

This is a preview of "ISO 16110-1:2007". [Click here to purchase the full version from the ANSI store.](#)

First edition
2007-03-15

Hydrogen generators using fuel processing technologies —

Part 1: **Safety**

*Générateurs d'hydrogène utilisant les technologies de traitement
du carburant —*

Partie 1: Sécurité



Reference number
ISO 16110-1:2007(E)

© ISO 2007

This is a preview of "ISO 16110-1:2007". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 16110-1:2007". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	4
4 Safety requirements and protective measures.....	12
4.1 Safety and reliability analysis.....	12
4.2 Configuration	12
4.3 Physical environment and operating conditions	13
4.4 Design requirements	15
4.5 Selection of materials.....	17
4.6 Pressure equipment and piping	19
4.7 Prevention of fire and explosion hazards	22
4.8 Prevention of electrical hazards.....	27
4.9 Electromagnetic compatibility (EMC)	28
4.10 Control systems and protective/safety components	28
4.11 Pneumatic and hydraulic equipment.....	32
4.12 Valves.....	33
4.13 Rotating equipment	33
4.14 Cabinets	35
4.15 Thermal insulating systems and materials	36
4.16 Utilities	36
4.17 Installation and maintenance	36
5 Test methods.....	37
5.1 Measurement uncertainties	37
5.2 Test fuels and pressures	38
5.3 Basic test arrangements	38
5.4 Type/qualification tests	39
5.5 Routine tests	54
6 Marking, labelling and packaging	54
6.1 Hydrogen generator marking	54
6.2 Marking of components	55
6.3 Product's technical documentation.....	55
Annex A (informative) Significant hazards and hazardous situations dealt with in this International Standard.....	63
Annex B (informative) Carburation and material compatibility for hydrogen service	65
Annex C (informative) Recycling of hydrogen generators.....	70
Annex D (informative) Considerations for the installation of hydrogen generators	71
Bibliography	73

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16110-1 was prepared by Technical Committee ISO/TC 197, *Hydrogen technologies*.

ISO 16110 consists of the following parts, under the general title *Hydrogen generators using fuel processing technologies*:

- *Part 1: Safety*
- *Part 2: Procedures to determine efficiency*

This is a preview of "ISO 16110-1:2007". [Click here to purchase the full version from the ANSI store.](#)

Introduction

The machine concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this part of ISO 16110.

This part of ISO 16110 provides requirements and recommendations relating to hydrogen generators using fuel-processing technologies so as to promote:

- safety of persons and property;
- consistency of control response; and
- ease of maintenance.

High performance is not to be obtained at the expense of the essential factors mentioned above.