machine to your needs. Quickly add functionality and enabled for future automation. Differentiate on your terms.

## The Value TerraTech Brings to Manufacturers



### Standardization

Make life predictable and avoid unpleasant surprises.

- Reduced planning time
- Consistent quality
- Lower lead times
- Reduced cost and overhead



### Accelerate

Save time, money and accelerate your zero-emission journey with a standardized and customizable system across all your machines. Reduce your development time and increase your ROI.



### Usability/Reusability

Easy to use, integration between programming software, controllers, drives and actuation. Moog tools, libraries, API, Interconnected and reusable hardware and software. Accessibility to data, intelligence, machine analytics, reliability and performance data,



### Systems Integration

TerraTech makes the complex simple. Spend less time in development and more time on added value tasks. Moog did all the hard system integration work for you; We make it simple to use.

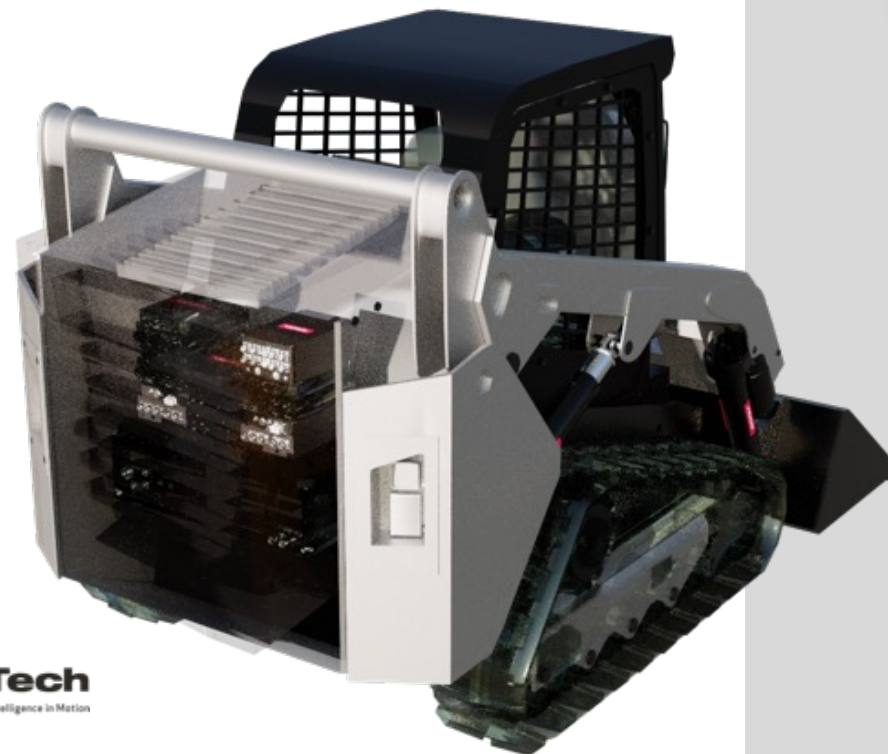
# Full Electric System Architecture

## Integrated Intelligence in Motion

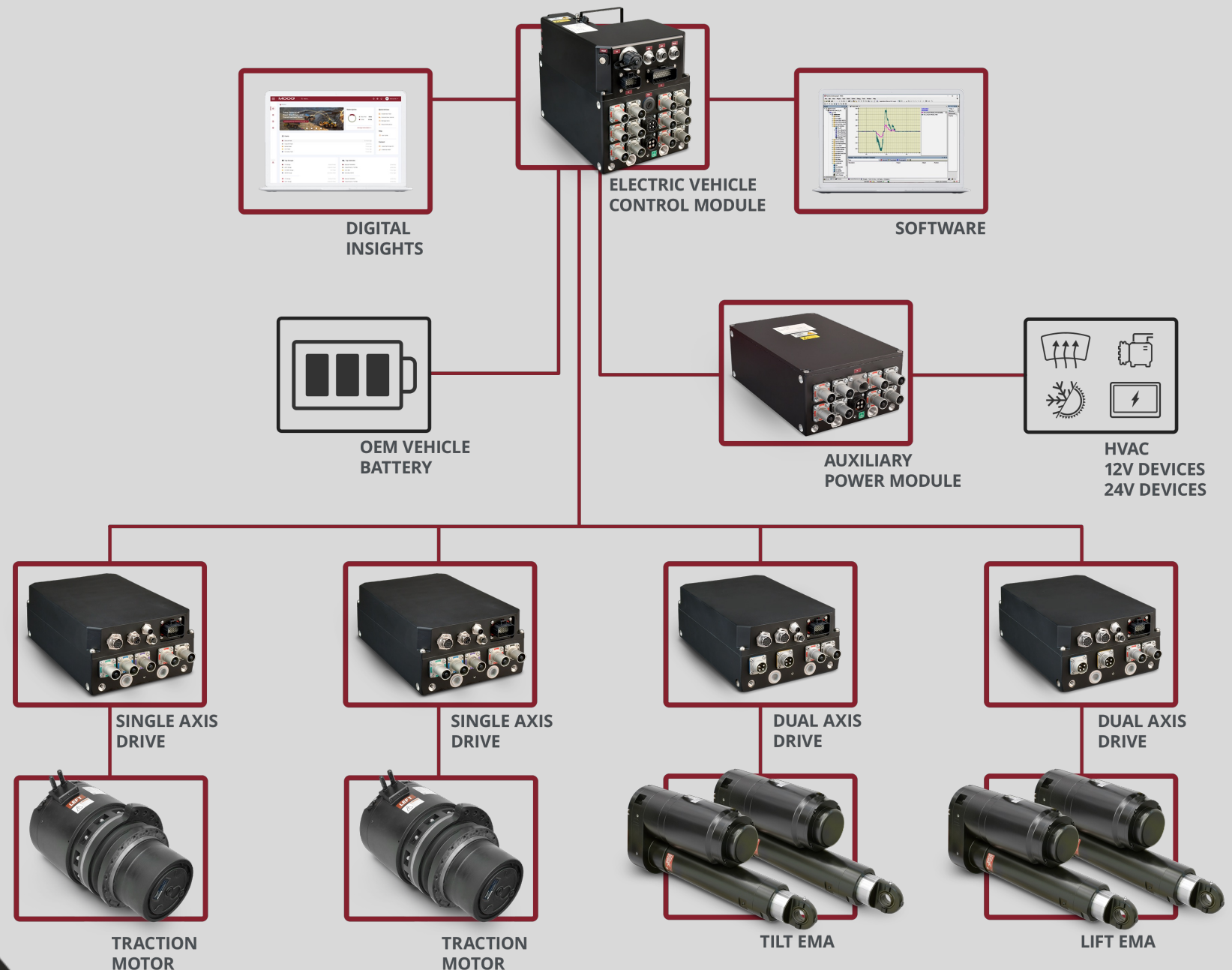
**Integrated:** Connection between the programming software, EVCM, motor controllers and the energy system reduces the development, validation and verification (V&V) time.

**Intelligence:** Uses a common control engine with a common software development environment.

**Motion:** Intelligent, safe and efficient motion ecosystem giving you performance and reliability that really matters.



## All Electric Track Loader System Architecture



Moog Construction provided

Customer provided

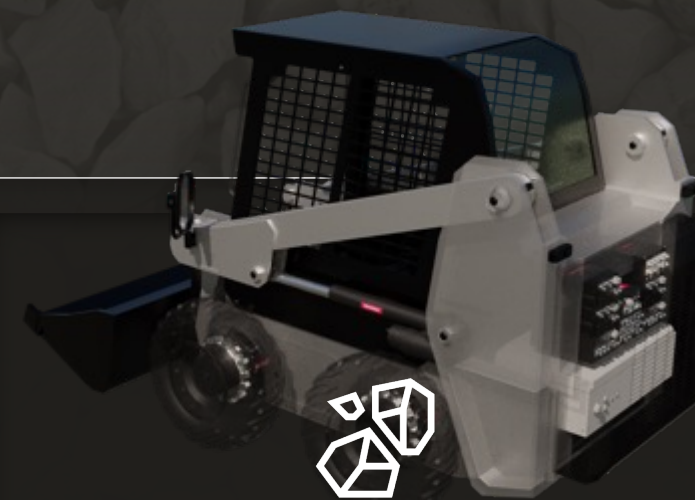
# TerraTech Application Guide

Terratech is designed to fit  
your machine requirements



**1,000 - 2,500 kg**

[Learn more >>>](#)



**2,500 - 4,000 kg**

[Learn more >>>](#)



**4,000 - 7,000 kg**

[Learn more >>>](#)



**7,000 - 14,000 kg**

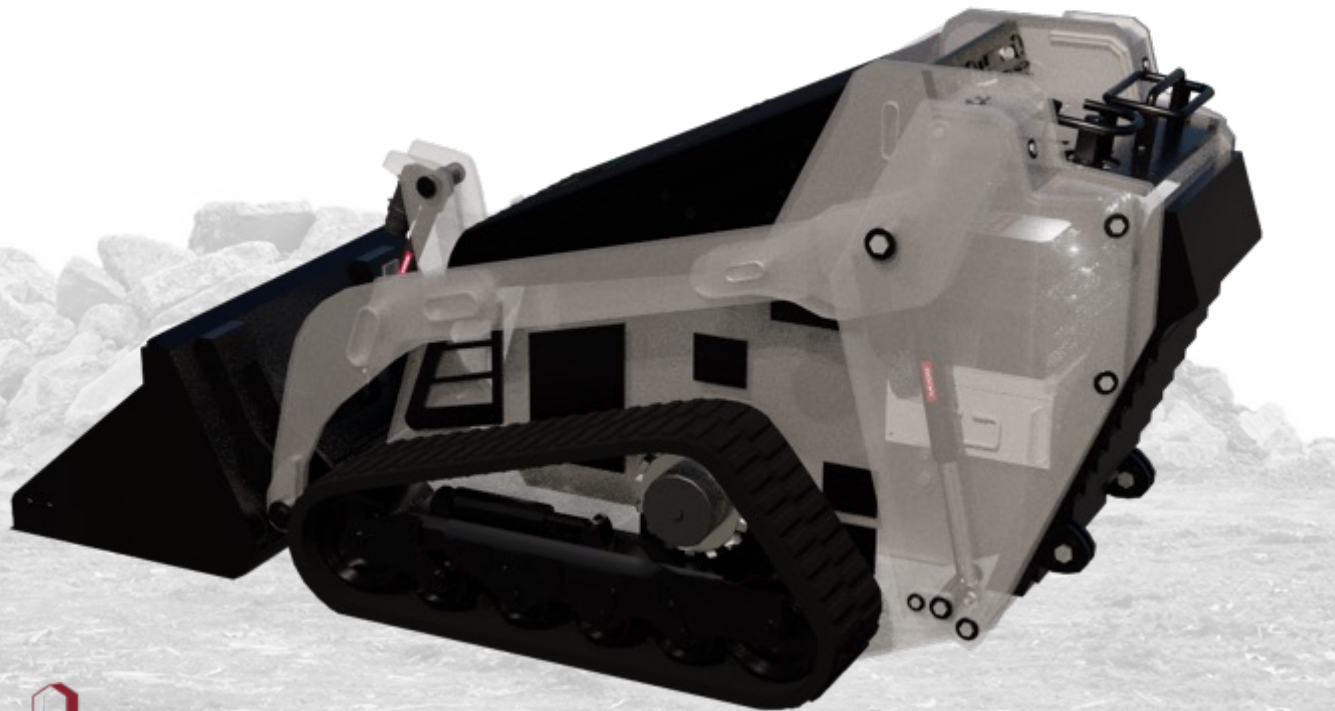
[Learn more >>>](#)



# 1,000 - 2,500 kg Machines

|                                    |                   |
|------------------------------------|-------------------|
| <b>Approximate Machine Tonnage</b> | 1,000 – 2,500 kg  |
| <b>Bucket Breakout Force*</b>      | 12 kN (2,600 lb)  |
| <b>Machine Example</b>             | Mini Track Loader |

\*For reference only. Dependent on machine kinematics and system configuration.



## Electronic Vehicle Control Module - EVCM

Contains software programmed for actuator control, interfacing with OEM controllers, battery management systems, implements functional safety features, and transfers data through CAN, ethernet, WIFI, or LTE networks. The EVCM also distributes high voltage power to the servo drives.



## Servo Drive – Single and Dual Axis

Inverts high voltage DC power to 3 phase power for actuators or motors. Available in a high power, single axis option or a lower power dual axis option for a compact solution.



## Electric Cylinder – Series 4

The servo motor receives 3-phase power from the servo drive to provide high forces and high-speed control that matches or exceeds hydraulic cylinder performance without the mess of hydraulics.



## Traction Motor – Series 1

Receives 3-phase power from a servo drive to run the servo motor. The traction motor is equipped with an integrated gearbox to provide the necessary torque to drive the machine.



## Auxiliary Power Module - APM

Provides 24V or 12V power to auxiliary functions on the machine, such as lights, fans, joysticks, etc.





# 2,500 - 4,500 kg Machines

|                                    |  |
|------------------------------------|--|
| <b>Approximate Machine Tonnage</b> | 2,500 – 4,000 kg                                       |
| <b>Bucket Breakout Force*</b>      | 32 kN (7,200 lb)                                       |
| <b>Machine Example</b>             | Small to Medium Skid-Steer, Small Compact Track Loader |

\*For reference only. Dependent on machine kinematics and system configuration.



## Electronic Vehicle Control Module - EVCM

Contains software programmed for actuator control, interfacing with OEM controllers, battery management systems, implements functional safety features, and transfers data through CAN, ethernet, WIFI, or LTE networks. The EVCM also distributes high voltage power to the servo drives.



## Servo Drive – Single and Dual Axis

Inverts high voltage DC power to 3 phase power for actuators or motors. Available in a high power, single axis option or a lower power dual axis option for a compact solution.



## Electric Cylinder – Series 5

The servo motor receives 3-phase power from the servo drive to provide high forces and high-speed control that matches or exceeds hydraulic cylinder performance without the mess of hydraulics.



## Traction Motor – Series 1

Receives 3-phase power from a servo drive to run the servo motor. The traction motor is equipped with an integrated gearbox to provide the necessary torque to drive the machine.



## Auxiliary Power Module - APM

Provides 24V or 12V power to auxiliary functions on the machine, such as lights, fans, joysticks, etc.





# 4,000 - 7,000 kg Machines

|                                    |  |
|------------------------------------|--|
| <b>Approximate Machine Tonnage</b> | 4,000 – 7,000 kg                                 |
| <b>Bucket Breakout Force*</b>      | 42 kN (9,500 lb)                                 |
| <b>Machine Example</b>             | Large Compact Track Loader, Compact Wheel Loader |

\*For reference only. Dependent on machine kinematics and system configuration.



## Electronic Vehicle Control Module - EVCM

Contains software programmed for actuator control, interfacing with OEM controllers, battery management systems, implements functional safety features, and transfers data through CAN, ethernet, WIFI, or LTE networks. The EVCM also distributes high voltage power to the servo drives.



## Servo Drive – Single and Dual Axis

Inverts high voltage DC power to 3 phase power for actuators or motors. Available in a high power, single axis option or a lower power dual axis option for a compact solution.



## Electric Cylinder – Series 6

The servo motor receives 3-phase power from the servo drive to provide high forces and high-speed control that matches or exceeds hydraulic cylinder performance without the mess of hydraulics.



## Traction Motor – Series 2

Receives 3-phase power from a servo drive to run the servo motor. The traction motor is equipped with an integrated gearbox to provide the necessary torque to drive the machine.



## Auxiliary Power Module - APM

Provides 24V or 12V power to auxiliary functions on the machine, such as lights, fans, joysticks, etc.







# 7,000 – 14,000 kg Machines

|                                    |   |
|------------------------------------|---|
| <b>Approximate Machine Tonnage</b> | 7,000 – 10,000 kg   |
| <b>Bucket Breakout Force*</b>      | 73 kN (16,500 lb) to 108 kN (24,000 lb)                           |
| <b>Machine Example</b>             | Compact Wheel Loader, Medium Wheel Loader, Tracker Loader Backhoe |

\*For reference only. Dependent on machine kinematics and system configuration.



## Electronic Vehicle Control Module - EVCM

Contains software programmed for actuator control, interfacing with OEM controllers, battery management systems, implements functional safety features, and transfers data through CAN, ethernet, WIFI, or LTE networks. The EVCM also distributes high voltage power to the servo drives.



## Servo Drive – Single and Dual Axis

Inverts high voltage DC power to 3 phase power for actuators or motors. Available in a high power, single axis option or a lower power dual axis option for a compact solution.



## Electric Cylinder – Series 8 & 10

The servo motor receives 3-phase power from the servo drive to provide high forces and high-speed control that matches or exceeds hydraulic cylinder performance without the mess of hydraulics.



## Drive Train Motor

Receives 3-phase power from a servo drive to run the servo motor. The drive train motor integrates with the OEM gearbox to propel the vehicle.



## Auxiliary Power Module - APM

Provides 24V or 12V power to auxiliary functions on the machine, such as lights, fans, joysticks, etc.





**MOOG**  
**CONSTRUCTION**