

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 150/MP/2012

**Coram:
Shri V. S. Verma, Member
Shri M. Deena Dayalan, Member**

**Date of Hearing: 20.06.2013
Date of Order: 02.07.2013**

In the matter of

Approval for granting exemption from operating 31 nos hydro stations unit in Restricted Governor Made of Operation (RGMO) and for granting time extension for operating 10 nos LMW/8 Nos. KWU units in RGMO in the thermal power stations of Maharashtra State Power Generation Company Limited.

**And
In the matter of**

Maharashtra State Power Generation Company Limited **...Petitioner**

Following were present:

1. Shri Anurag Sharma, Advocate for the petitioner
2. Shri S.V. Bedekar, MSPGCL
3. Shri Raman Deep Singh, MSPGCL

ORDER

This petition has been filed by the Maharashtra State Power Generation Company Limited (MSPGCL) for exemption from implementing the Restricted Free Governor Mode of Operation (RGMO) in the hydro generating stations and extension of time for implementing RGM in the thermal generating stations of the petitioner as required under Regulation 5.2 (f) of the Central Electricity Regulatory

Commission (Indian Electricity Grid Code) Regulations, 2010 (hereinafter referred "Grid Code").

2. The details of the hydro generating stations for which exemption has been sought from implementation of RGMO are as given below:

S. No.	Generating Station	Make and Capacity of the Unit	Unit No.	Exemption Needed	Reason/Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1	Bhira Hydro Power Station				Due to technical constraints in Present Governor system and Generation being dependent on the water release programme of Water resource Department (GoM)
2	Pawna HPS	1x10 MW	1	Yes	
3	Bhatghar HPS	1x16 MW	1	Yes	
4	Tillari HPS	1x60 MW	1	Yes	
5	Dudhganga HPS	12 MW	1	Yes	
		12 MW	2	Yes	
6	Bhatsa HPS	15 MW	1	Yes	
7	Vaitarna HPS	60 MW	1	Yes	
8	Paithan HPS	12 MW	1	Yes	Due to technical constraints in the present governing system and being Hydro Pump Storage Station
9	Ujjani	12 MW	1	Yes	Due to technical constraints in the present governing system and being Hydro Pump Storage Station
10	Ghatghar HPS	125 MW	1	Yes	
		125 MW	2	Yes	
11	Koyna Hydro Power Station	AE Germany- 70 MW	1	Yes	Generation is dependent on the water release programme of Water resource Department (GoM)
		AE Germany-70 MW	2	Yes	
		AE Germany-70 MW	3	Yes	
		AE Germany -70 MW	4	Yes	
		AE Germany-80 MW	5	Yes	
		AE Germany-80 MW	6	Yes	
		AE Germany-80 MW	7	Yes	

		AE Germany-80 MW	8	Yes
		BHEL- 80 MW	9	Yes
		BHEL-80 MW	10	Yes
		BHEL-80 MW	11	Yes
		BHEL-80MW	12	Yes
		BHEL-18 MW	13	Yes
		BHEL -18 MW	14	Yes
		BHEL -250 MW	15	Yes
		BHEL- 250 MW	16	Yes
		BHEL-250 MW	17	Yes
		BHEL-250 MW	18	Yes

3. The details of thermal generating stations for which extension of time has been sought for implementation of RGMO are as given below:

S. No.	Generating station	Make and Capacity of the unit	Unit No.	Extension Needed up to date
(1)	(2)	(3)	(4)	(5)
1	Khaperkheda Thermal Power Station	KWU-BHEL-210 MW	2	December 2012
		KWU-BHEL-210 MW	3	June 2013
		KWU-BHEL-210 MW	4	June 2013
2	Koradi Thermal Power Station	LMW/BHEL-210 MW	6	April 2015
		LMW/BHEL-210 MW	7	April 2017
3	Nashik Thermal Power Station	LMW/BHEL- 210 MW	3	December 2014
		LMW/BHEL- 210 MW	5	December 2014
4	Chandrapur Super Thermal Power Station	LMW/BHEL- 210 MW	1	December 2015
		LMW/BHEL-210 MW	2	December 2013
		LMW/BHEL-210 MW	3	December 2014

		LMW/BHEL-210 MW	4	December 2013
		KWU/BHEL-500 MW	5	December 2013
		KWU/BHEL-500 MW	6	December 2015
5	Parli Thermal Power Station	LMW/BHEL-210 MW	3	Extension up to May 2013
		LMW/BHEL-210 MW	4	Extension up to May 2013
		KWU/BHEL-250 MW	6	Extension up to December 2012
		KWU/BHEL-250 MW	7	Extension up to December 2012

4. Regulation 5.2.(f) of the of Grid Code provides that all thermal generating units of 200 MW and above and all hydro units of 10 MW and above which are synchronized with the grid, irrespective of their ownership, shall be required to have their governors in operation at all time in accordance with the provisions in sub-clauses (i) to (iii) of the Grid Code. The provisions of governor action is extracted as under:-

“Governor Action

(i) *Following Thermal and hydro (except those with up to three hours pondage) generating units shall be operated under restricted governor mode of operation with effect from the date given below:*

(a) *Thermal generating units of 200 MW and above,*

- (1) *Software based Electro Hydraulic Governor (EHG) system : 1.8.2010*
- (2) *Hardware based EHG system: 1.8.2010*

(b) *Hydro units of 10 MW and above: 1.8.2010*

(ii) *The restricted governor mode of operation shall essentially have the following features:*

(a) *There should not be any reduction in generation in case of improvement in grid frequency below 50.2 Hz. (for example if grid frequency changes from 49.3 to 49.4 Hz. then there shall not be any reduction in generation). Whereas for any fall in grid frequency, generation from the unit should increase by 5% limited to 105 % of the MCR of the unit subject to machine capability.*

(b) *Ripple filter of +/- 0.03 Hz. shall be provided so that small changes in frequency are ignored for load correction, in order to prevent governor hunting.*

(c) If any of these generating units is required to be operated without its governor in operation as specified above, the RLDC shall be immediately advised about the reason and duration of such operation. All governors shall have a droop setting of between 3% and 6%.

(d) After stabilisation of frequency around 50 Hz, the CERC may review the above provision regarding the restricted governor mode of operation and free governor mode of operation may be introduced.

(iii) All other generating units including the pondage up to 3 hours Gas turbine/Combined Cycle Power Plants, wind and solar generators and Nuclear Power Stations shall be exempted from Sections 5.2 (f), 5.2 (g), 5.2 (h) and ,5.2(i) till the Commission reviews the situation:

Provided that if a generating unit cannot be operated under restricted governor mode operation, then it shall be operated in free governor mode operation with manual intervention to operate in the manner required under restricted governor mode operation."

5. The Commission vide its order dated 4.10.2011 in *Suo-motu* Petition No. 191/2011 after taking note of the laxity on the part of the generators to implement RGMO, issued show cause notices to the defaulting generators on the following terms:

"2. It has been brought to the notice of the Commission by the National Load Despatch Centre that out of the 700 generating stations/ units, about 560 generating stations have not yet switched over to the operation under restricted governor mode. The list of such generating stations / units is enclosed as Appendix to this order. NLDC has submitted that adequate response is not coming from generating units which have declared themselves in RGMO. The fluctuation in system frequency also occurs at system boundary due to load change over or sudden increase in generation due to change in schedule. With all the units operating with RGMO the fluctuation in system frequency would have been restricted to large extent.

3. As all the generating stations are not on the RGMO mode, fluctuation in system frequency is adversely affecting the power system and the generating stations. Non-operation of the generating stations under the restricted governor mode after 1.8.2010 amounts to non-compliance of the provisions of the Grid Code.

4. All the respondents are directed to explain by 25.10.2011 the reasons for not switching over to the restricted governor mode of operation and to show cause as to why appropriate action under the Electricity Act, 2003 should not be initiated against the respondents for non-compliance of the provisions of the Grid Code."

6. In the above backdrop, the petitioner has filed the petition seeking exemption from implementing RGMO in its hydro generating stations and extension of time for implementing RGMO in thermal generating stations. The petitioner has submitted that MSPGCL has 32 thermal and hydro units of 10 MW and above capacity. In terms of the Regulation 5.2 (f) of the Grid Code, RGMO could not be implemented in its various power projects within the specified time due to technical constraints in the present governing system. The petitioner has enumerated the reasons for delay as under:

S. No.	Generating Unit	Reason for delay	
1	Bhira Hydro Power Station -Unit-I (40 MW) and II (40 MW) -Unit-II	Due to technical constraints in Present Governor system and Generation being dependent on the water release programme of Water resource Department (GoM)	
2	Pawna HPS-Unit-I (10 MW)		
3	Bhatghar HPS-Unit-I (16 MW)		
4	Tillari HPS, Unit-I (60 MW)		
5	Dudhganga HPS, Unit-I (12 MW) and Unit-II (12 MW)		
6	Bhatsa HPS, Unit-I (15 MW)		
7	Vaitarna HPS, Unit-I (60MW)		
8	Paithan HPS, Unit-I (12MW)		Due to technical constraints in the present governing system and being Hydro Pump Storage Station
9	Ujjani, Unit-I (12 MW) 12 MW	Due to technical constraints in the present governing system and being Hydro Pump Storage Station	
10	Ghatghar HPS, Unit-I (125 MW) and Unit-II (125 MW)		
11.	Koyna Hydro Power Station	AE Germany- Unit-I (70 MW)	Generation is dependent on the water release programme of Water Resource Department (GoM)
		AE Germany-Unit-II (70 MW)	
		AE Germany- Unit-III (70 MW)	
		AE Germany –Unit-IV (70 MW)	
		AE Germany-Unit-V (80 MW)	
		AE Germany-Unit-VI (80 MW)	
		AE Germany-Unit-VII (80 MW)	
		AE Germany-Unit IX (80 MW)	
		BHEL-Unit-IX (80 MW)	
		BHEL-Unit-X (80 MW)	
		BHEL-Unit XI(80 MW)	
		BHEL-Unit-XII (80MW)	
		BHEL-Unit-XIII (18 MW)	
		BHEL Unit-XIV(18 MW)	
		BHEL, Unit-XV (250 MW)	

	BHEL, Unit XVI (250 MW)	
	BHEL, Unit-XVII (250 MW)	
	BHEL, Unit XVIII (250 MW)	

7. The petitioner has further requested to grant time for operation of RGMO for the following generating stations:

S. No.	Station	Make and Capacity of the Unit	Unit No.	Extension needed up to date
(1)	(2)	(3)	(4)	(5)
1	Khaperkheda Thermal Power Station	KWU-BHEL-210 MW	2	December 2012
		KWU-BHEL-210 MW	3	June 2013
		KWU-BHEL-210 MW	4	June 2013
2	Koradi Thermal Power Station	LMW/BHEL-210 MW	6	April 2015
		LMW/BHEL-210 MW	7	April 2017
3	Nashik Thermal Power Station	LMW/BHEL- 210 MW	3	December 2014
		LMW/BHEL- 210 MW	5	December 2014
4	Chandrapur Super Thermal Power Station	LMW/BHEL- 210 MW	1	December 2015
		LMW/BHEL-210 MW	2	December 2013
		LMW/BHEL-210 MW	3	December 2014
		LMW/BHEL-210 MW	4	December 2013
		KWU/BHEL-500 MW	5	December 2013
		KWU/BHEL-500 MW	6	December 2015
5	Parli Thermal Power Station	LMW/BHEL-210 MW	3	May 2013
		LMW/BHEL-210 MW	4	May 2013
		KWU/BHEL-250 MW	6	December 2012
		KWU/BHEL-250 MW	7	December 2012

8. During the course of the hearing on 17.7.2012, the representative of the petitioner submitted as under:

(i) MSPGCL has placed orders with BHEL and the work is being undertaken in the units of the thermal generating stations and time may be granted for operation under RGMO till such time the modification is done by the vendor M/s BHEL.

(ii) All thermal units are operating on FGMO mode with manual intervention and shall continue to operate till RGMO is fully implemented.

(iii) Hydro generating stations cannot be operated in RGMO mode due to technical constraints in the governor system.

(iv) RGMO cannot be made effective in Koyna HPS and other Hydro generating stations due to technical constraints in the present governor system as generation is dependent on water release programme of Department of Water Resources, Government of Maharashtra.

9. The petitioner vide its affidavit dated 9.8.2012 has submitted that MSPGCL is not able to implement RGMO in its hydro generating stations due to following reasons:

(a) Most of units have rendered service for more than 25 years. These units are functioning on old technology. Spares for these units are not available and as such, Original Equipment Manufacturers are not responding to MSPGCL for the modifications to be incorporated in governing system of these units.

(b) Some units have mechanical governors, which lack the ability to respond fast under RGMO. Hydro units having francis turbines are designed to run at full load and face cavitation/vibrations problems at lower loads besides higher response time.

(c) All hydro generating units are owned by Govt. of Maharashtra. The generation from these units depends on water release permission /schedule given by Department of Water Resource for drinking water / irrigation purpose. Generation of electricity is secondary aspect for such units. Further, water allocation (water quantity to be consumed/ used by State where the river crosses more than one State) for hydro stations being limited these stations are operate as per the instructions of SLDC, depending on grid conditions. These constraints though some hydro units (e.g. Koyna unit No. 1 to 8) are capable to run on RGMO, restrict them to operate on RGMO.

(d) In case of pump storage schemes, water level at downstream pond is to be taken care to avoid overflowing.

10. It is observed from the reply of MSPGCL that the main reasons for non-implementation of the RGMO in its units of the hydro generating stations are as under:

(a) Old units with no support from OEM for spares and governing system modifications.

(b) Governors are not operating in auto mode.

(c) Hydro Units/Plants utilize water released by Department of Water Resource, Government of Maharashtra and the discharges from the units are strictly controlled by Municipal Corporations and Irrigation Authorities for drinking and irrigation purposes, respectively.

(d) The generation from these stations is completely governed by the water demand and not as per the grid load /demands. Implementation of RGMO will affect the primary purpose of fulfilling the water demand of the city of Mumbai.

11. As per Regulations 5.2 (f) (iii) of the Grid Code, if a generating unit cannot be operated under restricted governor mode operation, it shall be operated in free governor mode operation with manual intervention to operate in the manner required under restricted governor mode operation. Considering the difficulty faced by the petitioner, it is directed that the petitioner shall carry out necessary modifications in the governing system to operate these units under FGMO with manual intervention in terms of Regulation 5.2 (f) (iii) of the Grid Code.

12. The petitioner has also prayed for extension of time for implementation of RGMO in the generating station mentioned in para 3 of this order. We observe that time extension as sought by the petitioner, has already expired for Khaperkheda Thermal Power Station, units-2, 3 & 4 (210 MW each) and Parli Thermal Power Station, units-3 and 4 (210 MW each) and unit 6 & 7 (250 MW each). It is also noted that the petitioner has not prayed for extension of time for their other 5 thermal units namely Khaperkheda TPS unit – I, Paras TPS unit 3 & 4, and Bhushawal TPS unit 2 & 3 as the RGMO implementation is in advanced stage and RGMO trial, in coordination

with WRLDC, is pending. The petitioner is directed to submit the latest status of RGMO in all thermal units within one month from the date of issue of this order.

13. With regard to the petitioner's other 10 units as mentioned in para 3 of this order, the representative of the petitioner submitted during the course of the hearing that all thermal units are operating on FGMO mode with manual intervention and shall continue to operate till RGMO is fully implemented in terms of Regulations 5.2 (f) (iii) of the Grid Code. We direct the petitioner to expedite and make all-out efforts for implementation of RGMO in the units of its thermal generating stations. We further direct the petitioner to ensure that the hydro generating units are put on FGMO with manual intervention with immediate effect.

14. Petition No. 150/MP/2012 is disposed of in terms of the above.

Sd/-

(M.Deena Dayalan)
Member

sd/-

(V.S.Verma)
Member