



COMPANY:

KOOLAIR

INTEGRITY TESTING OF
UNIDIRECTIONAL FLOW DIFUSERS

Reference: 150603

NOVEMBER, 17TH 2015

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Indoor Environment Accredited Profesional
FEDECAI

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Inspection:

INTEGRITY TESTING OF UNIDIRECTIONAL FLOW
DIFUSSERS



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1 SUBJECT



This document presents the results of the INTEGRITY TESTING OF UNIDIRECTIONAL FLOW DIFUSSERS in the installations of KOOLAIR located in Mostoles (Madrid-Spain)

The inspection was carried out by Ambisalud on November, 2015.

2 SCOPE

The test was made to the UNIDIRECTIONAL FLOW DIFFUSER SYSTEM KOOLAIR KTF-008-01.

3 METHODOLOGY

INTEGRITY TESTING		PICTURES
OBJETIVE	Confirm that the filtration system is properly installed. Checking for leaks to confirm that the filter is free from damage in the filter media and the supporting frame is tight.	
VALIDATION CRITERIA	<p>Standard ISO 14644: 3 Test Methods</p> <p>The read from the clean side of the filter concentration should not exceed 0.01% of the detected before the filter to filter H14 , H13 , H12 concentration .</p> <p>Filter H11 (99.9 % efficiency) concentration on the clean side of the filter should be $\leq 0,1$ % of the detected before.</p> <p>Finally , for H10 filters (95% efficiency) , detected in the clean side of the filter should be $\leq 5\%$ concentration of previously</p>	
METHOD	Injecting the aerosol into the air stream before the filter and detect leaks with a photometer in the clean side of the filter performing a sweep of the surface thereof if possible or in the air stream after filtration .	
EQUIPMENT	<p>Particle generator</p> <p>Photometer</p>	

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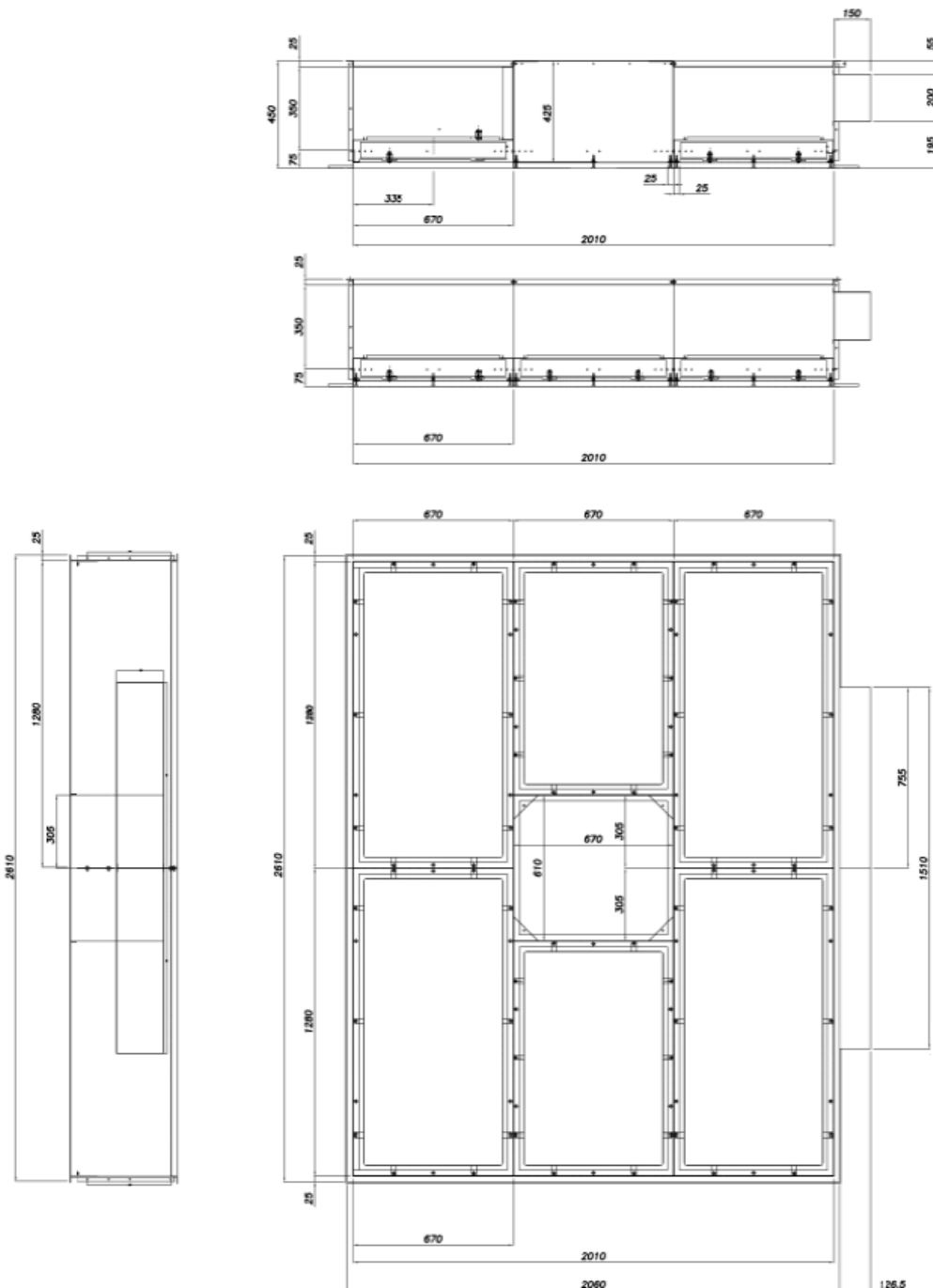
4 DESCRIPTION OF THE UNIDIRECTIONAL FLOW DIFFUSER

The UNIDIRECTIONAL FLOW DIFFUSER SYSTEM KOOLAIR KTF-008-01 characteristics are the following:

Airflow: 4.000 m³/h

Pressure drop: 60 Pa

Scheme with dimensions:



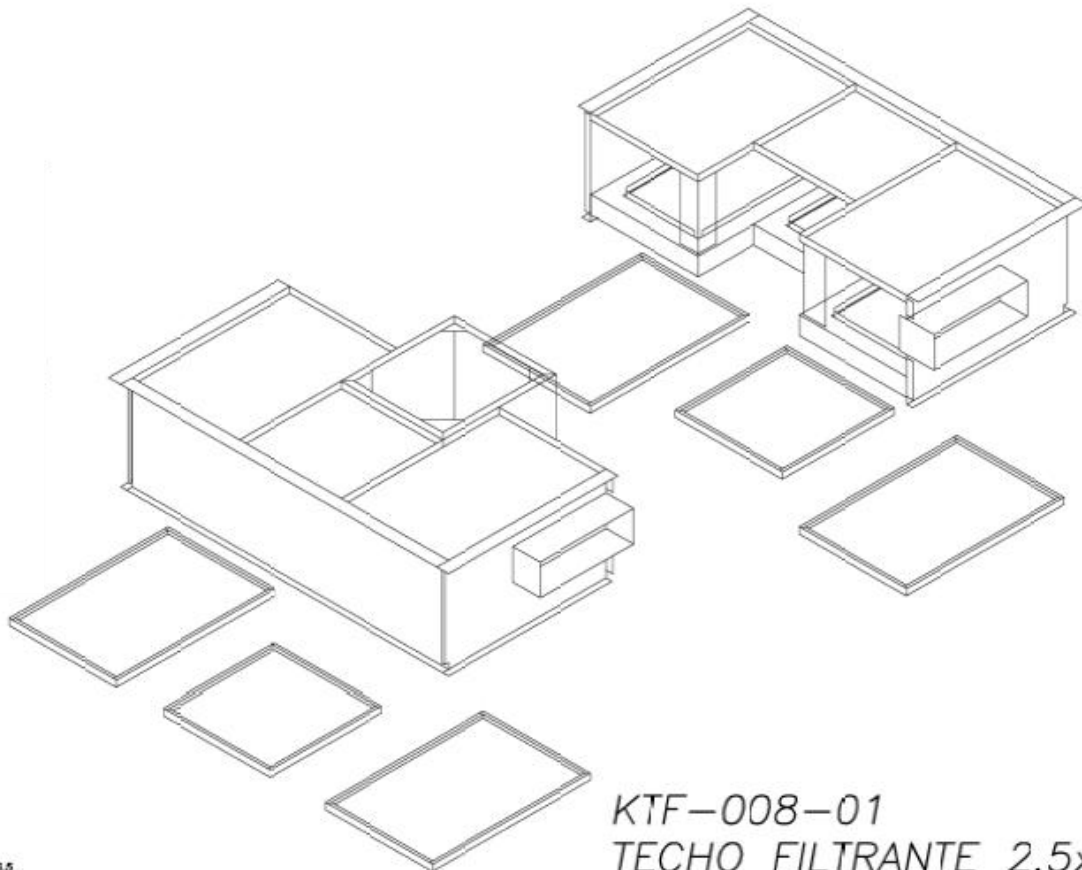
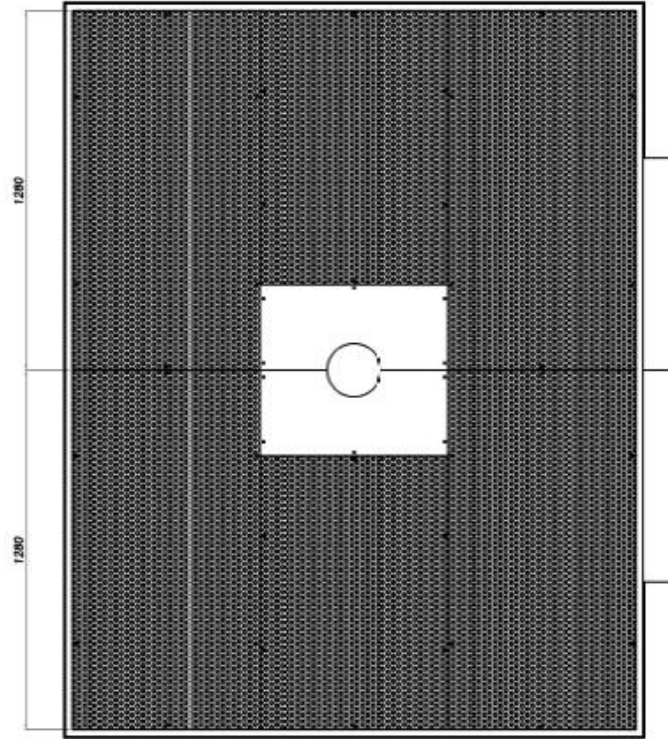
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KTF-008-01
TECHO FILTRANTE 2,5x2

126.5

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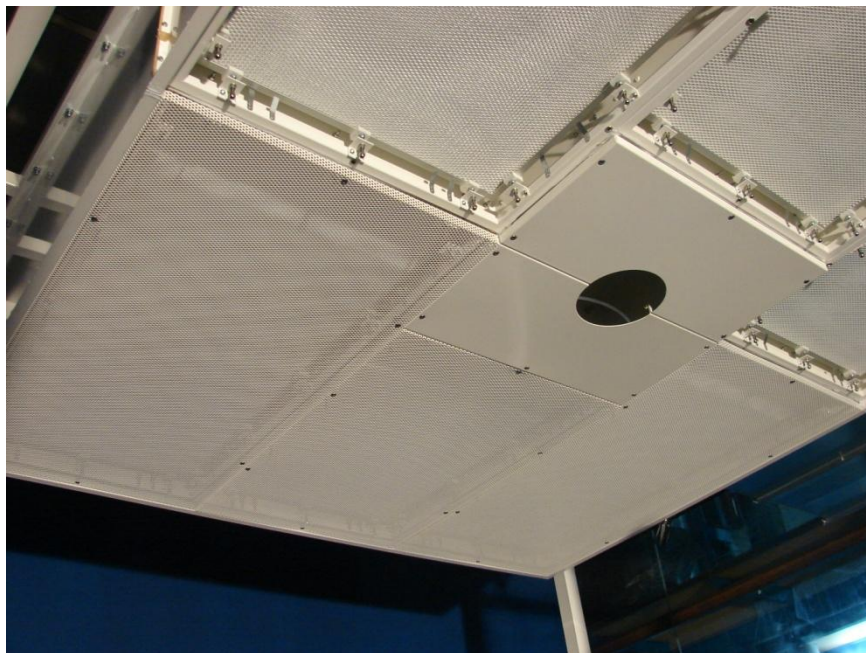
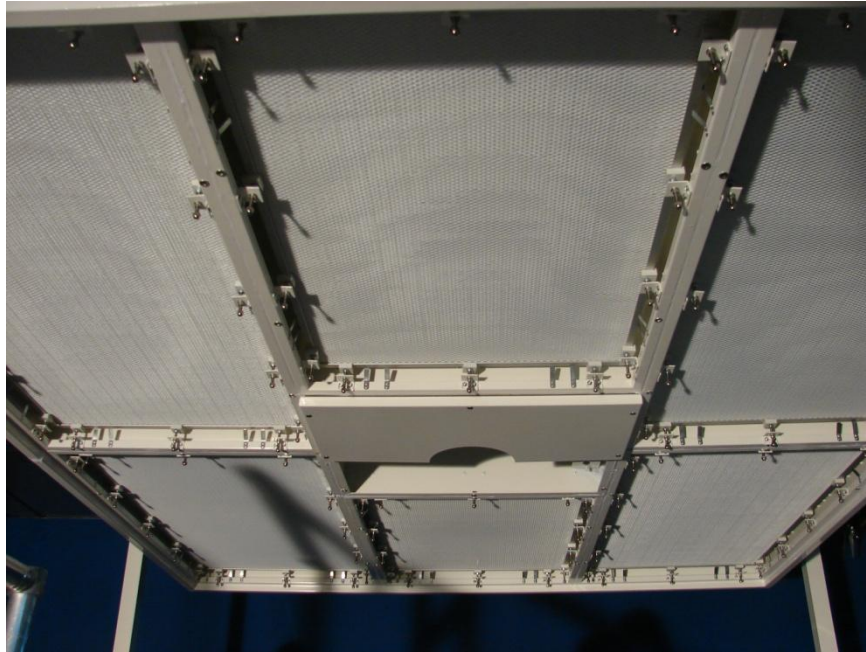
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General view of the unit tested:



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5 CONCLUSION

Ambisalud conducted an Integrity Test in the UNIDIRECTIONAL FLOW UNIT KOOLAIR KTF 008-01 on November 2015.

The results showed:

Consistently total absence of leakage in the filter media (Result = 0,0000)

Minor leakage in contact between filter and frame (Results < 0,01)

The unit KOOLAIR KTF 008-01 tested in the premises of KOOLAIR located in Mostoles (Madrid-Spain) were **CONFORM** to the Standard ISO 14644. 3

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ANNEX I: CERTIFICATES OF QUALITY AND ENVIRONMENTAL

Certificado del Sistema de Gestión de la Calidad



ER-0814/2009

AENOR, Asociación Española de Normalización y Certificación, certifica que la organización

AMBISALUD CALIDAD AMBIENTAL, S.L.

dispone de un sistema de gestión de la calidad conforme con la Norma UNE-EN ISO 9001:2008

para las actividades: La inspección básica de calidad ambiental en interiores.
La validación de quirófanos y salas de ambiente controlado en centros hospitalarios.

que se realizan en: CL VELAZQUEZ, 100 4º. 28006 - MADRID

Fecha de emisión: 2009-07-17
Fecha de renovación: 2012-07-17
Fecha de expiración: 2015-07-17

AENOR Asociación Española de Normalización y Certificación

Avelino BRITO MARQUINA
Director General de AENOR

AENOR Asociación Española de Normalización y Certificación

Génova, 6. 28004 Madrid, España
Tel. 902 102 201 – www.aenor.es

Entidad de certificación de sistemas de gestión de la calidad acreditado por ENAC con acreditación N° 01/C-SC003



AENOR es miembro de la RED IQNet (Red Internacional de Certificación)

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INTEGRITY TESTING OF
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THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
AENOR
hereby certify that the organization

AMBISALUD CALIDAD AMBIENTAL, S.L.

CL VELAZQUEZ, 100 4º
28006 - MADRID
España

for the following field of activities

Basic indoor air quality inspection.
Validation of operating theatre and controlled indoor environment in hospitals.

has implemented and maintains a

Quality Management System

which fulfills the requirements of the following standard

ISO 9001:2008

Issued on: 2009-07-17

Renewed on: 2012-07-17

Validity date: 2015-07-17

Registration Number: ES-0814/2009



Michael Drechsel
President of IQNet

Avelino BRITO
Chief Executive Officer

AENOR
Asociación Española de
Normalización y Certificación

IQNet Partners*:

AENOR Spain AFNOR Certification France AIB-Vincotte International Belgium ANCE Mexico APCER Portugal CCC Cyprus
CISQ Italy CQC China CQM China CQS Czech Republic Cro Cert Croatia DQS Holding GmbH Germany DS Denmark
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia IMNC Mexico INNORPI Tunisia
Inspecta Certification Finland IRAM Argentina JQA Japan KFQ Korea MSZT Hungary Nemko AS Norway NSAI Ireland
PCBC Poland Quality Austria Austria RR Russia SII Israel SIQ Slovenia SIRIM QAS International Malaysia SQS Switzerland SRAC
Romania TEST St Petersburg Russia TSE Turkey YUQS Serbia

IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

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Inspection:

INTEGRITY TESTING OF
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Certificado del Sistema de Gestión Ambiental



AENOR, Asociación Española de Normalización y Certificación, certifica que la organización

AMBISALUD CALIDAD AMBIENTAL, S.L.

dispone de un sistema de gestión ambiental conforme con la norma UNE-EN ISO 14001:2004

para las actividades: La inspección básica de calidad ambiental en interiores.
La validación de quirófanos y salas de ambiente controlado en centros hospitalarios.

que se realizan en: C/ VELA ZQUEZ, 100 4º. 28006 - MADRID

Fecha de emisión: 2013-04-02
Fecha de expiración: 2016-04-02

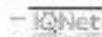
Avelino BRITO MARQUINA
Director General de AENOR

AENOR

Asociación Española de
Normalización y Certificación

Ciudad, 6. 28004 Madrid, España
Tel 902 102 200 - www.aenor.es

Entidad de certificación de sistemas de gestión ambiental acreditada por ENAC con acreditación N° 2010-MAD03



AENOR es miembro de la RED IGNET (Red Internacional de Certificación)

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THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
AENOR

hereby certify that the organization

AMBISALUD CALIDAD AMBIENTAL, S.L.

CL VELAZQUEZ, 100 4^a
28006 - MADRID
España

for the following field of activities

Basic indoor air quality inspection,
Validation of operating theatre and controlled indoor environment in hospitals.

has implemented and maintains a

Environmental Management System

which fulfills the requirements of the following standard

ISO 14001:2004

Issued on: 2013-04-02

Validity date: 2016-04-02

Registration Number: ES-2013/0111



Michael Drechsel
Michael Drechsel
President of IQNet

Antonio BRITO
Antonio BRITO
Chief Executive Officer
AENOR
Asociación Española de
Certificación y Control de Calidad

IQNet Partners:

AENOR Spain AFNOR Certification France AIB-Viapotte International Belgium ANCE Mexico APCER Portugal CCC Cyprus
CISQ Italy CQC China CQM China CQS Czech Republic Crc Cert Croatia DQS Holding GmbH Germany DS Denmark
FCV Dresden FONDOROMA Venezuela ICOMTEC Colombia IMC Mexico INGERE Tunisia
Singapore Certification Malaya IRAM Argentina JQA Japan KPC Korea MSZT Hungary Tenko AS Nenzag NSAI Ireland
PCBC Poland Quality Austria Austria ER Razavi SH Israel SIQ Slovakia SIRM QAS International Malaysia SGS Switzerland SEAC

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ANNEX II: CERTIFICATES OF CALIBRATION



CERTIFICADO DE CALIBRACIÓN


Certificate of Calibration

Número 20155069
Number

Página 1 de 3 páginas
Page 1 of 3 pages

**LABORATORIO DE CALIBRACIÓN
AZBIL TELSTAR TECHNOLOGIES, S.L.U.**
C/ Josep Tapiolas, 120
08226 – Terrassa (Barcelona)
Telf: +34 93 736 16 00
Fax: +34 93 785 93 42
www.telstar.eu



OBJETO <i>Item</i>	AEROSOL PHOTOMETER
MARCA <i>Brand</i>	ATI
MODELO <i>Model</i>	TDA-2H
IDENTIFICACIÓN <i>Identification</i>	21877
SOLICITANTE <i>Applicant</i>	AMBISALUD CALIDAD AMBIENTAL, S.L. C/ Velázquez 100, 4º Izda 28006 Madrid Madrid, España
FECHA/S DE CALIBRACIÓN <i>Date/s of calibration</i>	06/03/2015
Signatario/s autorizado/s <i>Authorized signatory/ies</i>	Fecha de emisión <i>Date of issue</i>
 Josep M.º Hidalgo Rble. Técnico de Laboratorio	06/03/2015

Los resultados se refieren al momento y condiciones en que se realizaron las mediciones y que figuran en el citado Informe. Este laboratorio no se responsabiliza de los perjuicios que puedan derivarse del uso inadecuado de los instrumentos calibrados.
Este certificado no podrá ser reproducido de una forma parcial sin la aprobación expresa del Laboratorio.
*This results are referred to the moment and conditions in which the measurements were made. This Laboratory assumes no responsibility for damages ensuing unsuitable use of the calibrated instruments.
This Certificate may not be partially reproduced, except with the prior permission of the Laboratory.*

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LABORATORIO DE CALIBRACIÓN
CALIBRATION LABORATORY

Número/Number: 20155069

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Condiciones ambientales durante la calibración / Room conditions during calibration

Temperatura / Temperature: 23 ± 3°C
 Humedad relativa / Relative humidity: 60 ± 20%
 Presión Atmosférica / Atmospheric pressure: 1030 mbar

Procedimiento de calibración / Calibration procedure

La calibración se ha realizado por el procedimiento T-A-003.
The calibration has been carried out according to T-A-003 procedure.

Instrumentos utilizados

Used instruments

	ID	Incertidumbre Uncertainty (k=2)
Multímetro YOKOGAWA 7552 n/s 51WF0886	VEL-02	± 0.41 %
Caudalímetro TSI 4043E n/s 40430502014	VCL-01	± 3.0 %
Fotómetro ATI TDA-2H n/s 16884	VDA-14	± 2.5 % F.S.

Los instrumentos y patrones utilizados en la calibración son trazables a APPLUS⁺. / *The instruments and standards used in the calibration are traceable to APPLUS⁺.*

Condiciones de Calibración / Calibration conditions

P. TEST Test P.	VALORES Values		TOLERANCIA Tolerance
	As Found	As Left	
J6-WHT	0,2682	0,2679	>220mV/Def
J9-1	5,028	5,028	+5V±,1V
J9-5	14,955	14,957	+15V±,45V
J9-6	-14,857	-14,858	-15V±,45V
U4-3	-11,933	-11,935	-12V±,5V
U8-1	12,025	12,025	+12V±,5V
U12-6	5,004	5,004	+5V±20mV
U13-1	9,876	9,876	+10V±,4V
Caudal / Flow	29,5	28,3	28,3±2,8 SLPM

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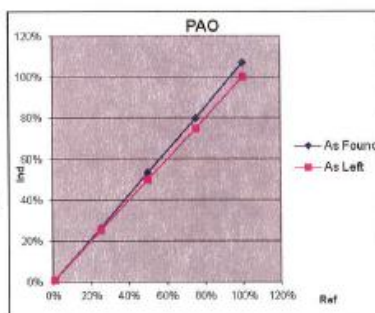


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Resultados Calibración / Calibration results

INDICACIÓN DE CONCENTRACION EN PAO %

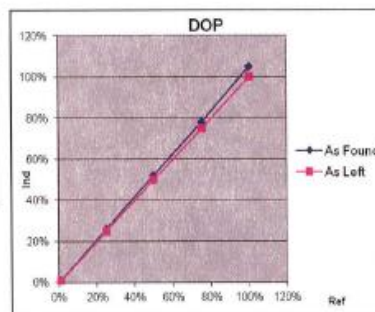
<i>As Found</i>		<i>As Left</i>	
REFERENCIA <i>Reference</i>	INDICACIÓN <i>Indication</i>	REFERENCIA <i>Reference</i>	INDICACIÓN <i>Indication</i>
0%	0,0%	0%	0,0%
1%	1,0%	1%	1,0%
25%	26,0%	25%	25,0%
50%	53,0%	50%	50,0%
75%	80,0%	75%	75,0%
100%	107,0%	100%	100,0%



*Tolerancia: 10% de la lectura/
 Tolerance: 10% of reading

INDICACIÓN DE CONCENTRACION EN DOP %

<i>As Found</i>		<i>As Left</i>	
REFERENCIA <i>Reference</i>	INDICACIÓN <i>Indication</i>	REFERENCIA <i>Reference</i>	INDICACIÓN <i>Indication</i>
0%	0,0%	0%	0,0%
1%	1,0%	1%	1,0%
25%	26,0%	25%	25,0%
50%	52,0%	50%	50,0%
75%	78,0%	75%	75,0%
100%	105,0%	100%	100,0%



*Tolerancia: 10% de la lectura/
 Tolerance: 10% of reading

As Found: valores tomados antes de la calibración. / *Values read before the calibration.*

As Left: valores tomados después de la calibración. / *Values read after the calibration.*

Comentarios / *Comments:*

Los resultados obtenidos en la calibración del equipo (valores *As Left*), objeto del presente certificado, están **dentro** de las especificaciones del fabricante.
 Los resultados contenidos en este informe se refieren al momento y condiciones en que se realizaron las mediciones.
 La cantidad de aerosol generada para la indicación del 100% corresponde a 100 µg/l.

*The results obtained from the calibration of the equipment (As Left values), covered by this certificate, are within the manufacturer's specifications.
 The results contained in this report relate to the time and conditions under which the measurements were made. The amount of aerosol generated for indication of 100% corresponds to 100 µg/l.*