1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **CSANe 20ATEX1111X** **1**

4 Equipment: **NovaPRO 9000 Process Gas Chromatograph**
NovaAIR Process Gas Chromatograph

5 Applicant: **AGC Instruments Ltd**.

6 Address: Unit 2, Shannon Free Zone West,
Shannon
Co. Clare
V14 PX03
Ireland

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-2:2014
Note: Since EN 60079-1:2014 has only been applied to the capillary tubes, for clarity 'db' has not been included in the certification code.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 2 G
Ex pxb IIB+H_2 T3 Gb

Project Number 80058594

Signed: J Ensminger

Title: Certification Engineer

CSA Group Netherlands B.V.
Utrechtseweg 310, Building B42,
6812AR, Netherlands

SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **CSANe 20ATEX1111X**
Issue 1

13 **DESCRIPTION OF EQUIPMENT**

The NovaPRO 9000 and NovaAIR Process Gas Chromatographs are used to measure the levels of impurities contained in matrix gas or alternatively to measure the total purity. They employ a number of columns to separate the individual gases and pass them to the detector. Each column and detector are housed in a temperature controlled oven. The output signal from the detector(s) produces an increased or decreased voltage that indicates the level of the individual gas. This information is analysed by the on-board computer which produces a graph showing the levels of impurities being analysed. The real-time clock circuit of the on-board computer includes an inherently safe coin cell, type CR2032 manufactured by Panasonic. The detector types used are Flame Ionisation Detector (FID) or Flame Photometric Detector (FPD), and/or Discharge Ionisation Detector (DID) and/or Thermal Conductivity Detector (TCD). The NovaPRO 9000 is fitted with up to eight cube ovens or alternatively with one bay oven that incorporates a cube oven. The NovaAir is fitted with up to four cube ovens.

The enclosure of the process gas chromatographs is designed to be purged and pressurised by a suitably certified 'pxb' control system of a leakage compensation type using air as the protective gas. The enclosure is provided with a single inlet for the purge air supply. A suitably certified 'pxb' pressure relief and spark arresting device is provided for the exit of the purging air. The enclosure is pressurized all the time at a pressure that is higher than the external atmospheric pressure, the pressure in the sample gas containment system and the pressure in the fuel gas containment system. This constant overpressure results in no release from the containment systems. Both the internal pressure in the enclosure and the pressure in the containment systems are monitored by the purge controller. Both containment systems are fitted with a mechanically operated, normally closed pressure switch. These pressure switches are connected in series in the intrinsically safe circuit of the purge controller.

Flame arrestor type 931-B 1/2-4x0.2/D manufactured by BS&B FlameSaf Limited, certified under IBExU 14ATEX2087X is provided in the vent line of the Flame Ionisation Detector (FID) or Flame Photometric Detector (FPD) as applicable. The equipment comprises capillary tubes at the inlet and at the outlet of the sample gas containment system and at the inlet of the fuel gas containment system. These capillary tubes comply with the relevant requirements of EN 60079-1:2014 however for clarity the certification code does not include 'Ex db' marking.

The enclosure of NovaPRO 9000 is a powder coated sheet steel, double compartment enclosure with both compartments having a door fixed with two hinges and two cam locks. The upper compartment door includes a window. The doors, the window and the bezel have gasketed joints. The total gross internal volume of the enclosure is 275 L. Cable entry through the side wall of the enclosure is realized by up to six suitably certified and rated M16x1.5 and/or M20x1.5 cable glands. All unused cable entries are closed off by suitably certified blanking elements. An atmospheric auxiliary enclosure is attached to the side of the purged and pressurised enclosure which houses miscellaneous separately certified as well as uncertified process equipment. With the exception of the suitably certified 'pxb' purge controller, associated vent valve with pressure relief and spark arresting device and the associated containment system pressure switches, the equipment incorporated in the atmospheric auxiliary enclosure does not form part of this certificate.

The enclosure of NovaAIR is a powder coated sheet steel, single compartment enclosure with a door fixed with two hinges and two cam locks. The door includes a window. There is a gland plate provided at the bottom of

the enclosure. The door, the window, the bezel and the gland plate have gasketed joints. The total gross internal volume of the enclosure is 129.6 L. Cable entry through the top, bottom and the side walls of the enclosure is realized by up to ten suitably certified and rated M20x1.5 and/or M25x1.5 cable glands. All unused cable entries are closed off by suitably certified blanking elements. An atmospheric auxiliary enclosure is attached to the bottom of the purged and pressurised enclosure which houses miscellaneous separately certified as well as uncertified process equipment. With the exception of the containment system pressure switches, the equipment incorporated in the atmospheric auxiliary enclosure does not form part of this certificate.

Electrical rating of both NovaPRO 9000 and NovaAIR: 110 V/60Hz or 240 V/50Hz, 115 W. Depending upon the voltage rating of the cartridge heater that is fitted.

Variation 1 - This variation introduced the following changes:

i. Acknowledgement of dual voltage and dual frequency rating of 240V/110V and 50Hz/60Hz.
ii. Introduction of the Flame Photometric Detector (FPD) arrangement to NovaPRO 9000 and NovaAIR Process Gas Chromatographs.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	03 August 2020	R80000328A	The release of the prime certificate.
1	02 February 2021	R80058594A	The introduction of Variation 1.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

15.1 For correct operation the on-site pressurizing air supply must be capable of providing a minimum of 160 L/min for purging.

15.2 The enclosure shall be purged with air from a safe area at a flow rate of not less than 160 L/min through the outlet for at least duration as follows:

Equipment model/configuration	Minimum purge duration [min]
NovaPRO 9000 with cube oven layout	29
NovaPRO 9000 with bay oven layout	15
NovaAIR	15

15.3 The purge gas shall be instrument air with a temperature not exceeding +40°C.

15.4 The end user shall ensure that any alarms provided with the purge controller (such as over pressure or under pressure alarms) are connected in accordance with the manufacturer's instructions.

15.5 The end user shall regularly inspect and maintain the type 931-B 1/2-4x0.2/D flame arrester in accordance with OEM Operation and Maintenance Instructions, B4-IOM-XXXX, Rev 1.0 of 1 January 2014.

The relevant information has been reproduced as part of the instructions provided with the Gas Analysis Equipment. Refer to Nova System Routine Protection System Inspections checklist.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF MANUFACTURE**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Certificates.

17.2 Holders of EU type-examination certificates are required to comply with the production control requirements defined in Article 13 of directive 2014/34/EU.

17.3 The NovaPRO 9000 and NovaAIR Process Gas Chromatographs shall be fitted with a suitably certified 'pxb' purge controller, associated vent relief complete with spark arrestor and associated containment system pressure switches.

17.4 The manufacturer shall take all reasonable steps to ensure that the end user complies with any specific conditions of use for certification associated with the 'pxb' purge controller, vent relief and containment system pressure switches fitted to the equipment. In addition, the manufacturer shall provide the end user with an appropriate copy of the certificate and installation instructions for each certified device that is fitted.

17.5 Each NovaPRO 9000 and NovaAIR Process Gas Chromatograph shall be subjected to a routine overpressure test of 27 mbar for a period of 2 min ± 10 s, in accordance with Clause 16.2 of EN 60079-2:2014. There shall be no permanent deformation that invalidates the type of protection.

17.6 Each NovaPRO 9000 and NovaAIR Process Gas Chromatograph shall be subjected to a routine leakage test, in accordance with Clause 16.3 of EN 60079-2:2014. The leakage flow rate shall not exceed 60 L/min.

17.7 The operation of the pressurisation and purging system attached to the purged enclosure must be verified before use, and:

- Set to provide at least 160 L/min purge flow rate and at least 29 minutes purge time in case of NovaPRO 9000 with cube oven layout.
- Set to provide at least 160 L/min purge flow rate and at least 15 minutes purge time in case of NovaPRO 9000 with bay oven layout.
- Set to provide at least 160 L/min purge flow rate and at least 15 minutes purge time in case of NovaAIR.
- Set to provide and maintain a minimum 0.5 mbar positive pressure difference between the enclosure and both the fuel gas and sample gas containment systems.
- Set to relieve internal overpressure at a maximum of 18 mbar