Revision of the Machinery Directive

The New Approach's basic tools for ensuring the free movement of safe machinery - the Machinery Directive and harmonised standard EN 292 Safety of Machinery - are currently under scrutiny by the European engineering community. The Commission has recently put up a proposal to the Council to overhaul the Machinery Directive[1]. The document was made available to all stakeholders at the beginning of 2001 on Directorate General Enterprise's web site[2].

The basic technical standard for the safety of machinery - EN 292 - is at present under revision by the Special Group set up within CEN Technical Committee TC 114, Safety of Machinery (see "EN 292: the internationalization challenge", p. 35). This key document was drawn up under a mandate handed to CEN by the European Commission and supports the essential health and safety requirements (EHSRs) for the design and construction of machinery and safety components, introduced in Annex I of the Machinery Directive.

Between them, these documents lay down technical rules and regulations which affect mechanical engineering right across the board. They apply to nearly all stationary and movable machinery for commercial, industrial and private use.

The Machinery Directive, in particular, sets legal requirements that affect the health and safety of millions of machinery operators across Europe. It provides a benchmark for devising a common vocabulary on accident prevention and the improvement of working conditions.

This makes it essential for trade unions to have a say in the discussions around these two key documents, to hammer home the top priority - the highest standard of health and safety protection for workers.

Taking stock

Many machine manufacturers and buyers are now aware of the Machinery Directive as they gather experience of how it works in practice. Inspection bodies, and national and European institutions, on the other hand, have built up significant experience as a result of their involvement in the operation of the Directive since it became fully applicable to all types of machines in 1995. The free movement of goods and the removal of technical barriers to trade have received a positive boost. But in all that time, no systematic assessment of what the Machinery Directive has meant for the safety and health of workers in Europe has ever been done, and high machinery-related accident and injury rates continue unabated in many European countries.

One fundamental issue is whether a revision of the Directive is desirable or not. In attempting to answer this, it will be useful to refer to the experience gained since the Directive came into force. In this context, the Molitor Report, the 'Questions and Answers' from Member States, the technical data sheets from Notified Bodies, prosecutions in relation to machinery and actions against mandated standards represent "the state of play so far" on the Machinery Directive, and - as such - will be briefly analysed.

The **Molitor Group** was set up in 1994 by the Commission in order to assess the impact of Community and national legislation on employment and competitiveness, and to frame recommendations based on its assessment[3]. At that time the Machinery Directive, which was one of the objects of study, had not yet been transposed in all Member States. The Molitor Group failed to reach a general consensus, however, and ended up by putting forward to the Commission a string of non-consensus proposals, including:

- to clarify the definitions and scope of the Machinery Directive;
- to simplify the assessment procedure for placing machinery on the market;
- to bring down the cost of making machinery compliant;
- to remove uncertainties caused by overlapping between different directives.

Not all proposals were accepted by the Commission, which - however - expressed a positive opinion[4] on the Group's analysis.

The ***Questions and Answers*** report contains problems and solutions emerging from the meetings of various working groups of member states' experts. The document shows diverging interpretations on several topics, ranging from the scope to market surveillance, from the duties of notified bodies to the interconnections with other directives, and finally from safety components to second-hand machinery. The Commission published questions and answers in the document "Useful Facts in Relation to Directive 98/37/EC", which also contains a number of *information sheets* elaborated by the European Co-ordination of Notified Bodies for Machinery and Safety Components in order to help them in verifying products in accordance with the Directive's requirements. This information - endorsed by the Member States - along with technical details in relation to specific products (woodworking machines, safety components, presses, etc.), also contains evidence of uncertainties on key procedural aspects: how to assess the safety of a product not designed in line with harmonised standards; how to manage failings detected in standards; how far should the Notified

[1] This article refers to document COM (2000) 899 final of 26 January 2001. The process of revising the Machinery Directive started 3 years ago. Past TUTB comments on the revision of the directive can be found in "Overhauling the Machinery Directive", *TUTB Newsletter* n° 11-12, June 1999, pp. 6-9.

[2] http://europa.eu.int/comm/enterprise/mechan_equipment/machinery/direct/proposal.htm

[3] See "Molitor Group: deregulation assault on health and safety", in *TUTB Newsletter* n° 1, October 1995, pp. 2-3.

[4] Doc. SEC[95] 2121 final.

Body check the manufacturer's declarations in an EC type-examination, etc.

Published annually, *Questions and Answers*, plus the information sheets from Notified Bodies, represent 'living documents' subject to continuous modification and, as such, not binding *important opinions* to be used as guidance.

As well as **safeguard clauses**[5] against specific machines and safeguard actions against harmonised standards, appeals can also be made against standards moving to the Formal Vote stage which precedes ratification and subsequent publication in the *Official Journal*. These appeals are important as being directly associated with a potential safeguard action against the published standard.

Around 17 harmonised standards and draft standards (prEN) have been challenged to date by one or more national authorities following serious accidents to workers using work equipment designed in compliance with those standards (see box).

Appeals and safeguard actions against standards provide a significant insight into the European standardisation process. Standards are a ground for compromises where harmonization of design solutions is often the result of contingent circumstances (i.e. the availability of resources or the interest in a particular manufacturing sector). The difficulty of reaching common agreements and ensuring full participation by all stakeholders often results in solutions which might not best address workers and consumers' expectations.

Unfortunately, New Approach Directives do not provide a procedure by which for public authorities to verify or approve either at Community or national level the contents of harmonized standards which have been adopted with the procedural guarantees of the standardization process. There is no provision for systematic verification of the technical contents of harmonised standards.

The Market

The Machinery Directive allows self-certification of almost 95% of all machines sold in Europe: manufacturers can perform their own testing and maintain their own Technical File, and apply the CE mark themselves. Third party certification is required for machines which are considered to be especially dangerous, and listed in the section known simply as Annex IV. It lists devices that cut, compress and inject, but this is far from covering all machines capable of causing serious injury or death. As a result, manufacturers of most of the machinery placed on the market will not have to prove how design measures meet the essential requirements. The health and safety of millions of machinery operators largely depends on manufacturers' sense of responsibility.

European standards and draft standards submitted to the safeguard clause

- **prEN 12622**: "Press brakes"
- **EN 81-3**:2000 "Safety rules for the construction and installation of lifts - Part 3: Electric and hydraulic service lifts"
- **EN 692**:1996 "Mechanical presses - Safety"
- **EN 848-3**:1999 "Safety of woodworking machines - One sided moulding machines with rotating tool - Part 3: Numerical Control boring machines and routing machines"
- **EN 1501-1**:1998 "Refuse collection vehicles and their associates lifting devices - General requirements and safety requirements - Part 1: Rear-end loaded refuse collection vehicles"
- **prEN 12999**: "Cranes - Loader Cranes"
- **EN 11681-2**: 1998 "Machinery for forestry - Portable chain saw - Safety requirements and testing - Part 2: Chain saw for tree service"
- **EN 708**:1996 "Agricultural machinery - Soil working machines with powered tools - Safety"
- **EN 693**: "Machine tools - Hydraulic presses"
- **EN 703**:1995 "Agricultural machinery - Silage cutters - Safety"
- **prEN 280**: "Lifting platforms"
- **prEN 12750**: "Safety of woodworking machines - Four sided moulding machines"
- **prEN 12609**:1996 "Truck mixers - Safety requirements"
- **prEN 1551**:2000 "Safety of industrial trucks - Self-propelled trucks over 10000 kg capacity"
- **prEN 1459**:1998 "Safety of industrial trucks - Self-propelled variable reach trucks"
- **EN 1726-1**:1998 "Safety of industrial trucks - Self-propelled trucks up to and including 10000 kg capacity and industrial tractors with a drawbar pull up to and including 20000 N - Part 1: General requirements"
- **prEN 12840**: "Machine tools - Safety - Manually controlled turning machines with or without automatic control"

[5] See "Standardization of mechanical presses litmus test of the working of the Single Market" and "France invokes safeguard clause against a European standard", *TUTB Newsletter* n° 5, February 1997, p. 1 and pp. 13-16; "The United Kingdom's safeguard clause on EN 708 - Agricultural machinery", *TUTB Newsletter* n° 10, December 1998, pp. 12-13.

The Commission proposal

Scope

The directive's scope and definitions have been substantially revised. New products now covered by the directive include construction site hoists, devices for lifting of persons with reduced mobility, and cartridge-operated fixing devices. On the other hand, a series of products are now excluded from its scope: motors of all types and industrial plants taken as a whole, among others.

The proposal includes major amendments for two categories of products - safety components and partly-completed machinery - and adds a new category of products: machinery which present no risks to safety and health. These three topics will be looked at in detail.

The existing Directive identifies **safety components** as components intended to perform a safety function, whose malfunction may cause danger to exposed persons. When placed separately on the market, safety components are subject to the same certification procedures applicable to machinery, but they do not bear the CE marking under the Machinery Directive[6]. The new proposal replaces the definition with an exhaustive and restrictive list of safety components (which the Machinery Committee set up by the directive will have the power to amend). Unlike the consolidated directive, safety components are now defined as "machinery". When placed separately on the market, they are subject to the same certification procedures as machinery.

The existing directive allows free movement of machinery intended to be incorporated into machinery or assembled with other machinery, provided the manufacturer attaches to them a "declaration of incorporation". They do not bear the CE marking under the Machinery Directive. In the document *Comments on Directive 98/37/EC*[7], they are defined as *quasi-machinery* (comment No. 133). In the new proposal, quasi-machinery is now a new object expressly described as *partly completed machinery*. These products are defined as virtually completed machinery which cannot perform a specific application: the directive will not apply to them in its entirety. As in the consolidated text, they benefit from free movement when accompanied by a "declaration of incorporation". The, manufacturer will also have to provide a "notice of assembly" containing instructions for their safe incorporation into the final system.

The new proposal permits machinery for which a risk analysis demonstrates the absence of any intrinsic safety and health hazard to move freely. But the manufacturer must affix the CE marking on the product, and keep the risk analysis available for inspection by competent national authorities.

Legal provisions: Member States

Cooperation between national competent authorities is now emphasized. Article 19 invites Member States to exchange information with one another to achieve uniform application of the directive. Article 18 specifies that Member States should divulge information pertinent to the safety and health protection of persons, even if covered by professional secrecy.

Finally, relevant national provisions on the installation and use of machinery will be given visibility at European level. Article 15 now invites Member States to provide all stakeholders concerned and the Commission with information on their regulatory framework and future strategies on this subject.

Legal provisions: Manufacturers

The proposal emphasizes a number of duties which are part of manufacturers' obligations. New recital No. 11 invites manufacturers of products which may be used by *non-professional* operators to take into account their peculiar limitations and expectations. Recital No. 19 specifies that before placing a product on the market, manufacturers shall carry out a *risk analysis* intended to identify the ESRs applicable to the product. The revised Annex I clarifies manufacturers' obligations to design machinery taking into account *foreseeable abnormal situations*[8]. Finally, manufacturers' duties to draw up adequate *instructions* have been further clarified (machinery connection to utilities, recovering from accidents or breakdowns, identification of workstations, maintenance, etc.).

Conditions for placing machinery on the market - Conformity assessment

The conformity assessment procedure for machinery (and safety components) laid down in the new proposal is almost unchanged from that in the existing directive, except for machinery presenting serious hazards (listed in Annex IV). Hazardous machinery may no longer be declared in conformity to the ESRs without a third party control: the technical file will be always checked by a Notified Body. On the other hand, a full quality assurance procedure is introduced as an alternative to EC-type certification. This consists of a comprehensive third party examination of the design, production, inspection, testing and storage policies put in place by the manufacturer. The Notified Body will examine the quality system and inspect the manufacturer's premises in order to ascertain that the quality system ensures that the machinery will comply with the directive's provisions. After his quality system has been approved, the manufacturer may affix the CE marking on each machine and draw up an EC declaration of conformity.

Finally, the Annexes are designed to give all stakeholders a clear formulation of the different conformity procedures: the declaration of conformity and declaration of incorporation have been simplified, while the contents of the technical file are specified in a separate annex.

[6] Article 8, 1. 2.

[7] European Commission, 1999.

[8] Preliminary observation No. 2 and principles of safety integration, 1.1.2. [a].

The TUTB's view

Generally-speaking, the Machinery Directive still seems to suffer from ambiguity and confusion in the description and identification of products to which it applies, as well as the application of CE marking. Clarification - a key aim - may not be achieved.

1. On the '**definitions**', if the Machinery Directive is to work, the different parties involved in the implementation of its provisions must know whether it applies to them or not. The Directive's definition of machinery is wide: the advantage of a broad definition ensuring free movement for a large number of products can be detracted from by difficulties in formulating adequate descriptions. The new Article 1 - "Scope", and Article 2 - "Definitions", give a new statement of: machinery *stricto sensu*, assembly of machinery, interchangeable equipment and partly-completed machinery. However, there is still undifferentiated use of words like machinery, drive system, machine, single machine, and device. Further on in the text, new terms are introduced: complete machine (article 13, [a]), complex installations - parts of machinery (Annexe I, 1.2.4.3.). To illustrate the ambiguities, partly completed machinery is supposed to be incorporated into other machinery to form :
- a machine covered by this Directive - Recital 12,
- a *single* machine to which this Directive applies - Article 2 (i).

Article 13, moreover, states that partly completed machinery is supposed to be incorporated into a *complete* machine.
The TUTB believes that allowing these different terms to coexist could create misunderstanding for all parties involved in the implementation of the Directive.

2. **CE mark provision and meaning**. The CE mark plays a key role in both market surveillance strategies and employers' confidence in EC-marked products. The provisions are not clear for *safety components* and *quasi-machinery*. Under the existing Machinery Directive *safety components* are differentiated from machinery, and are not CE-marked because of the express exclusion in Article 8.1.2nd sub-paragraph. The draft proposal defines safety components as *machinery*, does not expressly exclude safety components from being CE marked, and also lays down - in the 2nd preliminary observation of Annex I - marking obligations for all machinery. The ambiguity is patent, therefore. The same holds good for *quasi-machinery*, which is not within the scope of the existing Directive and so not CE-marked. But as the proposal does bring quasi-machinery within the scope of the directive, it is unclear whether it must be CE-marked or not. Finally, it is difficult to understand the rationale for CE-marking machinery for which the directive has no relevance in terms of health and safety. It may be wondered whether CE-mark is still proof that the machine meets the EHSRs applicable to it. This issue should also be seen in the light of the key role played by the CE mark for control of the market surveillance strategies. If buyers' confidence in the CE mark is to be maintained, it cannot be associated with machinery which the manufacturer has excluded from the Directive's EHSRs.

3. The explicit exclusion of whole industrial plants from the scope of the directive is welcome: but it should be made clear that the directive would apply to all **subsystems** performing specific operations identifiable in any process plant (e.g., the fuel burner system of steam generators).

4. Another source of confusion is introduced with the **risk analysis** mentioned in Recital No. 19 and Article 12. The risk analysis concept is increasingly widespread in Community industrial terminology, and so its inclusion is welcome. *Risk analysis* is the process by which the machine is limited in space, its hazards are identified, and its risks are estimated. It provides the information needed to perform the *risk evaluation* which is intended to determine whether risk reduction is required or not. At this stage, designers can apply the *principles of safety integration* detailed in Annex I, 1.1.2, which essentially coincide with the risk control strategies undertaken to: 1. engineer mechanical risks out of the process, 2. eliminate hazards by means of safety technology (guards and safety devices), and 3. give instructions and warnings where hazards can be neither designed out nor guarded against.

In light of these principles, the draft proposal can be said to contain two inaccuracies:
- It requires manufacturers to carry out a risk analysis before applying the conformity assessment procedures and then placing the product on the market. *Manufacturers' duties go much further than that: after the risk analysis they must evaluate the risk and implement the necessary risk reduction measures by applying the safety integration principles detailed in Annex I, 1.1.2 of the existing text.*
- It requires manufacturer to carry out the risk analysis described in Annex I, 1.1.2: *Annex I, 1.1.2 is greatly concerned with risk reduction strategies, but not risk analysis - it is rather a prerequisite to it.*

The TUTB therefore suggests using the results of the work done on mandated harmonised standards EN 292:1991 and EN 1050:1996, which give a coherent description of the whole risk management strategy for designing safe machinery.

5. **Safety components** were introduced by Directive 93/44/EEC amending Directive 89/392/EEC in a bid to help manufacturers improve the safety level of machines already in use, and also to regulate the increasing use of programmable electronic systems and computer control of safety-related functions. Firms operating giant presses, for example, began looking at bringing in safety light curtains as systematic protection for operators against the risks of

crushing. Laser scanners were introduced to protect zones around dangerous machines, while microprocessors were used for key-operated safety switch for interlocks and for safety limit switches. However, the introduction of safety components in the text of the directive gave rise to major problems. On one hand, it is essentially unclear what products fall into the category of safety components within the meaning of the directive: except for components listed in Annex IV, manufacturers still have the right to decide and declare whether the components they intend placing on the market are safety components or not. On the other hand, it is felt by many that the essential health and safety requirements of Annex I are not suitable for such products. One practical example illustrates this point. Numerically-controlled (NC) woodworking machines will always involve the traditional risks of contact, projection of pieces, crushing: but new types of malfunction may produce hazardous situations. In fact, on such computer controlled machines, visible and identifiable malfunctions on traditional electromechanical components are now giving way to a new category of "intangible" faults of electronic modules and systems resulting from software errors, bus connection failure, sensing device malfunctions. Software error-related accidents involving industrial robots and metal forming machines have already been documented. In conclusion, the proposed text does not go far enough in providing information to customers on potential hazards resulting from the wrong choice of safety components, while Annex I does not provide technical information on essential requirements specific to such components. The proposed text fails in the main aim of helping employers needing to upgrade machinery already in use by integrating safety devices.

6. The TUTB welcomes the identification of **quasi-machinery** as a reality emanating from the technological trend towards using integrated complex systems at the workplace, where the single-function machine is increasingly supplanted by systems comprising mechanical components, logic controllers, sensing devices, and new materials. However, the draft proposal does not go far enough in addressing the interlocks between the duties of subassembly suppliers and final assemblers and does not help clarify the responsibilities of each player. Evidence from the workface suggests that the overall risk analysis of complex machinery often goes no further than boundaries and interfaces between the different components, and crucial issues like operability, ergonomics and maintenance of the whole machine are not taken into account by final assemblers. There is a general understanding that assemblers of complete machinery should be given all information needed to carry out the full risk analysis and safe assembly. But their task is complicated by component suppliers' holding back on the quality and quantity of commercially sensitive information made available. As a result, incompetence on both sides (suppliers and assemblers) may lead to a final machine being put out with an incomplete risk analysis and an instruction manual simply cobbled together from bits of the documents volunteered by the different suppliers. In an accident, it would be very difficult to trace back events and identify failings at the interface between boundaries (components-main system). The draft proposal should stress that partly completed machinery will never come with more than a partly-completed hazard analysis, and its limitations and boundaries must be communicated to the final assembler. In short, suppliers of quasi-machinery should be fully accountable for their products, by identifying and complying with the relevant EHSRs.

7. On the introduction of the **Full Quality Assurance** procedure, Quality Assurance (QA) is largely concerned with clear specifications, auditing and reporting back, monitoring to identify and correct deviations in materials, behaviour and systems, sample checks and training. As such, QA schemes which exist or are being implemented should lead to improvements not only in product quality, but safety and health standards, too. But that would be to move from product safety certification to manufacturer certification, without third party interference at product level. Arguably, this could reduce the specific product health and safety requirement-focused controls and tests, and bring in an alternative system geared to guaranteeing a completely different aspect - i.e., the homogeneity of the characteristics of all samples placed on the market, which are not necessarily related to the specific product health and safety requirements.

8. The TUTB cannot accept the removal of Recital No 18 on **trade union access** to the standardisation process. This Recital was added at the behest of the European Parliament, in the light of the contents of Article 5.3. - inviting Member States to facilitate the social partners' participation in the drafting and monitoring of harmonised standards. This participation principle was also stressed in the Council Resolution of 28 October 1999 (on the role of standardisation in Europe), Article 39. In conclusion, as well as dropping Recital No 16, the proposal from trade unions to expand and improve Article 5 (with the obligation for Member States to periodically report to the Commission on the provisions for informing and consulting the social partners on European standards mandated under directives) has been disregarded.
It should also be noted that Proposal No 8 (General proposals) from the "Molitor Group" invited the Commission to consult consumers, business and workers by means of an *effective, systematic, and timely* strategy.

9. Recital No 14 - which clearly states that the **ESRs** must be complied with to ensure that machinery is safe - has been dropped. We believe that the

Machinery Directive should contain such a concise recital, which adequately introduces the obligation of the existing Article 3 and the 2nd preliminary observation of Annex I. In particular, Recital 14 should be re-introduced to support the new Recital No 19 defining the obligation for manufacturers to carry out a risk analysis for machinery to be placed on the market.

10. As regards Annex I of the Commission proposal, we have three main comments.

Ergonomics. The Commission proposal contains a short separate paragraph (1.1.3) for ergonomics. The description is fairly general and limited. It should be filled out to include mental strain, physiological strain and relevant health effects. There is no acknowledgement that disregarding ergonomics can lead to accidents. A reference must be included that sitting postures are to be preferred to standing ones when designing machinery, and the possibility of changing positions. The same description must include a reference to adjustable machinery to accommodate different populations. The design of information from indicators should also incorporate ergonomic principles.

Controls (1.2.) "Errors in logic do not lead to dangerous situations" has been deleted, to make way for the new provision "human error during operation does not lead to hazardous situations". The TUTB disagrees with this change, since accidents can be caused by design errors in the control system architecture or by faulty cabling, resulting in - for example - an inability to stop the machine when needed, or a hazardous unexpected start-up. Moreover, employers are increasingly relying on programmable logic controllers in order to modernize and upgrade existing manufacturing systems. These components deliver many benefits but also add a level of complexity - particularly in relation to the associated software - which may adversely affect workers' safety. To illustrate this point two examples may be given: a safety mechanism may be neutralized by a design error in the software supervising operating procedures, or unplanned interactions may occur between controls. On the other hand, employers themselves might be able to modify software to increase production or adapt to changed operating conditions, causing - for example - a failure to follow the proper machine control sequence. In conclusion, TUTB calls on the Commission to reinstate the dropped paragraph, and to cover future potential risks associated with increasing workplace use of software combined with hardware to create a programmable system or product.

Contents of instructions (1.10.). The manufacturer's obligation to provide instructions containing drawings and diagrams has been dropped. The TUTB disagrees with this change, since graphs and charts are essential to make buyers aware of start-up operations, servicing, maintenance and repairs. More importantly, lack of this information will preclude employers from properly discharging their duties to inform workers about the conditions of use of machinery.
To conclude on Annex I, the formulation of the essential health and safety requirements has been simplified, but explanatory sentences have been sacrificed (as many as twenty parentheses containing cases and examples have been dropped).

Accidents waiting to happen

Turning to ways of tightening up the legislation's accident and injury prevention provisions, we suggest redrafting the text recommending that manufacturers make the best use of operators' experience with machines, because risks unknown to them in the design phase might only appear in daily workplace use. It should also be stressed that machinery risk analysis, especially hazard identification, cannot be performed without a knowledge of the accident history of machinery. In this context, market surveillance activities could be improved by recommending that national authorities regularly disseminate data on machinery accidents.

How accidents happen

Many hazardous machines are not listed in Annex IV: construction (cranes, excavators and mixers), paper and printing (cutting, coating and fibreboard machines), textile and leather (spinning and knitting machines), food and beverage, are just some of the industry sectors where accident fatalities remain high. A growing number of diligent manufacturers of these hazardous machines are investing heavily in ensuring that their products are fully compliant with the Machinery Directive. They are also finding it relatively painless, even without the support of C-standards (which historically are being developed for Annex IV machinery first). Documentation and information for users is clear and exhaustive: feedback from the workplace is continuous.
But some manufacturers are still not performing proper risk assessments, which they see as a costly exercise holding up the placing of their product on the market. They point to the lack of harmonised standards to justify their design solutions, and implement poor design solutions, which will be backed up by low-grade technical files and insufficient information for use. Their irresponsible attitude will be found out by conscientious employers, who will likely source elsewhere if they can. As a result, they will be held to account only after an accident. And that is not acceptable.

Lessons learned

Accident data bases to date have been compiled at the high price of numerous deaths and billions of euros worth of equipment scrapped. But there is no Community action to ensure that lessons are learned. An injury data collection and information

exchange system for machinery, classified by typology, could help "know the enemy": details of accidents or near misses occurring on a particular machine - computer-collected at Community level - would trigger an automatic response to detect potential deficiencies of the machine involved in terms of intrinsic safety, protection measures and information for use. This data would then instigate appropriate cross-cutting actions at Community level. A second - but no less important - step could be to develop statistics based on EHSR groups, and identify corrective actions: *maintenance*, for example, could be the focus of a campaign to raise awareness among manufacturers to improve safety for machinery cleaning or repair staff by better identifying danger zones. A third major benefit could be that accident data on specific group of machines could drive the framing of C-standards to provide manufacturers with 'state-of-the-art' design solutions and a common hazard identification strategy.

Documentation is key

The requirement to always check the technical file of machinery listed in Annex IV is welcome. But that still covers only a small percentage of all machinery sold in Europe. The TUTB believes that all machinery manufacturers should provide users with a description of the means used to comply with the applicable essential health and safety requirements, along with the methods adopted to eliminate all hazards. The description of the risk assessment carried out on the product should also be provided to users as an integral part of the instructions for use.

The existing directive provides for all this information to be included in the technical file, which is examined - before the product is placed on the market - only for machinery listed in Annex IV and designed without the support of harmonised standards covering all applicable ESRs.

For most machines, therefore, manufacturers do not have to show how their design meets the EHSRs: their diligence in carrying out safe design is *presumed*. Competent national authorities cannot access this information before machinery is placed on the market, so actions will be triggered only when design deficiencies show up in practice.

The TUTB believes that prevention is better than cure: end users and competent national authorities must be given access to technical documentation for machinery with a proven track record of potential to cause harm. There is evidence that poor quality documentation is the first symptom of poor design. Also, making data on machinery accidents more widely available could help identify and defeat the 'enemy': it could encourage authorities to target their market surveillance initiatives more tightly and raise awareness amongst users to create the first barrier against unsafe machinery by getting them to routinely examine the documentation that comes with the machinery they buy.

The users' voice

The proposal requires manufacturers - Annex I, 1.10.2, *Contents of the instructions* - to remind users of their obligation to comply with the Work Equipment Directive. This is a welcome new requirement - although it might have been better placed elsewhere in the directive. Machines are designed for an *intended* use. They are then operated in a workplace characterized by: job mobility, area of performance, ongoing operations in surrounding areas, specific hazards in the area, relative age of the workforce and job experience, applicable health and safety rules, and specific abnormal or unforeseen problems. So, poor communication between manufacturer and customer could result in an unsafe machine. In this context, machinery guarding has historically been a critical issue. Guarding could be appropriate in its own right, but could prove unsuitable in relation to the movement of materials on-site, the specific job procedures in place, production rates, and particular needs for maintenance access. A machine which is *optimally* designed in itself could then turn out to be unsuited to a specific workplace. The resulting accident would be the result of a poor understanding of the risk assessment required by the Machinery Directive and its relation to the risk assessment which employers must perform.

The TUTB questions whether the current system helps to get machines perfectly integrated in the workplace and used in the conditions foreseen by the designer with an adequate understanding of the customer's work organisation and specific work processes. In particular, the TUTB would like to see thought given to the possibility of forcing manufacturers to systematically follow-up their machinery. For most manufacturers - those who have been trading sensibly and reliably in the past - systematic feedback of operators' experience is common practice. For many others is not. So, the Machinery Directive should contain provisions requiring manufacturers to collect users' feedback and incorporate it in the technical file and information for use. In so doing, a communication link between manufacturers and users would be formalized, as an essential step to integrating the risk assessment carried out by both manufacturers and employers. The knock-on benefits for standards would be to make them more people-centred by exploring and taking into account the person-machine interface in the full range of conditions of use. ■

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