PAC OVERVIEW

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MANAGING DIRECTORS MESSAGE

This edition of PAC Overview comes to you at the end of another difficult year for business worldwide; the difficulties for many heightened by the affects of bad weather, forest fires and military conflicts at a time when trust in politicians is at an all time low in almost every corner of the world.

Despite all these problems, there are signs that our industry, at last, is getting on top of the worst recession any of us have seen in our lifetime and we, at PAC, feel that we should do everything in our power to help our clients and our industry get back to normality just as soon as possible.

Thus, facing the implementation of the new EC Machinery Directive 2006/42/EC in January 2010, shortly to be followed by Amendment 2 to EN280, we have packed this issue with important information that all of you will need to absorb to ensure full compliance with all that Brussels has to throw at us in the coming months!

As a further gesture of our determination to keep costs to our clients to a minimum, all PAC staff have accepted a pay freeze for the coming year and we have frozen our fees for the next twelve months to the rates applicable in 2009.

We take this opportunity of wishing all our clients and friends a very happy Christmas and sincerely hope that you will find 2010 will witness the business revival we all so earnestly seek.

PAUL A ADORIAN
Managing Director

NEW MACHINERY DIRECTIVE

As many of you will know, the new European Directive on Machinery 2006/42/EC comes into force on the 29th December this year. PAC has now spent several months reviewing its client's technical files and certifications for those products that will continue in production after that date.

A large number of new certificates have now been issued following those reviews. To distinguish them from the previous certificates to Directive 98/37/EC, the new certificates issued to 2006/42/EC have been drawn up in a different design format.


EC Type Examination Certificate

Of course, at the same time as the new Directive comes into force, the old Directive 98/37/EC ceases to apply. Any EC Type Examination certificates issued to manufacturers stating the old Directive will be no longer be valid for those products manufactured after that date. This also means that manufacturers cannot refer to the old PAC certificate numbers on their EC Declarations of Conformity. In that respect, products sold after 29th December, must refer to the new certificate number, where issued. Declarations of Conformity must then be made to 2006/42/EC, replacing the reference to 98/37/EC.

It is also worth remembering that the new Directive requires the manufacturer to request a review of the certification every five years. Certificates issued to 2006/42/EC, therefore, include an expiry date, after which that certificate will no longer be valid for new products.

Reviews undertaken five years from now will need to take into account the latest versions of European standards published in the Official Journal at that time. This is likely to include the new version of EN 280 (currently in development), which will introduce several new safety requirements.

Manufacturers will be encouraged to work towards compliance with this revised standard once it has been agreed upon by the technical committee TC98.

PETER REED
Technical Officer

INTEGRITY OF SAFETY FUNCTIONS OF MEWPs

When designing the safety critical function of a machine, the designer should refer to the Type C standard for that type of equipment as this often specifies the required integrity of the safety related control systems. For example, Table 4 in clause 5.11 of EN 280(A1) specifies the EN 954-1 Category of twenty different safety functions in that Standard. However, there are some safety functions whose categories are not specified. Examples of these are tabulated below:-

Although these categories (or Performance Levels or Safety Integrity Levels) are not specified, Annex I of the new Machinery Directive 2006/42/EC requires a manufacturer or its authorised representative to carry out a risk assessment. The purpose of this "thinking outside of the box" approach is to try to identify and eliminate or reduce hazards at an early stage of the product development. It may also identify hazards that may not be covered by constructional requirements of the applicable Type-C standards.

In line with this new requirement, we recommend that the Failure Mode and Effects Analysis (FMEA) for the machine addresses these safety functions. Additionally, guidance for determining the required integrity may be sought from EN ISO 13849-1: 2008 Annex A or EN 62061: 2005 Annex A. The required integrity depends on factors such as:

- likelihood of failure
- consequence of failure
- severity of injury
- possibility of avoidance
- external factors

The required integrity cannot normally be applied for a given safety function for all machines. To illustrate this, a manufacturer may have an issue with nuisance tripping of the load sense on a particular machine hence this will require a more reliable emergency lowering function than a machine which does not have this problem.

Please do not hesitate to contact us to for further guidance.

DARREN GIBSON
Technical Officer

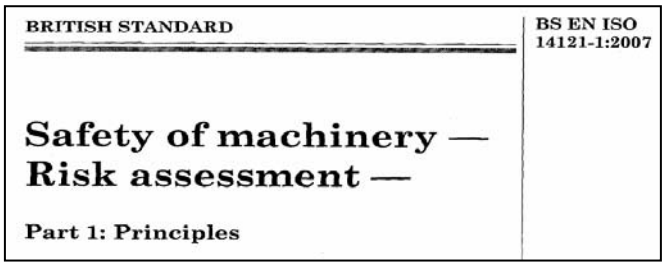
Safety Function	EN 280(A1) Clause
Emergency Stop	5.7.5
Prevention of Start-up on Restoration of Power After Power Failure	5.7.7
Emergency Lowering	5.7.8
Prevention of Excess Speed of Movement	5.7.9
Spurious Movement Due to Failure of Controls	Not specified

MORE EMPHASIS ON RISK ASSESSMENT

Annex VII of the new Machinery Directive 2006/42/EC describes the requirements for technical files for machinery.

One of the major changes between this and the previous Directive 98/37/EC is that now the full documentation on risk assessment is required in the technical file.

Normally, a product falling within the scope of EN 280:2001 would need to address those hazards listed in Table 1 of the standard. Other products, would either refer to the relevant list of hazards in a more appropriate standard or, alternatively, directly address the EHSRs within Annex I of the Directive.


BRITISH STANDARD

BS EN ISO 14121-1:2007

Safety of machinery — Risk assessment —

Part 1: Principles

The protective measures implemented to *remove* or *reduce* the hazards must be described as part of the risk assessment. Often, *residual risks* may still remain, which may also need to be considered.

EN 14121-1:2007 is a European standard dedicated to principles of risk assessment when applied to machinery. One section within this standard describes the documentation that should be created to demonstrate the safety of the machinery. This is exactly the type of documentation that should be included in the technical file for that product.

Additional validation may also be required using EN 13849 parts 1 and 2, for safety related systems. This often requires an FMEA (Failure Mode Effects Analysis) to be undertaken, to demonstrate that the machine remains safe in the event of a failure.

PETER REED
Technical Officer

AMENDMENT A2 TO EN280:2001

The amendment A2 to EN 280 will soon be published in the Official Journal of the EU. By doing so it adds certain specific requirements to areas such as guarding, instructions and marking.

Guards, for example, which are intended to be removed regularly, either for maintenance or regular operational activity, must utilise fastenings which remain either attached to the guard or the machine when the guard is removed. This then prevents loose parts (e.g. nuts, bolts, pins) from becoming lost and potentially creating an unsafe machine by not having those guards properly secured.

Additional requirements for the operating instructions include methods to be followed in the event of an accident or breakdown. What, for example, should an operator do if he discovers damage to the machine during his daily inspection, or if this damage occurs during actual use.

Procedures required if the machine breaks down (and potentially leaves an operator stranded at height) also need to be included.

If a machine relies on certain components, such as batteries in the chassis, for stability then the specification of these should be included. It goes without saying as to the implications of someone unknowingly replacing such items with those of a lesser weight.

A test report demonstrating 'fitness for purpose' is now also required as part of the instructions. This may take the form of a statement within the actual operator's manual, or perhaps an actual certificate accompanying the instructions when the machine is sold.

As regards marking of the machinery, for those manufacturers located outside Europe the name plate affixed to the machine must now include the name and address of their representative in Europe. The year of construction, that is the year in which the manufacturing process was completed and it entered the supply chain must also be indicated.

These specific additions ensure that the amended standard incorporates the modified Essential Health & Safety Requirements of Directive 2006/42/EC. It also ensures that the amended standard can be used to presume conformity with the provisions of the new Directive.

PETER REED
Technical Officer

FURTHER UPDATE ON THE REVISION OF EN 280

The public comment stage of the full revision of EN 280 ended in October this year, with a total of 200 comments being submitted by 17 EU Member States. These were a mixture of editorial and technical comments, the majority of which were submitted by just six countries – France, Germany, Italy, the Netherlands, Sweden and the United Kingdom. The comments will be considered by CENTC98/WG1, the Working Group responsible for the revision of EN280, in the first quarter of 2010 and a final draft prepared for Formal Vote by the Member States of the EU.

During the preparation of the final draft the CEN consultant will examine the draft to ensure that it meets the Essential Health and Safety Requirements of the Machinery Directive. Once the CEN Consultant's work has been completed and any queries dealt with, the Formal Vote process will begin. Voting is carried out using the Qualified Majority Voting system, whereby voting is weighted according to the population of each Member State.

If the Formal Vote is positive, the standard will be prepared for publication by the national standards organisation of each Member State and reference to the standard will be published in the EU Official Journal. This will signify that it is a "harmonised" standard and that compliance with the standard will give a "presumption of conformity" with the Machinery Directive. On the other hand, if the vote is negative the Working Group will have to review the objections of those Member States who voted against the draft and revise the document to overcome these objections. Once a new draft has been completed, the Formal Vote process will begin again.

It is very much hoped that the revision to EN 280 will get a positive vote first time around, in which case the revised standard should be published in 2012.

TIM WATSON
Technical Director

ELECTROMAGNETIC COMPATIBILITY (EMC) AND MEWPs

"Which EMC standards do I apply to my machine?"

This is a question that we are commonly asked. The main family of standards that apply to these machines is the EN 61000-6 series and these group together individual tests for immunity and emissions. The emissions for a machine expected to operate in a commercial or light industrial environment are more stringent than those for a heavy industrial environment, whereas the machine has to withstand higher immunity levels if it is to be used in a heavy industrial environment. Shown below is the outcome for applying the various combinations of these standards.

There may be situations where the equipment may be exposed to electromagnetic fields that are higher than the ones specified in the above standards. Examples include MEWPs used in smelters or near to power lines. Such equipment may require testing to enhanced immunity levels as Annex I Clause 1(b) of the EMC Directive 2004/108/EC states that equipment must have "a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use." Also, where safety-critical electronic control circuits are present, EN 62061: 2005 Annex E recommends testing to enhanced immunity levels.

Another point to note is that the latest versions of the generic immunity standards, EN 61000-6-1: 2007 and EN 61000-6-2: 2005 now require radiated immunity testing to be carried out between 1.4GHz and 2.7GHz. This new requirement must be applied to existing equipment as the electromagnetic environment becomes more harsh as due to the increasing use of equipment such as mobile telephones.

"What should be the mode of operation of the machine when the machine is tested?"

This is another question that we are often asked. For emissions testing, this should be the worst case condition which is typically with the machine moving. For the immunity tests, this should be the dangerous condition which is typically unwanted movement. Tests in more than one mode of operation may be required for some machines.

Please do not hesitate to contact Darren Gibson (darren@pac.uk.com) for further information.

DARREN GIBSON
Technical Officer

Situation	Emissions Standard	Immunity Standard	Environment of operation	Comments
1	EN 61000-6-3 (Light industrial)	EN 61000-6-2 (Heavy industrial)	All	Best possible situation. Machine can be operated in both environments
2	EN 61000-6-4 (Heavy industrial)	EN 61000-6-2 (Heavy industrial)	Heavy industrial	2nd best situation. Machine can be used in an industrial environment.
3	EN 61000-6-3 (Light industrial)	EN 61000-6-1 (Light industrial)	Light industrial and commercial	Machine limited to light industrial and commercial environment.
4	EN 61000-6-4 (Heavy industrial)	EN 61000-6-1 (Light industrial)	None	**Cannot be used –emissions too high for commercial, too susceptible for heavy industrial**

AIRCRAFT GROUND SUPPORT EQUIPMENT

The introduction of the new Machinery Directive has meant that many European harmonised standards have had to be amended, in order that they can be continued to be used as a presumption of conformity. Among the standards amended are those relating to Aircraft Ground Support Equipment (GSE). The prominent European standards for this type of equipment are the EN 1915 and EN 12312 series.

EN 1915 comprises four parts, dealing with the requirements for basic safety, stability, strength, noise and vibration. The EN 12312 series deals with specific types of GSE. Where the lifting of persons is concerned, Part 6 deals with de-icing equipment and Part 8 platforms used for maintenance activities. Each of these standards has been amended recently, prior to the switch-over date for the new Machinery Directive on 29th December 2009.

What are the changes, you may well ask? Firstly, as is the case with all amendments, references to other European & ISO standards have been updated, deleting those which have now been superseded. Secondly, since there have been a number of changes to the essential health & safety requirements of the new Directive, these changes have had a knock-on effect on the safety requirements of GSE. The main changes are only briefly mentioned in this article, however for manufacturers of this type of equipment it is recommended the latest versions of the standards are obtained.

Taking EN 1915-1 first, additional requirements have been introduced for the reversing of self-propelled GSE and the provision of optical/acoustic warning devices. For equipment lifting persons utilising chains or ropes, two such systems must now be provided. There are also now more specific requirements for information to be stated on the manufacturer's nameplate, and that which must appear in the instructions. An important addition is the requirement for a test report detailing static and dynamic tests, which must be provided with the instructions. This requirement is identical to that in the amended EN 280 standard.

Fortunately, the amendment to EN 1915 Part 2 does not introduce additional requirements for strength and stability of GSE, but only updates references to other relevant European standards.

Other than updated references, Parts 6 & 8 of EN 12312 have got off lightly and the do not require any additional safety measures. One important standard referenced, however, is that which deals with emergency stop equipment, EN ISO 13850 which has superseded EN 418.

As a postscript, it should be noted that although EN 280:2001 excludes from its scope 'aircraft GSE', manufacturers would do well to use it as a guide for requirements for equipment for lifting persons. Importantly, if the product is to be used outside of the airport environment, or for other activities, then the requirements of EN 280 must also be considered.

PETER REED
Technical Officer

MACHINES IN STOCK AT 29TH DECEMBER, 2009

Hopefully, all manufacturers are by now well aware of the change from the current Machinery Directive 98/37/EC to the new Machinery Directive 2006/42/EC on the 29th December this year. After that date only machines type approved to the new Directive can be placed on the market in the European Union.

One question that comes up very frequently is what happens to machines in stock that were manufactured before the changeover date to the old Directive? Can they be sold after the 29th of December with a Declaration of Conformity to 98/37/EC or do they have to be upgraded to the new Directive and supplied with a Declaration of Conformity to 2006/42/EC?

Having consulted the UK Government department responsible for the Machinery Directive, the Department of Business, Innovation and Skills (BIS), they have told us that:-

"The view of BIS is that if a product has been manufactured, and has entered the supply chain, before 29 December 09 then the applicable directive is 98/37. Where a product is manufactured, and enters the supply chain on/after the 29/12 Directive 2006/42 applies".

This means that provided the manufacturing process has been completed before 29th December 2009 and the machine is in stock ready to be sold, it falls under the current Directive 98/37/EC and can be supplied with a Declaration of Conformity to that Directive. Where the manufacturing process has not been completed before 29th December 2009 then the machine must comply with the new Directive 2006/42/EC and be supplied with a Declaration of Conformity to the new Directive.

TIM WATSON
Technical Director

DISMANTLING AND DISPOSAL

In this world where everyone is becoming much more aware of environmental issues, the question must arise 'what happens to a MEWP when it reaches the end of its useful life?'. The Machinery Directive 2006/42/EC requires that any risks arising throughout the foreseeable lifetime of the machinery are addressed. This also includes the phases of 'dismantling, disabling and scrapping'.

Therefore, not only must a manufacturer consider risks associated with normal use but also any which may arise when the machine is dismantled or when its components are disposed of. One may ask, for example, 'are there any hazardous materials that make up this machine?' 'Do certain components of the MEWP need to be disposed of in a specific manner?' and perhaps the most important question of all – 'which components can be recycled?'

A typical MEWP may be made up from a combination of steel, aluminium, polymers, elastomers and fluids, not to mention a number of others. Scrapping a machine at the end of its life may raise questions as to its composition, which parts can be recycled and which must be carefully disposed of. Certainly, batteries and hydraulic oil have a significant impact on the environment if not disposed of correctly. The manufacturer may have to ask himself or herself whether any components can be re-used, recycled or require specialist disposal.

Although EN280:2001 does not contain specific requirements on instructions for dismantling or disposal, EN ISO 12100 Part 2 does. This Type A standard, covering basic safety for machinery, requires that the 'information for use' (i.e. the operating, maintenance and service instructions), contains this type of information.

Manufacturers should therefore consider what materials constitute the make-up of their product and provide this data in their instructions. This information will prove valuable for anyone ultimately faced with scrapping the machine. It will also provide the basis of what can be recycled and which materials must be correctly disposed of, especially those which may be harmful to the environment.

PETER REED
Technical Officer

A COMPETITION FOR ENQUIRING MINDS

Have you ever wondered why the decision makers in Brussels decided to chose Sunday, the 29th December, 2009 as the cut-off date for EC Type Examination Certificates issued to 98/37/EC, as opposed to the end of year?

We were sufficiently intrigued by this example of Brussels bureaucracy to address the question to our friends at BIS (Department for Business Innovation and Skills), formerly known as BERR (Department for Business Enterprise & Regulatory Reform), which started life as the DTI (Department of Trade and Industry) who, to our surprise, speedily responded with a concise answer to the riddle, which, of course, would have been obvious had we really thought about it seriously!

We will be offering three prizes of scale models of MEWPs to the first three correct answers to this Brussels inspired riddle received in our offices no later than midnight on Tuesday, 5th January, 2010. (You may also guess why we have picked that date as the deadline for answers!).

Entries will be accepted from anyone in the powered access industry, with the exception of employees at BIS (Department for Business Innovation and Skills), who would have an unfair advantage as they understand what goes on in Brussels.

Get your thinking caps on – think laterally. Best of luck.

PAUL A ADORIAN
Managing Director

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Merry Christmas and a Happy New Year to all our readers.