Industrial rope access

What is 'rope access'

A rope access system has been defined as, "… a safe method of working at height where ropes and associated equipment are used to gain access to and from the work place, and to be supported there …"[1].

Rope access techniques can only be carried out in a reliably safe manner where those undertaking the work are competent, i.e. suitably experienced and trained, particularly in the method(s) of access and equipment that they will actually be using. They must have knowledge of and be able to recognise any limitations of their equipment, in order to avoid misuse. In addition, the work is properly planned, managed and supervised by competent person(s).

The primary objective when using rope access methods is to plan, manage and carry out the work with minimal accidents, incidents or dangerous occurrences, i.e. to ensure a safe system of work is maintained at all times, and with no damage to property or harm to the environment.

History

Industrial rope access, as it is known of today, started in the early to mid-80s using a technique based on a system developed by cavers during the late-60s and 70s[2]. Whilst a safe system it relied on the use of a single rope. A second rope (the 'back up') was therefore added, in order to provide a level of security (or 'fall protection').

The application of rope access techniques on buildings, etc. transferred naturally to offshore work, where it was used to solve difficult access problems on North Sea oil rigs. Subsequently, in 1987, six companies started the world's first rope access trade association, the Industrial Rope Access Trade Association (IRATA). The Health and Safety Executive (HSE) was involved from the outset and was influential in ensuring that rope access would be a safe system of work. Today, industrial rope access is used for wide range of work all over the world.

Standards

There are a number of standards applicable to rope access:

IRATA International
IRATA International, Code of practice for industrial rope access, September 2013[3] *(ICOP)*

This reflects current best working practices on safe rope access. It comprises four elements:

- Parts 1 and 2: Providing guidance on: planning and management; selection of technicians and their training; selection of equipment; supervision; inspection regime; and maintenance of equipment; and primary rope-access work methods.
- Part 3: providing annexes addressing such issues as risk assessments, method statements, inspection checklists, use of tools and work equipment, etc.

1 IRATA International, www.irata.org
2 *Rope access: from early beginnings to the future in the UK and beyond*, Paul Seddon, International Fall Protection Symposium, Orlando, Florida, USA, 19 October 2000
3 http://irata.associationhouse.org.uk/default.php?cmd=210&doc_category=479

- Part 4: Containing local legislation requirements to assist international companies that use the Code.

The ICOP was based originally on the IRATA Guidelines[4], that represented a number of years of close co-operation with the HSE.

British Standards Institution (BSI)
BS 7985: 2013[5]

When read in conjunction with BS ISO 22846-1: 2003 and BS ISO 22846-2: 2012, this standard gives practical advice on the duties placed on employers, employees and self-employed people who use specialist rope access methods for work at height, and gives recommendations for good practice. The first edition of BS 7985 was published in 2002 (and revised later, in 2009).

International Standards Organisation (ISO)
ISO 22846[6]

This comprises two parts: Part 1 (Fundamental principles for a system of work) and Part 2 (Code of practice).

ISO 22846-1[7] was published in 2003 (being adopted as a British Standard[8] in July 2012) and gives the fundamental principles for the use of rope access methods for work at height. It is applicable to the use of rope-access methods on buildings, other structures (e.g. on or offshore) or natural features (e.g. cliff faces), during which ropes are suspended from or connected to a structure or natural feature; and is applicable to situations where ropes are used as the primary means of access, egress or support and as the primary means of protection against a fall.

ISO 22846-2 was published much later, in 2012 (with immediate publication as a British Standard). It expands on the fundamental principles outlined in ISO 22846-1 and gives recommendations for: planning and management; operative competence and responsibilities of personnel; supervision; the selection, use and care of equipment; and advice on how to implement a 'safe system of work'. There may be other issues to consider also, depending upon the nature and location of the work, the competence and experience of the operatives (as well as local or regional legal requirements).

Equipment

Since its inception, industrial rope access has used equipment predominantly designed and manufactured for caving. Initially, with no applicable industrial product standards, equipment was chosen because it provided the minimum level of safety that was considered for the then workforce experienced in caving and climbing. A number of industrial product standards now exist within Europe[9].

4 Guidelines on the use of rope access methods for industrial purposes, IRATA
5 BS 7985: 2013, *Code of practice for the use of rope access methods for industrial purposes – Recommendations and guidance supplementary to BS ISO 22846*
6 Personal equipment for protection against falls - Rope access systems
7 http://www.iso.org/
8 http://shop.bsigroup.com
9 TC160: www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx

Back-up devices

Fundamentally, rope access requires a back-up device. This is attached to the back-up safety line in order to protect the technician from a fall if the main working line fails or if the technician slips or loses control in any way. The back-up device is intended to lock on to the safety line without causing damage to the rope, and absorbing any shock load that may occur.

However, back-up devices offer considerable design challenges for manufacturers and the use of these products has been the subject of strong debate within the rope access industry for many years[10]. In certain situations there is a real risk that devices may not work as users expect, especially when working with used rope or heavy loads. The rope may break (caused by the device) or the device may not arrest the fall. Relying on product standards alone is not enough. Some test requirements are imperfect and those selecting equipment can rely on them too much. Critically, product standards do not sufficiently consider aspects of use. The heightec Quantum back-up device was a response to an assessment of the issue of 'reasonably foreseeable misuse' and is intended to work on all types and condition of rope, with loads up to 200 kg.

Rope access in the wind industry

Rope access work in and on wind turbines[11] needs to consider carefully the access, egress and rescue or evacuation from any exposed or restricted area, e.g. transition piece, nacelle or hub. By its nature work is likely to be in an exposed position. Turbines are often in remote locations with poor mobile phone coverage and with access via unsurfaced tracks. This is exacerbated by offshore work, where the emergency services are highly unlikely to be able to provide initial assistance. Planning should take account of boat transfer, sea conditions and working over water. Hazards include rigging, environmental considerations, mechanical isolation, entrapment, fragile surfaces, bio-hazards, electricity and fire. Other issues include an understanding of any site-specific procedures, the need for isolation and permit-to-work, ergonomics, the lifting and lowering of loads and welfare provision. Industrial rope access is versatile, and has an excellent safety record[12], but like all work at height must be planned and managed properly.

Management and supervision of rope access

ISO 22846 provides some good advice on the management and supervision of rope access. It provides a useful benchmark. IRATA has published a comparison study[13] between ISO 22846 and its own ICOP 2013. In broad terms, the latter gives much more detail. ISO 22846, however, states that the *rope access manager* should also be able to:

a) communicate requirements to rope access supervisors;

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10 Industrial Rope Access: Back-up Devices - A Review, *A summary of relevant technical and legal information relating to the historical development of industrial rope access back-up devices*, heightec, July 2013, www.heightec.com/new.php#news96

11 Application of rope access methods in the construction, inspection, repair and maintenance of wind turbines, IRATA

12 Work and safety analysis 2012, IRATA International www.irata.org/pdf_word/WASA%20-%20Work%20%26%20Safety%20Analysis%202012.pdf

13 *Comparison study between ISO 22846 and IRATA International code of practice for industrial rope access*, 2013 edition, David Thomas and Paul Seddon, 18 February 2013 http://irata.associationhouse.org.uk/default.php?cmd=215&doc_id=3956

b) write standard operating procedures;
c) implement and review such control systems;
d) assess which control measures are suitable (based on experience); and
e) overview and manage the execution of the work task using rope access skills.

These issues are broader than competence in rope access only. Similarly, the competence requirement for a *rope access supervisor* is broader than competence in rope access only. ICOP 2013 notes that it covers only the supervision of rope access safety and that some form of training in management plus an assessment is recommended. There are no criteria established within the IRATA International Training and Certification Scheme (being addressed presently) and this wider competence should include competence in 'leadership and management', as well as competence in 'health and safety'. Some employers will undoubtedly provide this level of knowledge and skills, through in-house training (and experience gained 'on-the-job'). Others may not.