

Application Guidance Notes: Technical Information from Cummins Generator Technologies

## AGN 091 – Disposal of Alternator Materials

### **LEGISLATIVE REQUIREMENTS**

Legislative requirements placed on manufacturers regarding the incorporation of any component part, or using a manufacturing process that contains or involves the use of an identified substance that has been identified as hazardous, is detailed in AGN 006 - Codes, Standards and Directives.

AGN 006 also provides guidance on the safe disposal of electrical power generation equipment at the end of their working life.

In support of the WEEE (Waste of Electrical and Electronic Equipment) Directive and the International Maritime Organisation (IMO) guidelines for material disposal declaration, commonly known as the Green Passport for Ships, this AGN provides greater detail on component part materials of the alternator, for safe disposal.

### **MATERIAL DISPOSAL**

AvK and STAMFORD alternators are manufactured from materials commonly used by any manufacturer of rotating electrical machines. No component part will become the subject of an extraordinary environmental issue at the end of its working life, at the point of disposal. The following information is offered in support:

- The mechanical construction is formed from components manufactured from steel, cast iron, aluminium, and solid - resin based - mouldings.

- The wound electrical components consist of electrical steels, copper wire, and solid electrical insulation materials. These electrical assemblies are then impregnated in a resin, which has been formulated for good electrical performance. This resin is heat cured as part of the manufacturing process. Therefore, this resin will be in the form of an inert encapsulation over the electrical windings before the alternator leaves the manufacturing plant. If a material or component recycling programme is considered to involve a material 'burn-out' process, then the appropriate and ruling industrial precautions must be taken.
- Most AvK and all STAMFORD alternators are designed to be 'open ventilated' and so indirectly cooled by ambient air. No part of the cooling system involves retained and sealed gasses or liquids. Some AvK alternators include an air-to-air heat exchanger or air-to-water cooler. No part of either of these cooling systems involves retained and sealed gasses or liquids, other than water.
- The alternator bearings are lubricated by a proprietary lubricating grease or oil, which will be present in the bearing housing, and any connected pipe work and cooling or jacking system.
- No part of the electrical insulation system incorporates electrical oils.
- No part of the electrical control system incorporates components that involve retained and sealed liquids.
- The Automatic Voltage Regulator [AVR] contains an electronic printed circuit board assembly of construction and materials commonly found in many electrical machines. Disposal of this assembly may need to be considered as a separate issue to the main alternator and should follow the prevailing legislation applicable to this type of product at time of disposal.

For disposal considerations, if a material or component recycling programme is considered involving a material 'burn-out' process, then the appropriate and ruling industrial precautions must be taken.

In summary; data analysis has concluded that AvK and STAMFORD alternators do not presently contain materials within the scope of equipment that is covered by the specified requirements of the WEEE Directive. To the best of our knowledge, AvK and STAMFORD alternators do not contain any traces of asbestos. A Green Passport statement, specific to the marine alternator supplied, is available on request, as appropriate.