Base Load Power Hub (BLPH)

RESTRICTION ORIFICE

FACTORY ACCEPTANCE TEST PROCEDURE

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
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HOLDS LIST

No.	Description
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VISUAL / DIMENSIONAL PROCEDURE:

1. SCOPE

This procedure covers the requirements which shall be used about the visual and dimensional inspection of parts and assembly of flowmeters and restriction orifices.

2. RESPONSIBILITY

The workshop Q.C. supervisor is responsible for the control of materials in accordance with this specification.

3. PROCEDURE

Visual and dimensional examinations shall be performed in accordance with the manufacturing and control plan requirements.

Controls shall be performed at least at these manufacturing steps:

- Raw material reception;
- Process machining;
- Assembly;
- Release for shipping.

4. CONTROL TOOLS for DIMENSIONAL EXAMINATION

For dimensional examinations, according to the piece dimensions and parts the following

tools shall be used:

- for lengths up to 500 mm: sliding gauge;
- for lengths over 500 mm: steel tape;
- for diameters with decimal tolerance: sliding qauge;
- for diameters with centesimal tolerance: micrometer qauqe;
- for threads: plug gauge or roller thread gauge
- for surface finish: roughness Gauge

All the instruments used for examinations shall be controlled and calibrated instruments, certified by the Q.A. manager.

For visual examinations in aid of naked eye the following tools may be used:

- Mirrors;
- Magnifying lens;
- Illuminators.

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5. PROCEDURE for VISUAL and DIMENSIONAL EXAMINATION

Dimensional examinations shall be performed on 100% of the pieces. All the dimensions shown on reference documents listed on the manufacturing and control plan (drawings, codes, contract specifications, etc...) shall be checked.

All pieces whose dimensions are outside the manufacturing tolerances, shown on the reference documents, shall be rejected and segregated from the remaining pieces, identifying them with label marked "HOLD ITEMS". In such event a non-conforming material report shall be issued by the Q.C. supervisor and promptly forwarded to Q.A. manager.

Visual examinations shall be performed on 100% of the pieces. The examination shall consist of observation of whatever portions of a component or weld. The following parts shall be checked carefully:

- External and internal surfaces;
- Bevels;
- Marking;
- Packing;
- Welds (where applicable).

All surfaces shall be clean and free of scales, rust, oil and grease. All welds, pipe and components shall be capable of complying with the requirements specified below or with the limitations on imperfections specified in the Material Specification under with the component was furnished.

The following indications are unacceptable:

- Cracks on external surface;
- Undercut on surface which is greater than 1 mm deep;
- Lack of fusion on surface;
- Weld reinforcement greater than specified in the welding specification (where applicable);
- Incomplete weld penetration (where applicable).

6. REPORT

A report shall be issued by the Q.A. department and this report shall become a part of the manufacturer's final quality control documentation to be submitted to the purchaser.

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POSITIVE MATERIAL IDENTIFICATION PROCEDURE:

1. SCOPE

This document contains all the necessary instructions to identify an alloy and to carry out its chemical composition Quantitative analysis with normal accuracy degree by using Niton Xtl 800 mod. 898 and Xtl 700 mod. 797Z.

2. REFERENCE DOCUMENTS

- Operating Manual for alloy Analyzer Niton;
- ASME BPVC IIA Latest Edition.

3. PERSONNEL TRAINING

The personnel carrying out the tests shall have an adequate knowledge of the operating instructions included in the Manual.

4. MEASUREMENT AND OPERATION PRINCIPLES

The apparatus applies the X Ray fluorescence analytic technique through energy issue from a X Ray-tube, for the followings object:

- Quality control and examination of type of alloy.
- Quantitative analysis of chemical composition.

The alloy identification is carried out through the chemical recognition of the X ray's intensity chemical combination corresponding to the Specific document composition range.

Therefore, it is necessary to ensure that the surface of the material to be analysed chemically represents the sample under examination and, when necessary, even by means of mechanical working (cleaning, polishing, grinding, etc.) in order to remove oxidations or any parts of not representative material.

5. RADIATIONS SECURITY

The operator must follow the manual instructions. The inspection performed with "Niton equipment" will not cause any environment incompatibility and will not interfere with all the operations performed near the operator.

6. CALIBRATION CHECK

Switch on the instrument and then wait for its self – checking starting with its calibration test through identification of the standard sample 1.1/4 Cr ½ Mo UNS K11572 - IARM 35 EN. In case the apparatus does not identify the standard sample, it will be necessary to proceed as described in the Manual.

7. ALLOY IDENTIFICATION

Check the surface conditions and select the appropriate operating mode. Position the instrument taking care that the window is completely covered with the material to be examined and start with the alloy identification.

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After completion of the identification procedure, the apparatus will show on the display the name and code of the alloy which has been analyzed.
The failure of an identification can be due to one of the following reasons:

- Movement of the probe during data acquisition.
- Surface coat chemical not representative.
- Dimension of part under examination lower than probe window dimension or non-contact conditions.
- Metal thickness not suitable.
- Alloy not included in the specifications which have been stored.

The percentages of the different elements are visualized on the display at the end of the alloy identification.

After PMI testing has been successfully completed, each equipment component shall be marked.

If the result is different from the expected one, repeat the identification to confirm, verify that the operating system applied is suitable to the surface conditions and in case select an operating system more adequate.

Testing of C (Carbon) will not be performed because it is not specifically required.

8. ACCEPTANCE CRITERIA

For acceptance, it must be demonstrated that materials contain the amounts of alloying elements shown in the material specification. Alloys shall be acceptable if the alloying elements are each within 10% of the specified range of values. Welds with consumables that match, or nearly match, the base metal composition shall be within ±12.5% of the ranges allowed in ASME SEC IIC for each element.

9. REJECTION PROCEDURES

If the PMI testing results fall outside the acceptable range using a method described, the Equipment Manufacturer or the Fabricator, as applicable, has the option to conduct a more accurate analysis at his own expense to determine the component acceptance such as obtaining a chemical analysis performed by an independent testing laboratory.

The alternative test method or independent laboratory must be acceptable to the Company Inspector. The results of the more accurate test method or independent chemical analysis shall govern. If any component or weld is found unacceptable, it shall be marked with an "X" and replaced. The replacement shall be alloy verified in accordance with this standard.

10. TEST REPORT

After completion of the examination the operator will record the results on the Test Report.

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APPENDIX #1:
VISUAL & DIMENSIONAL REPORT

TERRANOVA® Srl - www.terranova-instruments.com
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Head Office: Via Rosso Medardo 16 – 20159 Milano – Italy
Phone: +39 0377 919119 – Fax: +39 0377 855720 - VAT IT07848810151

TERRANOVA® Srl - 26827 Terranova dei Passerini (LO) - Via Gramsci 1 – Tel. +39 0377 9110636
Email: sales@terranova-instruments.com – Web: www.terranova-instruments.com

TEST CERTIFICATE (Certificato di Collaudo)

Customer (Cliente)	P.O. (Ordine)	Plant (Impianto)	Job (Commessa N.)

TEST RESULT (ESITO DEL COLLAUDO)

Date (Data)						Attachment (Allegati)	TER Inspector Ispettore TER)	Purchaser's Inspector (Ispettore Cliente)	Total Page (Tot. Pagine)
		Conforming (Conforme)	**Dimensional Check (Controllo Dimensionale)**		**Conforming (Conforme)**				
					Not Conforming (Non Conforme)				
			Marking/Tagging check (Controllo Marcature)		**Conforming (Conforme)**				
		Not Conforming (Non Conforme)			Not Conforming (Non Conforme)				Total Item (Totale Pezzi)
			Surface Finish Check (Controllo Finiture Superficiali)		**Conforming (Conforme)**				
					Not Conforming (Non Conforme)				

RESULT (RISULTATI)

N.	Quantity (Pezzi)	P.O. Item (P.O. Ref)	Product (Prodotto)	Model/Tag (Serial Number/Sigla)	COMPONENTS MATERIALS (MATERIALI DEI COMPONENTI)			
					Flange Material (Materiale Flangia)	Pipe Material (Materiale Tubo)	Plate Material (Materiale Disco)	Drawings N° (Numero Disegni)
1								
2								
...								

APPENDIX #2:
PMI REPORT

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Email: sales@terranova-instruments.com – Web: www.terranova-instruments.com

POSITIVE ALLOY MATERIAL IDENTIFICATION

IDENTIFICAZIONE MATERIALI

REPORT N°.	
Date / *Data*	
Sheet / *Pagina*	OF

APPARATUS / *STRUMENTO*				**PROCEDURE** / *PROCEDURA*	
CUSTOMER / *CLIENTE*		**JOB N°.** / *N°. COMMESSA*		**PLANT** / *IMPIANTO*	
HEAT N°. / *COLATA N°.*		**P.O.** / *ORDINE CLIENTE*		**QCP** / **QUAL. PLAN No.**	
MATERIAL / *MATERIALE*		**OBJECT** / *OGGETTO*			
DRAWING / *DISEGNO*		**EXTEND OF ANALYSE** / *ESTENSIONE CONTROLLO*		**QUANTITY ANALYSIS** / *N°. ANALISI TOTALI*	

PO ITEM	**ITEM DESCRIPTION** / *DESCRIZIONE ITEM*	**ANALYSIS RESULTS** / *RISULTATI D' ANALISI*										**CONFORMING** / *CONFORME*	**HEAT** / *COLATA*
		% REQUIRED / *RICHIESTE*					**% MEASURED** / MISURATE						
		Ni	**Cr**	**Mo**			**Ni**	**Cr**	**Mo**			**YES / NO**	

Operator / *Operatore:*

Customer / *Cliente:*

Inspector / *Ispettore:*