



Sabarkantha District Co-operative Milk Producers' Union Ltd.

Sub Post : Boria, Himatnagar-383 006. (Gujarat)

Engg-Project/SCC/

/2019-20

Date : 08.01.2020

By Speed Post Only

To,

I. The Project Manager

Bureau of Energy Efficiency

4th Floor, Seva Bhavan, New Delhi

II. The Representative

United National Industrial Development Organization (UNIDO)

New Delhi

Sub : Documents for release of grant for De super heater Demo - Project at Shamlaji CC, A unit of Sabar Dairy

Ref.: Sanction letter IND/PRO/300(37)/430 dated 13.04.2018 from UNIDO for for implementation of "Waste Heat Recovery from Refrigeration system - De-Super Heater"

Dear Sir,

This is in reference to aforementioned subject I would like to inform you that we have installed and successfully commissioned De Super heater system at our Shamlaji Chilling Center. Hence you are kindly requested to please release grant amount as sanctioned for this demo pilot project at earliest.

Thanking You,

Pranav Patel

AS(Engg.)

Encl.

i. Performance report

ii. CE - commissioning certificate



Handwritten notes:
18/1/20
NFC
Pl. examine & put up on file

iii. Invoices - Two Nos

iv. Bank Details (Sabarkantha District Co-operative Milk Producers Union Ltd) -
Photocopy of Cheque

PERFORMANCE REPORT OF DEMO. PROJECT

(Commissioning Stage)

(Waste Heat Recovery from Refrigeration system, De-Super Heater)

AT

Chilling Centre, Shamlaji

(A Sabar Dairy Unit)

Sabarkantha District Co-Operative Milk Producers Union Limited, Himatnagar,

(GUJARAT DAIRY CLUSTER)



Summary:

- (A) Project commissioning Date : 08.08.2019
- (B) Furnace Oil Saving per day (Kg) : 35 Kg
- (C) Furnace Oil Cost (Kg/Rs.) : 35 INR
- (D) Cost Savings (Rs./Day) : 1250 (Average)

**Thanking you,
Regards**

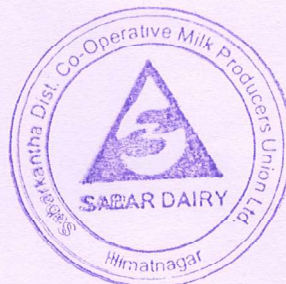
DGM

DGM(Engg.)

Sabarkantha District Co-Operative Milk Producers Union Ltd.

Sabar Dairy, Himatnagar

Date: 08.01.2020



Antu

Preamble

Bureau of Energy Efficiency (BEE) is implementing a BEE-SME program to improve the energy performance in 12 selected SME's clusters. Gujarat Dairy Cluster one of them.

At present there are 17 main Dairy units, 29 Chilling Centers, 08 Cattle Field plants and 1 Polymer Film Packaging plant under dairy cluster.

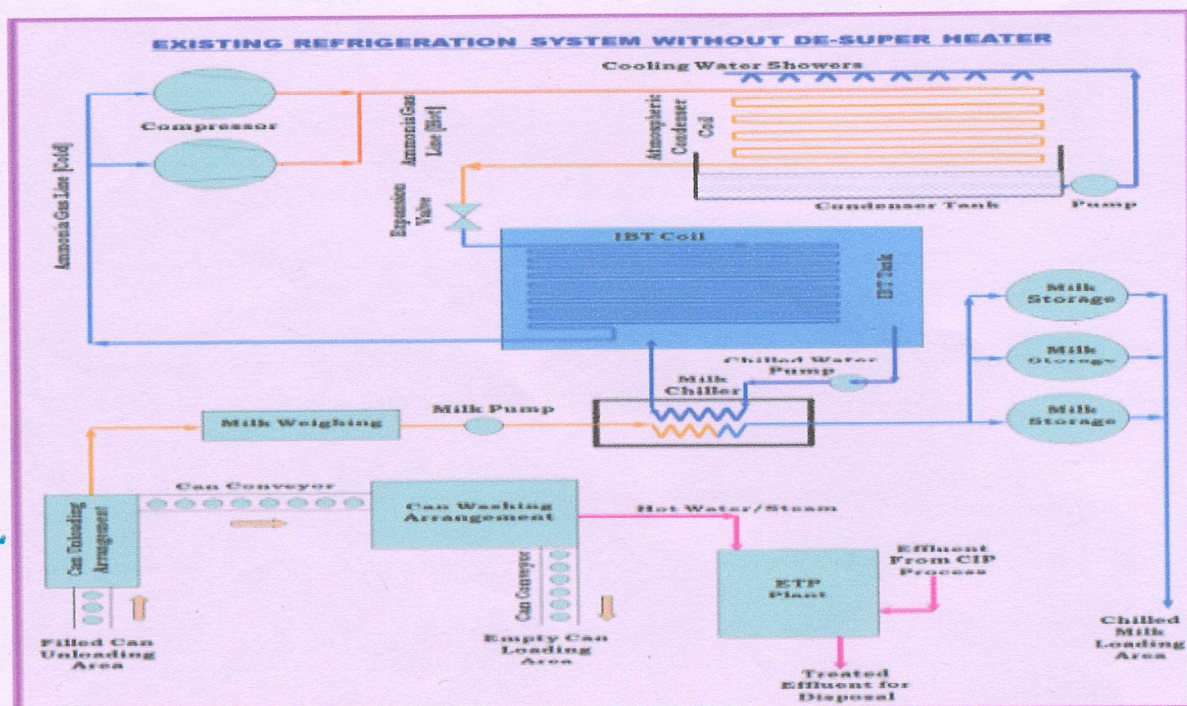
Installation of De-super heater (Waste heat recovery from refrigeration system) project was selected for providing financial support under GEF-UNIDO-BEE Project. The system has been duly installed and commissioned in July 2019.

PROJECT OUTLINE

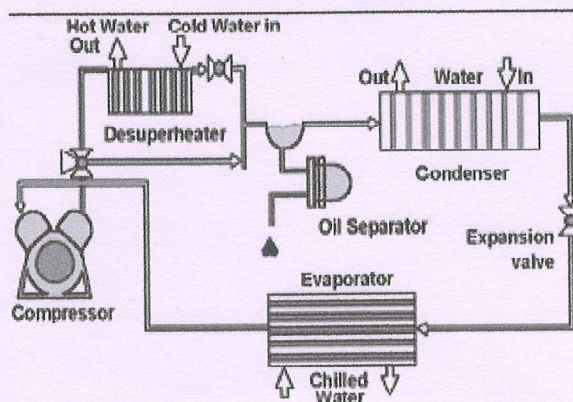
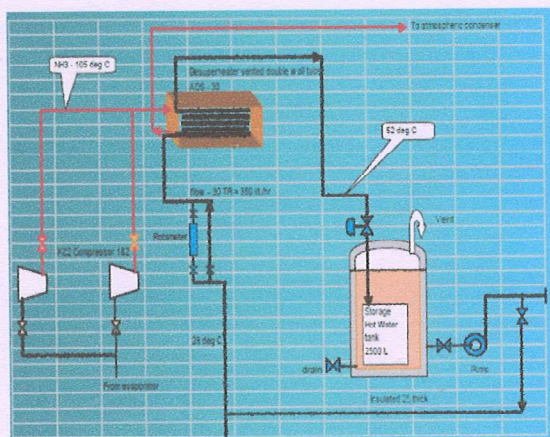
Milk chilling centers and dairy plants are using conventional technology. The design and operation of the plant is standardized as per old practices. It was fine, till energy was available relatively cheap and there was no global drive to better energy management.

While carrying out the audits and presenting the Energy audit reports to the units, it was found that significant energy can be saved by provision of De-super heater system. And hence there is a need for a better technology for efficient energy management.

Existing System (Without DSH)



With De-Super Heater



De-super heater to be provided on Reciprocating Chiller system to harness waste heat of NH₃ gas. De-super heater is installed on discharge side of NH₃ compressor. The temperature of NH₃ gas observed to be 92 to 95°C. It is standard practice to harness 12 to 15% of Waste heat rejected in condenser by providing De-super heater. The arrangement of de-super heater can be by providing PHE or in case of small reciprocating NH₃ compressor by providing shell and tube type heat exchanger. The hot water temperature can be maintained up to 70°C by proper design of de-super heater along with maintaining flow rate. Apart from the direct energy saving after getting hot water, the heat load on condensing coil or cooling system will be reduced which will further open possibilities of downgrading the cooling water pumps.

Broad system details are as under:

S.No.	Parameters	Unit	Values
1	Furnace Oil Savings	Kg/year	12500
2	FO Price	Rs./Kg	35
3	Monitory Savings	Rs./year	437500
4	Investment	Rs.	750000
5	Simple Payback Period (T_{sp})	Years	2
6	Discounted Payback Period (T_{dp})	Years	1

OPERATING PHILOSOPHY:

Basic operational schemes include:

- Daily start-up
- Daily shutdown
- Normal operation

Daily start-up:

Normal operation:

Daily shutdown:

Safety Features:

Fuel Savings analysis:

MONITORING PROGRAM (AS PER SCHEDULE-III)

Date & Time	Water Flow (L/Day) Water	Inlet Temperature (°C) Water	Outlet Temperature (°C)	Inlet ammonia Gas Temperature (°C)	Outlet Ammonia Gas Temperature (°C)
08 August 2019	10200	27	56	91	37
09 August 2019	10500	27	57	94	38
10 August 2019	9500	29	60	96	40
11 August 2019	10300	28	61	97	41
12 August 2019	9200	27	58	92	42
13 August 2019	9700	27	59	93	40
14 August 2019	9800	28	60	96	39
15 August 2019	10500	28	60	95	38
16 August 2019	10100	29	62	97	37
17 August 2019	10600	29	63	96	37
18 August 2019	9300	30	63	97	39
19 August 2019	9100	29	59	96	42
20 August 2019	10500	29	60	95	44
21 August 2019	10400	29	60	94	42
22 August 2019	10500	28	62	98	41

23 August 2019	10300	28	61	98	40
24 August 2019	10400	28	60	97	40
25 August 2019	10200	28	61	95	36
26 August 2019	10400	27	57	92	38
27 August 2019	10200	27	57	93	37
28 August 2019	10400	27	56	91	39
29 August 2019	10100	28	58	92	39
30 August 2019	10400	28	59	92	40
31 August 2019	10500	29	60	95	41

PERFORMANCE DATA (As per Schedule-V)

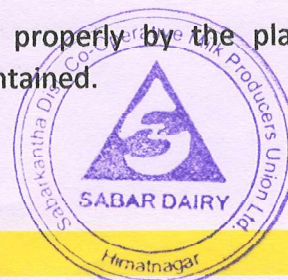
Date of Commission: 08.08.2019		Year of Operation: 2019				
Month	Flow (kL/Hr)	Water Inlet Temperature (°C)	Water Outlet Temperature (°C)	Savings (kcal)	Savings (Rs.)	Remarks
Aug-19	810	28.25	59.7	7336656	36039.71	
Sep-19	813	29.1	60.1	7258464	35655.61	
Oct-19	822	28.74	61.1	7660776	37631.89	
Nov-19	805	28	60.8	7604352	37354.71	
Dec-19	790	26.4	51.2	5642496	27717.52	

PERFORMANCE PARAMETERS (Daily log sheet)

Since installation, the system has been working in Auto mode, with automatic starting, stopping and tracking. Summary of steam generated is as under:

CONCLUSION:

The system is fully operational and daily monitored properly by the plant operating personnel. Proper records of system parameters are maintained.



Antil



Thanking you,

Pranav Patel

Prepared by: Pranav Patel, (AS- Engineering)

Date: 08.01.2020



A-5, Bhagyalaxmi Society, Nr. Railway Crossing, Vallabh Vidyanagar-388 120. Ph.: (02692) 234627

Date: 12.08.2019

To whomsoever it may concern
INSTALLATION COMMISSIONING CERTIFICATE

This is to certify that M/s. Sabarkantha District Co-operative Milk Producers' Union Ltd., sub Post: Boria, Himatnagar 383-006 Gujarat had purchased Capital goods from M/S Ice Make Refrigeration P. Ltd., Ahmedabad 380 014 Vide P.O.No.:S410057560 dtd.09.10.2018 for Shamlaji Chilling Center Unit and tri party agreement between BEE, UNIDO and M/s Sabar Dairy Himatnagar.

The Details of Capital goods are as under: -

Ammonia De Super heater having Material code: 4009675, HSN/SAC code: 84195020
Qty 1nos.

Purpose of these certificate for Submission of letter for certifying procurement quotation and commissioning of pilot project to

1: The Project Manager, Bureau of Energy Efficiency, 4th Floor, Seva-Bhavan, New Delhi

2: The Representative, United National Industrial Development Organization (UNIDO) New-Delhi

As per sanction letter IND/PRO/300(37)/430 dated 13.04.2018 from UNIDO for "Promoting Energy Efficient and renewable energy in selected MSME Cluster in India" for implementation of "Waste Heat Recovery from Refrigeration system - De-Super-Heater"

at , Shamlaji Chilling Center a unit of M/S Sabar Dairy, Himmatnagar, Gujarat State, India

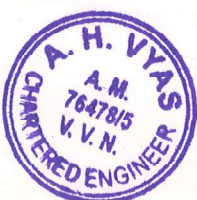
I certify that the owner completed pilot project and commissioned successfully on 08.08.2019 after trial run.

I observed and inspected procurement quotation material, erection and trial run of De Super Heater system and found satisfactory.

I also found commissioning data satisfactory as specified in agreement for new technology for working/ in operation.

Hereby with this, I am certifying the new implemented project erection and its operation satisfactory & successful after trial run/commissioning.

This Certificate is issued on the basis of the technical discussion held with plant/office personal during plant visit and documents provided by M/s SABARKANTHA DISTRICT CO.OPERATIVE MILK PRODUCERS' UNION LTD.-383006 for Shamlaji Chilling Center Unit and the physical verification, of the above installed capital goods at plant premises



A. H. VYAS AM 76478/5
Chartered Engineer M. E.
(Valuation in P & M)
A-5, Bhagyalaxmi Society,
Near Rly. Crossing,
Vallabh Vidyanagar - 388120



Ajitkumar H Vyas