

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

**Petition No. 62 of 2016
Date of Order: 05.09.2019**

In the matter of: Petition under Section 142 of Electricity Act, 2003 for taking suitable action against the respondents for mis-interpreting the Commission's Order dated 28.10.2013 in Petition No. 3 of 2012 and under regulation 10 & 69 of Punjab State Electricity Regulatory Commission (Conduct of Business) Regulations, 2005 for issuance of necessary clarification, directions to the respondents to treat the load of the "Electro Slag Refining" machine installed in the premises of the petitioner as General Industrial Load instead of PIU.

In the case of: Antarctic Industries Ltd. B -25, Phase-III, Focal Point, Ludhiana-141010, through its authorized signature Harjinder Kumar Rana S/o Sh. Chaman Lal Rana, Liaison Officer. PSPCL A/c No. E31-FP03-00969.

.....Petitioner

VERSUS

1. Punjab State Power Corporation Limited through its Managing Director, The Mall Patiala
2. Addl. S.E. Focal Point (Spl.) Division, Focal Point, Ludhiana.

.....Respondents

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

ORDER

1. The Antarctic Industries Ltd., Focal Point Ludhiana (AIL) has filed the present petition for taking action against the respondents for mis-interpreting the Commission's Order dated 28.10.2013 in Petition No. 3 of 2012 and for issuance

of necessary clarification, directions to the respondents to treat the load of the "Electro Slag Refining" machine installed in the premises of the petitioner as General Industrial Load instead of PIU.

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

- i) That AIL is a duly incorporated company and having an electricity connection bearing A/c No. E-31-FP 03-00969 obtained from PSPCL. AIL having load of 5.678 kW filed requisition no. 125 dated 16.11.2009 in the office of Addl. S.E. Focal Point (Spl.) Division, Ludhiana for extension of load from 5.678 KW to 675 KW with a contract demand of 750 KVA at a supply voltage of 11 KV, as AIL was going to install Electro Slag Refining Plant (ESR Plant) of 495 KW and 180 KW of other misc. load. The Dy. Chief Engineer/ Operations vide memo no. 11269 dated 05.11.2009 asked the Addl. S.E. to get the earnest money deposited from AIL. In this letter it was specifically mentioned in the column of type of Industry as "Electro Slag Refining/ Re-melting".
- ii) That PSPCL issued feasibility clearance for the above said load vide SE/Operation, Ludhiana memo no. 1498 dated 15.02.2010. Thereafter AIL was asked by the Addl. S.E. Focal Point (Spl.) Division, Ludhiana to intimate the type of process involved in the ESR which was provided vide letter dated 25.04.2010.
- iii) That in ESR system heating is done by passing a high

ampere low voltage supply with the help of a step down transformer which is same as in welding and the electrode is consumed in the process. In this process no induction heating is involved. AIL also filed an affidavit dated 26.05.2010 with PSPCL and Addl. S.E. Focal Point (Spl.) Division, Ludhiana stating therein that ESR plant does not come under PIU. Thereafter AIL got the ESR plant installed in its premises.

- iv) That PSPCL issued a demand notice No. 712 dated 08.06.2010 under normal conditions of supply and as non PIU load. AIL thereafter submitted the test report on 15.02.2012 which was verified and accepted by the representative of Addl. S.E. Focal Point (Spl.) Division, Ludhiana and the connection was released to AIL on 09.03.2012 under general industry category and not under PIU. AIL was thereafter issued bills for the consumption of the electricity and was charged as General Industry Miscellaneous (Others).
- v) That the Commission passed Order dated 28.10.2013 in Petition no. 3 of 2012 and held that all LS consumers where the Induction Billet Heaters/Surface Hardening Machines are installed shall be treated under PIU category. In this Order the Commission gave detailed reasons and also relied upon the study report submitted by CPRI, Bangaluru. The Commission has mentioned that this Order would be applicable from 01.01.2014.
- vi) That after the Order dated 28.10.2013 was passed by the Commission, PSPCL issued Commercial Circular

no. 27 of 2014 stating that all LS consumers where the induction billet Heaters/ surface hardening machines are installed shall be treated under PIU category w.e.f. 01.01.2014. This commercial circular had no bearing in the case of AIL as there was no billet heater or surface hardening machines used by AIL.

- vii) Despite the fact that there was no billet heater or surface hardening machines installed in the premises of AIL, the respondents treated the load of AIL as PIU and issued the bills under the category of “PIU (Induction Furnace) Billet Heater” for the month 04/2014 of Rs. 3,90,160/- whereas in the earlier bills the category of the industry has been mentioned as General Industry Miscellaneous (Others). AIL sent a letter dated 06.06.2014 to the Addl. S.E., Focal Point (Spl.) Division, PSPCL, Ludhiana to that effect and specifically stated therein that as per Order passed in petition no. 3 of 2012 by the Commission all LS consumers where the Induction Billet Heater/ Surface Hardening Machines are installed are to be treated under PIU category. It was also mentioned that no Billet heater or induction Hardening Machine are installed in the factory of AIL. It was further mentioned that there is no requirement where any induction system is used. A request was made to treat the load of AIL as general load.
- viii) AIL filed a petition before the Circle Level Dispute Settlement Committee (CDSC) challenging the bill issued for the month of 4/2014 by treating AIL as PIU

Billet Heater. PSPCL filed reply to the petition filed by AIL and admitted that in the A&A form category of the industry has been mentioned as ESR. It was also mentioned that the consumer has mentioned in its petition about the process which is a technical matter and has to be decided by the Committee. From the reply it is very much clear that PSPCL was not clear about the nature of the industry of AIL but without any reason have billed it under PIU.

- ix) CDSC vide its Order dated 07.08.2014 decided that as per record, 495 KW load is that of ESR and so the billing of AIL has to be done under PIU and the bills which have been issued after CC 27/2014 treating consumer under PIU category have been rightly issued.
- x) AIL filed a grievance petition before the CGRF, Patiala. The CGRF, vide order dated 23.01.2015 remanded back the case of AIL to the CDSC for fresh hearing after getting the process studied by committee/ agency of technical experts and/or obtaining the opinion of commercial organization for considering whether ESR is PIU or not.
- xi) AIL thereafter filed an appeal before the Ombudsman, Electricity, Punjab and challenged the orders passed by the CGRF and CDSC and further sought directions for treating the load of AIL as General Load instead of PIU. But the Ombudsman, Electricity, Punjab sent a letter dated 24.03.2015 to AIL mentioning that the CGRF, Patiala has only remanded back the case of

AIL to the CDSC for fresh hearing and passing of speaking orders and as such the filing of the appeal in the court of Ombudsman is yet pre-mature and is not found registerable as per Punjab State Electricity Regulatory Commission (F&O) Regulations 2005.

- xii) That AIL again approached the CDSC and filed a detailed application and made a prayer to treat the ESR as General Category and also to revise all the electricity bills issued to the petitioner. The said application is still pending and no order has been passed, though the CDSC is not competent to take any decision on this petition.
- xiii) That due to treating the ESR process installed in the premises of the petitioner as PIU, AIL is liable to pay minimum monthly charges at higher rates because rates for PIU are much higher than the MMC prescribed for general industry. Further the rate of tariff after April 2014 is also more for PIU than General Industry. PSPCL has also overhauled the account of AIL by treating it as PIU from the date of connection was released i.e. April, 2012. PSPCL has charged Rs. 41,66,263/- more from AIL till May, 2016 because AIL has been treated as PIU industry.
- xiv) That from the facts mentioned above it is very much clear that PSPCL has mis-interpreted the Order dated 28.10.2013 passed by the Commission in Petition no. 3 of 2012. The Commission has passed the above said Order in the case of Billet Heaters and Surface Hardening Machines only and it has nothing to do with

the ESR machine/ process as installed in the premises of AIL. Relevant portion of the Order passed in Petition no. 3 of 2012 by the Commission under para 16 is reproduced as under:

“The induction billet heater works on the principle of transformer. Due to mutual inductance, the magnetic field produced surrounding the coil induces an equal and opposing electric current in the billet and billet will heated up due to the resistance to the flow of the induced current i.e., eddy current”.

xv) It is submitted that ESR is a simple step down LT transformer whose secondary supply is a low voltage and mains frequency (50 Hz.) source with current of a high order for an effective heating by way of welding. In fact, AIL is not having any induction furnace pot/crucible where any induction coil is installed. The ESR Process is equivalent to a welding process in which the material is deposited through welding electrode and the electrode is consumed in the process.

xvi) That as per the Order passed by the Commission in Petition no. 3 of 2012, the Induction Billet Heaters/ Surface Hardening Machines and Induction Furnaces are non-linear loads because these equipments produce heavily distorted current waveform that causes distortion of voltage waveform, which also creates voltage dip and voltage flickers in the system. The Commission further held that 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. Whereas in the case of ESR system heating is done by passing a high ampere low voltage supply with the help of a step down transformer which is same as in welding and the electrode is consumed in the process. In this process no induction heating is involved.

- xvii) That the Hon'ble APTEL in Appeal no. 311 of 2013 held as under and as such only the Commission has jurisdiction to decide the present petition:-

“..the State Commission, being State Electricity Regulatory, is fully competent and empowered to look into the facts that a particular class of Consumers or category of consumers is not over-charged under any so called new nomenclature or by making quite new categories without the approval of the State Commission, otherwise, the provision of Electricity Act, 2003, State Commission's Regulations, Supply Code and National Tariff policy, would be put to misuse by some errant distribution Licensees...”

- xviii) That by mis-interpreting the Order passed by the Commission in Petition no. 3 of 2012 and on its own treating the industry of AIL as PIU without seeking any clarification, PSPCL is liable for necessary action under section 142 and 146 of the Electricity Act, 2003. That as per section 142 and 146 of the Electricity Act, 2003,

only the Commission has power to decide a complaint and take necessary action.

The petitioner has prayed that:

- a) necessary action may be taken under section 142 of the Electricity Act, 2003, against the respondents for mis-interpreting the Order dated 28.10.2013 passed by the Commission in Petition no. 3 of 2012 and treating the Electro Slag Refining (ESR) machine/ process installed in the premises of the petitioner as PIU though as per order dated 28.10.2013 only the billet heaters/ Surface Hardening Machines are to be treated under PIU Category;
- b) necessary clarification, directions be issued to the respondents to treat the load of the ESR machine installed in the premises of the petitioner as General Industrial Load instead of PIU because the system / process involved in ESR is totally different than principle/ process of billet heaters/ Surface Hardening Machines;
- c) order dated 23.01.2015 passed by the Forum for Redressal of Grievances of Consumers (CGRF), PSPCL, vide which the case of the petitioner has been remitted back to the Zonal level Dispute Settlement Committee to decide the status of the petitioner as General Industry or PIU, may be set aside, because only the Commission has jurisdiction to decide the status of an industry and Licensee is not competent to decide or change the status of an Industry;

- d) during the pendency of the present petition before the Commission the respondents may be restrained from treating the industry of the petitioner as PIU.
 - e) the respondents may kindly be directed to refund the amount charged from the petitioner on account of treating the industry of the petitioner as PIU instead of General Industry.
3. The petition was fixed for admission on 06.10.2016 wherein the Counsel for AIL stated that he will withdraw the cases in the subject matter pending adjudication in other Courts/judicial bodies. After hearing the counsel for AIL, the petition was admitted. The Commission after hearing directed that AIL shall provide technical inputs required by PSPCL with respect to the ESR machine and PSPCL was directed to file reply to the petition.
4. PSPCL submitted its reply vide its memo no. 6587 dated 05.12.2016, the submissions made therein are summarized as under:
- i) That the instant petition is bad and liable to be dismissed for the following reasons:
 - a. That AIL has sought to invoke the power under Section 142 of the Electricity Act, 2003 and the powers under Section 142 of the Electricity Act, 2003 can be exercised 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. The same thus

deserves to be dismissed.

- b. That even if the contentions of AIL are to be accepted, the entire case of AIL is that its unit is not a PIU and that the Commission needs to clarify whether they are PIU or not. Given the said contentions, it necessarily implies from the same that there is no determination by the Commission with respect to category of the unit of AIL. Hence, by pleadings of AIL itself, it cannot be said that there has been any violation of any order or regulations framed by the Commission. The invocation of the proceedings is thus bad and the petition deserves to be dismissed with heavy costs.
- c. That the petition is based upon pre-emptions. For the purpose of claiming benefit of a particular category, burden is upon AIL to establish that it falls in the said class of unit/industries. The said aspects cannot be drawn on the basis of inference but is required to be established. It is conjectural and is not based upon substantive rights and determination.
- d. That as AIL has worked upon the theory of hypothesis rather than establishing its case through the specific instructions and orders/regulations. A claim based upon hypothesis and conjectures is not sustainable and is liable to be dismissed.

- e. That the essential aspects with respect to the nature of industry have not been disclosed by AIL.
- ii) AIL applied for extension of load from 5.68 KW to 675 KW with contract demand of 750 KVA. The feasibility clearance was given by SE/Op, City East Circle, Ludhiana vide memo no. 1498 dated 15.02.2010. Consumer submitted A & A Form on 09.04.2010 & was issued demand notice no. 712 dated 08.06.2010. Accordingly, AIL submitted test report on 09.02.2012 and extension was released vide SCO No. E31/S/12/115884/2991 dated 22.02.2012 on 08.03.2012 under large supply category. Out of the total load of 675 kW, 495kW is ESR load and 180 KW of miscellaneous load. Though the feasibility clearance letter and A&A Form are silent about the nature of industry, but AIL deposited the security at the time of registration of A&A form under PIU category @ Rs. 1500/per KVA as per the prevailing instructions of the time.
- iii) That billing of the consumer after the release of the connection from 04/2012 to 08/2012 was done under PIU category and consumer deposited all these bills without any protest. As per Commercial Circular No. 28/2012 all the large supply consumers having billet heater load up to 25% of connected load or 500 KW whichever is higher may be considered as general category consumer. As the process of consumer was ESR, which is a heating load, so the billing of the consumer was started under general industries from

the month of 09/2012. After that Commercial Circular No. 27/2014 was issued in which it was mentioned that LS consumers where induction billet heaters, surface hardening machines are installed shall be considered under PIU category with effect from 01.01.2014.

- iv) That the process used by the consumer involves heating and melting of scrap which is identical to melting surface. As per literature submitted by the consumer, ESR is a process of re-melting and refining steel and other alloy for mission critical application in air craft, thermal Power Station, Nuclear power Plants, Military technology etc. and therefore this office treated application of consumer under PIU category. In the month of 6/2014 the bill of Rs. 3,90,160/- was issued for minimum charges under PIU category. In the month of 6/2014 the bill of Rs.3,90,160/- was issued for minimum charges under PIU category. The consumer didn't agree with the bill and requested to consider the case before CDSC. The committee after hearing the case, decided on 27.08.2014 that the billing of this connection comes under PIU category. So the bills issued under the PIU category after the issue of Commercial Circular no. 27/2014 are correct and recoverable.
- v) The consumer was not satisfied by the decision of CDSC and appealed before CGRF, Patiala against the decision of CDSC. The forum considered the case and remanded back the case on 23.01.2015 to CDSC for fresh hearing after getting the process studied by the

committee/agency of technical experts and/or /obtaining the opinion of commercial organization for considering whether ESR is PIU or not. It is pertinent to mention that the Commission in the past had got a study of billet heater and similar induction and arc melting furnaces conducted. After that the consumer filed appeal before Ombudsman Electricity, Punjab against order dated 23.01.2015 of CGRF, Patiala. Ombudsman returned the case with the remarks that CGRF, Patiala has only remanded back the case of AIL to the CDSC for fresh hearing and passing of speaking order and as such filing of appeal in the court of Ombudsman is as yet pre mature.

- vi) That there is no misinterpretation. AIL entered into an agreement with the licensee and sought extension in load under PIU category as it deposited advance consumption deposit @ Rs. 1500/- per kVA as applicable to PIU units as per prevailing instruction of the time. Further the consideration of ESR machines as general industrial load instead of PIU as claimed by AIL is neither supported by any detailed technical data and analysis nor any scientific facts and this status cannot be assigned at the mere asking. Since AIL itself entered into agreement with the license to get extension in load under PIU category, therefore invoking of section 142 of Electricity Act, 2003 is neither correct nor desirable.
- vii) That AIL is bound by its A & A form, wherein AIL had applied for and has been granted connection as a PIU

and that the present petition, after nearly three years, is highly belated and is liable to be dismissed.

5. AIL filed its rejoinder wherein in addition to reiterating the earlier submissions it is also submitted as under:
- i) That the Commission never held that the ESR Unit installed in the premises of the petitioner would come under PIU category. In case PSPCL had any doubt then they were required to approach the Commission before treating the connection of AIL as PIU.
 - ii) That the distribution licensee can recover charges from a consumer if it is authorized to do so by regulations. There is no rule or regulation as per which PSPCL could treat the electricity connection of AIL as PIU.
 - iii) That PSPCL without any rule or regulations treated the general load of AIL as PIU. The connection was released for general load and later on its own PSPCL start charging the charges from AIL by treating its load as PIU which is totally wrong and illegal and in violation of the provisions of the Electricity Act, 2003.
 - iv) AIL has clearly stated to PSPCL that ESR is not an induction furnace. As the Additional S.E. was not clear and unable to understand the industry being a new process for this part of the country. As the time limit to submit A&A form was going to lapse, so as asked by PSPCL AIL submitted A&A form and also deposited ACD as asked by the PSPCL just to avoid delay in the project.
 - v) That after completion of 11 kV Line, PSPCL served a notice of 15 days to the petitioner for submitting the test

report. As the consent to operate from PPCB was pending so test report could not be submitted and the PSPCL vide its memo No. 784 dated 4-4-2011 issued bill for Monthly Minimum Charges (MMC). It is pertinent to mention here that the bill of MMC was issued on the basis of General Industry Load. The load was released vide SCO No. E 31/S/12/115884/2991 under LS category on 8-3-2012 by the PSPCL. The PSPCL issued first electricity bill indicating the industry of the petitioner as Billet Heater (PIU). The petitioner protested the same and requested the PSPCL to amend the bill but the PSPCL did not reply and the petitioner then deposited the bill under protest.

- vi) That it is correct that ESR is a process of re-melting and refining steel and other alloy. But it is totally denied that this process is PIU. It is correct that AIL challenged the bill issued under PIU category before the CDSC. PSPCL filed reply and stated that whether ESR comes under billet heater or PIU has to be decided by the Committee. The CDSC without assigning any reason held that the load of 495 KW is of PIU nature. That as per PSPCL rule and regulations if the load is as PIU then the transformer for furnace load and for LT load should be separately installed. But as per feasibility clearance granted to AIL it has installed a single 1000 KVA LT Transformer (11 kV/ 415 v) from which total plant is being run including 495 kW ESR.
- vii) The Commission in the past got the study of the billet heaters and surface hardening machines conducted by

CPRI Bangalore but the said study is related to billet heaters and surface hardening machines only and not with regards to ESR. The report submitted by PSPCL of three officers committee was never placed on record before any authority and even its copy was never given to AIL. Even AIL was not associated by the Committee while giving its report. In the concluding para of the report the committee opined that an exhaustive and comprehensive analysis by a specialized institute such as CPRI Bengaluru or an institute of the same stature is required to study the process of ESR. Meaning thereby in the absence of any such study the committee constituted by PSPCL was not able to comment whether the process is PIU or not. In this way PSPCL was wrong in treating the load of the ESR as PIU.

The ESR process is used to re-melt and refine steels and various super-alloys, resulting in high-quality ingots. It uses the as-cast alloy as a consumable electrode. Electric current (generally AC) is passed between the electrode and the new ingot, which is formed in the bottom of a water-cooled copper mold. The new ingot is covered in an engineered slag that is superheated by the electric current. The electrode tip is slowly melted from contact with the slag. These metal droplets travel through the slag to the bottom of the water-cooled mold and slowly freeze as the ingot is directionally solidified upwards from the bottom of the mold. The slag pool floats above the refined alloy, continuously floating upwards as the alloy solidifies.

The molten metal is cleaned of impurities that chemically react with the slag or otherwise float to the top of the molten pool as the molten droplets pass through the slag. This Process is equivalent to welding process where metal from flux coated welding electrode is deposited on the metal surface.

6. PSPCL filed its reply to the rejoinder vide memo no. 5805 dated 04.05.2017, wherein in addition to reiterating the earlier submissions, it submitted as under:

- i) The power under Section 142 of the Electricity Act, 2003 can be exercised by the Commission in the event of non-compliance of the directions given by the Commission. In the absence of pointing out any specific violation of the directions, petition would not be maintainable and is liable to be dismissed.
- ii) AIL has failed to explain the inordinate delay in filing the instant petition and has not given any justifiable reason for the delay of more than 3 years.
- iii) The competent authority with respect to declaring the firm as PIU or ESR is PSPCL, meaning AIL cannot raise a challenge to the action, which has already been taken by the competent authority. The same has never been agitated by AIL before any competent authority. Therefore, the averments are afterthought and a bundle of lie.

7. The Commission decided vide its Order 08.11.2017 as under:

“After hearing the parties, the Commission considers it appropriate to refer the issue, as to whether Electro Slag Refining / Remelting Plant is covered under Power Intensive Unit (PIU), to CPRI, Bengaluru.

In the meantime, PSPCL shall treat the consumer under “General Category” and not PIU and issue bills accordingly, till the issue is finally decided by the Commission.

The staff of the Commission is directed to refer the matter to CPRI, Bengaluru forthwith. The petition shall be taken up for further hearing after receipt of report from CPRI.”

8. As CPRI quoted exorbitant rates and was not interested in taking the assignment of determination of status of one or two industries only, so the matter was referred to other institutes of repute such as IIT Delhi, IIT roorkee, NIT Kurukshetra, PEC Chandigarh, Thapar institute Patiala, APQI Delhi, MECOn Ranchi and ASCI Hyderabad. ASCI was appointed as consultant for giving the expert recommendation whether process being carried in the premises of AIL Ludhiana falls under PIU category or not. The consultants visited the premises of the petitioner on dated 09.10.2018 & 14.11.2018 and took the requisite readings to analyse the process of working of ESR installed in its Industry. The consultants ASCI submitted its report on dated 09.01.2019, with the conclusion that:

- i) *Observation in the case of the Electro-slag refining/re-melting process at M/s Antarctica Industries Limited are summarised as under:*
- a) *The current at the 11KV incomer was varying between 11.18 Amp to 22.28 Amp due to widely varying load.*

- b) *The current Total Harmonic Distortion (THD) for (10 Minutes) values 95th percentile were 8.71%, 16.64%, 12.05% 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 11.33%, 11.24% 11.11% in R,Y,B phases respectively and which are beyond the limits of 8% recommended by IEEE 519-2014.*
- ii) *The Electro-slag refining/re-melting process at M/s Antarctic Industries Limited is injecting Current Harmonics into PSPCL system and distorting the current waveform because the electro slag re-melting furnace and the 3-phase/ 1-phase, 433V/40-59V transformer installed are non-linear loads.*
- iii) *Current and Voltage Harmonics in the grid are frequent causes of power quality problems, some of which are discussed in Para 3.4. Harmonics generated in the industry will flow back to the distribution network and causes heating in lines/cables, transformers, capacitor banks, power distribution system. Harmonics generated at one consumer may affect the normal operation of another consumer connected to the distribution network.*
- iv) *In Electro slag re-melting process at this industry, electric supply is fed between a consumable electrode (which is to be gradually melted and to be re-solidified) and the base plate of the mould as a result arc is created between the electrode and the bottom of the mould. The arc melts the electrode starting from the tip and the molten droplets are deposited at the bottom of the mould and solidify. In an Arc Furnace, the electric supply is fed between two electrode rods and arc is created between two electrodes to heat and melt the scrap material held in furnace. Arc Furnaces induces harmonics and causes voltage flickers in the*

grid supply. The principle used both in for melting the material in Arc Furnace and in Electro slag re-melting for melting the consumable electrode (work piece) is conversion of electrical energy into thermal energy in the form of an electrical arc. The arc produced in the electro slag melting process induces harmonics and voltage flickers in the grid supply. The Arc furnace is already considered as PIU.

- v) **As per existing instructions “Arc furnace and power intensive units including Induction furnaces, chloro alkaline units, Billet heaters, surface hardening of machines & electrolyte process industries” are considered as PIU and since the process involved in electro slag re-melting/refining unit installed at M/s Antarctic Industries Ltd is same as of ARC Furnace units, it also falls under Power Intensive (PIU) category.**

9. The report was sent to the AIL and PSPCL on 16.01.2019 for submitting comments, if any, on the report. The Petitioner filed written submission in this regard on 15.07.2019. The petitioner reiterated some of the earlier submissions and the new submissions of the petitioner are summarized as under:

- i) That the petitioner has received a report submitted by Administrative Staff College of India, Hyderabad though in the order dated 8-11-2017 the Commission has directed to refer the issue to CPRI, Bengaluru. It is submitted here humbly that the report sent to the petitioner is contrary to the order dated 08.11.2017 passed by this Commission and as such cannot be relied upon.
- ii) That the Centre for Infrastructure Management and Regulatory Studies (CIMR) of Administrative Staff

College of India (ASCI) has equated the process with Arc Furnace. CIMR should have restricted its findings to the technical study instead of categorization of the industry as it is not in their purview. ARC Furnace and welding process are too far apart to be equated. Therefore the report of the CIMR has to be rejected and fresh report has to be obtained from CPRI.

iii) That no study has ever been taken in fabrication units where lot of welding sets are used which will show the electrical parameters as studied in our plant to be the same. Arc Furnace uses two or three electrodes to heat the charger (scrap or metal ore) whereas an electrode during welding is consumed and metal is deposited on the welding surface. During many visits of PSPCL officers and of CIMR to our unit, no such Arc Furnace was found by which metal scrap or metal ore was being heated. In fact it is very clear that our process is a welding process in which an electrode is used to deposit metal on mild steel base plate.

iv) That the comparison of study done by CPRI regarding billet heaters/ induction furnaces etc. and CIMR would further strengthen our point. Comparison of original study of billet heaters and the present report is as follows:

a) **Total Voltage Harmonic Distortion (THD):** varied from 0.976 to 1.059 whereas in the billet heater study it varied from 1.5 to 8.0 much above the recommended limit of 5.0.

- b) **Total Current Harmonic Distortion (THD):** in our case, in 3 phases varied 8.71 to 16.64 whereas in case of induction and ARC Furnace it varied from 11.1 to 89.5. Also as mentioned there is no limit specified for this IEEE 519.
- c) **Total Demand Distortion (TDD):** in our case it was 11.33% whereas in the earlier study it varied from 11 to 61%. It is to be noted that our Maximum Demand Indicating is well within the contract demand and hence does not create any problem to the system.

That a perusal of the final report in the data pertaining to current reveals that there were very low current distortion for very short time (3 sec) whereas all voltage distortions are well within the limits. Even excess demand in % of CD is not there as was there in the initial report.

- v) That the PSERC (Electricity Supply Code & Related Matters) Regulations, 2014 under Regulation 24 clearly specifies that average Total Harmonic Distortion is to be measured for Voltage and Current Distortion in normal condition which has not been done in our case. Secondly, it is also specified under Regulation 24.3 that Consumers contributing harmonic distortions in excess of the specified standards shall be served with a notice by the distribution licensee to rectify the violation within three months failing which such consumers shall be liable to pay penalty, as may be prescribed by the

licensee with the approval of the Commission. Therefore if there is any Harmonic Distortion in the petitioner's industry, the petitioner was required to be given notice by the licensee to rectify the same within 3 months and in case the petitioner fails to rectify the same then the licensee can impose penalty with the approval of this Commission. But there is no provision in the Supply Code which says that that because of Harmonics industry can be categorized as PIU.

- vi) That our industry is air polluting industry and as per pollution control board we have installed Air Pollution Control Board (APCD) to restrict the emission as per norms of the pollution board. There is no scope for emitting pollution and paying some penalty or charges for that. In the same way, industries with harmonic pollution should be advised to install harmonic filters if it is effecting PSPCL system instead of categorize them as PIU and charging high tariff.
- vii) That since no harmonic study was ever done for our type of industry before the present CIMR report and PSPCL at every stage has been stating in writing that they don't know about ESR and this has been recorded in CGRF order. This clearly shows that our industry was categorized as PIU by PSPCL randomly. So even if the present study is to be accepted (without prejudice) it cannot be with retrospective effect.
- viii) That ours is a totally different process, as mentioned many times, is exactly a welding technique. Also in our

process at the start of production there is current variation for about 10-15 minutes after which the process is smooth and constant current load so harmonic study for only 10 minutes will not give true picture of our industry. Therefore a comprehensive long term study should be done and that too by CPRI as ordered for our industry and also similar type of processes in other industries to arrive at a distinct conclusion so as to categorize any industry as PIU.

The petitioner further prayed that in view of the submissions made above, the load of the ESR machine installed in the premises of the petitioner may be treated as general industry load and PSCPL be directed to comply with regulation 24 of the Supply Code-2014, in the interest of justice.

10. PSCPL filed written arguments vide letter No. 5440 dated 23.07.2019 and in addition to reiterating the earlier submissions, submitted as under:

i) The matter was examined by the Administrative Staff College of India (ASCI) and the staff of the ASCI visited the site. After thorough examination, the ASCI has come to a conclusion that the Plant of the petitioner is a PIU. Further the Institute in its Para No. 4.0 has observed that:

“Power Intensive Category- The utility has to provide higher level of short circuit MVA to absorb the power quality pollutants created by the industry which is having a larger capacity of non-linear loads. The utility to overcome these issues of power quality pollutants and voltage fluctuations in its grid, is treating industries whose loading pattern is non-linear, under Power Intensive Unit (PIU) sub-category.

To be fair to the consumer, the following clause is also provided in the "Schedule of Tariff (FY-2018-19)

"For ARC/PIU industries where the load is of mixed nature, i.e. in addition to Arc/Power Intensive Loads, General Industrial loads are also running, Fixed and Energy Charges shall be determined by computing the Maximum Demand and Energy consumption for the billing month on pro-rata basis in proportion to such demands sanctioned by the distribution licensees and applicable tariff (Fixed Charge and Energy Charge) shall be as specified against the corresponding demand slab (without clubbing of Arc/Power Intensive and general Load) under the relevant schedule of tariff".

- ii) That the prayer of the petitioner before this Commission was to the effect that direction be issued to the respondent to treat the load of the ESR machine installed in the premises of the petitioner as general industrial unit instead of PIU. The inspection of the machinery installed in the plant of the petitioner has been done by ASCI and it has come to conclusion that the plant of the petitioner is a PIU. Therefore, nothing survives in the petition. PSPCL be permitted to charge the petitioner as PIU. Needless to mention herein that vide order dated 08.11.2017 the respondent corporation was directed to treat the consumer under general category.

11. After hearing both the parties, Order was reserved on 24.07.2019.

12. Observations and Decision of the Commission

The Commission has examined the submissions made in the petition, reply filed by the respondent, rejoinder and

surrejoinder submitted by the parties, report submitted by ASCI Hyderabad, comments of the parties on the report and the pleadings made during the course of hearing of the matter, and decides as under:

12.1 Prayer for action under Section 142 of the Electricity Act, 2003, against the respondent: The Commission refers to the Section 142 of the Act, which provides as under:

“Section 142. (Punishment for non-compliance of directions by Appropriate Commission): *In case any complaint is filed before the Appropriate Commission by any person or if that Commission is satisfied that any person has contravened any of the provisions of this Act or the rules or regulations made thereunder, or any direction issued by the Commission, the Appropriate Commission may after giving such person an opportunity of being heard in the matter, by order in writing, direct that, without prejudice to any other penalty to which he may be liable under this Act, such person shall pay, by way of penalty, which shall not exceed one lakh rupees for each contravention and in case of a continuing failure with an additional penalty which may extend to six thousand rupees for every day during which the failure continues after contravention of the first such direction.”*

The Commission notes that Section 142 of Electricity Act invites action/punishment for non-compliance of directions by the Commission. As no such instance has been pointed/cited by the petitioner, no action is warranted under this section.

12.2 Prayer for issuance of necessary clarification/directions to treat the ESR load of the petitioner as General Industrial Load:

After hearing the parties, the Commission vide Order 08.11.2017 considered it appropriate to refer the issue, as to whether Electro Slag Refining / Re-melting Plant is

covered under Power Intensive Unit (PIU), to CPRI, Bengaluru. Accordingly, the matter was referred to the CPRI. But, in view of the exorbitant rates quoted by it and its disinclination to review the same and limit the study to the petitioner's load, offer of consultancy was referred to other institutes of repute such as IIT Delhi, IIT Roorkee, NIT Kurukshetra, PEC Chandigarh, Thapar Institute Patiala, APQI Delhi, MECON Ranchi and ASCI Hyderabad. Thereafter, after following the due process ASCI Hyderabad was appointed as consultant for giving its expert opinion on whether the process being used by AIL Ludhiana falls under PIU category or not. The consultant after visiting the premises of petitioner at Ludhiana on 09.10.2018 & 14.11.2018 and recording the requisite readings to analyse the working of ESR load of the petitioner, submitted its report dated 09.01.2019 with observations as under:

“iv) In Electro slag re-melting process at this industry, electric supply is fed between a consumable electrode (which is to be gradually melted and to be re-solidified) and the base plate of the mould, as a result arc is created between the electrode and the bottom of the mould. The arc melts the electrode starting from the tip and the molten droplets are deposited at the bottom of the mould and solidify. In an Arc Furnace, the electric supply is fed between two electrode rods and arc is created between two electrodes to heat and melt the scrap material held in furnace. Arc Furnaces induces harmonics and causes voltage flickers in the grid supply. The principle used both in for melting the material in Arc Furnace and in Electro slag re-melting for melting the consumable electrode (work piece) is conversion of electrical energy into thermal energy in the form of an electrical arc. The arc produced in the electro slag

melting process induces harmonics and voltage flickers in the grid supply. The Arc furnace is already considered as PIU.

v) As per existing instructions “Arc furnace and power intensive units including Induction furnaces, chloro alkaline units, Billet heaters, surface hardening of machines & electrolyte process industries” are considered as PIU and since the process involved in electro slag re-melting/refining unit installed at M/s Antarctic Industries Ltd is same as of ARC Furnace units, it also falls under Power Intensive (PIU) category.”

The report was forwarded to the petitioner AIL and the respondent PSPCL on 16.01.2019 for their comments. The petitioner submitted objections to the report on 10.07.2019. The petitioner's objections and the Commission's views on the same are summarized below:

12.2.1 That the petitioner has received a report submitted by ASCI, Hyderabad. Though, in the order dated 08.11.2017 the Commission has stated that the matter would be referred to CPRI, Bengaluru. Thus, the report cannot be relied upon.

Commission's view:

As already discussed above, the matter was first referred to the CPRI. However, in view of the exorbitant rates (Rs. 23 Lac excluding GST) quoted by it and its disinclination to review the same and limit the study to the petitioner's load, the consultancy was awarded after following the due process to ASCI Hyderabad at the cost of Rs. 3.50 Lac excluding GST. During the hearing on 17.07.2019, the Commission asked the petitioner if he is ready to pay the cost of a study by CPRI. The petitioner declined and

requested to allow withdrawal of its said objection. This was allowed.

12.2.2 The petitioner contended that in their process, at the start of production there is current variation for about 10-15 minutes after which the process is smooth and constant current load so harmonic study for only 10 minutes will not give true picture of our industry.

Commission's View: The Commission observes that, the recording of readings of petitioner's load by ASCI pertains to 1 hour 15 minutes, which is a fair duration to analyse the pattern of load characteristics.

12.2.3 That in the present report, readings were recorded by the power analyser from 16.00 to 17.15 hrs on 14.11.2018, downloaded from computer and analysed. The analysis done is mentioned below:

- a) Individual & Total Voltage Harmonic Distortion for Short Time (10 min) Values 95th Percentile; are within the limit of 3% & 5% as recommended by CEA and IEE 519-2014.
- b) Individual Current Harmonic Distortion for Short Time (10 min) value 95th Percentile: Noted that individual current harmonic values for 5th, 23rd, 25th, 26th, 28th, 29th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 41st and 43rd harmonics are above limits. Out of 50 even and odd harmonics only 17 are above limits.
- c) Total Current Harmonic Distortion (THD) for Short Time (10 min) values 95th Percentile: Noted that the total current Harmonic Distortion values are 8.71%,

16.664% and 12.05% in R, Y, B phases respectively which are above recommended limit of 8.0% by CEA, THD, limits not specified in IEEE 519.

- d) Total Demand Distortion (TDD) at Peak Demand Load Current for Short Time (10 min) values 95th Percentile: Noted that the TDD was 11.33% which is above the recommended limit of 8.0% by IEEE 519-2014.

Commission's view: The Commission notes that except for the Voltage Harmonic Distortions (which are usually generated by the supplier) other distortions injected by the petitioner's industry breach the limits prescribed by CEA and IEEE 519-2014.

- 12.2.4 That the CIMR should have restricted to the technical study instead of categorization of the industry as it is not their purview.

Commission's view: The Commission notes that, the recommendations submitted by ASCI are as per the scope of work of the assignment, which was for giving the expert recommendation whether the process being carried on in the premises of AIL Ludhiana falls under PIU tariff category or not, keeping in view the existing classification of tariff categories for consumers.

- 12.2.5 That the petitioner's process is a totally different process, as mentioned many times, it is exactly a welding technique. Arc Furnace uses two or three electrodes to heat the charger (scrap or metal ore) whereas an electrode during welding is consumed and metal is deposited on the welding surface. In fact it is very clear that our process is a

welding process in which an electrode is used to deposit metal on mild steel base plate.

Commission's view: The Commission notes that Arc-furnace, ESR and Arc-welding processes work on the same principle of producing heat by passing a high ampere current at low voltage supply, using a step down transformer. However, welding sets of small capacity are generally used for repair works only and not for production in an industry. In case, the Arc – Technology used in welding is put to use for melting in place of Arc furnace/Induction furnace, the same is also liable to be considered as PIU load in view of its non-linear load characteristics, causing electrical pollution in the system, which is similar to that of an Arc furnace.

12.2.6 That a comparison of the study done by CPRI regarding billet heaters/ induction furnaces etc. and the CIMR would further strengthen our point.

Commission's view: The Commission notes that except for Voltage Harmonic Distortion (which are usually generated by the supplier) figures of other distortions by the petitioner fall within the limits as recorded for billet heaters in the CPRI report and are considered as a PIU load. However, since the petitioner's process has been found to be principally same as that of an Arc-furnace, there is no point in comparing the same with that of Billet heater load which is similar to an induction furnace load as per CPRI report.

12.2.7 That there is no provision in the supply code which says

that because of Harmonics industry can be categorize as PIU. The issue of harmonics is to be dealt as per Regulation 24 of PSERC (Electricity Supply Code & Related Matters) Regulations, 2014 which requires serving of a notice by the distribution licensee to rectify the violation within three months failing which such consumers shall be liable to pay penalty. Further, as this industry is an air polluting industry and devices as per the requirement of Air Pollution Control Board (APCD) have been installed to restrict the emission as per norms, there is no further scope for emitting pollution and paying penalty or charges for that. In the Same way, industries with harmonic pollution should be advised to install harmonic filters if it is adversely affecting the PSPCL system instead of categorizing them as PIU and charging higher tariff.

Commission's view: The Commission observes that provision of the classification of the consumers into various tariff categories is provided in Regulation 4.4 of Supply Code which specifies as under:

“4.4 Classification of Consumers.

Distribution licensee shall classify and re-classify consumers into various tariff categories from time to time as approved by the Commission. No additional category other than approved by the Commission shall be created by the distribution licensee.”

Accordingly, the Consumers who are running Arc furnace including Induction furnaces, chloro alkaline units, Billet heaters, surface hardening machines & electrolyte process industries, have been classified as Power Intensive Unit (PIU) under LS category in the Schedules of Tariff.

However, without prejudice to above, the Commission observes that for implementation of Regulation 24 of Supply Code, power quality meters are required to be installed at the consumer's premises for which a mandate has already been issued to PSPCL.

12.2.8 That since no harmonic study was ever done for this type of industry before the present CIMR report and PSPCL at every stage has been stating in writing that they don't know about ESR and this has been recorded in CGRF order, this clearly shows that AIL was categorized as PIU by PSPCL randomly. So even if the present study is to be accepted (without prejudice) it cannot be with retrospective effect.

Commission's view: The Commission notes that the process of the petitioner has been found to be electrically same as that of arc furnace as per the expert opinion obtained from ASCI Hyderabad, with observations that, the principle used in both for melting the material in Arc Furnace and in Electro slag re-melting for melting the consumable electrode (work piece) is conversion of electrical energy into thermal energy in the form of an electrical arc.

The Commission also notes that at the time of registration of A&A form for the ESR load, petitioner has deposited the security deposit @ Rs. 1500 per KVA as applicable to PIUs. Also, upon release of ESR load on 09.03.2012, first bill in 04/2012 and subsequent bills upto 08/2012 were issued as PIU. However, the benefit applicable to billet heater load as per Commercial Circular No. 28/2012 dated

06.09.2012 (stating that all the large supply consumer having billet heater load up to 25% of connected load or 500 KW whichever is higher may be considered as general category consumer) was extended to the petitioner by billing him under general industry w.e.f. 09/2012. The same was withdrawn upon issuance of Commercial Circular No. 27/2014 dated 29.05.2014 (mentioning that LS consumers where induction billet heaters/ surface hardening machines are installed shall be considered under PIU category with effect from 01.01.2014) and the bill of the petitioner for 4/2014 was again charged as PIU.

Since, ESR load of the petitioner is already being treated as PIU from the very beginning i.e release of ESR load (w.e.f. 09.03.2012) except for the period when relief as applicable to the billet heater load was granted to the petitioner, the contention of the petitioner that its load cannot be considered as PIU with retrospective effect is not maintainable.

Thus, in view of the above findings, the prayer of the petitioner to issue necessary clarification/directions to treat the ESR load of the petitioner as General Industrial Load and to issue consequent directions to the respondent does not survive.

12.3 Prayer to set aside the CGRF Order dated 23.01.2015 remitting back the case of the petitioner to the Dispute Settlement Committee to decide the status of the petitioner as General Industry or PIU:

In view of the Commission's observations under para

12.2 above, the issue stands settled and CGRF's direction to refer the matter to Dispute Settlement Committee for getting the process studied by committee/agency of technical expert made vide said order has been rendered in fructuous.

12.4 Prayer to restrain the respondents from treating the industry of the petitioner as PIU during the pendency of the present petition:

The Commission vide its interim Order dated 08.11.2017 has ordered that, PSPCL shall treat the consumer under "General Category" and not PIU and issue bills accordingly, till the issue is finally decided by the Commission. **In view of the Commission's observations under para 12.2 above, the Commission's interim Order dated 08.11.2017 is withdrawn.**

12.5 Prayer to direct the respondents to refund the amount charged from the petitioner on account of treating the industry of the petitioner as PIU instead of General Industry:

In view of the Commission's observations under para 12.2 above, the prayer does not survive.

Accordingly, the petition is dismissed.

Sd/-

**(Anjali Chandra)
Member**

Sd/-

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

Sd/-

**(Kusumjit Sidhu)
Chairperson**

**Chandigarh
Dated: 05.09.2019**