

New guidance notes for inspecting power presses and associated guarded plant provide useful insights into how best to mitigate risk. John Baxter explains

Pointers

- Risk assessment is key: for example, a fixed guard on a machine is subject to less deterioration than a moving guard, provides greater protection and so needs less frequent inspections by a less competent person
- Machinery guarded by light guards provides no physical barrier, so presents high risk to an operator – meaning that the architecture and integrity of the whole system needs to be fail-safe, with periodic tests carried out by a competent person, using calibrated equipment

Power presses, like most big mechanical plant, have been operated subject to regular mandatory inspections for many years. But there's a problem: the approaches taken to those inspections have varied, according both to the inspection company and the equipment itself.

That's not altogether surprising. On the one hand, the detail of the inspections required, as expressed in the Provision and Use of Work Equipment Regulations 1998 act (PUWER), is open to interpretation. On the other we're talking about a wide range of machines, including, for example, hydraulic and pneumatic presses and press brakes. Also, power presses are not all the scruffy, thumping machines of old: modern plant is much quieter, but also inherently safer and technologically more advanced than its predecessors.

However, from a risk perspective, there is great value in generic procedures and practices with tight guidance. Relevant and unified policies – unambiguously expressed and properly documented – reduce risk and enhance safety. So it's interesting to look at the forthcoming guidance from the Safety Assessment Federation (SAFed), which aims to achieve precisely that for all power presses and associated plant, by defining an agreed methodology for every engineer surveyor.

'PPC03, a common approach to the thorough

or press brake for the working of metal by means of tools, or for die proving, which is power-driven and embodies a flywheel and clutch'. For the record, the legislation calls for a 'thorough examination' by a competent person (meaning an engineer surveyor) following installation or relocation, exceptional circumstances liable to jeopardise safe use, as well as periodically – specifically 12 monthly when using fixed guards or closed tools, but six-monthly for all other forms of guarding.

Under PPC03, there are some important changes. For example, looking at supplementary testing, power press engineer surveyors already carry out periodic non-destructive testing (NDT) in the form of magnetic particle inspection (MPI) on the clutch key, if it is a full revolution press – but MPI isn't routinely carried out on other components. Given that MPI is critical in mitigating single-mode failures with parts such as the clutch key – but also mating components, the extraction device and the pitman ball screw that connects between the con-rod and the slide/ram – from now on all these components must also be subject to MPI.

Similarly, periodic dismantling of part revolution presses that do not use a clutch key has always been included in supplementary testing. PPC03 reinforces this, recognising that wet or dry friction clutches need to be routinely dismantled to

Power of

examination of power presses', from SAFed's TC7 (Technical Committee 7), is the eagerly awaited publication, now endorsed by the HSE. TC7 believes it will work, not least because it incorporates parts from other guidance documents – in particular, providing useful appendices covering similar machines. There will also be an agreed proforma for power press electrical inspection and test certificates – the cause of much debate since the introduction of this requirement under HSE guidance, 'HSG236 power presses: maintenance and thorough examination', in January 2003.

First, a little background. All power presses supplied within the European Community since 1 January 1995 must be CE marked, in accordance with the Machinery Directive. Just as important, all such plant and its guards are covered by part IV of PUWER, which defines the equipment as 'a press

determine the condition of normally enclosed and unseen components that, should they fail, could cause an uncovenanted stroke.

Meanwhile, to minimise operational risk, PPC03 borrows from INDG316 'Procedures for daily inspection and testing of mechanical power presses and press brakes', which guides an in-house person to sign the 'guards certificate', confirming integrity of the guarding systems within the first four hours of every working period, as well as after tool-setting or adjustment. It's also structured to match the processes an engineer surveyor follows during formal inspections – taking the safest state (at rest) first, before moving on to testing the press at work.

As for electrical inspection and testing, the simplified power press electrical test certificate, now included in PPC03's appendix, contains a declaration in which the person carrying out the

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testing states whether or not the two main classes of circuits – power and control – were satisfactory. The certificate goes on to itemise the components of both power supply and control system that must be examined before testing, in order to ensure that no danger arises from the test itself. And there is now space to document the test equipment serial number and calibration dates.

Additional testing


The test schedule also highlights the types of circuits to be tested: emergency stop, guard and run circuits. The two test types are: continuity, to ensure that all connections are full and secure; and insulation resistance, to ensure that all cable insulation is complete and in good condition, and that a short circuit or earth fault is not imminent.

Existing SAFed documents CAC01 and CAC02 – for the engineer surveyor and client respectively – are also in the appendix, the intention being to explain the kinds of documentation and data sources acceptable. Engineer surveyors mainly want information pertaining to mechanical, electrical or NDT supplementary testing, but CAC02 also outlines the responsibilities of the client in terms of ensuring that contractors working on power presses and machines can demonstrate competence and appropriate qualifications.

PPC03 also reflects the fact that SAFed's power press engineer surveyors regularly inspect machines that are not power presses, and so use protective devices not usually encountered. Its

the press

appendix includes technical information on pressure-sensitive mats, programmable laser scanners, laser active optoelectronic protective devices (AOPDs), which move with the machine beam on hydraulic press brakes, and two-hand control devices. It's another important step in enabling all engineer surveyors to adopt a common approach, even when presented with new technology and unusual practices.

Finally, it's worth noting that other forms of guarded machinery are covered by Part II of PUWER, which calls for the lesser requirement of an inspection, with periods arrived at through risk assessment – although often following those on power presses. Hydraulic and pneumatic presses, and press brakes fall into this category, and the assessment needs to examine deterioration rates and complexity of the machine and guarding. 

Jon Arnold

Advice and guidance

For advice on power presses and guarded machinery, go to SAFed at +44(0)20 7403 0987 or visit www.safed.co.uk. Alternatively, visit www.hsebooks.com for 'HSG236 Power presses: maintenance and thorough examination' (£8.50); 'L112 Safe use of power presses' (£6.00); 'INDG316 Procedures for daily inspection and testing of mechanical power presses and press brakes' (free); 'L22 Safe use of work equipment' (£8.00); and 'HSG180 Application of electro-sensitive protective equipment using light curtains and light beam devices to machinery' (£7.95).

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