

ภาคผนวก ข
ใบรับรองเครื่องมือที่ใช้ในการทดสอบ



GE
Inspection Technologies

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Test Certificate for X-Ray Tubes

Certificate No.: 23930																									
X-Ray Insert Tube No.: 60-1725	Type: MIR 301 E																								
Large Focus ■ : 3,00mm (1.5)	fine Fokus □ : mm () EN12543 (IEC 336)																								
<u>MAXIMUM CONTINUOUS LOAD</u>																									
Constant potential ■ : 300 kV	3,0 mA																								
Constant potential □ :	kV mA																								
Non-rectified voltage :	kV mA																								
Max. allowed filament current ■ : 3,8 Amp.	□ : Amp.																								
Cooling of the Anode by: Air	Minimum flow: l/min																								
Tubehousing Type: ERESCO 65 MF3	Serial No.:08 2313-60																								
Ray protection license: BFS 01/04 RRöV																									
Record No.:344/08	Order No.: 124725																								
<u>Data of load</u>																									
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Constant potential</th> <th colspan="2">non-rectified voltage</th> </tr> <tr> <th>kV</th> <th>■ mA</th> <th>□</th> <th>kV mA</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>6</td> <td></td> <td></td> </tr> <tr> <td>150</td> <td>6</td> <td></td> <td></td> </tr> <tr> <td>300</td> <td>3,0</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Constant potential		non-rectified voltage		kV	■ mA	□	kV mA	20	6			150	6			300	3,0						
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Certified at Ahrensburg, this 19.09.2008 <i>Handwritten signature</i>																									

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Bilgersdorfer Allee 11
22926 Ahrensburg (Germany)
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St.-Nr.: 205/5930/0173

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GE
Inspection Technologies

X-ray

Konformitätserklärung Declaration of Conformity

von / by

GE Inspection Technologies

Bogenstraße 41,
22629 Ahrensburg, Germany

Erzeugnis und Typenbezeichnung
Product and Model

ERESCO 65 MF3

- Industrie-Röntgengerät
- Industrial X-Ray Equipment

Das Gerät erfüllt damit die Forderungen folgender EG-Richtlinien

Niederspannungs-Richtlinie

EMV-Richtlinie

nat. franz. Standard

73 / 23 / EWG

89 / 336 / EWG

NFC 74 100

The equipment conforms with the following applicable EC-Directives

Low Voltage Council Directive

EMC Council Directive

nat. french Standard

Hierfür liegen folgende Prüfberichte vor:

02 / 2245-1D (TTI-P-G 100/96-30)
02 / 2245-1E (TTI-P-G 100/96-30)
03 / 2245-2 (TTI-P-G 100/96-30)
05 / 5027-1 (TTI-P-G 100/96-30)
08 / 8090-1-2 (DAT-P-229/96-02)
08 / 8090-1-2e (DAT-P-229/96-02)

For this the following certificates exist:

Das Gerät entspricht folgenden Normen

EN 12100-1
EN 12100-2
EN 418
EN 954-1
EN 1050
EN 60529

EN 60204-1
EN 61000-6-2
EN 61000-6-3
EN 61000-6-4
DIN 54113
RöV

The equipment is in accordance with the following standards

Das Gerät ist mit dem CE-Zeichen gekennzeichnet. Beim Betrieb sind nationale Gesetze der Strahlensicherheit zusätzlich zu beachten.

Die Erklärung basiert auf dem Ergebnis von Prüfungen an einem Muster.

Die Einhaltung der EMV-Richtlinie wurde von einem unabhängigen akkreditiertem Prüflabor überprüft und bestätigt (nach EN 45001).



The equipment is labeled with the CE-mark. National laws concerning the radiation safety have to be adhered to.

This certificate is the result of tests carried out on one sample.

The conformity acc. to EMC Council Directive was certified by an independent accredited test laboratory (acc. EN 45001).



ppa. Dr. Michael Schaefer

GE Inspection Technologies GmbH,
June 20, 2008

ppa. Hans Uwe Matzen

GE Inspection Technologies GmbH,
June 20, 2008

GEInspectionTechnologies.com

ANLAGE zum Röhrenbegleitschein

ACHTUNG ! Dieser Röntgenstrahler enthält Beryllium und darf nicht mit dem normalen Gewerbe- oder Hausmüll entsorgt werden.

Berylliumstaub, Berylliumdampf und Berylliumverbindungen sind giftig, gefährden insbesondere die Atmungsorgane und können Krebserkrankungen verursachen.

Die örtlichen Entsorgungsvorschriften sind daher zu beachten. Bei frachtfreier Rücksendung übernehmen wir die Entsorgung.

Sicherheitsratschläge:

- Nach Kontakt mit den Augen diese gründlich mit Wasser spülen und den Arzt konsultieren.
- Nach Hautberührung sofort mit viel Wasser und Seife abwaschen.
- Bei Verdacht und Unwohlsein den Arzt konsultieren.

ANNEX to the Tube Certificate

ATTENTION ! This radiating X-ray source contains beryllium and must by no means be disposed of together with industrial or domestic waste.

Beryllium dust, beryllium vapours, and beryllium compounds are poisonous, they are a danger specifically to the respiratory organs and might cause cancer.

The local regulations for handling waste must strictly be observed. Upon return free of charges we would take care of disposing.

Advices for security:

- in case of contact with the eyes do carefully wash out and contact physician
- in case of contact with the skin do immediately wash with plenty of water and soap
- in case of any doubt and indisposition do immediately contact physician.





OLYMPUS NDT
 48 WOERD AVENUE
 Waltham, MA 02453 USA
 TEL: (781) 419-3900
 E-mail: info@panametrics-ndt.com

ISO 9001 CERTIFIED

Certificate of Calibration

Form NDT Version 1.3.7 - 259J
 Certificate Number 2073707

Customer: Olympus Singapore Pte Ltd
 NDT Sales Order/RA: CA032102
 Gage Model: 38DLPLUS S/N: 100105012
 Gage Status: New Transducer Status: New
 Operational Software: 1.05
 Transducer Model: D790-SM S/N: 729502
 Temperature: 72F Humidity: 38%

This certifies that calibration of the above ultrasonic thickness gaging system has been verified within the tolerance and measurement range indicated below, using calibration standards with measured thickness traceable to the National Institute of Standards and Technology (N.I.S.T.). The calibration standard material is CARBON STEEL. The test procedure used conforms to the requirements of ISO-9001 section 7.6.

All units below are: inches

System Calibration Data					
Test-block S/N	Certified Length inches/mm	Measured Length inches/mm	Deviation inches/mm	Tolerance +/-inches/mm	Within Tolerance?
1200	0.03900	.039	.0000	.004	YES
1201	0.07815	.078	-.0001	.004	YES
1202	0.19695	.198	.0011	.004	YES
1203	0.39440	.395	.0006	.004	YES
1204	0.78785	.787	-.0009	.004	YES
1205	1.96990	1.970	.0001	.004	YES
1206	3.93815	3.938	-.0001	.004	YES
N/A	N/A	N/A	N/A	N/A	N/A

Gage Setup: N/A

Gage Velocity after Calibration: .2326 inches/μs

Gage Zero after Calibration: 28570

Note: The measurement accuracy of any ultrasonic gaging system is dependent on the performance and proper usage of both the gage and transducer. This certificate of calibration identifies the part number and serial number of the transducer used to make the recorded measurements. System performance with other transducers may differ, especially with transducers that have been subjected to excessive wear or overheating. The user assumes responsibility for verifying system accuracy if the gage is used with transducers other than the one identified on this certificate. It is the responsibility of the user to periodically verify system calibration as outlined in the instrument operating manual.

Comments: N/A

With the exception of cosmetic tests on repaired gages, does the above gage pass all test requirements of Panametrics procedure #7.14-706? <<YES>>

Special Setup Approval: N/A

Technician: John Chappell

Date: 12/14/2010 at 2:29:29 PM

Signature:



Telephone: 781-419-3900
 Fax 781-419-3980
<http://www.olympusndt.com>
<http://www.panametrics-ndt.com>



**TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CALIBRATION SERVICES AND ENVIRONMENTAL ANALYSIS DEPARTMENT**

534/4 PATTANAKARN ROAD SOI 18. SUANLUANG, SUANLUANG BANGKOK 10250

TEL. 0-2717-3000-24 FAX. 0-2719-9484

Cert.No.: 11L5446

Page: 1 of 2

Certificate of Calibration

Equipment :	Step Wedge-Carbon Steel
Type :	CS Five Step
Serial No. :	TNDT-5 010/4
ID No. :	-
Manufacturer :	-
Submitted by :	Thai Nondestructive Testing Public Company Limited 19 Soi Suanson 8, Ramkhamhang Road, Huamark, Bangkok, Bangkok 10240
Ambient Temperature :	(20 ± 2) °C
Relative Humidity :	(50 ± 15) %
Calibrated by :	Waraporn Pansuwan
Approved by :	<u>KS Pirat</u> Approved Signatory
	() Teerayooth Chuleelertwittayapon
	() Mitr Veeratham
	(✓) Pirat Kongsri
Issue Date :	05 October 2011

The uncertainties are for a confidence probability of approximately 95%.



Equipment : Step Wedge-Carbon Steel
Type : CS Five Step
Serial No. : TNDT-5 010/4
ID No. : -
Manufacturer : -
Received Date : 29 September 2011
Condition As-Received : Used Item
Calibration Date : 4 October 2011
Reference : 109-1189WN

Cert.No.: 11L5446
Page: 2 of 2

Measurement Method :

Calibration were conducted using in-house calibration according to direct measurement method with external digit micrometer caliper.

Condition of this result of calibration

1. Reference standard instruments :-

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Test report No.</u>	<u>Due date</u>
1) External Digit Micrometer Caliper	193-101	1025873	10L6369	16 Nov 2011

2. This result of calibration was found accurate as shown on date and place of calibration only.

3. This result of calibration was made on requested at the point specified by customer.

4. This certification is traceable to the International System of Unit maintained at :-

-National Institute of Metrology (Thailand).

Result of calibration:-

Without adjustment

1	3	5	7	9	11	13	15	17	19
2	4	6	8	10	12	14	16	18	20

Nominal Thickness (mm)	Point No.	Standard Reading (mm)
3	1	3.170
	2	3.172
	3	3.157
	4	3.160
6	5	6.157
	6	6.149
	7	6.137
	8	6.138
9	9	9.139
	10	9.140
	11	9.136
	12	9.140

Nominal Thickness (mm)	Point No.	Standard Reading
12	13	12.139
	14	12.144
	15	12.152
	16	12.154
15	17	15.158
	18	15.157
	19	15.171
	20	15.173

The uncertainty of measurement was 1.7 μm

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95 %.