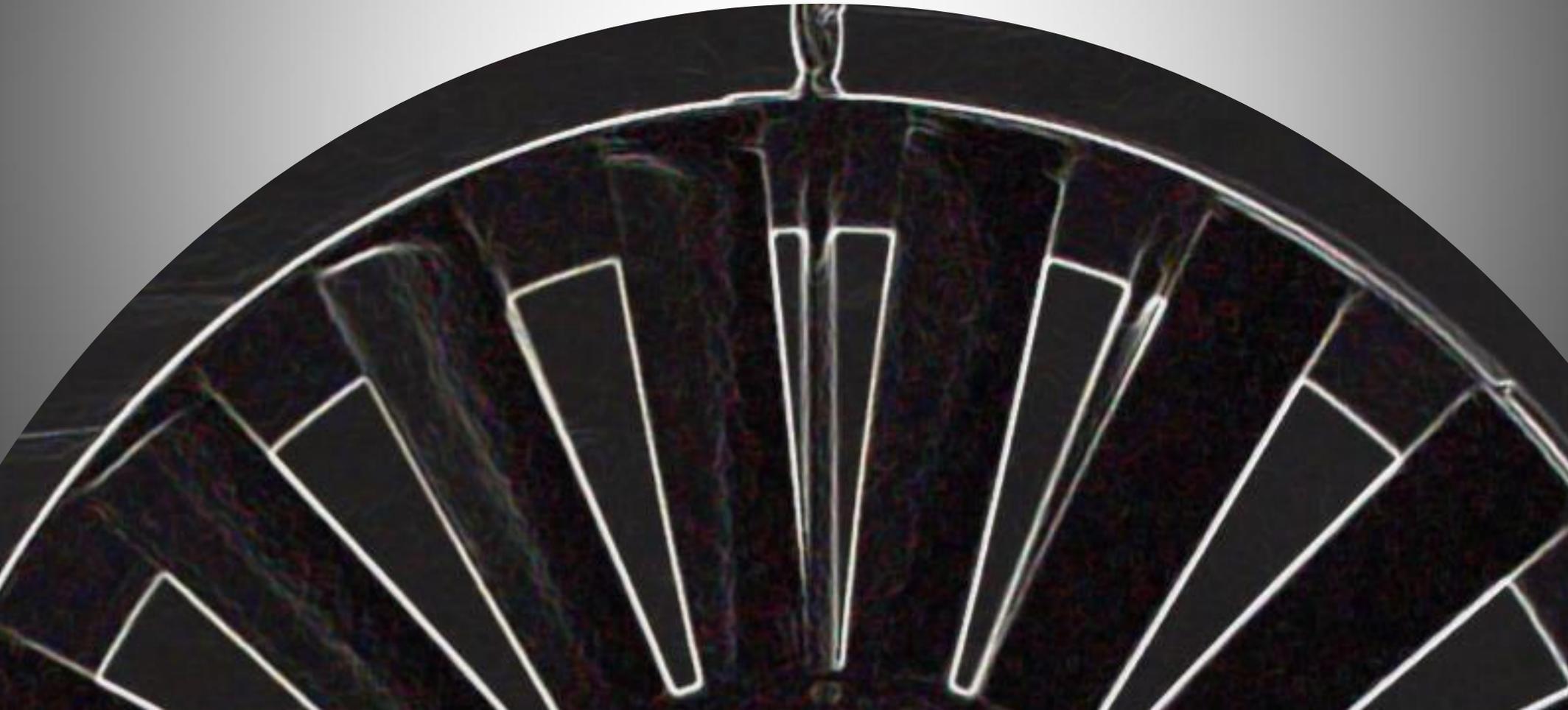


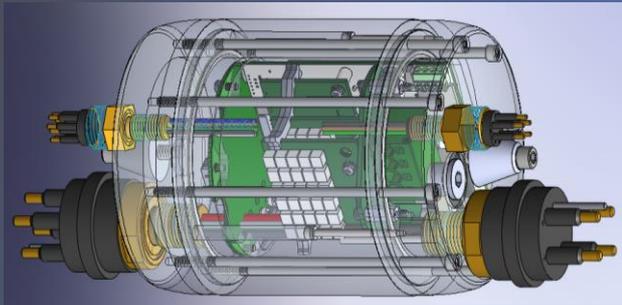
INNERSPACE CORP.

1138 E. EDNA PLACE COVINA, CALIFORNIA 91740
WWW.INNERSPACETHRUSTERS.COM

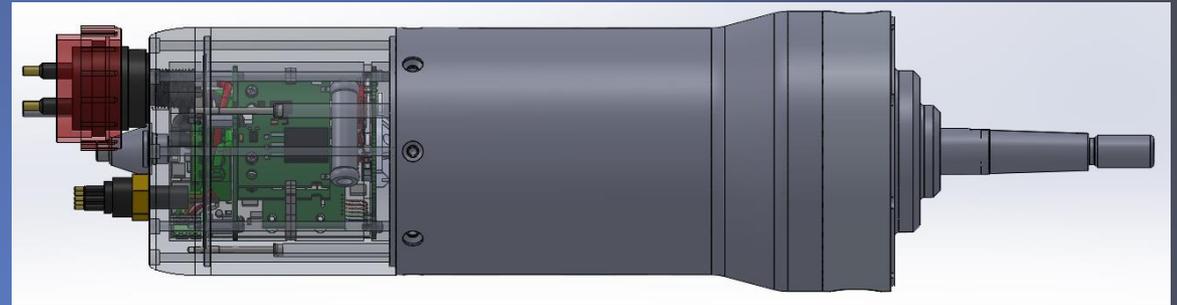
25 HP STATE-OF-THE-ART AMBIENT PRESSURE MOTOR CONTROLS FROM 100 - 550VDC



MOTOR CONTROL



**Stand-alone Motor
Controller (SMC)**



Integrated Motor Controller (IMC)

- Available Configurations:
 - Integrated: Directly attached to motor - includes all control elements within motor housing.
 - Stand Alone: Independent control unit with cable connections to motor - phase (power) and sensing (resolver).

SMC / IMC MOTOR CONTROLLER

- Environmental monitoring – temperature of electronics
- Compact, light weight, designed specifically for purpose
- Standardized communications interfaces and protocols (CAN bus over MOD bus)
- No one atmosphere bottle needed.
- Oil-filled, Pressure Balanced
- Wide range of voltages and current capability

SMC / IMC MOTOR CONTROLLER

Communications - Simplified

- MODbus.....
- Open Standard
- Well Established
- Robust
- Plenty of good documentation
- Simple and Easy to Implement
- Light Weight – Runs on smallest controllers
- Suitable for Talk, Listen or Talk/Listen use
- Most importantly – simple to understand
- Information at <http://www.modbus.org>

SMC / IMC MOTOR CONTROLLER

With Simple, Direct Control.....

Enable Thruster

Set Thrust (Velocity/Torque)

Read Operational Data such as Voltage, RPM, Alarm Status

Read Service Data such as Running hours, shaft rotations, etc.

Write Configuration Data such as Operating modes, power limits, etc.

SMC / IMC MOTOR CONTROLLER

Control

- Electrical: CAN bus point to point electrical connection
 - A separate 12VDC LV supply used with the CAN bus allows independent powering of the control electronics. This enables the condition of the controller (and for the IMC the controller/motor) to be known without the HV being present. Communication of all of the motor parameters is possible, and RPM is also reported.
- Command: MOD bus set with defined command set including: Query, Action and Maintenance Commands.

SMC / IMC MOTOR CONTROLLER

Command

- Action Commands:
 - Thrust setting - Forward and Reverse, 0% to 100%
 - Safety Lockout (Manual)
 - Status query
- Status Messages:
 - Shaft RPM
 - Bus Voltage & Motor Current
 - Throttle/Thrust setting.

SMC / IMC MOTOR CONTROLLER

- Safety State Action:
 - Condition warnings (temperature, voltage, current)
 - Control System Connectivity Failure - Automatic shutdown

Innerspace Corp.

Specializes in the design and manufacture of Hydraulic & Electric Marine Thrusters whether they are custom or off the shelf. The company has at its disposal, the most advanced manufacturing techniques in conjunction with special purpose-built equipment. This ensures that customers receive innovative products of the very highest quality at a competitive price. Based in Covina, California.