MINUTES OF MEETING

Name of the Committee	Date & Time	Venue
5th Technical Committee Meeting for Chillers	11-05-2018 (3:30-05:30) PM	Conference Hall, BEE.

BACKGROUND

Fifth Technical Committee meeting on Chillers was held on 11th May 2018 at BEE Conference Hall. Welcoming the participants Shri. Sameer Pandita, Director mentioned that the request made by members of RAMA to BEE in the previous TCM held on 26th March, 2018, to recognize and accept test results of chillers covered under the scope of IS 16950 issued by AHRI/ Eurovent Chiller has been examined at BEEs end and it was decided that for the purpose of registration under its S&L Programme for Chillers BEE would accept these test reports subject to the conditions that all the tests have been or being carried out in accordance with test conditions specified in Indian standard (IS 16950). He said that this meeting has been convened to discuss the further course of action based on the decision taken during the last meeting and the way forward to initiate the S&L program for chillers as early as possible.

DISCUSSIONS

BEE submitted that for the purpose of registration of Chiller models under its voluntary star labelling program, it shall recognize and accept energy performance test reports from AHRI/ Eurovent or any other test labs accredited by NABL/ ILAC/ APLAC/ COFRAC who are competent enough to carry out testing in accordance with IS 16590.

1. BEE Star label shall be issued to a chiller model only upon receipt of test report (Physical and/or virtual) as per IS 16590 test conditions and test procedure. It was however clarified that BEE will not recognise AHRI/ EUROVENT /ILAC/ APLAC/ COFRAC as Chillers Certification agencies given that the mandate of product certification (in accordance with BIS Act and Rules) lies with the Bureau of Indian Standards only.

2. NABL confirmed its willingness and readiness to validate manufacturer's in-house testing labs as per IS 16590. In the light of the information provided by NABL representatives, BEE requested that all the Chillers manufacturers who have their in house test facilities for chillers should take all necessary steps to get their labs accredited by NABL as per IS: 16590 at the earliest.

3. BEE also proposed that manufactures should assist NABL in understanding the nuances of in-house Chillers testing procedure as per the existing process as well as of the selection software to enable NABL also to validate and accredit the software packages and in-house labs used by manufacturers to determine energy performance of the chillers as per IS 16590.

4. The Chair informed that as per the decision taken in 4th technical committee meeting held on 26th March 2018, manufacturers representing RAMA committed to submit requisite documents including internal test reports / software simulated report to support their claims of substantive differences perceived by them between COP, ISEER values proposed by BEE and the IPLV values mentioned in the ECBC for the Chillers. However, no response to this extant was received by BEE till date inspite of the fact that manufacturers had sufficient time to respond.

5. BEE informed that in absence of any response received from the RAMA members, the chiller registration process, methodology and star table with proposed COP and ISEER values as discussed and presented in the 4th TCM was placed before the Management Advisory Committee (MAC) of BEE and the same was agreed and approved in principle by MAC. The prequalification criteria, star rating plan, label design as approved by MAC are as follows:

A. PRE-QUALIFICATION

The chillers shall comply prequalification criteria i.e., every model within each Basic Model Group (BMG) shall achieve following minimum COP of respective star level to become eligible for star rating plan,

Table 1

Minimum COP at 100 percent Load for water cooled condenser

Cooling Capacity (kW)	COP required
<260	4.7
>=260 &<530	4.9
>= 530 &<1050	5.4
>=1050 &<1580	5.8
>=1580	6.3

Table 2

Minimum COP at 100 percent Load for air cooled condenser

Cooling Capacity (kW)	Minimum COP required
<260	2.8
>=260	3.0

B. STAR RATING PLAN

The water-cooled condenser and air-cooled condenser chillers shall meet the requirement of ISEER as per the tables below. The star level chosen for the models shall be based on minimum ISEER value in each star level band for each range of cooling capacity as specified in Table 3 below:

Table 3

Star Rating levels for water cooled condenser

Table Validity Period 1st January 2019 to 31 December 2020					
Cooling Capacity (kW)	ISEER				
	1 Star	2 Star	3 Star	4 Star	5 Star
<260	5.8	6.2	6.6	7.0	7.5
>=260 & <530	5.9	6.3	6.7	7.1	7.6
>= 530 & < 1050	6.5	6.9	7.4	7.9	8.4
>= 1050 & <1580	6.8	7.2	7.7	8.2	8.7
>=1580	7	7.5	7.9	8.5	9.0

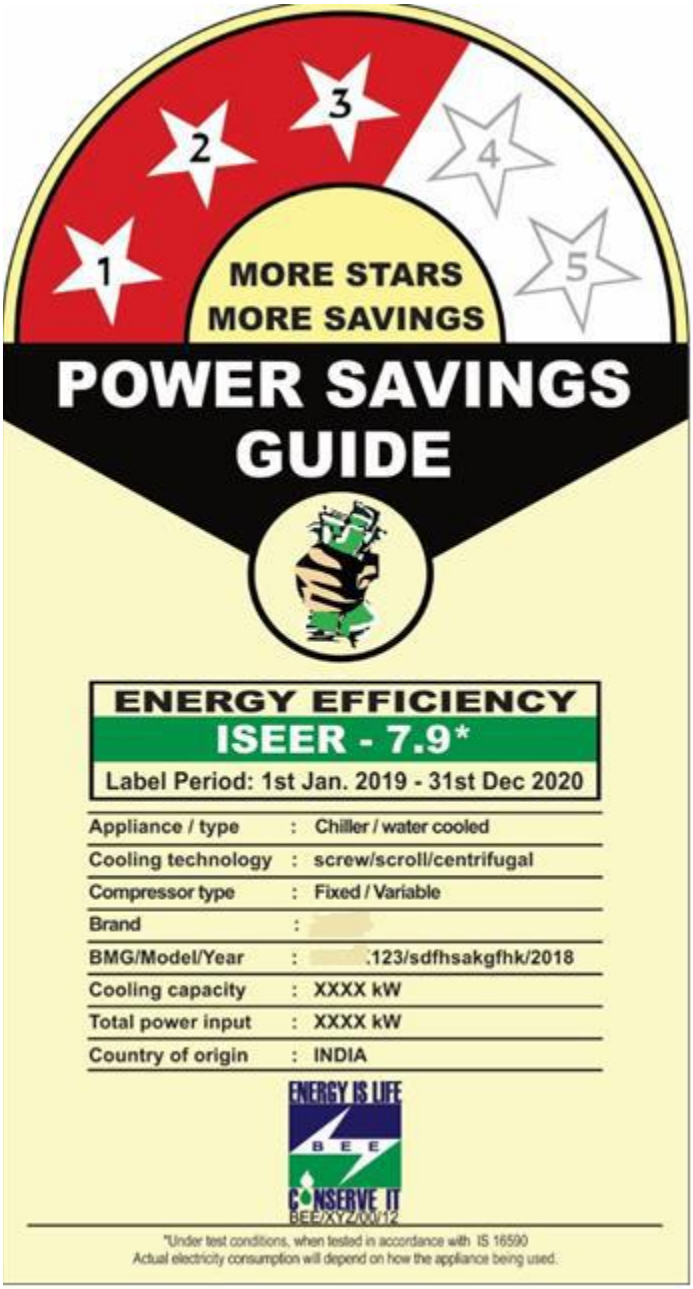
Table 4

Star Rating levels for air cooled condenser

Table Validity Period 1st January 2019 to 31 December 2020					
Cooling Capacity (kW)	ISEER				
	1 Star	2 Star	3 Star	4 Star	5 Star
<260	3.5	3.8	4.1	4.4	4.8
>=260	3.7	4.0	4.3	4.7	5.0

6. For chiller registration under BEE star labelling programme, a detailed registration and Check testing procedure as given in Annex A of these minutes was presented to the committee.

7. The Chiller label shall be on an aluminium anodized plate and markings on it shall be legible, indelible and durable. Label shall be mounted as nearer as possible to the name plate affixed on the chiller and shall mention the following particulars:



8. BEE proposed the following tolerance values before the committee which was agreed by the members:
   a) No negative tolerance for COP
   b) No negative tolerance for ISEER
   c) Measured cooling capacity shall not be less than 0.95 times of the declared cooling capacity
   d) Measured power consumption shall not be more than 1.05 times the declared power consumption.

9. BEE reiterated its intent launch voluntary chillers labelling programme from 1st January 2019. The star table for COP and ISEER values will be valid for a period of 2 years i.e. till 31st December 2020. The chiller registration process may be operationalized from 1st October 2018.

10. Based on the recommendation of the committee, BEE agreed to facilitate setting up of independent test labs to cater to small scale chiller manufactures.

11. BEE distributed the hard copy of the draft schedule for chillers to the committee members present during the meeting seeking their comments and feedback latest by 21st May 2018.

DECISIONS

Based on detailed deliberations with the stakeholders, following decisions were taken:

1. Chillers manufacturers to provide comments on the draft schedule latest by 21st May 2018 for consideration of BEE.

2. Chillers manufacturers to provide evidence in form of physical test reports and software simulated reports to support their claim of a perceived high degree of variation between ISEER/ COP values proposed by BEE and IPLV values mentioned in the ECBC.

3. BEE may consider revising the values of ISEER/ COP based on analysis of test data and suitable technical justification submitted by manufacturers provided substantive differences are observed. No revision shall be done in the proposed values in absence of sufficient supporting data.

4. Manufactures to take necessary steps to get in-house labs and Chiller performance simulation softwares accredit by NABL.

5. BEE to accept test reports from AHRI/ Eurovent/ NABL/ ILAC/ APLAC/ COFRAC accredited labs or any other testing agency capable of testing Chillers as per test conditions mentioned in IS16590 for the purpose of Chillers model registration under its voluntary star labelling programme for Chillers.

6. Following tolerance values were approved:
   a) No negative tolerance for COP
   b) No negative tolerance for ISEER
   c) Measured cooling capacity shall not be less than 0.95 times of the declared cooling capacity
   d) Measured power capacity shall not be less than 1.05 times of the declared power consumption.

7. Definition of BMG (Basic Model Group) shall be incorporated in the draft schedule. A BMG shall be defined as a set of models that share characteristics which allow the performance of one model to BEE a general representative of performance of other models within the group. This group of products does not necessarily have to share discrete performance.

8. The label proposed to be affixed on each Chillers model shall be on an aluminium anodize plate. The markings shall be legible indelible and durable. It shall be mounted near to the Rating /Name plate.

9. The sample label design and particulars mention on it were approved by committee as proposed.

10. Launch of voluntary chillers programme w.e.f. 1st January 2019 was agreed in principle. The star tables proposed in the schedule shall be valid for a period of 2 year i.e. till 31st December 2020. The chiller registration portal may be operationalized from 1st October 2018.

The meeting concluded with a Vote of thanks to the Chair.

ANNEXURE A- CHILLER REGISTRATION AND CHECKTESTING PROCESS

Submission of application by the manufacturer for company registration

Company registration of manufacturer by BEE

Submission of application by manufacturers for BMG/model registration

DECLARATION OF BASIC MODEL GROUP (BMG) INCLUDING MANUFACTURERS SELF TEST REPORT BASED ON VIRTUAL TESTING, USING THE TOOL/SOFTWARE APPROVED BY AHRI/EUROVENT/OTHERS FOR EACH CHILLER + ONE PHYSICAL TEST REPORT OF A CHILLER FROM EACH BMG in a AHRI/EUROVENT/NABL/APLAC/ILAC/ COFRAC or any other agency as per BIS 16590 test conditions.

ACCREDITATION WITH MANUFACTURER /INDEPENDENT LAB AND FOR SELECTION SOTWARE, MANUFACTURES TEST REPORT(SOFTWARE AND PHYSICAL) APPROVED BY AHRI/EUROVENT/OTHERS WILL BE ACCEPTED FOR REGISTRATION UNDER S&L PROGRAMME.

BEE after verification of all documents will issue final approval letter for the all the models under the basic model group

AFTER ISSUE OF FINAL APPROVAL LETTER, MANUFACTURER SHALL INFORM PRODUCTION SCHEDULE , DELIVERY SCHEDULE AND CLIENT DETAILS OF CHILLERS MANUFACTURED/IMPORTED to BEE

CHECK TESTING

BEE will depute its representative to witness check testing in the presence of AHRI/EUROVENT/Client at any AHRI/ EUROVENT/ ILAC/APLAC/COFRAC/NABL accredited testing facility.

CHILLER CERTIFICATION PROCESS

CHECK TESTING

PHYSICAL TESTING TO BE CARRIED OUT ON A CHILLER FOR EACH BASIC MODEL GROUP IN ILAC/APLAC/NABL/AHRI/EUROVENT /COFRAC etc accredited manufacturer's or independent Lab. (30% OF TOTAL BMG'S WILL BE TESTED EACH YEAR PER MANUFACTURER)

INCASE OF NON-COMPLIANCE AS PER MANUFACTURER'S DECLARATION, THE BASIC MODEL GROUP COVERING ALL TYPES, CAPACITIES AND ENERGY EFFICIENCY LEVELS SHALL BE DERATED TO THE NEXT LOWER EFFICIENCY LEVEL. IN CASE OF ONE STAR RATED CHILLER FAILING THE TEST IT SHLL BE DEREGISTERED FROM THE S&L PROGRAMME

ACTION ON THE FAILURE OR NON COMPLIANCE OF MODELS AS PER BEE PRESCRIBED REQUIREMENTS MENTIONED IN ITS SCHEDULE. BEE TO TAKE ACTION ACCORDING TO ITS SOP.

MANUFACTUERS TO SUBMIT FRESH APPLIACTION FOR THE DERATED BASIC MODEL GROUP