KERALA STATE ELECTRICITY REGULATORY COMMISSION
THIRUVANANTHAPURAM

PRESENT : Shri. T.M.Manoharan, Chairman
Shri.K.Vikraman Nair, Member
Shri.S.Venugopal, Member

OP No 15/2015

Inthe matter of re-fixing the tariff of the 10 MW combined thermal cum co-generation power plant of M/s MPS Steel Castings Pvt Ltd, Kanjikkode, Palakkad.

Petitioner : Managing Director
MPS Steel Castings (P) Ltd
Palakkad

Respondent : Kerala State Electricity Board Limited
Thiruvananthapuram.

Order dated 21.01.2016

1. M/s. MPS Steel Castings Private Ltd, the petitioner here in, has filed OP No. 15/2015 before the Commission with a prayer to re-determine the tariff of the thermal plant of the company. The plant is a 10 MW combined co-generation cum thermal plant installed in their sponge iron factory at plot no. 476, Wise Park, in Kanjikkode in Palakkad District. The co-generation power plantis designed to generate 6 MW of electricity by primarily utilizing flue gases generated during the process of sponge iron manufacture. There is a 4 MW thermal power plant run on coal which is combined with the same power generating system. It is informed that the 4 MW thermal plant was combined with the 6 MW co-generation plant with a view to availing the facility of open access in accordance with the regulations prevalent at that time. By order dated 20.06.2009, the Commission had approveda tariff of Rs.2.31 per unit for the first 5 years from the date of commercial operation,

based on the premise that the power plant is a combined co-generation plant. KSEB and the petitioner had entered into a power purchase agreement (PPA) on 20.03.2011 and the said PPA expired on 19.02.2014. Though the PPA expired on 19.02.2014, the petitioner has been selling electricity to KSEB Ltd on the same terms and conditions which were in force prior to 19.02.2014. It is submitted that, due to the hike in cost of materials, labour etc, the company cannot continue to sellelectricity to KSEB Ltd at the same rate of Rs.2.31 per unit. Therefore the petitioner has requested for an upward revision of tariff based on a claim that the actual capital cost incurred for the project is much more than what had been approved by the Commission in its order dated 20.06.2009.

Hearing

2. Commission admitted the petition as OP No 15/2015. Hearing on the petition was conducted on 09-06-2015. Sri. A. Jesurajan, Assistant Manager (Electrical), represented M/s MPS Steel castings Ltd and Sri. P.V. Sivaprasad, Executive Engineer, TRAC represented KSEB Ltd.

3. During the hearing on the subject petition, the petitioner MPS Steel castings Pvt Ltd has submitted as follows.

   i. M/s MPS Steel Castings (P) Ltd have been functioning from 2006 March onward and contributing the State's economy by generating employment and infrastructure facilities. Petitioner had set up a 10 MW combined co-generation cum thermal power plant at 476, Wise Park, in Kanjikode in Palakkad District, Kerala. Construction of the power plant was started on 01.04.2005, it was synchronized with the state grid on 13.09.2008 and thereafter on 19.03.2009 the power plant was declared to be under commercial operation. The plant was started with the intension of using it as a captive power plant ie. whole of the energy generated from this plant is to be used in the Sponge Iron plant and the group concerns of M/s MPS Steel Ltd situated at different locations within Kanjikode Industrial Area. For this purpose power had to be transported from wise park unit to various locations. In order to do that, we had to get open access permission. To get permission for open access, the capacity of the plant should be at least 10 MW at that time. That is why the company

thought of adding 4 MW thermal plant with the 6 MW Co-generation plant so that total capacity is 10 MW.

ii. *The Power Plant is designed so as to generate electricity by recovering the flue gas generated during the sponge iron manufacturing process and by burning the coal in the fluidized bed Combustion Boiler. The Power Plant has a Single Turbine coupled with an Alternator and four boilers (3 Waste Heat Recovery Boilers (hereinafter referred to as WHRB), each boilers are designed to generate 2.00 MW power (3x2 = 6) and One Fluidized Bed Combustion Boiler (hereinafter referred to as FBC) designed for 4.00MW power). Thus the capacity is 10.00 MW.*

iii. *The company approached the Hon'ble Commission for the determination of Tariff. On 20.06.2009 this Hon'ble Commission passed the order determining the tariff for sale of power at the rate of Rs. 2.31 per unit for a period of 5 years. Accordingly, PPA had signed with the KSEB for 5 Years. The Company was producing 6.00MU per month and after the usage of own consumption, the power was pumped to the KSEB grid from 19.2.2009. The PPA got expired on 19.02.2014. Mean while the company was taken over by a new management (M/s Senthil Group, Coimbatore). Due to the reason of change of new management, the company could not approach Hon'ble commission for re-fixing the tariff and the company continued to give power to KSEB at the same rate fixed by the commission on 2.06.2009, for one more year by extending the validity of the PPA.*

iv. *Now due to hike in the cost of raw materials, labor costs etc, the company could not produce power at the rate of Rs 2.31. The Company still supplying the power to KSEBwith a condition that, the company will again approach the Hon'ble commission forfixing new tariff and once the commission fix new tariff, KSEB has to purchase power at thenew rate fixed by the commission. The same has been agreed by the KSEB vide theirletter No. DREP/Plg.III/MPS/20144-15/427 DATED 16.2.2015.*

v. *The Company has submitted that, the total project cost incurred for the project is Rs 44.8479 crores. The company claimed that, the interest for term loan is 13.25% and the interest for working capital is 12.75%. The O&M cost arrived is at actual and an escalation of 10% may be allowed for the future years. The debt-equity of 70:30 as per CERC norms has been adopted for arriving the cost of generation. The actual heat rate of 2930- kCal/kWh auxiliary consumption of 10% were considered. Based on the above, the petitioner has arrived the cost of generation at Rs 4.50 per unit and prayed for re-fixing the tariff at a minimum rate of Rs 4.50 per unit and to modify the PPA accordingly.*

4. The respondent KSEB Ltd has submitted the following during the hearing of the subject petition andalsovide their submissions dated 08.06.2015 and 22.06.2015.

   i. *Hon'ble Commission vide the order dated 20-6-2009 had determined the tariff for sale of power from the combined co-generation cum thermal power plant at Rs.2.31 per unit for a period of 5 years and accordingly KSEBL had signed PPA with MPS Steel on 20-3-2011. The PPA expired on 19-2-2014. KSEBL has been making payment to the petitioner for the electricity injected at the rate approved by Hon'ble Commission. The petitioner cannot make a retrospective revision of the tariff of the project. Hence the levelised tariff for the project may be arrived for the balance life of the project.*

   ii. With regard to Capital cost of the project, KSEBL stated that*"Hon'ble Commission vide the order dated 20-6-2009 had adopted the capital cost at Rs.3.5 crore/MW for the thermal plant and co-generation power plant, for arriving at the levelised tariff for the first five year period from the date of CoD. The petitioner had not reported any additional capitalization during the period since its CoD from 2009-10. Considering the above, there is no rationale in enhancing the Capital cost for tariff determination from the 6th year onwards from the level of Rs 3.50 crore/MW approved by the Hon'ble Commission vide the order dated 20th June 2009."*

5. With regard to the applicable tariff norms for 4MW thermal plant, KSEB Ltd requestedthe Commission to adopt the O&M cost for the 4 MW thermal plant as per thenorms stipulated in KSERC(Power Procurement from Cogeneration Plants by Distribution Licensees) Regulations, 2008 issued by the Commission vide notification No. KSERC/III/Regulations/2008 dated, 19th November,2008.

6. With regard to the applicable tariff norms for 6 MW co-generation plant, KSEB Ltd stated that:

   a. *Interest on loan should be @ 9% as per the KSERC(Power Procurement from Cogeneration Plants by Distribution Licensees) Regulations, 2008.*
   b. *O&M cost can be approved based on the past actual for the period from 2009-10 to 2010-11. An escalation of 5.72% may be adopted for arriving the O&M cost of subsequent years.*
   c. *Interest on working capital may be allowed at bank rate.*
   d. *Return on equity may be allowed at the rate of 14%.*

7. With regard to the determination of energy charges,KSEB Ltd has requested that,

(a) Station heat rate may be adopted as per CERC norms.

(b) GCV may be fixed at the weighted average GCV of the primary fuel received.

(c) Fuel price should be fixed based on the weighted average price of the last one year actual purchase cost.

8. KSEB Ltd further submitted that,

"The PPA entered in to between M/s MPS Steel Casting Pvt Ltd and KSEB Ltd for procuring power from the 10 MW Combined Co-generation plant expired on 18-2-2014. As per clause 2.1.1 of the PPA, the term of the agreement can be extended on mutually agreed terms and conditions. Accordingly, at the end of the validity period of the PPA i.e.on 18-2-2014, the company intimated the readiness to extend the term of the PPA for another one year with the same terms and conditions of the PPA including the tariff. The company has been supplying power to KSEBL since then. However the validity of the extended term has expired on 18-2-2015. The company is willing to extend the PPA for further period subject to the condition that, the tariff re-determined by this Hon'ble Commission based on the tariff petition filed by the Company shall be the tariff applicable for the extended period. Accordingly, KSEBL and M/s.MPS Steel entered into a supplementary PPA on 26-3-2015 to continue the PPA for purchase and sale of power from the 10MW power plant of M/s.MPS Steel from 19-2-2015 and to extend the validity of the PPA as per clause 2.1.1 for a further period from 19-2-2015 till Hon'ble Commission pronounce final orders in the tariff revision petition to be filed by the company. It was also agreed that the tariff as revised shall be made applicable for the period extended from 19-2-2015. It was also further agreed that all other terms and conditions of the PPA dated 30-3-2011 shall remain unchanged and in full force and binding on the parties and the supplementary agreement shall be an integral part of the PPA."

Analysis and decision of the Commission

9. The Commission vide its order dated 20th June 2009 in petition No TP-62/2008 had determined the tariff of the 10 MW co-generation thermal power plant at Kanjikode

at Rs.2.31 per unit. The norms and other parameters adopted by the Commission for arriving the tariff vide the order dated 20th June 2009 are extracted below.

"3. Commissions' findings

3.1. Capital Cost.

The project is a combined Co generation and Thermal Plant. In the case of Co Generation portion of the project the Capital Cost has already been fixed in the regulation for Co Generation. The cost assumed is Rs 3.5 Crore/MW. But in the case of Thermal Plant of 4 MW the cost has to be estimated. For establishing any IPP for supplying power to a licensee for more than a year bidding route has to be followed. But since this is a combined co generation and Coal fired plant, the Coal Plant shall be taken as part of the Co Generation Plant and combined cost of plant decided.

Since in this case M.P.S. Steel has approached the Commission after completion of the project and after commencing supply of power to KSEB, no prior approval of the Commission was obtained by the Company. Hence prudence check of the actual capital expenditure incurred by the Company cannot be carried out fruitfully. Hence the other option is to compare Cost/MW of Thermal Stations which are already completed and whose tariffs are also approved. Capital Cost of Thermal Stations are given below

1) Feroz Gandhi Unchahar TPS Stage III (210 MW) Rs 3.84 Crore/MW
2) Suratgarh Unit VII (250 MW) Rs 3.26 Crore/MW
3) Kota Unit VI (195 MW) Rs 3.56 Cr/MW
4) Ramagundam STPS-III(500MW) Rs 3.31 Crore/MW
5) Rihand TPS (1000 MW) Rs 3 Crore/MW
6) Feroz Gandhi Unchahar TPS Stage II (2X210 MW Rs 2.94 Crore/MW

Taking into consideration of the above figures the Cost/MW of Thermal Plant of 4 MW is fixed as Rs. 3.5 Cr /MW the cost approved for Co Generation Plant using Bagasse.

3.2. Life of Plant

Life of Plant is 12 years for Co Gen Plant as per regulation KSERC (Power procurement from Co-generation Plants by Distribution licensees) Regulations, 2008 and same is adopted for Coal Plant also.

3.3 Depreciation rate

Depreciation rate is 7.5% for Co Generation plant as per KSERC (Power procurement from Co-generation Plants by Distribution licensees) Regulations, 2008 and 7.5% for Coal plant also.

3.4 O&M

1.5% of Capital investment in the case of Co Generation Plant as per KSERC (Power procurement from Co-generation Plants by Distribution licensees) Regulations, 2008 and same is adopted for Coal Plant also.

3.5 Interest Cost for long term debts

12% for both Co-Generation Plant and Coal fired plant.

3.6 Periodofterm loan

Term loan period is 10 years for both Co gen Plant and Coal Plant.

3.7 ROE

Return on equity is 14% for Co Gen Plant as per KSERC (Power procurement from Co-generation Plants by Distribution licensees) Regulations, 2008 and same is adopted for Coal plant.

3.8 Fuel Consumption

At station heat rate 2930K Cal/kWh and GCV of 5500K Cal/Kg and fuel price of Rs 4000/MT fuel consumption shall be 0.53 Kg/ kWh for Coal Based Plant and 15% of that for Co Generation Plant (as per Norms for Biomass and bagasse Co Generation Power Plants as per MN&RE Letter No. 3/19/2006-CPG dated 26-12-2006).

Based on these norms the generation and cost of both plants are given below

Co-generation plant					
Year	*1*	*2*	*3*	*4*	*5*
Rate (Rs/unit)	*1.68*	*1.64*	*1.56*	*1.51*	*1.47*
Levelised tariff at 12% Discount rate				*1.58*	*Rs/unit*

Coal plant					
Year	*1*	*2*	*3*	*4*	*5*
Rate (Rs/unit)	*3.5*	*3.45*	*3.38*	*3.33*	*3.28*
Levelised tariff at 12% Discount rate				*3.40*	*Rs/unit*
Combined Cost of Energy				*2.31*	*Rs/unit*

10. In view of the above facts and circumstances the Commission had ordered that KSEB may procure power from the 10 MW combined co-generation thermal plant of M/s MPS Steel Castings (P) Ltd, Kanjikode, Palakkad at the rate of Rs.2.31/kWh for a period of 5 years.

11. As detailed above, the Commission had, as per its order dated 20.06.2009, taken a decision on the capital cost and other technical and financial parameters to beadopted for determination of the tariff of the combined co-generation plant of M/s MPS Steel Castings Pvt Ltd for the first five years.

12. The petitioner had filed appeal No.181/2009 before the Hon'ble Appellate Tribunal of Electricity challenging the order of the Commission dated 20.06.2009 on various grounds. During the course of preparing the final argument the senior counsel appearing for the petitioner expressed some doubts about the correctness of the nature and status of the plant as a co-generation unit and advised the petitioner to seek expert technical opinion in this regard. The petitioner took an opinion from Dr.K.V.Unninarayanan, Chief Engineer (Rtd) KSEB, Certified Energy Auditor and Mr.P.V.Jose, Executive Engineer (Rtd) KSEB who reported after visiting the site that the petitioner's plant was not a cogeneration plant. Thereafter the petitioner filed an affidavit in appeal No 181 of 2009 before Hon'ble Tribunal bringing out the said factual position about the nature of the power plant. On 25.05.2010 the Hon'ble Tribunal after considering the aforesaid affidavit passed an order permitting the appellant to withdraw the appeal with liberty to approach the Commission for necessary relief with regard to re-determination of tariff. However it was made clear that the Tribunal was not expressing any opinion on the merits of the matter and as such the Tribunal didnot disturb the impugned order dated 20.06.2009 passed by theCommission. The relevant portion of the judgment of the Hon'ble Tribunal is extracted below.

"In view of the statement of the Appellant that the Appellant is no more a co-generation plant, it is proper for the Appellant to approach the Commission seeking for necessary relief for re-determination of tariff in the capacity as a generating station without co-generation. The learned Senior Counsel requests this Tribunal to give permission to withdraw the Appeal with a liberty to approach the Commission for re-determination of tariff. The learned Senior Counsel would undertake that the Appellant would approach the Commission within two months from the date of this Order.

Accordingly, we permit the Appellant to withdraw the Appeal with a liberty to approach the Commission for necessary relief for re-determination of the tariff. However, it is made clear that we are not expressing any opinion on the merits of the matter and as such we are not disturbing the Order impugned passed by the Commission.

The Appellant is at liberty to approach the Commission for necessary relief in the light of the new stand taken by the Appellant within two months from today. In that event, the Commission may consider the prayer of the Appellant and pass an Order with regard to the re-determination of tariff in accordance with law.

With these observations, the Appeal is dismissed as withdrawn."

13. Based on the judgment of the Hon'ble APTEL dated 25th May 2010 in Appeal Petition No. 181 of 2009, the petitioner hadfileda petition before this Commission to re-determine the tariff of the plant asnon-cogeneration plant. However, the Commission vide the order dated 30th November2010 had confirmed that, the 6 MW power plant is co-generation plant and hence there is no need to change the parameters approved by the Commission in its order dated 20-06-2009. The relevant portion of the order of the Commission dated 30-11-2010is extracted below.

"4.2 The generation of electricity by a power plant based on waste heat recovery from sponge iron kilns can be considered as co-generation only. It is admitted by the petitioner that a sponge iron plant burns coal in kilns and the process generates heat at very high temperature. The heat is recovered through three Waste Heat Recovery Boilers (WHRB), each boiler designed to generate 2 MW of power. The steam generated by the three boilers is used to drive a turbine to generate electricity. The power plant is located in the close proximity of the sponge iron kilns, and the whole process is generally so integrated that certain utilities may be common to both thesponge iron plant and the power plant. Hence the use of the power generated is in situ.

However, the waste heat is used only in the WHRB boiler and not in the FBC boiler,which uses coal, as fuel for generation of power. Three Waste Heat Recovery Boilers(WHRB) each boiler designed to generate 2 MW of power and one Fluidized BedCombustion Boiler (FBC) designed for 4MW power are used in the plant. The fourthboiler is installed only for optimization of capacity and has no direct relevance to thesponge iron plant. In fact, it can be operated independent of the sponge iron industry.

The sponge iron plant is not set up to produce power but to produce sponge iron. Poweris a byproduct obtained by utilization of the waste heat generated in the process ofmanufacture of sponge iron. If the process of this power generation is accepted as cogeneration,the generating unit has to be considered as an independent powerproducingunit.

4.3 Cogeneration has been defined in the Act under Sec. 2(12) as "a process whichsimultaneously produces two or more forms of useful energy (including electricity)".

Ministry of Power passed a resolution (No.A-40/95-IPC-I) on 6th November 1996 on promotion of co-generation power plants. This resolution contains a more elaborate definition of cogeneration as under:

"2. Definition of co-generation:

2.1 A cogeneration facility is defined as one, which simultaneously produces two or more forms of useful energy such as electric power and steam, electric power and shaft (mechanical) power etc. Cogeneration facilities, due to their ability to utilize the available energy in more than one form, use significantly less fuel input to produce electricity, steam, shaft power or other forms of energy than would be needed to produce them separately. Thus by achieving higher efficiency, cogeneration facilities can make a significant contribution to energy conservation".

Para 5 of the resolution talks of two basic co-generation cycles, viz. topping cycle and bottoming cycle. Under bottoming cycle, co-generation is 'any facility that uses waste industrial heat for power generation by supplementing heat by any fossil fuel'.
The qualifying requirement for bottoming cycle is provided in para 6, as under:
"(ii) Qualifying Requirements for Bottoming cycle:
In case of bottoming cycle, the total useful power output in any current year must not be less than 50% of the total heat input through supplementary firing".
The specific coal consumption of the sponge iron plant which has WHR boiler power plant is the same as that of standalone sponge iron power plant. No additional/ supplementary fossil fuel is burnt to produce power. Thus clearly the useful power output in the year is greater than 50% of the quantity of fuel fired for generation of power. Thus the power plant based on the waste heat of a sponge iron plant, which generates electricity using the steam produced by the waste heat recovery boiler, falls in the category of co-generation of the "bottoming cycle".
In the Judgement on appeal No 32, 33 and 118 of 2009 of the Appellate Tribunal for Electricity dated 28-04-2010 Chhattisgarh State Power Distribution Company Limited Vs SalasarSgSteel and Power Ltd it is quoted that the generating plants set up by the sponge iron industry may be treated as co-generation plants acting as independent power producers.
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In the report of DrK.V.Unninarayanan and P.V.Jose it is stated that "This is called sponge iron and during this process flue gas will be generated. The heat available in the flue gas is recovered and converted into steam through Heat Recovery Steam Generators Capacity 3x10 TPH (HRSG) and steam expands in the turbine through a common header to produce power.
It is also noted that, due to the basic problem in the design of WHRB thecompany could not be able to achieve the designed parameters. So they are compelledto burn extra more coal inside the Kiln to raise the temperature of flue gas from 800 Degree C to 1050 Degree C and to maintain the required pressure. Thus the produced steam is being fed to the common header which is the input line for the Turbine."
From the above statement it is clear that the plant is using flue gas generated during the process of production of sponge iron for power generation and hence heat energy and electrical energy is produced simultaneously which satisfies the definition of co generation plants. Extra coal is burnt inside the kiln to raise the temperature of flue gas from 800 Degree C to 1050 Degree C to maintain the required pressure. As stated by the experts due to the basic design problem of WHRB they are compelled to burn extra coal. This also has been considered in the fixation of tariff in the earlier order of the Commission dated 20-06-2009.
As per the technical details furnished by the petitioner, the 6 MW Power plant is utilizing flue gases during the process of manufacturing of sponge iron and hence is a bottom cycle co generation plant. Hence the Commission comes to the conclusion that there is no need to change the parameters approved by the Commission in the order dated 20-06-2009.

5. Decision of the Commission.
In the light of the above facts The Commission orders that the tariff applicable to the combined Co generation Coal fired power plant shall be as determined in the order dated 20-06-2009 on TP – 62/2008 which is given below.

Co-generation plant					
Year	*1*	*2*	*3*	*4*	*5*
Rate (Rs/unit)	*1.68*	*1.64*	*1.56*	*1.51*	*1.47*
Levelised tariff at 12% Discount rate				*1.58*	*Rs/unit*

Coal plant					
Year	*1*	*2*	*3*	*4*	*5*
Rate (Rs/unit)	*3.5*	*3.45*	*3.38*	*3.33*	*3.28*
Levelised tariff at 12% Discount rate				*3.40*	*Rs/unit*
Combined Cost of Energy				*2.31*	*Rs/unit*

Based on the above it is ordered that KSEB shall procure power from 10 MWcombined Co Generation Thermal Power Plant of M/s M.P.S. Steel Castings (P) Ltd, Kanjikode, Palghat at the rate of Rs 2.31/kWh for a period of 5 years as approved as per order dated 20-06-2009.The petition for redetermination of tariff is disposed off accordingly."

14. The petitioner had not challenged the above order of the Commission dated 30th November2010 beforethe Hon'ble Appellate Tribunal for Electricity (APTEL), wherein the Commission had re-confirmed the order of the Commission dated 20.06.2009 in petition No. TP- 62/2008, including the various parameters adopted for determining the tariff of the 10MW combined thermal cum co-generation plant. Hence, the parameters adopted by the Commission for determining the tariff of the 10 MW combined thermal cum co-generation plant vide the order dated 20-06-2009 in petition No. 62/2008 has become final.

15. The useful life of the plant considered for determining the tariff as per the order of the Commission dated 20-06-2009 was '12'years. The Commission had approved the tariff for first five years from the date of commercial operation. The validity of the original PPA (five year period) expired on 18.02.2014.The company has supplied electricity for one more year at the original tariff of Rs.2.31 per unit for one more year from 19.02.2014 to 18.02.2015. Hence, in this proceedings, the Commission has to approve the tariff only for the remaining useful life of the project i.e., from 7th year to 12th year.

16. The year wise details of the fixed cost for both the thermal plant and co-generation plant as computed by the Commission while issuing the original order dated 20.06.2009are given below.

4 MW coal plant and 6 MW co-generation plant						
Year	7th	8th	9th	10th	11th	12th
Fixed cost (Rs/ Unit)	1.06	1.02	0.97	0.92	0.87	0.88

The levelised fixed cost for the combined co-generation cum thermal plantsfrom 7th year to 12th year, at the normative values approved by the Commission in its order dated 20.06.2009 and at a discounting rate of 12% for the period works out to Rs.0.97 per unit.

17. The fuel cost for the 4 MW thermal plantwas approved as shown in the table below taking into consideration the station heat rate of 2930 kilo calories per kWh and the gross calorific value of coal at 5500 kilo calories per kg. The specific fuel consumption for the thermal plant is 0.532 kg / kWh. For calculating the fuel cost per kWh for the 6 MW co-generation plant, only 15% of the specific fuel consumptionfor the 4 MW thermal power plantwas approved, since the coal additionally required for the co-generation process is only 15% of the coal requirement of the thermal plant. The price of coal was adopted as Rs.4000/- per MT (Rs.4/kg).The combined PLF of the 6 MW co-generation plant and 4 MW thermal plant was approved at 72% as per the original order of the Commission dated 26.06.2009. Therefore the normative annual generations at 72% PLF from the 6 MW co-generation plant and the 4 MW thermal plant are 34.06 MU and 22.71 MU respectively.The weighted average rate has been computed considering the ratio of generation from the co-generation plant and thermal plant.

Particulars	Annual Generation	Tariff (Rs/ kWh)		
		Fixed cost	Fuel cost	Total
Co-generation plant (6MW)	34.06 MU	0.97	0.32	1.29
Thermal plant (4 MW)	22.71 MU	0.97	2.13	3.10
Weighted average tariff for the combined plant	-	0.97	1.04	2.01

Based on the above, the levelised tariff for the combined co-generation and thermal plants for the period from 7th year to 12th year is approved at Rs.2.01 per unit as calculated above, based on the parameters adopted by the Commission vide the order dated 20th June 2009**.** Detailed calculation is given in Annexure - A to this order.

18. Commission is of the view that,the impact of thechange in fuel cost of the plant, on account of the change in cost of coalhas to be regulated by a fuel price adjustment formula. The Commission vide the order dated 20th June 2009 had adopted the following parameters for calculation of the tariff,-

    (i) station heat rate of 2930 kCal/ kWh,

    (ii) gross calorific value of 5500 kCal/kg and

    (iii) thecost of fuel at Rs.4000/MT.

    Further, the fuel requirement of co-generation plant was approved as 15% of that of the thermal plant.

19. The station heat rate is machine specific. Since the same set of machine continue to generate electricity from this plant and since no records have been submitted to indicate any variation in heat rate with respect to the vintage of machine, there is no reason to change the station heat rate at this stage, as requested for by the petitioner. The gross calorific value depends on the quality of coal used and the major factor which decides the price of coal is its calorific value. The interests of both the consumer and the generator have to be protected in the case of change in the price and the calorific value of coal. The consumer has to be protected against the procurement of poor quality coal by the generating company at comparatively higher prices. For this purpose, the actual price per kg of the coal purchased by the petitioner [P(a)] and its gross calorific value [G (a)] as per the vouchers and other documents submitted by the petitioner in support of his claim for the fuel price adjustment have to be compared with the price per kg of the coal as notified by the Coal India Ltd.,for the same gross calorific valueon the date of purchase of coal [P (CIL)].The actual price of coal has to be rationalized with respect to the gross calorific value of 5500 kilo calories / Kg, duly considering the

price of coal notified by Coal India Ltd., [P (CIL)].The rationalized price of coal [P(r)] has to be worked out as per the following formula.

$$P(r) = \frac{P(a) \times 5500}{G(a)} \text{ or } \frac{P(CIL) \times 5500}{G(a)} \text{ whichever is less}$$

The fuel price adjustment that can be allowed to compensate for the change of price of coal shall be worked out using the following formula for the 4 MW thermal plant.

The rate of Fuel Price Adjustment (FPA) per unit = $\frac{\text{Rs. } [P(r) - 4] \times 2930}{5500}$

Where P(r)is therationalized cost of coal per kg

The fuel price adjustment that can be allowed to compensate for the change of price of coal shall be worked out using the following formula for the 6 MW co-generation plant.

The rate of Fuel Price Adjustment (FPA) per unit = $\frac{\text{Rs. } [P(r) - 4] \times 2930 \times 15}{5500 \times 100}$

Where P(r) is the rationalized cost of coal per kg

As already stated in para 17 of this order, the total energy that would be generated from 10 MW plant per annum at 72% PLF is 56.76 MU after providing 10% of energy for auxiliary consumption. Out of the 56.76 MU a quantity of 34.06 MU is from 6 MW co-generation plant and 22.70 MU is from 4 MW coal based thermal plant. The admissible FPA can be worked out using the following formula, taking into consideration the weighted average of generation from the co-generation and thermal plants,

$$FPA = 0.2610 \times [P(r)-4.00] \text{ Rs/unit}$$

Orders of the Commission

20. Commission has analysed in detail the proposals of the petitioner M/s MPS Steel Casting Pvt Ltd, the objections and comments offered by the respondent KSEB Ltd. Accordingly the Commission here by orders that,

(1) The levelised tariff for the 10 MW combined co-generation and thermal plant of MPS Steel Pvt Ltd for the period from 7th to 12th year from the date of commercial operation is approved at Rs 2.01 per unit.

(2) The Fuel Price Adjustment for the variation in price of coal shall be worked out adopting the formula specified in paragraph -19 of this order.

The petition is disposed of accordingly.

Sd/-	Sd/-	Sd/-
K.Vikraman Nair	**S.Venugopal**	**T.M. Manoharan**
Member	Member	Chairman

Approved for issue,

Santhosh Kumar.K.B
Secretary