

# ISO 11161:2007-05 (E)

## Safety of machinery - Integrated manufacturing systems - Basic requirements

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Strategy for risk assessment and risk reduction .....</b>	<b>6</b>
4.1	General .....	6
4.2	Specification of the limits of the IMS .....	6
4.3	Determination of the task .....	6
4.4	Identifying hazardous situations .....	8
4.5	Risk estimation and risk evaluation .....	8
4.6	Risk reduction .....	8
<b>5</b>	<b>Risk assessment .....</b>	<b>10</b>
5.1	Specifications of the IMS .....	10
5.2	Identification of hazards and hazardous situations .....	12
5.3	Risk estimation .....	13
5.4	Risk evaluation .....	14
<b>6</b>	<b>Risk reduction .....</b>	<b>14</b>
6.1	Protective measures .....	14
6.2	Validation of the protective measures .....	14
<b>7</b>	<b>Task zone(s) .....</b>	<b>14</b>
7.1	General .....	14
7.2	Determination .....	15
7.3	Design .....	15
7.4	Functional analysis .....	16
<b>8</b>	<b>Safeguarding and span of control .....</b>	<b>16</b>
8.1	Safeguarding of task zones .....	16
8.2	Span of control .....	17
8.3	Electrical equipment requirements .....	17
8.4	Modes .....	17
8.5	Safeguards .....	18
8.6	Protective measures when safeguards are suspended .....	18
8.7	Muting and blanking .....	20
8.8	Control .....	20
8.9	Reset of perimeter safeguarding devices .....	21
8.10	Start/restart .....	21
8.11	Emergency stop .....	22
8.12	Measures for the escape and rescue of trapped persons .....	22
<b>9</b>	<b>Information for use .....</b>	<b>22</b>
9.1	General .....	22
9.2	Marking .....	23

<b>10</b>	<b>Validation of the design</b> .....	<b>23</b>
<b>10.1</b>	<b>Validation that the design meets the requirements</b> .....	<b>23</b>
<b>10.2</b>	<b>Validation of the protective measures</b> .....	<b>23</b>
<b>Annex A (informative) Examples of integrated manufacturing systems (IMs)</b> .....		<b>24</b>
<b>Annex B (informative) Flow of information between the integrator, user and suppliers</b> .....		<b>27</b>
<b>Annex C (informative) Span of control examples within an IMS</b> .....		<b>28</b>
<b>Annex D (informative) Temporary observation of the automatic process</b> .....		<b>32</b>
<b>Bibliography</b> .....		<b>36</b>