

DIN EN 13001-1:2009-12 (E)

Cranes - General design - Part 1: General principles and requirements (includes Amendment A1:2009)

Contents		Page
Foreword		3
Introduction		4
1	Scope	4
2	Normative references	4
3	Terms, definitions, symbols and abbreviations	5
3.1	Terms and definitions	5
3.2	Symbols and abbreviations	5
4	Safety requirements and/or measures	8
4.1	General	8
4.2	Proof calculation	8
4.2.1	General principles	8
4.2.2	Models of cranes and loads	10
4.2.3	Simulation of load actions	10
4.2.4	Load combinations and load effects	11
4.2.5	Limit states	11
4.2.6	Proof of competence	11
4.2.7	Methods for the proof of competence	12
4.3	Classification	14
4.3.1	General	14
4.3.2	Total numbers of working cycles	15
4.3.3	Average linear or angular displacements	15
4.3.4	Frequencies of loads	17
4.3.5	Positioning of loads	18
4.4	Stress histories	19
4.4.1	General	19
4.4.2	Frequencies of stress cycles	20
4.4.3	Transformation of the identified stress cycles into cycles with constant mean stress or constant stress ratio	21
4.4.4	Classification of stress histories	24
Annex A (informative) Selection of a suitable set of crane standards for a given application		27
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC		28
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC		29
Bibliography		30