संख्या. पी-63013/155/02/2024/मोड-।/सीसुबल/ १०३०-९६ भारत सरकार, गृह मंत्रालय महानिदेशालय सीमा सुरक्षा बल

> (रसद निदेशालय: आधुनिकीकरण सैल) (Email-comdtord@bsf.nic.in)

> > (Fax: 011-24367683)

ब्लाक संख्या . 10, सीजीओ काम्पलैक्स, लोधी रोड, नई दिल्ली–03 दिनांक **८०** अगस्त 2024

सेवा में,

महानिदेशकः— आसाम राईफलस (through LOAR), केन्द्रीय ओद्यौगिक सुरक्षा बल, केन्द्रीय रिजर्व पुलिस बल, भारतीय तिब्बत बोर्डर पुलिस, सशस्त्र सीमा बल, राष्ट्रीय सुरक्षा गार्ड एवं पुलिस अनुसन्धान एवं विकास ब्योरो

# विषयः अनुमोदित गुणात्मक आवश्यकता / परीक्षण निर्देशों का प्रेषण

तकनीकी विशेषज्ञों के उप समूह द्वारा किए गये सूत्रीकरण एवं महानिदेशक सीमा सुरक्षा बल द्वारा अनुमोदित "QRs & TDs of Diesel Generator Set (5, 7.5,10, & 30 KVA) and QRs & TDs for Installation of Dual-Fuel Kit/Retro Fitment of Existing DG Set के संशोधित गुणात्मक आवश्यकता / परीक्षण निर्देशों को आपकी अग्रिम कार्यवाही हेतु प्रेषित किया जाता हैं। संलग्न : उपरोक्तनुसार

(आनन्द सिंह तक्षक) उप महानिरीक्षक (रसद)

## प्रतिलिपि :-

- तकनीकी निदेशक
   The Technical Director
   राष्ट्रीय सूचना—विज्ञान केन्द्र, नोर्थ ब्लाक, गृह मंत्रालय, नई दिल्ली
   NIC, North Block, MHA
   New Delhi, (द्वारा ई—मेल) ।
   (ई—मेल पता : mpsugandhi@nic.in)
- SO (IT), North Block, MHA
   (Through E-mail)
   (E-mail address: soit@nic.in)
   तकनीकी विंग, सीमा सुरक्षा बल
- 4. Sh. Anoop Dhanvijay, Director-Buyer Management (CPSEs & Central Ministries), GOI. Ministry of Commerce & Industry, Government e-Marketplace. Jeevan Tara Building.5-Parliament Street. New Delhi-110001

  E-mail:- anoop.dhanvijay@gem.gov.in
- 5. The DIG (Prov), CRPF HQr

- आपसे अनुरोध है कि उक्त उपकरण के सूत्रीकरण किये गये गुणात्मक आवश्यकता /परीक्षण निर्देशों जोकि गृह मंत्रालय की वैबसाईट (पुलिस आधुनिकीकरण संभाग ) के गुणात्मक आवश्यकता पोर्टल में मशीनरी एवं उपकरण के साथ निगरानी उपकरण वर्ग के अर्न्तगत कमांक संख्या—64 पर पहले से अपलोड है के स्थान इस पत्र के साथ संलग्न संशोधित गुणात्मक आवश्यकता /परीक्षण निर्देशों को अपलोड करने का श्रम करें। कृपया उपरोक्तानुसार कार्यवाही करने का श्रम करें।
- कृपया उक्त उपकरण के गुणात्मक आवश्यकता/
  परीक्षण निर्देशों को सीमा सुरक्षा बल की वैबसाईट पर अपलोड करने का श्रम करें।

For info with request to upload the approved Revised QRs & TDs of "Revised QRs & TDs of Diesel Generator Set (5, 7.5,10, & 30 KVA) and QRs & TDs for installation of dual-fuel kit/retro fitment of existing DG Set" on GeM Portal. Copy of QRs & TDs is attached with this letter.

वास्ते सूचनार्थ आपके पत्र संख्या—M.XII-I/2023-24-Prov-DA-5 दिनांक 21 अगस्त 2024 के संदर्भ में।

फाईल।

## REVISED DRAFT QUALITATIVE REQUIREMENTS AND TRIAL DIRECTIVES OF DIESEL GENERATOR SETS (I.E. 5, 7.5, 10, 20 & 30 KVA)

	·	<u>Part-l</u>		
SI.No.	Parameters	Specification	Trial Directives	Requirements
1.	Engine. Alternator and AMF /I with in Acoustic Enclosure nate	ete with naturally aspirated Diesel Manual Control Panel fitted/along urally Aspirated Diesel Engine and pupled or provided with flexible plate robust in construction.	To be physically checked by t BOO	he DG Set must have all requirement as mentioned in parameters.
	b) Diesel Generator set complete	Or  e with pressure charged (Turbo or and AMF/Manual Control Panel sure Pressure charged (Turbo ator shall be closely coupled or and mounted on a base plate		
2.	Control Panel with IP rating	Digital with AMF (Auto Mains Failure) panel for protection, metering and operation. IP 53/IP 54/IP 55	To be checked physically BOO.  Firm has to submit Nation accredited Lab certificate/a Indian Govt Lab certificate respect of the same.	panel. and required IP rating. nal
3.	AMF Panel ( Automatic Mains Failure)	As per ISO 2147 the panel shall have IP-42 type protection. AMF panel normally consists of relays, contractors, timers for automatic operation on Mains failure as well as for manual operation.	Operation of AMF panel vectors of the mains power to check immediate a smooth transfer on DG set a	healthiness of DG set with test mode & with load on mains.  Energy analyzer or load manager with selector switch/button to view readings of voltage,

A VIII

BSR

CROF

GRPF GRPF

AR BPRED ITBP

			·	<ul> <li>Audio-visual alarm indication/annunciation facility.</li> <li>Engine/DG shutdown device(fault/abnormality)</li> <li>Battery charger, excitation control, voltage regulating equipment.</li> <li>Circuit Breaker.</li> <li>Auto/manual mode selector switch .</li> </ul>
4.	Nominal rated capacity (KVA)	5, 7.5, 10, 20 & 30 KVA	To be physically checked by the BOO and NABL certificate also submitted by firm in respect of same.	DG set must be 5, 7.5, 10, 20 & 30 KVA.
5.	No of phase (output capacity rating/phase)	5 KVA&7.5 KVA- Single phase 10,20 & 30 KVA- 3 phase For example 3phase should generate 415 V AC electricity.	To be physically checked by the BOO	Nos of phase must be as per specification, also, there must be a current meter facility available for each phase.
6.	Engine::Cooling	Air cooled/water cooled ( for example :: Water cooled 3 cylinder, in line, rated 1500 RPM with a minimum 42 BHP	To be physically checked by the BOO and OEM certificate also submitted by firm in respect of same DG set must be 4 stroke	DG set engine should be make in India certification.
7.	Number of cylinder(Nos)	in 30 kW capacity DG set)  5KVA & 7.5 KVA- 1 or 2 Cylinder  10, 20 & 30 KVA- Multi Cylinder	To be physically checked by the BOO	DG set must have cylinders as mentioned in specification.
8.	Rated RPM of Engine(RPM)	( 3& above)  a) 1500 or b) 3000 {User to decide as per requirement at the time of indent}	To be physically checked by the BOO	RPM must be 1500 or 3000
			A	

BS.E CRP

Ja hm

11/0

AR

B G

10.	Salient features of engine	Turbo charged <b>Digital</b> Engine. Diesel injection Fuel System.	To be checked by BOO	
11.	Type of Governor	Mechanical – Upto20 KVA and Electronic- Above 20 KVA	Firm has to provide certificate from NABL accredited lab.	Governor of DG set must be Mechanicalor Electronic as defined in Specification column.
12.	Class of Governor	For mechanical Governors of A2.  or ISO 3046/BS-5514 for Electronic Governors of A1 class with actuator shall be provided.	Firm has to provide certificate from NABL accredited lab.	Governor shall be self contained unit capable of monitoring the speed.
13	Starting Voltage	12 Volt DC	To be checked by the BOO	Starting voltage must be 12 Voltage DC
14.	Alternator	The alternator shall be brushless, drip-proof, screen protected as per IP-23 degree of protection.	To be checked by the BOO	Alternator must be IP-23, Supplier firm should ensure that alternate spould be of the same make get single window service. Assembled one not acceptable.
15.	Class of insulation	Н	Firm has to provide National accredited Lab certificate /any Indian Govt lab certificate in respect of the same.	DG set must have H class insulation.
16.	Diesel tank & Fuel system	30 to 70 litre capacity with HSD as fuel as per capacity of DG set for 8 hours running	To be checked by the BOO	Required
17.	Fuel consumption	5 KVA- 100% load- 1.4 L/h 75% load- 1 L/h 7.5 KVA – 100 % load- 2.6 L/h 75% load- 2 L/h	To be checked by the BOO	Must have the fuel consumption capacity as per specification.

		10 KVA-		
		100% load- 2.1 L/h	· [	
		75% load- 1.7 L/h		Í
j		50% load- 1.2 L/h		
ļ		20 KVA-	!	
		100% load- 4.3 L/h		
		75% load- 3.5 L/h	1	
		50% load- 2.4 L/h	1	1
		30 KVA -		
		100% load- 5.3 L/h		
		75% load-4.2 L/h		
		50% load- 2.9 L/h		
18.	Automatic Voltage regulator	VG2/VG3 or better version	To be checked by the BOO	Must have required
	Grade		•	specification.
19.	Noise level at 1 meter(dB)	The manufacturer shall offer to	To be checked by the BOO and	Must maintain noise level as
1		the user a standard acoustic	Testing & certification of DG	per specification.
		enclosure of 75dB (A) insertion	sets for noise compliance as per	** **
:	* Ko	loss and also a suitable exhaust	CPCB norms have to be	
		muffler with insertion loss of	provided from Automotive	
		75dB(A) as per CPCB-IV.	Research Association of India.	
20.	Battery & Battery charger	Diesel Engines requires high	To be checked by the BOO.	Low maintenance free to IS
	system	initial starting current for	NABL accredited lab certificate	14257 for high cranking
		cranking, the industrial lead	has to be provided.	performance.
		acid 12 Volt batteries		
		of88/100/150 AH value are		
		normally needed.		
		For battery charging a static		
		battery charger is		
		recommended. Depending		
		upon the capacity of DG set		į
	ĺ	suitable current rating of		
		charger is selected. Normally 3		
		attempt starting setting is		*
19		preferred for engine starting		

BSF CRPF

him.

754

HR BPRED ITISP

		with a sequence of 6 seconds ON and 5 seconds OFF cycle.		
21.	Speed Governor	1500 to 1800 RPM (revolution per minute) for 50Hz systems and 1800 to 2200 RPM for 60Hz systems.	To be checked by the BOO	Must be available
22.	Wiring	Supply, laying and termination of interconnecting power and control cable shall be done by the seller. The cable supplied shall be ISI marked heavy duty PVC insulated, armoured cable with PVC outer.	To be checked by BOO	Supplier firm has to ensure and got checked from BOO.
23.	Installation & commissioning	With installation	To be checked by BOO, NABL certificate has to be submitted after commissioning.	Supplier firm has to produce the given result expected/desired.
24.	Operating temperature	> -20 to +55 C or > -40 to +55 C (User to decide as per requirement at the time of indent)		Operating temperature must be as per requirement mentioned in the specification.
24.	Earthing	Construction of suitable earthing station and necessary connections shall be done by the seller.	To be checked by BOO	All the materials , labour required for construction of earthing station shallbe supplied by the seller. The total number of earthing pits/station shall be 4 i.e. 2 for neutral and 2 for body earthing . Neutral earthing shall be done by copper plate and body earthing shall be done G.I pipe/copper plate. Consignee should identify

A ....

BSF

CRIF

le K.

AR BPRED

ITBP

<b>25</b> .	Warranty of complete Power Generator/DG set Warranty for running hours	24 month	To be checked by BOO  To be checked by BOO	the place for earthing station within 10 meters of Power Generator. ( Preferably chemical earthing within 10 mtrs distance of Gen Set)  Ensured by supplier firm
27.	Number of preventive maintenance visits offered in an year during warranty period.	At least 3 (three)	To be checked by BOO	Ensure by supplier firm
28.	Response time to attend the complaint during warranty	1 day	To be checked by BOO	Ensured by supplier firm
29.	Time duration for repairing /replacement the defective during warranty	3 days		Ensured by supplier firm
30.	Testing	Certificate required as per CPCB norms from ARAI or authorised NABL accredited lab.	To be physically checked by BOO.	Type approved certificate for the specified rating of the power Generator from any of the designated agency authorized by CPCB and fulfils CPCB-IV norms. COP certificate for engine, type test report for alternators per IS-13364(Part-I) latest/IS-13364(Part-Z) latest to prove conformity to the specifications.
31.	Documents/certificate	Test report and certificate has to be provided to the buyer during bidding time on demand .	To be physically checked by BOO	Supplier firm has to ensure supply of required documents/certificate.

BSR CRPF

la lin.

75

W B AR BPRAD

17BP

32.	User manual	Details of specification with guidelines have to be mentioned in the user manual	To be physically checked by BOO	Firm have to produce the given items before the BOO
33.	Operating manual/technical manual	Detailed operators instruction, technical literature, maintenance manual, inspection standards be provided with the requirement.	To be physically checked by BOO	Firm have to produce the given items before the BOO
34.	Specific tools	Required tools for servicing the Gen sets be provided by the supplier firm.	To be physically checked by BOO.	Firm have to produce the given items before the BOO

(NK/6nb R D Ansaig) (Y. K. Gantam (Brajuh Kumar (2mp Dinesh Chandra) (MK Singh, AC-2)

RRIM

(Rajeev Bhatt, SSO) (VIKram Singh)

(Shahnawa Khan)

ADG (HQr) CRPF (Sandeep Khirwar) IPS

Approved Not approved

Director General, BSF

#### PART-II

## QRS/SPECIFICATION FOR CONVERSION OF EXISTING CPCB-II COMPLIANT DG SET INTO DUAL FUEL MODE

DG sets from 25 KVA to 76 KVA

Need to be converted to DUAL FUEL MODE for existing Gen Sets which are not compatible to CPCB-IV( only 30 KVA comes).

Scope and Supply Details :-

Supply, Installation, Testing & Commissioning of Dual Fuel kit.

Sl.no.	Specifications of the item	Trial Directives
1.	Gas train (filter, ZPR, MVDLE)/-Sequential gas injection system – Parts supplied in Sequential Gas Retro Kit - Gas Controller (ECM), Injector Rail, Changeover Switch, Wiring Harness, Solenoid valve, Gas Filter, MAP sensor, Exhaust Gas Temperature sensor, Knock Sensor, Engine Coolant Temp Sensor, Lambda Sensor, Rubber	Necessary EU standards or equivalent standard certificates to be provided by OEM.  To be checked physically by BOO
_	hoses sets as a complete Kit .	<u> </u>
2.	Filter-50 micron	-do-
3.	150 mbar zero pressure regulator / Sequential gas injection system	-do-
4.	Electrically operated slow opening valve—or sequential gas injection system	-do-
5.	Pressure regulator Inlet-2 Bar, Outlet-150m bar or Inlet pressure 500 mbar and Outlet pressure- 150 mbar (As per site requirement)/ Sequential gas injection system	-do-
6.	Pressure gauge 0-500 mbar - or Sequential gas injection system	To be checked by BOO
7.	Air gas mixer with MAS /- Sequential gas injection system	Govt of India approvedcertificate is required. Warranty of the item for life time.
8.	Manual adjustment Screw/- Sequential gas injection system	To be checked by BOO
9.	Control panel with touch screen-	To be checked by BOO
10.	PLC /ECM	To be checked by BOO
11.	HMI/ - In Built sequential gas injection system	To be checked by BOO
12.	MCB/Relay/Contractor etc.	To be checked by BOO
13.	Sensors (Gas leakage sensor)	To be checked by BOO
14.	Pressure sensor	Certificate required from OEM.

BSR

CRPF

him.

NSI

AR BPRED

TEP

	0-1 Bar, 0-4 Bar -	
15.	Vibration sensor	Certificate required from OEM.
	0-2 IPS/Knock sensor-	
16.	Temperature Sensors	To be checked by BOO
17.	Wire Harness as per Engine	To be checked by BOO
18.	Control	To be checked by BOO
18	Dual Fuel system comes with an automatic control panel consisting of PLC	To be checked by BOO
	(Programmable logic Controller) and HMI (Human Machine Interface) . It	
	controls the complete dual fuel kit with no manual intervention. It is a	
	panel box which is mounted on the DG set itself and requires no extra	
	space. It has proper safeties and all sensors are connected in the panel to	
	ensure smooth transition between diesel and dual fuel.	
19.	Power supply	To be checked by BOO
	The system draws its power from the DG set alternator. It does not require	To be checked by BOO
	any other additional power supply.	
20.	Utilities required	To be checked by BOO
	Requires a gas connection outlet at the top of the DG set. PNG connection	To be checked by BOO
	at 500 MBAR pressure will be provided by the user. A flange outlet of the	
	PNG pipe will be required with the following specifications:-	
	½ or 1 inches flange outlet These outlets will be provided near to the DG	
	set on the TOP of the canopy. Incase of canopy DG set and in case of an	
6	open DG set , the user will provide at 1-5 feet height from the ground.	*
	Floor preparation for installation & Commissioning	
	Nothing is required except for the PNG pipeline outlet. ( As per user	¥
	requirement)	
21.	Installation & Commissioning	To be checked by BOO
	Installation may take a period of 2- 3 days for DG set. Firm will require a	Necessary certificate of testing will have t
	downtime of 10-12 hours for 1 DG set during which the DG set won't be	be provided by the supplier/seller before
	allowed to operate. The commissioning would happen after the complete	installation. To be checked by BOO
	installation. During commissioning firm would run DG set on diesel mode	9
	for 1 hour on load. After that firm would optimize the parameters in their	
	software and start the gas for the DG set to run on dual fuel mode. The	
	total commissioning procedure takes 2-3 hours per DG set. Firm requires	
	availability of diesel and load at the time of commissioning.	

An NSS

BSB.

CRPP

ls hm

AR BPRED ITEP

22.	Space requirement for test equipments.	To be checked by BOO
	No additional space required.	To be checked by BOO
23.	Civil requirement for test equipments	To be checked by BOO
	No civil requirement. Some welding may be required to be done on site for which we would require a welder to be brought from outside for the stand preparation for the gas train incase the DG's do not have the canopy.	To be checked by BOO
24.	Critical spare parts	To be checked by BOO
	Pressure regulating valve, solenoid valve, zero pressure regulator, pressure sensors, PLC and HMI.  Sequential gas injection system – Parts supplied in Sequential Gas Retro Kit	Necessary EU standards or equivalent standard certificates to be provided by OEM.
	Gas Controller (ECM), Injector Rail, Changeover Switch, Wiring Harness, Solenoid valve, Gas Filter, MAP sensor, Exhaust Gas Temperature sensor, Knock Sensor, Engine Coolant Temp Sensor, Lambda Sensor, Rubber hoses sets as a complete Kit.	
25.	Safety features	To be checked by BOO
	System has inbuilt safeties for engine parameters. It maps the manifold pressure, the gas supply pressure, manifold temperature, exhaust gas temperature, engine vibrations. Incase any parameter goes beyond the specified limits then the system automatically stops the gas flow and the DG set shifts to 100 % diesel and there is no breakdown on the gen set. The panel with IP-56 also has additional safety fuses to ensure that the sensors remain protected.	To be checked by BOO
26.	For retro-fitment emission control device, there is only 1 specification is as under:-	To be checked by BOO
	Further the dual fuel system is mandatory in all areas wherever gas pipeline infrastructure is available. While RECD is to be used only in places where there is no gas pipeline infrastructure or in remote areas. Majority all the metro cities fall under the pipeline infrastructure and hence dual fuel system should be fitted on the same whereas remote area DG sets where there is no pipeline laid by the city gas distribution company and incase they refuse to provide the gas, then only the RECD should be fitted.	To be checked by BOO
7.	After sales/service – After sales service will be provided by the supplier firm for at least 24 months (i.e. warranty period)	To be checked by BOO

BSF

CRPF

ho has

AR BARRD ITA

28.	User manual:-	To be checked by BOO
	Firm will provide user manual/technical manual with details for proper	
	care of retro fitment/RECD.	
29.	AMC	To be checked by BOO
	Firm has to provide AMC of dual fuel mode/RECD kit for at least 4000 hrs	
	or 06 years after installation of RECD whichever is earlier.	B
30.	Testing :-	One OEM or importer shall submit
	Following testing agencies are currently approved by the Nodal Agency	application for Type approval to any one of
	Central Pollution Control Board (CPCB) for purpose of type approval and	the certification agencies for its
	subsequently conformity of production verification compliance process and	families/models out of those approved by
	may be revised from time to time.	Central Pollution Control Board (CPCB)
	a) Automotive Research Association of India (ARAI, Pune)	
•	b) International Centre for Automotive Testing (ICAT, Manesar)	±
	c) Indian Institute of Petroleum (IIP, Dehradun)	
	d) Vehicle Research Development Establishment (VRDE, Ahmednagar)	
	e) Any testing & certification agency having accreditation from NABL	
	for the parameters referred in "System and procedure for Emission	
	Compliance Testing of Retro-fit emission control devices (RECD) for	*
	Diesel Power Generating Set Engines up to Gross Mechanical	g*
	Power 800 KW" (S & P) and also comply with other requirements of	
	referred S & P. Such testing & certification agencies will provide	
	details of NABL accreditation as well as self-certification of	6
	compliance to the requirements of referred S & P to CPCB. The	
al .	testing & certification agencies shall be mentioned and published	
	by CPCB on its website.	,
31.	RECD shall accompanied by the following information:	To be checked physically by BOO
	a) Manufacturer's name and /or trademark.	
	b) the make and identifying part number of the RECD as recorded in	1
	the information document issued in accordance with the model set	
	out.	* T = 0
	c) The RECD family as defined in clause 4.1.2.2 including year of	
•	manufacture, for which the RECD is approved, including , where	·
	applicable, a marking to identify if the RECD is suitable for fitting to	
	an engine & family that is equipped with an on-board diagnostic	

AR BPRRD

(OBD) system.	
d) The instruction manual for the retrofit installation.	
e) The end user service manual including maintenance instructions.	

Note: Sl.No.26, 30 & 31 point specification is applicable only when Retro Emission Control Device (RECD) is fitted in existing DG set above 30 KVA capacity. Upto 30 KVA capacity RECD is not required as only conversion to Dual Fuel Mode is applicable.

#### **PART-III**

Gas agency and distributors work for installation, commissioning and supply of PNG/CNG/LPG gas connection for DG sets.

- 1) Providing connection from nearest distribution point ( PNG/CNG)
- 2) Civil work like laying of pipe line.
- 3) Installation of Gas meter
- 4) Security deposit will be made by the buyer/user with gas agency which is refundable.

Assam Rifles

BSF

CRPF

CRPF

DIG

Approx

DIG (Prov) CRPF

IG (Prov) CRPF

NSG

Approved

approved

Director General, BSF

ADG (HQr) CRPF