



نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض



خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک
(قرارداد BK-HD-GCS-CO-0015_02)

شماره پیمان:

053 - 073 - 9184

Ferrite Number Measurement Procedure

پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	AA	120	QC	PR	0009	V00

شماره صفحه: 1 از 8

طرح نگهداشت و افزایش تولید 27 مخزن

Ferrite Number Measurement Procedure

نگهداشت و افزایش تولید میدان نفتی بینک

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Status:

IFA: Issued For Approval

IFI: Issued For Information

AFC: Approved For Construction



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V00	0009	PR	QC	120	AA	GCS	BK

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	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد /BK-HD-GCS-CO-0015_02)								
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1. INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Manufacturing (w/Engineering & Material Supply) of Air Coolers
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of: Hirgan Energy – Design & Inspection(D&I) Companies
VENDOR:	Aban Air Cooler (AAC)
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	Third Party Inspector
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

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2. Purpose

This procedure covers components and material to be checked, sampling requirements, approved methods, acceptance/rejection criteria for Ferrite Check of austenitic stainless steels Air Cooled Heat Exchangers in “Binak Oilfield Development – Manufacturing (w/Engineering & Material Supply) of Air Coolers”.

3. References Documents

- AWS A4.2 Standard Procedures for Calibrating Magnetic Instruments to Measure the Delta Ferrite Content of Austenitic and Duplex Ferritic Austenitic Stainless-Steel Weld Metal
- ASME SEC VIII Div.1 Ed.2017
- ASME SEC II .C Ed.2017

4. Calibration

Ferrite scopes have three levels of calibration as described in detail in the operating manual of the equipment.

Ferrite check instrument shall be calibrated before job by means of standard calibration blocks by Inspector.

4.1. Corrective Calibration

A corrective calibration of the equipment shall be performed whenever the probe is changed. As the probe wears, the calibration frequency should be increased. Excessively worn probes, as indicated by unstable measurements, shall not be used.

1) The equipment shall be calibrated

- Prior to each use
- Whenever batteries, probe cable etc. are replaced
- At least every one hour of continuous use.

2) Calibration of the equipment shall be performed using suitable calibration standard provided by manufacturer and AWS A4.2

4.2. The machine is supplied with four calibration blocks of base, 0.7 FN, 2.6 FN and 9.5 FN.

4.3. Test equipment shall:

- Be suitable for the range of 1-80% ferrite.

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- Be suitable for the range of surface curvatures and orientations to be encountered such as welds and small-bore fittings.
- Be sufficiently portable to gain access to each checkpoint under evaluation and be suitable for work within limited spaces.
- Be capable of providing `direct read-out' quantitative results.
- Have Calibration Blocks that cover the ferrite range 1-80% with relevant certification.
- Ferrite measurements may be influenced when material thickness is less than 2.5mm. In such cases a correction factor given in the operating manual of the equipment may be used.

5. Ferrite Content Checking for Stainless Steels

- Check the ferrite content of every austenitic stainless-steel weld, including overlay welds, in the as-welded condition using a Sevem gauge or a ferrite scope.
- Content of ferrite level in austenitic chromium/nickel welds shall be between 3-8 FN.
- Measuring instrument: Magnetic instruments may be used to measure weld metal ferrite content provided they are calibrated to recognized calibration procedures such as AWS A4.2, Standard Procedures for Calibrating Magnetic Instruments to Measure the Delta Ferrite Content of Austenitic Stainless-Steel Weld Metal.
- If chemical analysis of weld deposit is used to obtain the ferrite content, the analysis shall include nitrogen. The WRC Constitution or DeLong (FN) Diagrams for Stainless Steel Weld Metals (latest edition) shall be used to assess ferrite content.
- In case of PWHT, ferrite measurements shall be taken before PWHT. The specified ferrite content shall be checked also in PQR.

See attachment for ferrite content report.

6. Extent of Inspection

The ferrite content of 10% of every austenitic stainless-steel weld, including overlay welds, in the as-welded condition will be checked.

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7. Sampling Procedure

Q.C Department shall be responsible for arranging ferrite check operators for conducting ferrite check as per this procedure.

Ferrite check shall be carried out in accordance with defined activity according to ITP.

When access is not possible to the inside weld and/or weld size is small, examination of the outside of a weld only shall be acceptable.

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Attachment (Ferrite Content Report)

Project Num.:							Project Name:			Procedure Num.:		
Operator Name:							Operator ID Num.:			Operator Signature:		
Equipment Type:							Equipment Serial Num.:			Calibration Date:		
No.	Description of Examined Material	Recorded Value Ferrite %		Average	Accept	Reject	Retest					
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
Comments:												
A.A.C Inspector				NISOC				Client/TPA				
Name:				Name:				Name:				
Signature:				Signature:				Signature:				
Date:				Date:				Date:				