

ISO 14118:2017-12 (E)

Safety of machinery - Prevention of unexpected start-up

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	General measures to prevent unexpected start-up	2
4.1	General	2
4.2	Manual measures for isolation and energy dissipation	3
4.3	Other means to prevent unexpected (unintended) start-up	3
4.4	Signalling and warning (delayed start)	3
5	Isolation and energy dissipation	3
5.1	Prevention of unexpected start-up upon restoration of any power supplies	3
5.2	Devices for isolation from power supplies	3
5.3	Locking (securing) devices	4
5.4	Devices for stored-energy dissipation or restraint (containment)	4
5.4.1	General	4
5.4.2	Mechanical elements	5
5.4.3	Locking or securing facilities for the restraint (containment) devices	5
6	Other measures to prevent unexpected start-up	5
6.1	Design strategy	5
6.2	Measures to prevent unintended generation of start commands	6
6.2.1	Measures to prevent unintended actuation of manual start controls	6
6.2.2	Design of safety-related parts of the control system	7
6.2.3	Selection and location of power control elements	7
6.3	Measures to maintain stop commands	7
6.3.1	Principle	7
6.3.2	Maintained stop command generated by a stop control device (level A)	7
6.3.3	Maintained stop command generated by machine control (level B/C)	8
6.3.4	Mechanical disconnection (level D; see Figure 1)	8
6.3.5	Moving-part immobilization (level E; see Figure 1)	8
6.4	Automatic monitoring of the safe state (stopped condition) during a category 2 stop	8
7	Design requirements for verification	8
7.1	General	8
7.2	Provisions for verifying isolation	9
7.3	Provisions for verifying energy dissipation or restraint (containment)	9
Annex A (informative)	Examples of tasks which can require the presence of persons in danger zones	10
Bibliography		11