

## EXECUTIVE SUMMARY

Justifiable doubt has arisen over the performance of retractable fall-arresters when used in non-overhead applications and in other configurations which are not catered for by the test requirements within the BS EN 360 standard.

The tests within BS EN 360 do not recreate the falling conditions that can occur in non-overhead applications and in other configurations, so the retractable fall-arrester's ability to arrest a fall cannot be assessed, and therefore remains unknown. The retractable fall-arrester might be able to perform safely, or it may fail catastrophically, resulting in serious or fatal injuries to the worker it is seeking to protect.

One of the aims of the research was therefore to establish if manufacturers recommended, or if brochures or instructions suggested or implied that retractable fall-arresters could be used in these applications, whether their products had been tested for use in that manner, and whether the tests addressed all the conditions that could occur. The second aim was to recommend the criteria, testing or otherwise, that retractable fall-arresters should be required to satisfy if they were to be used in a non-overhead application or other configuration.

Two methods were used in order to achieve the aims. A literature review studied 87 references, and some 30 UK manufacturers and suppliers were surveyed.

When the results of the survey were analysed, it became evident that a large number of issues had arisen in the market place, which were all to do with confusion over performance in applications not catered for by the tests within BS EN 360. It was also evident that some of these applications had been in practice for a considerable number of years.

Virtually all the manufacturers surveyed were either making claims that their products could be used in applications with potential fall conditions different to the tests within BS EN 360, on the basis that products were safe for use because the BS EN 360 tests had been passed, or were giving the impression that their products were safe for use by not forbidding or opposing the use of their products in that manner.

Of serious concern was that the majority of manufacturers had not or had only carried out limited additional testing, and therefore could not substantiate performance claims for their products when marketed for use in potential fall conditions not recreated by the tests within BS EN 360. As a result, it was decided to carry out some testing to determine what might happen in some of these situations. Although testing was not envisaged at the outset of the project, it was believed to be necessary because of the safety concerns, and to help in the process of developing a future test specification.

Nineteen tests were carried out, fourteen of which were drop-tests to investigate how worker weight range and how the positions of the lifeline at near-full extraction, and at the maximum cone angle, affected fall-arrest performance. These tests used a steel mass as the test surrogate. Nine of the fourteen drop-tests (64%) demonstrated that the products would be unable to safely arrest the fall of a worker in real circumstances, situations in which the manufacturers had assumed would be satisfactory.

Two other tests investigated how different amounts of stored lifeline on the reel affected product strength, and three tests investigated fall-indicator activation.

Overall, the research demonstrated that BS EN 360 as a standard is grossly deficient in its ability to assess the performance and other technical aspects of retractable fall-arresters, and therefore cannot be relied upon to provide a presumption of conformity in order for a product to demonstrate compliance with the PPE Regulations (2002).

It cannot be argued, in defence of BS EN 360, that it is a simple matter of the content of the standard being overtaken by new and emerging applications. A number of the applications reviewed in this report have been ongoing for a number of years. Also, in the case of attaching retractable fall-arresters in certain ways to anchor devices, this is a necessary step in the assembly of a fall-arrest system, something which the individual product-based standard philosophy of CEN/TC 160 fails to cater and test for. Furthermore, a number of safety issues raised in this report are inherently basic to retractable fall-arrester design and operation, such as fall-arrest performance at the maximum lifeline cone angle and extraction positions, which should have been taken into account in BS EN 360 when it was first conceived.

Thirty-nine recommendations are made in regard to the findings of this research, including proposals for new test specifications and further research work. A considerable number refer to serious safety issues which warrant urgent attention. They also reflect how statutory controls in the UK, whether the CE certification or other scheme, do not prevent the application of retractable fall-arresters in situations for which they have not been tested.