

EC Type Examination Certificate

This is to certify that Lloyd's Register Verification, a Notified Body under the terms of:
The Pressure Equipment Directive 97/23/EC;
The Pressure Equipment Regulations 1999, UK Statutory Instrument 1999 No. 2001 as amended by S.I. 2002 No. 1267 and S.I. 2015 No. 399
did (in accordance with Module B of the Directive) undertake an EC Type Examination on the stated pressure equipment to ensure its conformity with the requirements of the Directive which apply to it. The equipment identified below was shown to comply.

This certificate is issued to:

Applicant: **HYDROGENICS Corporation**
220 Admiral Blvd,
Mississauga, Ontario, L5T 2N6 Canada

Product description: **H450E PEM Water Electrolyzer Stack**

Product type: **Pressure Vessel**

Design standard: **ASME Code, Section VIII, Div. 1; 2013 Edition**

The attached Schedule details the content of the Technical Documentation and Specified Standards and shall form a part of this certificate.

"This Certificate is not valid for pressure equipment, the design, ratings or operational parameters of which have been varied from the specimen tested. The manufacturer shall notify LRV of any modification or changes to the equipment in order to maintain a valid certificate."

"This certificate is valid for ten years from the date of issue."

Certificate No: 0038/PED/ECD1420010/C

Original Approval: 01 April 2016

Current Certificate: 01 April 2016

Certificate Expiry: 31 March 2026

LRV Notified Body Number 0038



P. Mintzaridis on behalf of Lloyd's Register Verification

EC Type Examination (Module B)
HYDROGENICS Corporation
H450E PEM Water Electrolyzer Stack
Certificate No. 0038/PED/ECD1420010/C Schedule

Equipment data

Type: Pressure Vessel
Maximum Working Pressure: 40 bar(g)
Capacity: 3L and 7L

The undermentioned documents have been reviewed for compliance with the Pressure Equipment Directive 97/23/EC and following Design Code(s):

ASME Code, Section VIII, Div. 1; 2013 Edition

Technical File Contents

Title	Document Number	Date
ASM, STK, EL, 450E, 29C, 130UM, FEA	1045506_FEA, Rev. 00	1 December 2015
ASM, STK, EL, 450E, 87C, 130UM, FEA	1048245, Rev. 00	21 January 2015
PLATE, EP, EL, 450E, WET, 316L SS, RAW	1045514, Rev. 00	8 December 2014
PLATE, EP, EL, 450E, AN, DRY, CT	1045530, Rev. 01	20 November 2014
PLATE, EP, EL, 450E, AN, DRY, FE	1045531, Rev. 01	20 November 2014
PLATE, EP, EL, 450E, AN, DRY, FE, RAW	1047731, Rev. 00	5 December 2014
NAMEPLATE, EL, 450E, 29C, CE/PED	1047744, Rev. 02	2 December 2014
PLATE, EP, EL, 450E, WET, 316L, SS, SHORT	1047999, Sheets 1 & 2/2, Rev. 02	8 December 2014
NAMEPLATE, EL, 450E, 87C, CE/PED	1052131, Rev. 01	7 December 2015
Hazard Analysis	450E Stack HAZOP, Rev. 12	-
Installation, Operation and Maintenance Manual	1052468-00, Rev. 0	January 2016
PMA	MIS-PRD-F19, Rev. 02	1 May 2015
Essential Safety Requirements Check List	MIS-PRD-F18, Rev. 01	27 May 2015

LR Reports

Title	Document Number	Date
Design Appraisal Document	BPA1502002/1, Issue 0	19 January 20016
Inspection Certificate	HFX1441012/1	21 March 2016

Schedule Issue: 01
Date of Schedule Issue: 01 April 2016
LRV Notified Body Number 0038



P. Mintzaridis on behalf of Lloyd's Register Verification