Resources Regulator
Department of Regional NSW

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Use of alternative component parts in design registered plant (fit form function)

Position Paper

Introduction

Mine operators or persons in control of design registered plant are responsible for maintaining the plant in accordance with its design registration, item registration (where applicable) and the manufacturers recommendations.

Circumstances may exist or develop throughout the operating lifecycle of design registered plant, where the use of alternate parts[4] may be required for plant to remain operational or may present significant operational efficiency benefits.

The purpose of this position paper is to give practical guidance on the use of alternative component parts in design registered plant and the reasonable circumstances which should exist to justify the use of alternative parts.

Target audience

This information is directed to mine operators and persons in control of plant subject to design registration[1].

Design registration holders, Original Equipment Manufactures[2] and third party suppliers including recognised service facilities[3] may also find aspects of this explanatory note useful.

This paper should be read in conjunction with the information provided in the *Guide: Plant design and item registration for mines and petroleum sites*

Note 1: This includes item registration holders for BF, PWS and DES items as well as persons with management and control of design registered plant such as Transport Braking Systems. This note is not relevant for registered conveyor belt.

Note 2: For the purpose of this position paper, the OEM is usually the design registration holder and primary supplier of replacement spare parts.

Note 3: For the purpose of this position paper, ExDES (RSF) licensed facilities who provide non-genuine component parts are considered third party suppliers for the purpose of this explanatory note.

Changes to registered designs

When considering the use of alternate parts, the plant owner should first understand how the alternate part may affect health and safety. Guidance to undertake this assessment is provided in section 6 of Guide: Plant design and item registration for mines and petroleum sites.

Circumstances

Circumstances considered reasonable under which an alternate part[4] may be used are;

- If the alternative part has no requirement for testing, performance or analysis that is specified in the design order, or the standards called by the design order, or
- where the component part, at the field replacement part level, is no longer available, has been superseded by an equivalent, or is otherwise discontinued, or
- is a consumable part[5]

Note 4: A alternate part in this context is a part which is purchased and replaced in the field or a workshop. It should not require any assembly but may require adjustment (such as a valve).

Note 5: A part which is usually replaced multiple times between major overhauls of the plant are likely to be a consumable. Similarly, parts typically not reused at Code D overhaul such as gaskets, fasteners and seals would also likely be a consumable part.

Risk ownership

Mine operators or persons in control of design registered plant own the risks with respect to health and safety following a decision to use an alternate part.

Assessment overview

Alternative parts must be adequately assessed by a person or persons competent to make such an assessment. The assessment should ensure:

- appropriate circumstances exist for the use of the alternate part,
- the alternative part can be fitted in place of the original part without modifications,
- performance of the alternative part is at least equal to the original part,
- any applicable performance and testing specified in a design order has been undertaken on the alternate part,
- any other calculations, analysis or testing consistent with the duties of a designer under the Section 22 of the *Work Health and Safety Act 2011* has been performed and assessed, and
- no new risks have been introduced by the alternate part.

A concept principally intended to assist mine operators and person in control of design registered plant make an initial assessment of suitable alternate parts is the fit form function (FFF) concept.

Fit-form-function – A concept where an alternate part is used in place of the original part which fits in the same location without any other modifications, performs the same function as the original, and provides an equivalent standard of performance as the original across the same range of operating conditions, without introducing any additional risks to health and safety.

It should not be interpreted that the FFF concept extends beyond replacement parts to sub-assemblies, sub-systems or other (broader) alteration concepts.

Site change management protocols should be used for the introduction of alternate parts. Engineering files of the evidence used in the assessment and the results of that assessment should be kept. Plant safety file records and maintenance management systems should also be updated to reflect the changes made.

Mindset: Before introducing an alternate part, the person with management or control of the plant should obtain sufficient information about the alternate part and be satisfied that they could confidently apply for alteration of the registered design if they were the design registration holder.

Caution

Some parts may look the same but may be internally different.

Proprietary parts may have been subject to modification by the designer or equipment manufacturer that are not externally visible or readily identifiable. These differences may not be captured in a specification sheet provided by a potential alternate component supplier.

Additional guidance for design registration holders and suppliers

Design registration holders

If a design registration holder is considering a change to their registered design, they should take the appropriate action to maintain the accuracy of their registered design.

Design registration holders should follow the guidance offered in Section 6, *Guide: Plant design and item registration for mines and petroleum sites.*

Suppliers

Suppliers approached to supply alternate parts must provide all necessary information to the plant owner or person in control to allow for the assessment (described above) to be completed appropriately.

Questions and answers

1. Does this apply to certified electrical plant?

   Answer: No. Certified electrical equipment must remain compliant with electrical certification as required by WHS(MPS)R 2022 section 81.

2. We are a mine with a winder which has been design registered by the supplier. We have to change the electric motor due to failure and the specified replacement is not available. An alternative is available which is the same specification but not the same brand as the one identified on the design registration drawing. Can I use it under FFF?

   Answer: Yes. If the motor is assessed by a competent person as not adversely affecting health and safety, the owner may choose to use the alternate motor in this circumstance.

3. An OEM of an LHD with a TBS can't get the same axles anymore. Can they simply use FFF and supply different axles?

   Answer: No. New axles are not consumables and are a principal component in the brake system and outside the intended scope of the application in principle.

4. Does this apply to FRAS conveyor belt?

   Answer: No. FRAS conveyor belt may only be replaced using another design registered FRAS conveyor belt.

5. An underground coal mine has a fleet of diesel man transporters. The registration drawing calls for a particular aluminium sump but the OEM can't supply because the engine has been discontinued. Can we source an alternate sump?

   Answer: Yes. There are no specific design, testing or performance requirements for sumps. An assessment (see Assessment overview) must be undertaken and any other calculations, analysis or testing consistent with the duties of a designer under the Section 22 of the *Work Health and Safety Act 2011* must be performed.

6. We are an ExDES OEM. We have learned that next year we will no longer be able to get cast water jacketed exhaust manifolds from our existing supplier. Can we use FFF and supply alternate exhaust manifolds under our existing part number?

   Answer: No. After doing the work required to develop a new manifold, the registration holder should apply for an alteration to have the new part recognised as part of the registered design. The recent changes to the registration system regarding alterations simplifies this process.

7. An underground coal mine has been approached by a filter supplier to provide an alternative diesel exhaust filter to that listed on a ExDES Registration. The supplier provided information to satisfy a competent person that all necessary testing of the filter had been conducted such that the holder of the registration could, if given access to the intellectual property for the filter, apply for alteration of the registered design. Can the mine use the alternate filter?

   Answer: Yes. If the person in control of the plant is satisfied the assessment criteria for the use of alternate parts has been met, then the alternate filter may be used.