HYUNDAI HEAVY INDUSTRIES | ENGINE & MACHINERY

Deep Change 새로운 100년! 미래를 향한 담대한 도전

TECHNICAL CIRCULAR

DOC No.: HHI-TEC-0450
Date : July 25, 2022

SUBJECT: RE-INTRODUCTION OF WinGD iGPR

TYPE: ALL HYUNDAI-WinGD X-DF ENGINES

DISTRIBUTION

☑ Ship yard	☑ Ship owner

Date	TEC No.	Design	Check	Approve	Change	R
20220725	HHI-TEC-0450	LSH	OSH	SSH	First issue.	0
						1
						2
						3
						4
						5

TECHNICAL CIRCULAR

DOC No.: HHI-TEC-0450

We have issued the technical circular “HHI-TI-0415(2020-11-10)-iGPR application changes for X-DF engines”. We are issuing again about iGPR application for all X-DF engines.

Following the rejection of the first iGPR design by some classification societies and one flag state in 2019, WinGD had redesigned the iGPR to meet all requirements and possible regulation interpretations.

The design approval for this new design, and therefore confirming the compliance with IMO regulations, has been given as follows:
- The type approvals of iGPR-5.2 were very successful and no remark was made by the Classes.
- Two classes handed over the final type approval documentation for all iGPR sizes.
- Additionally, the design approval for all sizes is nearly complete with all Classes. Complete type approval for the remaining sizes is a formality and can be concluded by projects where the respective size can be type tested.

Moreover, the NMA (Norwegian Maritime Authority), which was the flag state initially rejecting the iGPR design, officially confirmed compliance of iGPR with actual regulation.

Based on above mentioned situation, we announce that iGPR can be applied for all X-DF engine types above 52 bore from new building project as an option and scope of supply will be decided by Extend of Delivery(EOD) as below.

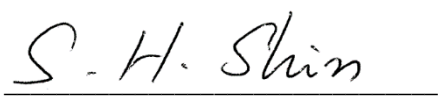
+ C 15 00	+	Gas Supply system
C 15 01	X	GVU (Gas Valve Unit, ED/OD type)
C 15 02	-	iGPR (integrated Gas Pressure Regulator, applicable for above 52 bore)

We hope the information will do you a valuable service.

Attachment: HHI-TI-0415(2020-11-10)-iGPR application changes for X-DF engines

[The end]

Yours sincerely,



S. H. SHIN / Senior Engineer
Head of Engine System Technical Sales Dep’t

HYUNDAI HEAVY INDUSTRIES | ENGINE & MACHINERY

TECHNICAL INFORMATION

DOC No.: HHI-TI-0415
Date : NOV 10, 2020

SUBJECT: iGPR APPLICATION CHANGES FOR X-DF ENGINES

TYPE: ALL HYUNDAI-WINGD X-DF ENGINES

DISTRIBUTION

☑ Ship yard	☑ Ship owner

Date	TEC No.	Design	Check	Approve	Change	R
20201110	HHI-TI-0415	PYS	SSH	PJK	First issue.	0
						1
						2
						3
						4
						5

TECHNICAL INFORMATION

DOC No.: HHI-TI-0415

We have issued the technical information “HHI-TI-0354(2018-10-12)-Application of i-GPR to X-DF Engines”. We are issuing this technical information about iGPR application changes for X-DF engines due to class approval issue of iGPR.

Despite of original consensus for the applied design by the classification societies, a reinterpretation of the IGF code challenged the safety concept of the applied pipe flanges in the iGPR.
WinGD has reacted with an adjustment by developing a new pipe connection concept fulfilling the new regulation interpretation. The widely proven functional part of the iGPR was not changed ensuring the high performing operational behaviour is kept.

But, unfortunately, the approval for new iGPR concept is still on-going. In this situation, we would like to propose iGPR application for new projects with X-DF engines as follows according to the discussion with WinGD.

In case of X82DF-1.0 and less bore size DF engines, it is recommended to keep GVU as standard equipment until further notice from engine builder. X92DF engine has been purely designed with iGPR. GVUs have never been produced for this size and power of X92DF engines. Therefore this large size of GVU is not proven in operations. Their application is therefore connected with risks.

This recommended application should be considered for new projects. For ongoing projects, please contact HHI-EMD. We, HHI-EMD, will keep in touch WinGD about iGPR application status and share information if we receive further notice from WinGD.

For more information about iGPR staus, please refer to attachment from WinGD.

We hope the information will do you a valuable service.

※ Attachment: WinGD iGPR Status Oct. 2020 (version 3)

[The end]

Yours sincerely,

J. K. Park

J. K. PARK / Senior Engineer
Head of Marine Engine & Machinery Technical Sales Dep’t

WinGD iGPR

Status Oct. 2020 (version 3)

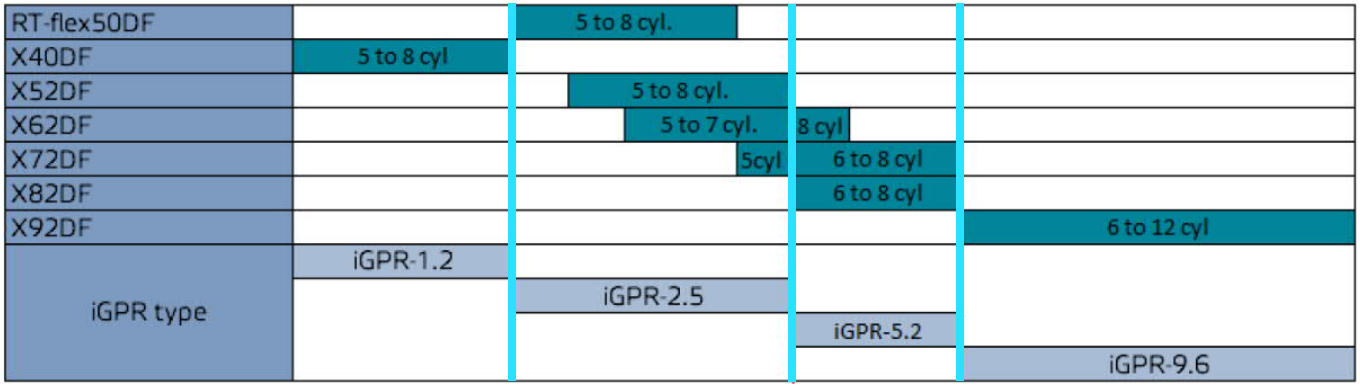
Martin Sichler, Daniel Ströddecke, Marc Spahni

iGPR – integrated Gas Pressure Regulation

Designation and sizes

- 4 sizes of iGPR are foreseen to cover the whole range of WinGD DF engines
  - Designation derived from maximum gas flow

Designation	Max. Gas Flow
iGPR-1.2	up to 1.2 tons gas per hour
iGPR-2.5	up to 2.5 tons gas per hour
iGPR-5.2	up to 5.2 tons gas per hour
iGPR-9.6	up to 9.6 tons gas per hour

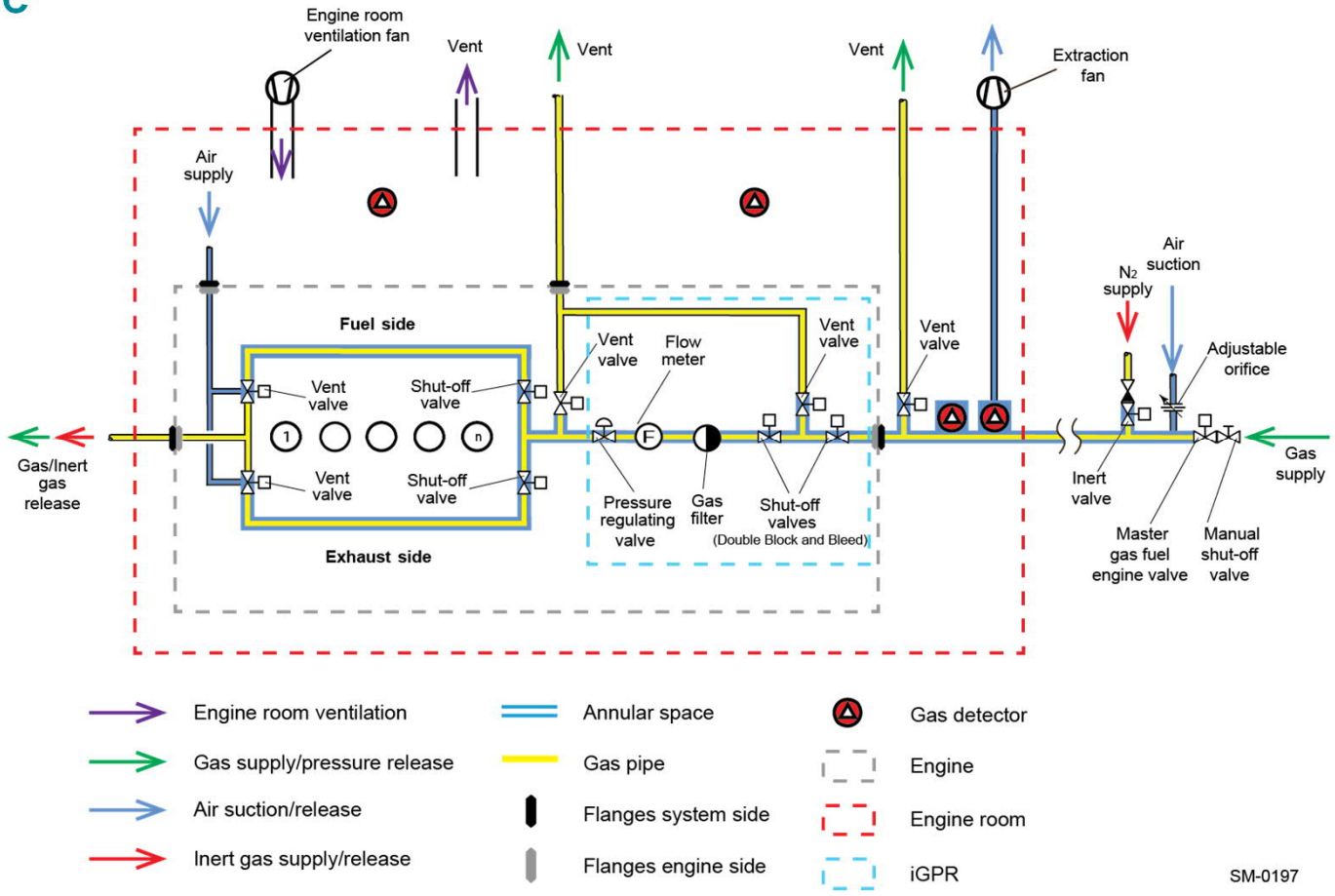


Source: WinGD Technical Circular to Licensees TCL-7435-2

iGPR – integrated Gas Pressure Regulation

Latest version with DBB valve

- iGPR main components
  - Gas filter
  - Flow meter
  - Pressure regulating valve
  - Double-block-and-bleed (DBB) valve incl. venting valve
- DBB valve to separate engine from vessel gas supply system
- Master gas fuel valve on vessel side



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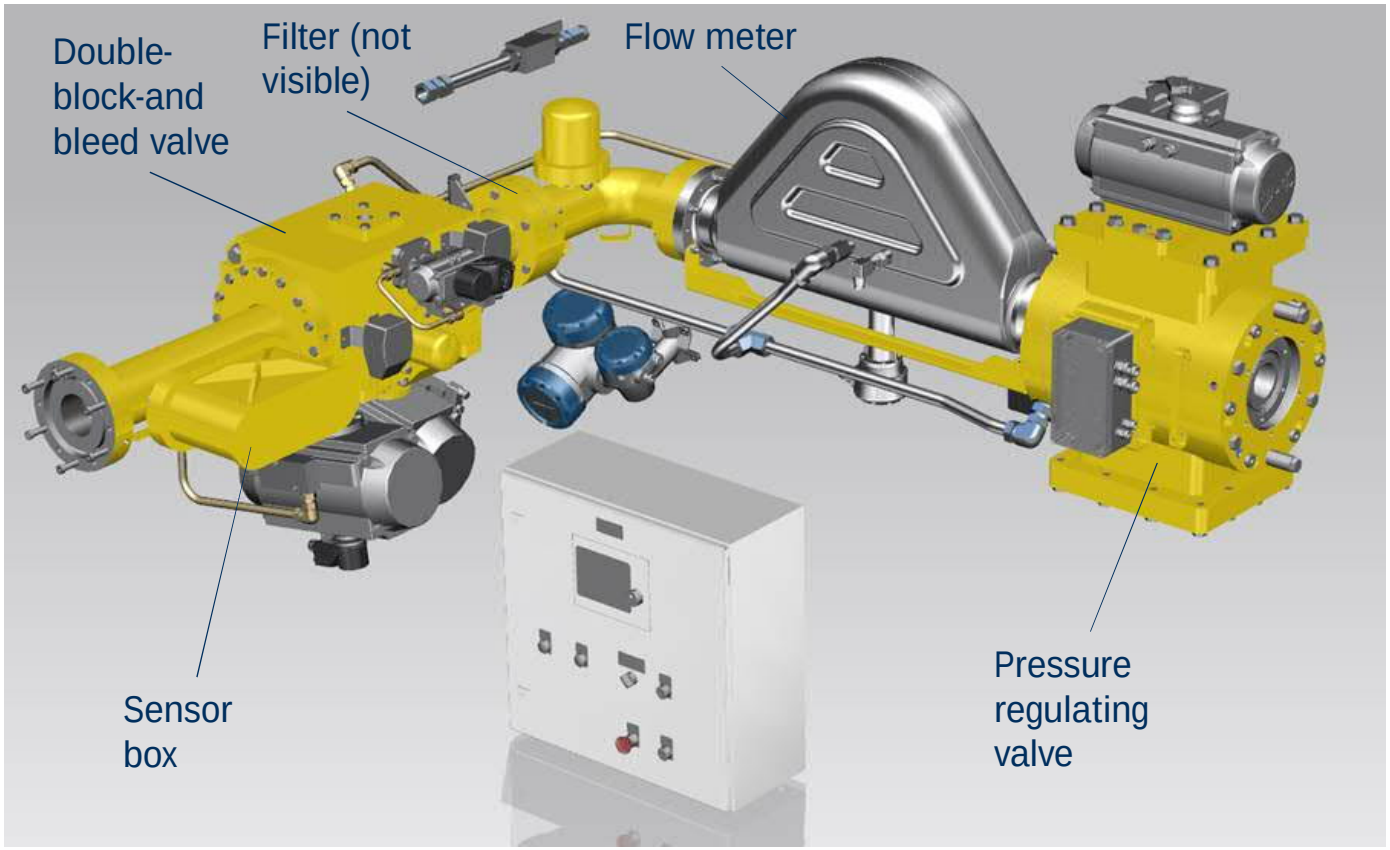
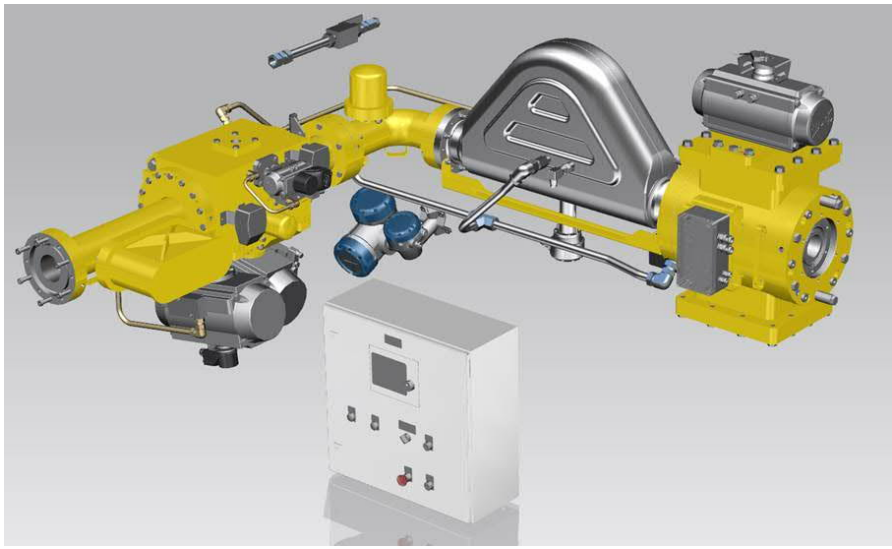


iGPR-5.2

iGPR – integrated Gas Pressure Regulation

Key features

- Same functionality as GVU
- Integrated Gas Pressure Regulation = integrated in the engine
  - No space requirements for GVU in engine room
  - Integration in engine control system → easy commissioning
- Proven components
  - Valves, double wall flow meter

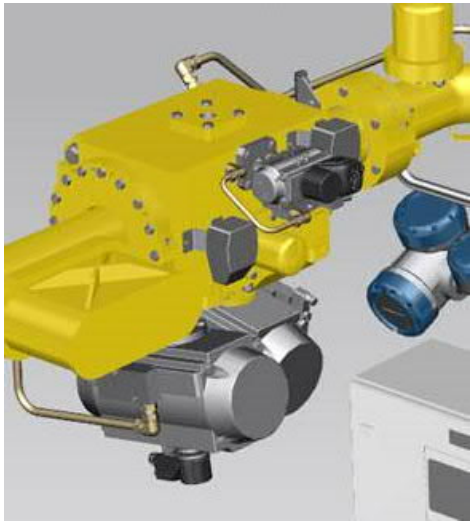


iGPR-5.2

iGPR – integrated Gas Pressure Regulation

Two flange solution

- Independent barriers for gas and annular space
  - Piping
  - Flanges
  - Bolting of flanges
- Design approved by classes and NMA (Norwegian Maritime Authority)



iGPR – integrated Gas Pressure Regulation

Design approval status

	ABS	BV	CCS	DNV-GL	KR	LR	NK	RINA	RS
iGPR-2.5 Single flange	-	-	-	R	-	-	A	-	-
iGPR-2.5 Two flange	(A)	(A)	A	A	O	O	A	O	(A)
iGPR-5.2 Two flange	O	(A)	A	A	O	O	A	O	A
iGPR-9.6 Single flange	-	(A)	-	-	-	-	-	-	-
iGPR-9.6 Two flange	N	N	N	N	N	N	N	N	N

Latest update 02.10.2020

A Approved
(A) Approval expected soon
R Rejected

O Outstanding
N Not yet submitted
- Not foreseen

Type Approval Test (TAT) to be done on coming engine projects

iGPR – integrated Gas Pressure Regulation

Applicable Gas Pressure Regulation

	GVU	iGPR
X52DF	A	(A)
X62DF	A	(A)
X72DF	A	(A)
X82DF-1.0	A	(A)
X92DF	N.A	A

<Note>
1. This table is valid till Q1 of 2021.
2. Customers should be consulted with WinGD before selection of Gas Pressure Regulation type.

A Applicable
N.A Non Applicable
(A) To be decided later, after Q1 2021

★ Customers are recommended to be applied GVU for new projects(X52DF/62DF/72DF/82DF) till being further information from WinGD.

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