

Webinar Q&A - How to increase reliability & robustness for Industrial Motor Control?

July 21st, 2020

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Q: From your practical experience, which fails more frequently, an electric motor or its controller?

A: I don't know which fails first but with Transfer Molded Power Integrated Module (TM-PIM), the life time of the module is multiplied by 3 compare to regular Gel-Fill modules.

Q: What is the largest motor your customers have told you they were using?

A: In Schneider Pacy-France, in the showroom, there is a 2 m diameter motor...

Q: Can you comment on EMF and EMC specifications of the various motor drivers? And how does the housing affect EMF / EMC?

A: EMI are link to motor type, cable length and Inverter. For the inverter, dv/dt is the main contributor to EMI. As the gate driver and the gate resistor is outside the module, the customer can control EMI.

Q: How does the TMPIM package affect the parasitic inductance between the DC-link terminals, and high-side and low-side switches compared to other packages?

A: Inside the TM-PIM, leakage inductances are smaller than Gel-Fill modules because the TM-PIM is smaller. In the TM-PIM, the node to node maximum leakage inductances are lower than 20nH.

Q: How do the packages compare under extreme relative humidity?

A: Molding offers a better barrier than Gel. TM-PIM offers a better protection again humidity environment.

Q: How to dissipate the heat of the packaging?

A: The TM-PIM offers a direct interface (with DBC) to the heat sink. The 6mm Creepage between pins and package top allows the user to attach directly the heat sink without any spacing or isolation material. DBC offers a very low thermal impedance between dies to external surface.

Q: Is it possible to control the module through serial port? Or connected to an external microcontroller unit?

A: In general, the microcontroller will drive the gate drivers connected to the TM-PIM. There is no direct connection between the module and the microcontroller. The microcontroller makes the digital connection to the outside world.