



Future Truck Program Position Paper: 2004-2

Future Electrical Systems for Protection of Electronics Subsystems Against Momentary Low/No System Voltage

Developed by the Technology & Maintenance Council's (TMC)
Future Electrical/Electronics Task Force

ABSTRACT

Today's commercial vehicles feature many ancillary electronic devices, such as recorders, computers, satellite systems, fax machines, printers, etc. In some cases, memory loss and erratic operation of electronic sub-systems has occurred due to momentary low or no voltage levels. The trucking industry has expressed the need for further enhancements to eliminate the effects of low or no voltage. Any improvements made should not adversely affect, and must be compatible with other vehicle systems. This TMC Future Truck Program Position Paper describes the needs of fleets with respect to future electrical systems during the next 5-10 year time frame. It does not provide, nor recommend, specific solutions to satisfy these needs. Rather, it provides manufacturers an opportunity to develop and manufacture products for the trucking industry that meets fleet-driven expectations.

INTRODUCTION

This position paper covers three aspects of electrical protection:

- Performance Requirements
- Maintenance requirements
- Operational Requirements

I. PERFORMANCE REQUIREMENTS

A. System Voltage Potential

The trucking industry has a need for constant

system voltage during the various modes of vehicle operation. For example, engines starting at various ambient temperatures and battery conditions can experience low voltage due to the starter's high-current draw. To solve this, a protection system could be time sensitive and energized at some point after the engine starts. The vehicle manufacturer, in order to ensure that the end user has reliable vehicle electronic equipment, should incorporate proven solutions.

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II. MAINTENANCE REQUIREMENTS

A. Performance/Diagnostics

A system that protects against momentary system voltage reduction or loss should be an enhancement to the operation of the electronic subsystems. This may be done with the additional use of features, such as self-diagnostics.

B. Parts Availability

Future low-voltage protection components should be available at the same or better service level as compared with today's electrical system components.

C. Service

Low-voltage protection systems should provide fleets with simple self-diagnostics of operation. Additionally, the power tap off should be labeled on the vehicle for proper operation.

D. Training and Service Tools

The trucking industry requires enhanced stan-

dardized service tools and training methods that are easy to understand and follow. Service tools should work with truck communication systems and comply with TMC standards.

E. Diagnostics

Future low-voltage protection systems should use the vehicle's databus to signal self-diagnostic and warning capabilities to the operator.

III. OPERATIONAL REQUIREMENTS

A. Cost of Ownership

Future low-voltage protection systems need to improve fleet cost of ownership over the life of the vehicle.

B. Resale Value—Future electrical systems (including batteries) not only need to improve vehicle performance, maintenance and operation, they also should provide the fleet with equivalent or improved resale value. This should be accomplished without compromising reliability of other electrical components.

