

**PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
SITE NO. 3, SECTOR 18-A, MADHYA MARG, CHANDIGARH-160017**

**Petition No. 49 of 2017
Date of Order: 26.06.2019**

Present: Ms. Kusumjit Sidhu, Chairperson
Sh. S.S. Sarna, Member
Ms. Anjuli Chandra, Member

In the matter of: Petition/Complaint under Section 142 of the Electricity Act ,2003 read with Regulation 60 and 61 of Punjab State Electricity Regulatory Commission (Conduct of Business) Regulations-2005 for the Respondent's willful and deliberate non-compliance of this Commission's Order dated 28.10.2013 in Petition No. 3 of 2012.

AND

In the matter of: M/s Singhania International Ltd., C-25,
Ph-1, Focal Point, Ludhiana.
.....Petitioner

VERSUS

Punjab State Power Corporation Limited
(PSPCL), Patiala.

.....Respondent

ORDER

1. The present Petition has been filed in August 2017 by M/s Singhania International Ltd. (SIL) under section 142 of Electricity Act with prayer as under:

- a) That respondent (PSPCL) may be directed to ensure compliance of the Commission's Order dated 28.10.2013 passed in Petition No. 3 of 2012 and consider the load of Electric Bell Furnace (for annealing) as general industrial load.

b) The Commission may kindly take any other action against the respondent as deemed fit.

2. The submissions made by the petitioner in the petition are summarized as under:

- i) That SIL is having one LS category connection, bearing account No. 3002809198, with present sanctioned load/demand as 1190 KW / 1190 KVA, (including load of Electric Bell Furnace for Annealing) under Focal Point (Spl) Division PSPCL, Ludhiana.
- ii) That SIL applied for load/demand of 490KW/490KVA on 04.10.2013 (including 255KW load of Electric Bell Furnace) which was sanctioned under General Category.
- iii) That thereafter, SIL applied for extension in load by 700 KW (including 490KW load of Electric Bell Furnace) to its already existing load of 490 KW, vide A&A No.14440 dated 27.02.2015 which was released under General Category on 19.09.2015.
- iv) That the extension in load was applied & released after the issue of Commercial Circular No. 27/2014 dated 29.05.2014 and the billing from the release of connection in 9/2014 and after extension in load (on 19.09.2015) was being done by applying tariff as per General Category.
- v) However, Asstt. Executive Engineer (AEE)/ Commercial, Focal Point Division Ludhiana, vide Notice bearing Memo No. 802 dated 31.05.2017 has

raised demand of Rs.7,55,886/- as difference of tariff applicable to PIU & General Category besides Rs. 2,13,760/- as difference in security deposit, on the ground that extension in load in 9/2015 (including 690 KW load of Electric Bell Furnace) was allowed under PIU. It was further mentioned in the notice that in 9/2014, while submitting detail of load, 255 KW load was declared as load of Electric Bell Furnace (for annealing), as such the billing was required to be done under PIU instead of under General Category of Tariff, from 16.09.2014 as per instructions issued vide CC No. 2/2014.

- vi) That as per para no. 21(v) of the Commission's Order dated 28.10.2013 passed in Petition No. 3 of 2012 decided as under:

*“The Commission accepts the comments of PSPCL given vide letter no. 6225 dated 05.09.2013 and decides that **all LS consumers where the Induction Billet Heaters/Surface Hardening Machines are installed shall be treated under PIU category.** This Order of the Commission will be applicable with effect from 01.01.2014. The respondent PSPCL shall issue a public notice in the leading newspapers having wide circulation in the State for wide publicity to the Order of the Commission and its impact. The requisite formalities, if any, required for implementing this decision by PSPCL be completed before 01.01.2014”.*

However, no public notice in the leading newspapers was issued regarding Order of the Commission, especially its impact, with the result that field offices

are exercising their discretion, differently in different cases. In the case of SIL, the connection was released in 9/2014 under General Category. Similarly, the extension in load in 9/2015 was also allowed in General Category (break up of load is prescribed in A&A form) and billing up to 6/2017 was also being done accordingly. Then another Additional Superintendent Engineer (ASE) of PSPCL interpreted the Commission's Order differently and considered the load of Electric Bell Furnace (for annealing) as PIU and raised demand of Rs.7,55,886/- as difference of tariff applicable to PIU & General Category from 9/2014 onwards. Whereas, the Order dated 28.10.2013 of the Commission and CC No. 27/2014 is meant for specific consumers viz the LS consumers having load of Induction Billet Heaters/Surface Hardening Machines. However, this circular cannot be made applicable for other load including the LS consumers having load of Electric Bell Furnace (for annealing).

- vii) That the Electric Bell Furnace installed by the consumer is having different parameters than that of Induction Billet Heaters/Surface Hardening Machines and other PIUs. Electric Bell Furnace (for annealing) is not an induction heating process that is followed in Induction Billet Heaters/Surface Hardening Machines.
- viii) That the Electric Bell Furnace is working on 3 phase, 415V, 50 Hz supply condition for annealing of wire rod coils. Its other features are as under:

- a) Input Frequency: 50 Hz
- b) Working Frequency: 50 Hz
- c) Input Voltage: 415 Volts
- d) Working Voltage: 415 Volts
- e) Input Current: 330 Amps (maximum)
- f) Working Current: 330 Amps (maximum)
- g) Power Load: 237 KW

The principle of heating in case of billet heaters/surface hardening machines is heating through induction at un-standard voltage and high frequency wherein temperature achieved is about 1100°C. The process is similar to that of heating in case of induction furnaces where un-standard voltage and high frequency supply is used for the process of melting the metal wherein the temperature achieved is about 1500-1600°C. However, Electric Bell Furnace does not work on the induction principle (where heating is done at high frequency). Further, working temperature of Electric Bell Furnace is 760 °C and maximum designed temperature is 850 °C. As such, this furnace cannot be equated with billet heaters/surface hardening machines or other PIUs.

- ix) That the Commission got a detailed study done from CPRI, Bangalore before the issue of Order dated 28.10.2013 for treating Induction Billet Heaters/Surface Hardening Machines as PIU. CPRI, Bangalore studied power quality parameters like current & voltage harmonics, voltage flicker and voltage dip besides demand factor and energy consumption in kWh per

tone of finished product. Some of these power parameters of Induction Billet Heaters/Surface Hardening Machines viz-a-viz Electric Bell Furnace, are explained below:

a) The Average Voltage Dip

- Billet heaters: 0.03 to 0.65 %
- Hardening machines: 0.09 to 0.47 %
- Induction furnaces: 0.09 to 2.05 % and
- Arc Furnace: 0.70 %.

❖ **Electric Bell Furnace: NIL**

b) The Average Harmonic Current:

- Billet heaters: 1.0 to 10.67 A
- Hardening machines: 0.80 to 13.74 A
- Induction furnaces: 2.37 to 18.86 A and
- Arc Furnace: 6.36 A

❖ **Electric Bell Furnace: NONE**

c) *The average distribution capacity reduction:*

(due to harmonics present)

- *Billet heaters: 0.12 to 0.84 %*
- *Hardening machines: 0.03 to 0.66 %*
- *Induction furnaces: 0.10 to 2.27 %*
- *Arc Furnace: 0.6 %*

❖ **Electric Bell Furnace** is not creating any inductive load and there is no harmonic generated in the furnace.

d) *Demand Factor:*

- *Billet heaters: 8.34 to 100.57 %;*
- *Hardening machines: 21.09 to 91.59 %;*

- *Induction furnaces: 35.96 to 103.63 %*
- *Arc Furnace: 70.05 to 79.84 %*

❖ **Electric Bell Furnace: 0.4356**

e) *The average Specific Energy Consumption (SEC) :*

- *Billet heaters: 0.24 to 0.83 kWh/kg ;*
- *Induction furnaces: 0.74 to 0.902 kWh/kg*
- *Arc Furnaces: 0.455 to 0.669 kWh/kg*

❖ **Electric Bell Furnace: 0.25 to 0.420 kWh/kg**

After study of the above power parameters, CPRI Bangalore concluded that:

“The Billet heaters and surface hardening machines can be considered as power intensive industry because already induction furnaces are considered as power intensive industries by PSPCL. The working principle and operational behavior with respect to power supply and power quality parameters for billet heaters, surface hardening machines & induction furnaces are same. The impact of power quality parameters like voltage dip, voltage flickers, voltage & current waveform distortions, harmonics, capacity loss of utility distribution system, demand factor, energy loss in distribution system, etc; have same effect. Only the specific energy consumption for induction furnaces is slightly higher compared to billet heaters”.

However, in case Electric Bell Furnace (for annealing), the above parameters are altogether different e.g., there is no voltage dip, voltage flicker, max temperature 850°C, no harmonic is generated and no energy loss etc. Further, (as mentioned in the Order dated 28.10.2013 of the commission), the Induction Billet Heaters/Surface Hardening Machines and Induction

Melting Furnaces work on the same principle of AC variable high frequency power supply. In this case, the grid power frequency supply (50 Hz) is converted to DC by rectification and then inverted back to varying frequency AC source. The heating factor depends on the frequency i.e. at high frequency, the heating and melting is fast, but all this is not in the case of Electric Bell Furnace.

From the above, there may be hardly any doubt that Electric Bell Furnace cannot be treated at par with Induction Billet Heaters/Surface Hardening Machines and other PIUs. As such, load of these furnaces may be considered under General Industry and tariff applied accordingly.

3. The petition was admitted by the Commission vide Order dated 18.09.2017 and PSPCL was directed to file a reply to the petition by 13.10.2017. SIL was also directed to file rejoinder, if any, by 03.11.2017. The petition was fixed for hearing/arguments on 15.11.2017.

4. PSPCL submitted its reply vide Memo No. 5353 dated 31.10.2017. The submission made by PSPCL are summarized as under:

- a) That the instant petition is bad and liable to be dismissed as
 - i) Petitioner (SIL) has sought to invoke the power under Section 142 of the Electricity Act, 2003. It is worthwhile to point out that the power under Section

142 of the Electricity Act, 2003 can be expressed by the Commission with respect to non-compliance of the directions given by the appropriate Commission. In absence of pointing out any direction or violation thereof, the petition itself is not maintainable.

- ii) The essential aspects with respect to the nature of Industry / Electric bell furnace for annealing had not been disclosed by SIL at the time of entering into agreement for PIU Industry with PSPCL.
 - iii) SIL has not availed the remedies available to it under Consumer Complaint Handling Procedure (CCHP) and Punjab State Electricity Regulatory Commission (Forum and Ombudsman) Regulation, 2016.
 - iv) SIL is bound by his A&A form, wherein declared 690 KW of load of 3 no. Electric Bell furnaces (annealing) as PIU load and the same was sanctioned under PIU Category.
- b) That SIL has a large supply connection bearing A/c No. 3002809198 (New) and E31 FP08/0880 (old) with presently sanctioned load/demand of 1190 KW / 1190 KVA operating under Focal Point Division (SPL), Ludhiana. The Consumer applied for extension of load from 89.830 KW to 490 KW / 490 KVA vide A&A No.59530 dated 01.10.2013. SIL declared one Electric Bell Furnace (for annealing) of 255 KW in load detail submitted along with A&A Forms. Load of SIL was sanctioned under General Category. One No. Electric bell furnace of 255 kW load was declared as installed in

the test report of 490 KW submitted by consumer. After completing the formalities load of 490 KW / 490 KVA released on 16.09.2014 vide SCO No. E31/S/14/218810/06990 dated 29.08.2014.

- c) That SIL applied for further extension of load/demand from 490 KW/490KVA to 1190 KW/1190 KVA vide Regd. No.14440 dated 27.02.2015 and that in the load, details of 1190 KW submitted along with A&A forms two Electric Bell furnaces (for annealing) of 490 kW were declared by SIL. Extension of Load from 490 KW to 1190 KW was sanctioned by Dy. Chief Engineer/ Op., City East Circle, Ludhiana under General Industry vide Memo No.1854 dated 12/03/2015. Load/demand of 1190 KW / 1190 KVA was released on 19.09.2015 vide Job order dated 31.08.2015.
- d) That SIL applied for the status of Continuous Process Industry vide application no. 2792 dated 26.11.2015 and in the documents submitted by SIL on its own volition made a distinction between General and Furnaces (PIU) load in the detail of sanctioned load 1190 KW. Since SIL had applied for and got his extension in load sanctioned under General Category Industry thus SIL was intimated to submit revised A&A forms through Memo No. 4522 dated 02.12.2015 of ASE, Focal Point Division, PSPCL, Ludhiana. SIL submitted revised A&A forms for 1190 KW/1190 kVA load/CD and requested for change in nature of load from General to PIU. As per the revised detail of load

submitted along with A&A form the consumer increased the number of Electric Bell type furnaces (for annealing) from two to three and total furnaces load of 690 KW. The revised distribution & categorization of load so submitted was sanctioned by Deputy Chief Engineer/DS, City East Circle, Ludhiana vide Memo No. 784 dated 05.02.2016 under power intensive unit category.

	Load	CD	
Annealing Furnaces	690 KW	690 KVA	Under PIU
General	500 KW	500 KVA	Under General
Type of Industry	Power Intensive Unit (PIU)		

Thus, the consumer has voluntarily and on his own volition categorized his load into General & Power Intensive taking the load of Electric Bell type annealing furnaces as power intensive. It is further added that bell type annealing furnace had not specifically been mentioned under General or Power Intensive load category in CC No. 27/2014 issued in pursuance to decision of the Commission in Petition No. 03 of 2012. Further, the distribution or any other wing of PSPCL has no facility to ascertain whether the specific electric bell type annealing furnaces falls under General or Power Intensive Category and as such this fact requires to be determined by a reputed Power Research institute or any other institute equipped with the requisite equipment to carry out detailed testing and study.

- e) That during the checking of record of connection of SIL, it was found that during extension of load in 09/2015,

SIL had already declared 690 KW of Electric Bell Furnaces (for annealing). Before this in 09/2014 while submitting load detail during extension of load 255 kW electric bell furnace (annealing) load was also declared by SIL. So due to this billing of SIL was to be done under PIU category instead of General Category. Thus, in the light of CC No.27/2014, Rs.7,55,886/- as difference of tariff under PIU category and General Category w.e.f. 16.09.2014 to 04/2017 and Rs.2,13,760/- as difference of PIU and General category security was also charged vide Memo No. 802 dated 31.05.2017. As SIL had declared himself that its load is under PIU category so the amount charged vide Notice No. 802 dated 31.05.2017 is correct and recoverable.

5. The matter was heard on 15.11.2017 wherein during the hearing the petitioner reiterated its submission that the Commercial Circular No. 27/2014 dated 29.05.2014 issued by PSPCL in view of the Order of the Commission dated 28.10.2013 in Petition No. 03 of 2012 cannot be made applicable to him.

6. The Commission vide interim Order dated 27.11.2017 observed and ordered as under:

“The Commission perused the circular and observed that the said circular was issued in compliance of the Order dated 28.10.2013 in Petition no. 03 of 2012 and the same refers only to the consumers where the induction Billet Heaters/Surface hardening machines are installed. As such notice issued vide Memo No. 802 dated 31.05.2017 by PPSCCL is not in order. However, the Commission also observed that the A&A Form dated 08.12.2015 signed and

submitted by the petitioner and the load sanctioned by PSPCL contains part of load as PIU. Accordingly, the demand raised by PSPCL vide Memo No. 802 dated 31.05.2017 for depositing Rs.7,55,886/- as difference in tariff for General Category and PIU Category and Rs.2,13,760/- as difference in security in PIU and General Category is stayed and the Commission decided to obtain an expert opinion as to whether the Electric Bell Furnace is covered under the PIU or not.

The petition is adjourned sine-die till the receipt of the expert opinion.”

6. The Commission referred the matter to Administrative Staff College of India (ASCI), Hyderabad for obtaining its expert recommendation. The consultants visited the SIL premises on 9th October 2018 & 14th November 2018 at Ludhiana and after analysing the process of electric bell furnaces, submitted its report on dated 08.01.2019 with the following summarized conclusion:

- 1) *Observations in the case of Electric Bell Furnaces installed for annealing at M/s Singhania International Limited are summarized as under:*
 - a) *The current at the 11KV incomer was varying between 2.84 Amp to 27.78 Amp due to widely varying load.*
 - b) *The current Total Harmonic Distortion (THD) for (10 minutes) values 95th percentile were 49.56%, 47.64%, 45.17% in R,Y,B phases respectively and are beyond the limit of 8% recommended by CEA.*
 - c) *The current Total Demand Distortion (TDD) at peak demand load current for (10 minutes) values 95th percentile were 18.27%, 18.87%, 18.20% in R,Y,B phases respectively and which are beyond the limits of 8% recommended by IEEE 519-2014.*

- 2) *Even though the heating elements in the electric bell furnaces are resistive loads but during the testing of the M/s Singhania International Limited, it was found that due to frequent/abrupt change in current drawal to regulate the temperature inside the furnaces, the current harmonics recorded at M/s Singhania International Limited were observed to be higher.*
- 3) *Current and Voltage Harmonics in the grid are frequent causes of power quality problems. Harmonics generated in the industry will flow back to the distribution network and causes heating in lines/cables, transformers, capacitor banks, power distribution system hence losses will be more in the distribution network. Also, harmonics generated at one consumer may affect the normal operation of another consumer connected to the distribution network.*
- 4) *As per existing instructions, Arc Furnaces including Induction Furnaces, Chloro-Alkaline Units, Billet Heaters, Surface Hardening Machines & Electrolytic Process industries are considered PIU. **Even though the Electric Bell Furnaces for annealing purpose are not mentioned in the above listed PIUs categories, however in view of the observations made above, particularly due to fact that level of harmonics generated by it are much higher, the Electric Bell Furnaces for annealing installed at M/s Singhania International Limited industry should also be considered as Power Intensive Unit (PIU).***

The said report of the Consultant was sent to SIL and PSPCL for comments, if any.

7. PSPCL vide its memo no. 5868 dated 02.04.2019 submitted that it agrees with the report submitted by ASCI, Hyderabad which states that "Electric bell furnace for annealing installed at M/s Singhania International Ltd. Industry should also be considered as

Power Intensive Units (PIU)". PSPCL also submitted that it had already assumed the Electric bell furnace (for annealing) owned by M/s Singhania as PIU and charged accordingly.

8. The matter was heard on 03.04.2019 wherein during the hearing the petitioner filed additional submissions. The petitioner reiterated some of the earlier submissions and the new submissions of the petitioner are summarized as under:

- i) Harmonics can be controlled by installing the Harmonics Filters. The petitioner is ready to install the same to suppress the Harmonics so that our unit may not be considered under PIU just due to generation of current harmonics.
- ii) The electricity is one of the main input costs in the case of petitioner and price of products/job work is fixed by considering the energy charges paid to PSPCL through regular billing. We charge only Rs. 5 per Kg as annealing cost, out of which, the cost of power is Rs.3.5 per Kg. As such, any retrospectively revision of billing will adversely affect the business of petitioner and liability of the petitioner on account of difference in tariff may be Rs.15 Lac apprx. and the petitioner cannot recover the difference from its customers whose job work was done during the previous 4-5 years. As such, if any revision is necessitated on the basis of study of expert group then it should be from the date of issue of Order by the Commission.
- iii) If the load of Electric Bell Furnace is required to be considered under PIU then it should be from the date of

issue of fresh notification/order by PSERC in this regard, so that the Consumer may not be burdened with any liability of previous period.

9. PSPCL vide its memo no. 5999 dated 23.04.2019 filed comments/suggestions wherein reiterating its earlier submissions commented as under:

Now, the Commission vide notice dated 15.01.2019 has intimated that expert opinion sought from Administrative Staff College of India, Hyderabad has been received on 08.01.2019. According to expert opinion report " Electric bell furnace for annealing installed at SIL should also be considered as Power Intensive Unit (PIU). PSPCL agrees with the report and pray that as electric bell furnace for annealing comes under PIU category as per the report of expert opinion, accordingly the petitioner has been charged under PIU Category from dated 16.09.14 as the petitioner had installed electric bell furnace from that date, which is correct and recoverable.

- a) The petitioner (SIL) had installed electric bell furnaces from 16.09.2014. So the amount of Rs. (755886+213760) Charged to the petitioner vide notice no. 802 dated 31.05.2017 is correct and recoverable. PSPCL started charging as PIU tariff w.e.f. 05/2017 but as per order dated 15.11.2017 of the Commission, the petitioner was again started billed under General tariff category.

10. Observations and Decision of Commission

The Commission has examined the submissions made in the petition, the replies filed by the respondents, report submitted

by ASCI, additional submissions made by the parties and other documents placed on record during the course of hearing of the matter. The findings of the Commission are as under:

- a) The Commission agrees with PSPCL that in the absence of any non-compliance of the directions of the Commission, action under Section 142 of Electricity Act is not warranted. However, the Commission does not agree with the contention of the PSPCL that petition is liable to be dismissed as the petitioner has not availed the remedies available to it under CCHP & Punjab State Electricity Regulatory Commission (Forum and Ombudsman) Regulation, 2016 in view of condition 24 of General conditions of tariff which provides as under:

“If a question arises as to the applicability of tariff to any class of consumer or as to the interpretation of various clauses of tariff or General Conditions of Tariff, decision of the Commission shall be final.”

- b) PSPCL's submission that the essential aspects with respect to the nature of Industry / Electric bell furnace for annealing had not been disclosed by SIL at the time of entering into agreement for PIU Industry with PSPCL is not true as the petitioner has dutifully declared the load of its Electrical bell Furnaces since beginning. Further the contention of PSPCL that SIL is bound by his A&A form, wherein it has declared 690 KW of load of 3 No. Electric Bell Furnaces (annealing) as PIU load and the same was sanctioned under PIU Category cannot be accepted as the petitioner in the detail of machinery appended with the said A&A form has submitted the

machinery description only as 3 Nos. Electrical Bell type annealing Furnaces of load 690KW. It is PSPCL who has classified the same as PIU load but still chose to charge the petitioner under General load, indicating that it was not sure of the nature of load. Moreover PSPCL in its submission in the current petition has submitted as under:

“The distribution or any other wing of PSPCL has no facility to ascertain whether the specific electric bell type annealing furnace falls under General or Power Intensive Category and as such this fact requires to be determined by a reputed Power Research institute or any other institute equipped with the requisite equipment to carry out detailed testing and study.”

c) ASCI Hyderabad, the consultant appointed by the Commission for obtaining expert comments in the matter, has submitted the report as under:

“

2. Even though the heating elements in the electric bell furnaces are resistive loads but during the testing of the M/s Singhania International Limited, it was found that due to frequent/abrupt change in current drawal to regulate the temperature inside the furnaces, The current harmonics recorded at M/s Singhania International Limited were observed to be even higher

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4. As per existing instructions, Arc Furnaces including Induction Furnaces, Chloro- Alkaline Units, Billet Heaters, Surface Hardening Machines & Electrolytic Process industries are considered PIU. Even though the Electric Bell Furnaces for annealing purpose are not mentioned in

the above listed PIUs categories, however in view of the observations made above, particularly due to fact that level of harmonics generated by it are much higher, the Electric Bell Furnaces for annealing installed at M/s Singhania International Limited industry should also be considered as Power Intensive Unit (PIU)."

d) Accordingly, the Commission decides as under;

- 1. The Commission's interim Order dated 27.11.2017 stating that the notice issued vide memo No. 802 dated 31.05.2017 by PSPCL is not in order, is confirmed. As such, the notice issued is set aside.**
- 2. In view of the findings/recommendations of Administrative Staff College of India (ASCI, Hyderabad), all Electric Bell Furnaces for Annealing including that of the petitioner shall be considered as Power Intensive Unit (PIU), with effect from the date of issue of this Order.**
- 3. PSPCL is also directed not to charge any industry as PIU which is not included in the list of declared PIU industries. However, as the technology is changing fast, there may be some new/existing Large Supply Industrial connection applicants/ consumers whose process/technology may be similar to PIU but with different name than that declared as PIU by the Commission. Licensee may file petition with the Commission to include such processes under PIU category. Such industries shall be charged general tariff with the undertaking from the applicant that it will be charged applicable tariff from the date of**

release of connection / extension in load as per the decision of the Commission in this regard.

The petition is disposed off accordingly.

Sd/-

**(Anjuli Chandra)
Member**

Sd/-

**(S.S. Sarna)
Member**

Sd/-

**(Kusumjit Sidhu)
Chairperson**

Chandigarh

Dated: 26.06.2019

