

Application Guidance Notes: Technical Information from Cummins Generator Technologies

## AGN 140 – Mobile Generating Sets

### **DESCRIPTION**

There are no specific guidelines for using AvK or STAMFORD alternators for mobile plant. Guidance for such applications begins with a fundamental description of the type of mobile application. Once the application type is known, there is a need to consider operating parameters and environmental conditions. Mobile Generating Sets are normally used for one of the following applications:

- Mobile at Sea, which could be identified as one of the following;
  - Pleasure
  - Unclassified
  - Marine classified
  - Dock side crane, or barge mounted crane
  - Barge mounted power pack for unloading boats or supporting their electrical needs whilst at anchor, rather than alongside dock.
  
- Mobile on Road, which could be identified as one of the following;
  - Part of vehicle operating equipment, such as a refrigeration vehicle
  - Mobile plant trailer mounted and so high-speed towable, or military off-road towable
  - Containerised as part of a mobile hire/rental fleet
  
- Mobile on Rail track, which could be identified as one of the following;
  - Part of rail car and therefore, supporting passenger accommodation and so gently shunting and good quality tracks.
  - Part of rail truck and therefore, supporting freight, powering ACU equip and handling equipment and likely to get rough shunting and poor tracks.

- To provide tractive power for locomotive.

## **APPLICATION REQUIREMENTS**

Every type of 'mobile' plant is likely to be more stressful than a nicely installed 'fixed' Generating Set sitting in a well-controlled environment. To determine the correct type and size of alternator required, it is necessary to ascertain the actual use and to identify the following:

- The characteristics of the load(s), along with the duty cycle of the load.
- The ambient and environment conditions with regard to cooling and airborne contamination.
- The location of the Generating Set within the ship, vehicle or carriage.

It will then be possible to nominate a suitable alternator, and also provide advice on the mechanical construction, particularly:

- Preference for a single bearing or two bearing alternator.
- Cooling air control and management
- Special requirements for winding insulation system protection.

### **Mobile at Sea**

Refer to the guidance offered in AGN 014 – Marine Alternators and AGN 039 – Marine Shaft Alternators.

### **Mobile on Road**

There is particular concern regarding acceptable vibration and shock levels. Refer to the guidance offered in AGN 008 – Vibration Levels and Shock Loads. For off-road situations, the guidance offered in AGN 072 – Environmental Conditions should be considered, along with the guidance offered in AGN 041 – Operating Speed, if the Mobile Generating Set is to be used over a variable speed range.

### **Mobile on Rail**

Invariably, the provision of an alternator for use in a Mobile Generating Set intended for installation on a rail carriage, leads us to be concerned about the entire electrical system on the train. The electrical system must be designed specifically for the installation on the rail carriage and the individual application of the alternator/Generating Set. Refer to the guidance offered in AGN 186 – Rail Applications.

The alternator is only a small component part of that electrical system. To ensure the correct type and size of alternator for a rail application, there is, invariably, a need to send the customer our check list sheet. We need to know specific details of the application, to ensure our alternator is suitable for the load demands and environmental conditions. The Questionnaire Check List is available from [applications@cummins.com](mailto:applications@cummins.com).

Every rail application must be considered individually, to address any concerns about the installation and use of that alternator on its unique application. The starting point must be to ascertain the complete details of the application, from the response to the Questionnaire Check List. Particular consideration will begin with the same concerns as for using a Mobile Generating Set for a Road application – vibration levels and shock loading, environmental conditions and Mobile Generating Set operating speed.