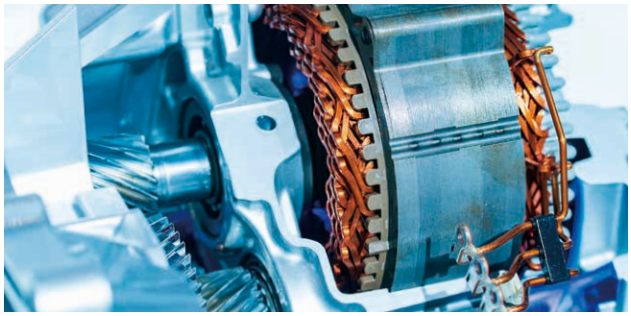
Application Note

— Example Applications —

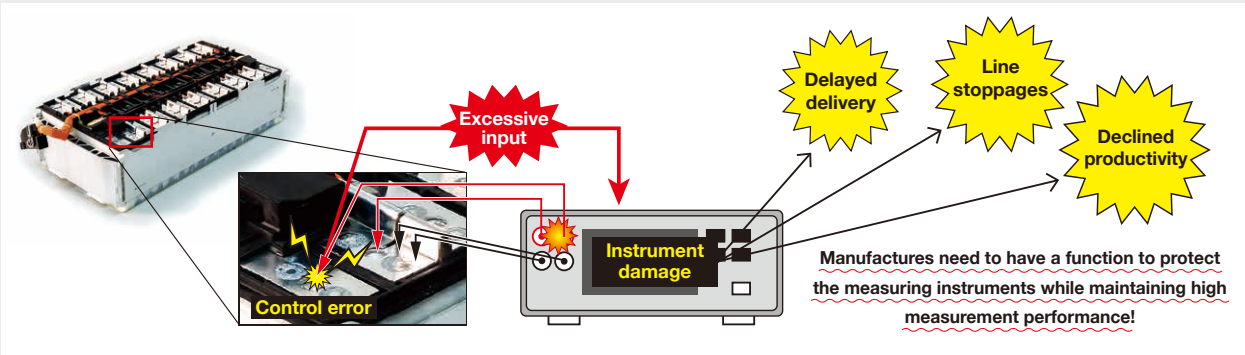
Measuring Battery Busbar Resistance Safely and with High Precision

Preventing instrument damage caused by excessive input

Since large currents flow inside components when automotive batteries are operating, heat loss due to the resistance component degrades energy efficiency. Heating caused by welding or connection defects in power lines, particularly busbars, causes battery degradation and poses a risk of fire. In order to improve the battery quality, it's necessary to implement a testing that can reliably detect welding defects. Because voltages can occur at locations where busbar welding resistance is being tested, it's essential to use instruments that can withstand excessive input.

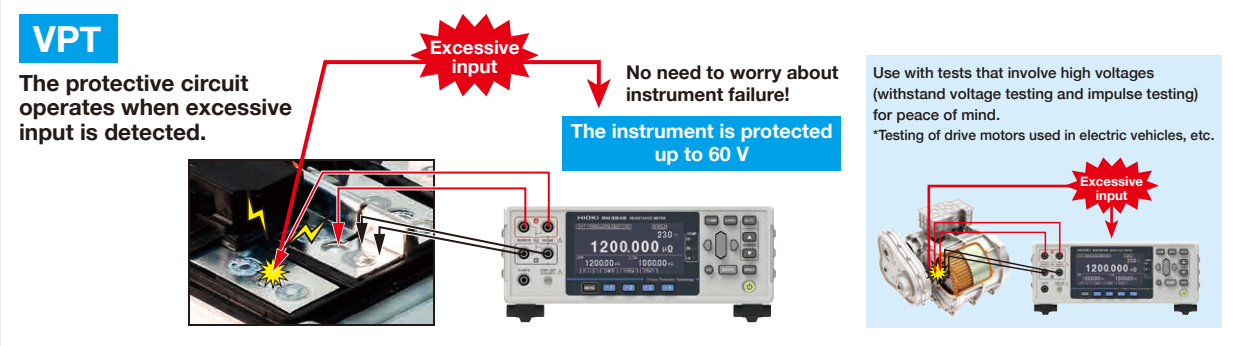


Issue Instruments can fail due to excessive input when measuring busbar resistance.



Voltages occur across battery pack busbars. Consequently, improper timing of probe contact can cause a voltage to be applied to the instrument. Excessive input has been known to damage conventional instruments. Instrument failures make inspection impossible, causing a production halt. In addition, the extra work necessitated by such problems, for example to switch over to a spare instrument, declines productivity.

Solution The RM3546's voltage protection technology (VPT) protects the instrument!



VPT provides a function to monitor withstand voltage and overvoltage input up to 60 V, allowing users to measure battery pack busbars that carry a voltage without worrying about instrument damage. The protective circuit operates when excessive input is detected, immediately stopping measurement. Measurement resumes automatically once the excessive input is no longer present.

Instrument used	**WELDING RESISTANCE METER RM3546**	Hioki product

HIOKI

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