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# 2009

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Promosalons (UK) Ltd  
Tel: 020 8216 3100  
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# Predictable misuse and abuse

The new European Directive 2006/42/EC obliges suppliers of equipment to consider and make allowances for 'reasonably foreseeable misuse' in their products and manuals. In the following article Peter Reed, technical officer of the notified body PAC, sets out the differences between normal use, predictable misuse and abuse.



Peter Reed

## Abuse or foreseeable misuse

The Machinery Directive 98/37/EC states that manufacturers must consider not only the normal use of the machines they build but also any misuses which can reasonably be anticipated. This relates both to the safe design of the product and also when writing the operating instructions. This immediately raises the question with manufacturers as to what 'can reasonably be expected?' Or, put another way, where is the delineation between intended use, foreseeable misuse and abuse of the product?

## Intended use

Intended use is the use of the product for the purpose for which it was designed and in the way normally prescribed in the instructions. It is therefore important that this is stated in the instructions and also that any uses other than those stated are not permitted unless approved by the manufacturer.

Reasonably foreseeable misuse is defined in the new Directive 2006/42/EC as 'use of machinery in a way not intended in the instructions but which may result from readily predictable human

behaviour'. The key phrase here is human behaviour and the question that a manufacturer must ask therefore is 'is an operator likely to do this ...?'

Driving off without stowing the crane - predictable misuse?



We all know from experience that if there are two ways in which to undertake a particular task, the easiest or quickest method will usually be chosen. If either of these methods results in making the machine less safe, then measures should be introduced - designed in - to automatically prevent such a reduction in safety.

One example is a load sensing system, which prevents overloading and thus requires the operator to carry out several smaller, safe lifts rather than a single, potentially dangerous, lift. Such safety issues have been written into and become a requirement of harmonised standards such as EN280:2001. However, standards are not drawn up with every possible operating scenario in mind, which is where the manufacturer must undertake a risk assessment to determine any other limiting factors of the machines it designs and produces.



C&a

misuse/abuse

Predictable misuse? - Yes

On the other hand, the manufacturer cannot be expected to foresee every possible situation or the even the capabilities of every operator that uses the machine. If the manufacturer is able to demonstrate via, say, stability or structural calculations, that its product will remain safe even if not used exactly as intended, then that may be more acceptable than relying on an operator's judgement. Another way to look at it is to play the role of a safety inspector and ask the

Predictable? Yes



This can include deliberate actions taken by the operator to over-ride safety devices, thus deliberately making the machine less safe or the elaborate modification of the product to carry out a task for which it was clearly not designed.

On the other hand a manufacturer cannot be expected to indicate everything that is not permitted in the operator's manual as Abuse, and the same applies to prohibitions stated on decals on the machine. If potential misuse is predictable then it must be considered. Further background on foreseeable misuse will be included in the guidance to the new Machinery Directive, which is currently being drafted and will ultimately be available on-line.



Hard to predict this application!

## About the author

Peter Reed has a strong background in mechanical, electrical and structural engineering and spent 14 years with Grove as a design engineer and project manager with the Manlift Division. His responsibilities included the preparation of technical files for EC certification, providing an ideal stepping stone to joining a notified body that specialises in lifting equipment - PAC.

## So what is Abuse?

While the difference between foreseeable misuse and abuse can be the subject of debate, there are some cases that fall clearly into the 'Abuse' category. For example, foreseeable misuse does not preclude irrational behaviour, this is where actions taken by an operator falls clearly into the area of abuse.