ISO 26802:2010-08 (E)

Nuclear facilities - Criteria for the design and the operation of containment and ventilation systems for nuclear reactors

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Functions ensured by the ventilation system 6
4.1 General 6
4.2 Main functions 7

5 Architecture and description of the different ventilation systems 8
5.1 Ventilation of the volumes within the primary containment envelope 8
5.2 Ventilation of the volumes located within the secondary confinement 10
5.3 Ventilation of the volumes located outside the secondary confinement 10
5.4 Miscellaneous ventilation systems not connected with containment envelopes 11

6 Safety aspects for ventilation systems 11
6.1 General principles 11
6.2 Risk assessment procedure -- General 12
6.3 Risk assessment procedure for severe accidents 14

7 Requirements for the design of ventilation systems 15
7.1 Confinement of radioactive material 16
7.2 Filtration 33
7.3 Reactor specificities 35

8 Management of specific risks 38
8.1 Control of combustible gases in the reactor building 38
8.2 Management of ambient conditions 39
8.3 Prevention of risks linked to releases of heat, gases or toxic vapours 41
8.4 Prevention of risks linked to the deposition of matter in ventilation ducts 41
8.5 Prevention of fire hazard 42
8.6 Consideration of external hazards 45

9 Dispositions concerning the management and the operation of the ventilation systems 46
9.1 Organization and operating procedures 46
9.2 Technical operating instructions 46
9.3 Operational management issues 47
9.4 Test procedures and maintenance 47
9.5 Monitoring of the ventilation system 50
9.6 Control of the ventilation system to prevent fire hazards 51

10 Control and instrumentation 53
10.1 Control 53
10.2 Instrumentation 53
10.3 Alarms 54

Annex A (informative) Typical radioactive products in nuclear reactors 55

Annex B (informative) Examples of general confinement concepts for nuclear power reactors 58

Annex C (informative) Examples of safety classification for nuclear power reactors 64

Annex D (informative) Examples of classification of working areas according to radiological contamination hazard 66

Annex E (informative) Example of classification of types of ventilation, according to radiological contamination hazard -- Recommended ventilation configurations 68

Annex F (informative) Existing requirements for aerosol filters 73

Annex G (informative) Examples of loads to consider during the design of NPP ventilation systems 78

Annex H (informative) Typical values of leaktightness for containment and ventilation systems and periodicities of associated controls 79

Annex I (informative) Primary containment envelope status 81

Bibliography 82