

Research Program

60V/High Current Traction Inverter

Smart Control

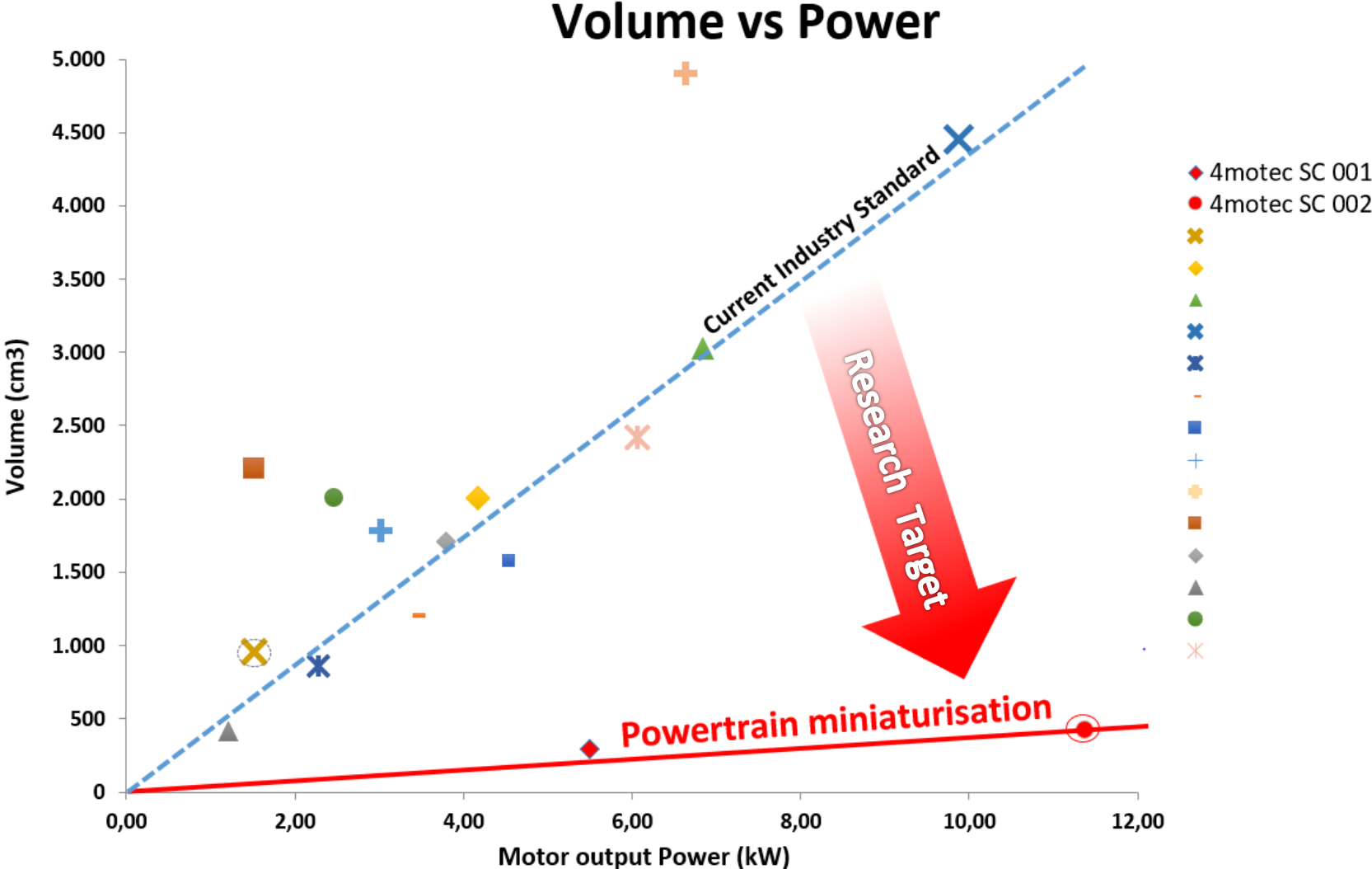
Gerald Poellmann
Gert Krammer

+43 618 20556016
office@4motec.com
www.4motec.com

Papiermuehlgasse 38/13/81
8020 Graz - Austria

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Competitor Comparison DC-AC Inverters < 10KW



The competitor analysis for DC-AC inverters up to 10KW (cont.) considers an average available battery voltage of 50,4 V

4motec solution includes already cooling requirements to achieve continuous power levels.

In case of some competitors an additional water cooling systems is required (app. further 2.500 cm³)

Postgraduate position - traction inverter research



Position:

We are working on a development target of 20KW/l power density for 60V traction inverters. This ambitious target has multiple impacts towards packaging, electrical safety, EMC and thermal management and requires unique state-of-art development for the system design, simulation and testing. We are focusing to integrate 1-2 postgraduate positions into our research work.

The PhD focus can be a topic out of below listed areas:

- Hardware design, simulation and testing:
 - Concept, design and simulation (parts of) of circuit diagram with Integration of an 3-Phase Galliumnitride bridge
 - EMC management/reduction methods considering size and switching frequency
- Software development
 - New concepts for FOC motor control on base of an 3-Phase Galliumnitride bridge
 - Integration of a SiliconLab processors (ARM Cortex M4)

Expected qualification:

- For SW development experience desired on FOC control of AC-Motors and with communication protocols like CAN
- For HW development and simulation experience desired on power electronics design
- Ideally experience with usual safety and quality norms
- Independent and structured working method

Organisation:

- Location either in Graz/Austria or Home University, depending on topic
- Form part of an high competent team
- Duration 12-24 months, start 09 2019
- PhD/working - language: English
- Compensation package depending on location, qualification and topic (In Graz usually starting with 1.300 EUR/month for full time engagement)