CII Energy Excellence Awards

Rane NSK Chennai Heartly Welcome CII Team

23 - 25 August, 2022

Presented by : RNSS - CHENNAI

Team Members

B Muralikrishnan
(Manager – PLE)

A Mohamed Sameer
(Asst.Manager – PLE)

M Vijayan
(Sr. Executive – PLE)

2022

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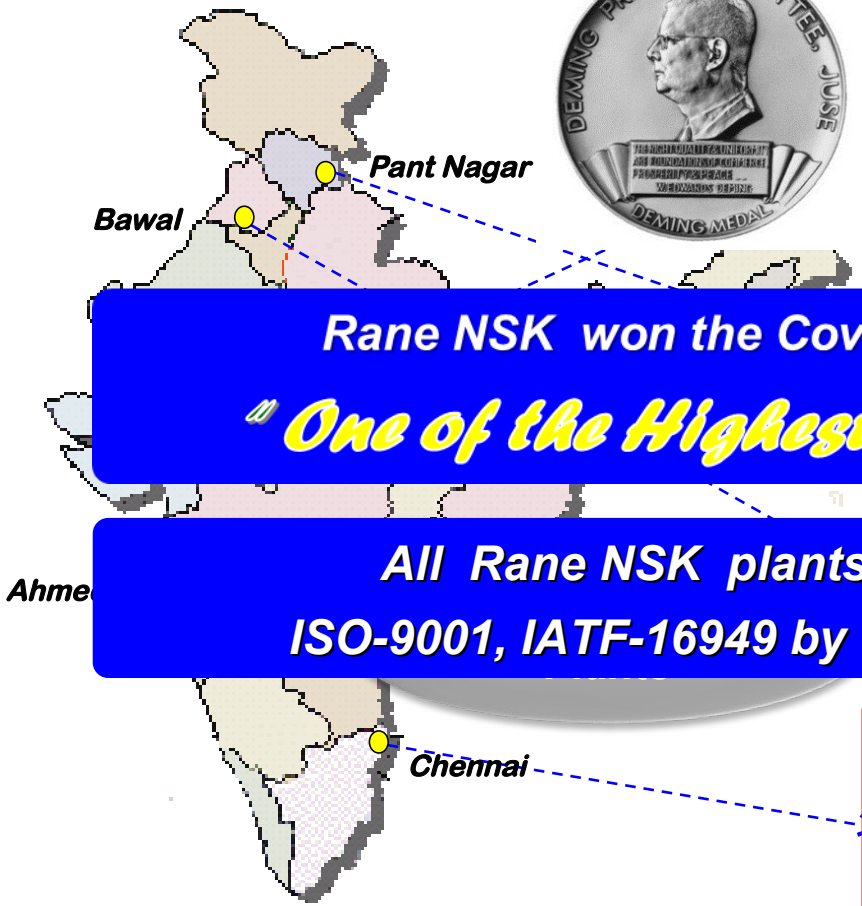
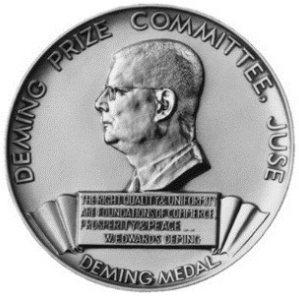
1. Company Profile & Product Details





Rane NSK Plant Locations

- Gujarat plant (Plant-4)
- Established : 2018
- Employees : 235 (51+184)
- Capacity per Month – 62,000 Column EPS

- Pant Nagar plant (Plant-3)
- Established : 2007

- Established : 2008

- Chennai plant (Plant-1), Corp.Office & R&D
- **Established : 1997**
- **Employees : 210 (60+150), (83)**
- **Capacity per Month – 75,000 Columns**

Rane NSK won the Coveted 'DEMING' Prize from JUSE in 2018

" One of the Highest Awards on TQM in the World "

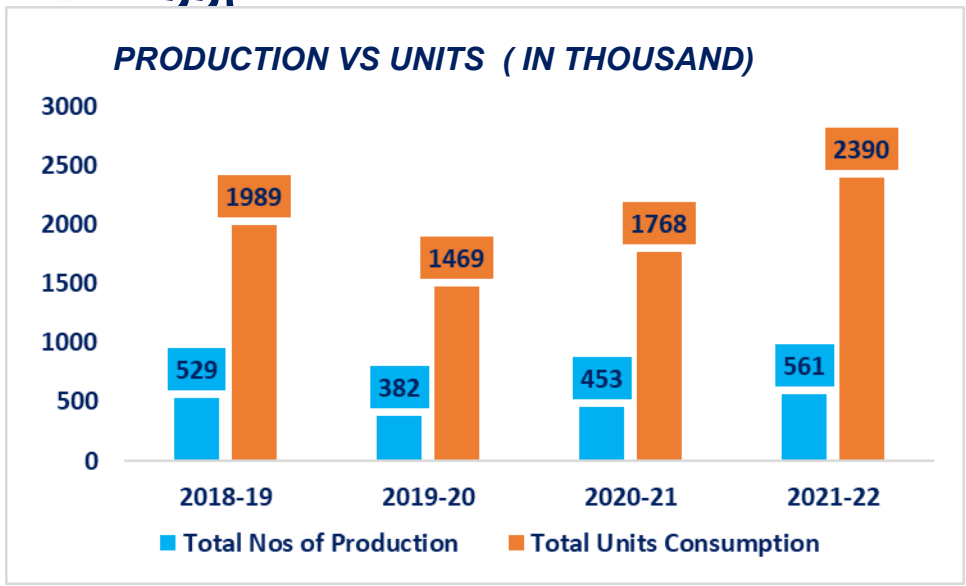
All Rane NSK plants Certified for ISO-45001, ISO-14001, ISO-9001, IATF-16949 by TUV-Nord and ISO/IEC-27001 by TUV-SUD

Plant	Products / Variants			Application	Major Customers
Plant-1 (Chennai)	Column-MSC	Manual Steering		• Passenger Cars • Utility Vehicles, LCV, MCV & HCV	❖ MSIL, TML, VE, Toyota, Honda ❖ ISUZU (Thaiand)

- MSC – Manual Steering Column

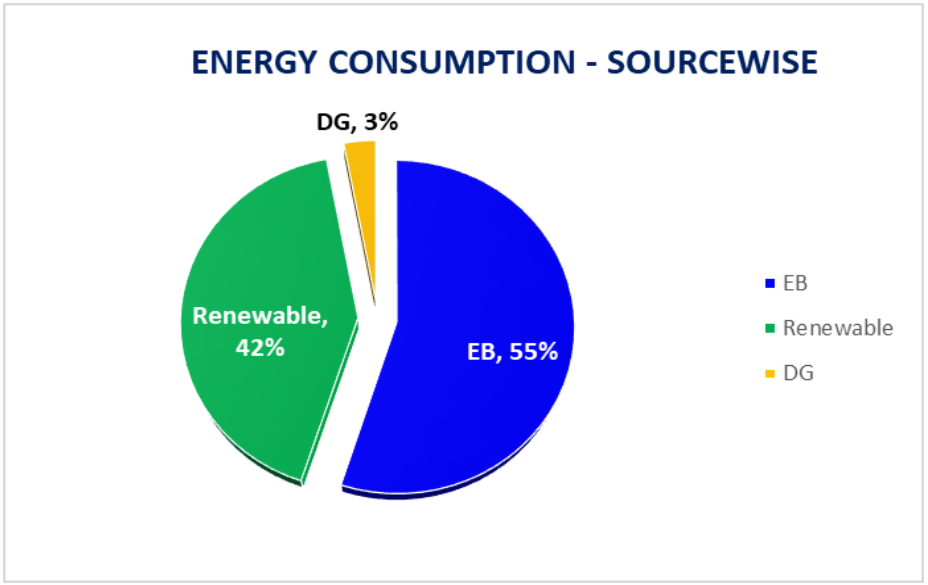
(XX+XX) – Indicates No.of. Employees (Management Staff + Operators & Trainees)

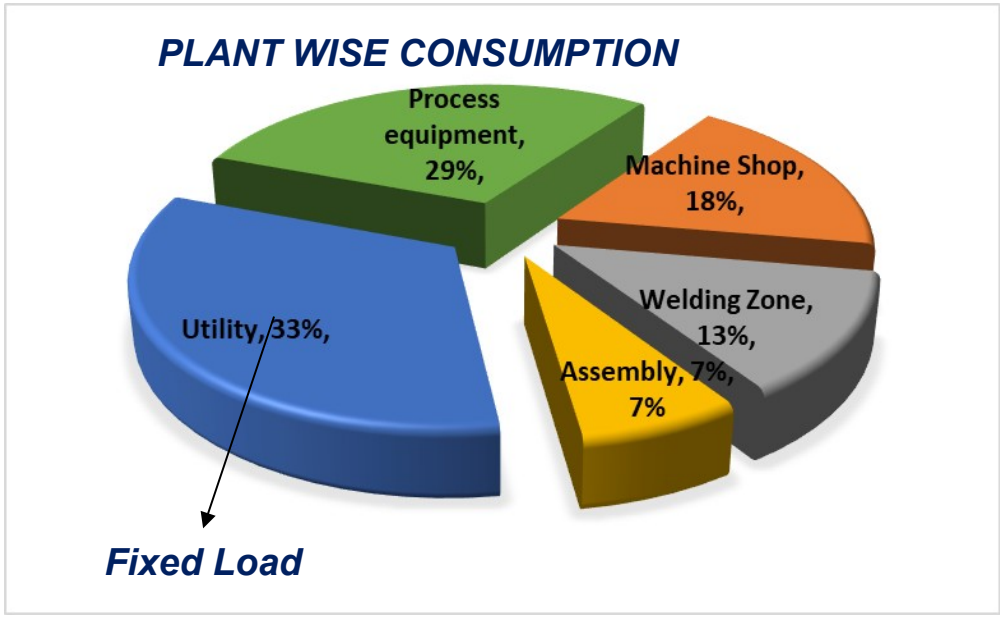
3. Sp. Energy Consumption in last 3 Year (FY 2018-22)



Variations

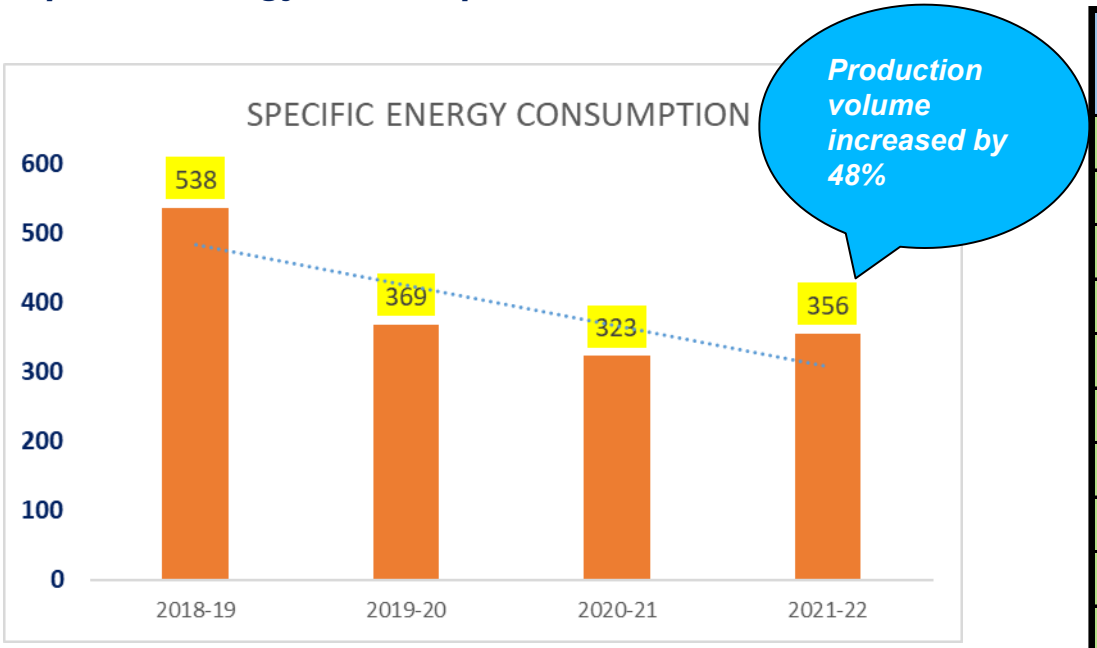
- Common utilities are working even production load is low
- Variation in product size and quantity as per market scenario





3. SPECIFIC ENERGY CONSUMPTION ELECTRICAL (FY 2018-21)

Specific Energy Consumption – Last 4 Years…



Solar Energy
FY 19-20 : 516000 Units
FY 20-21 : 624000 Units
FY 21-22 : 753517 Units

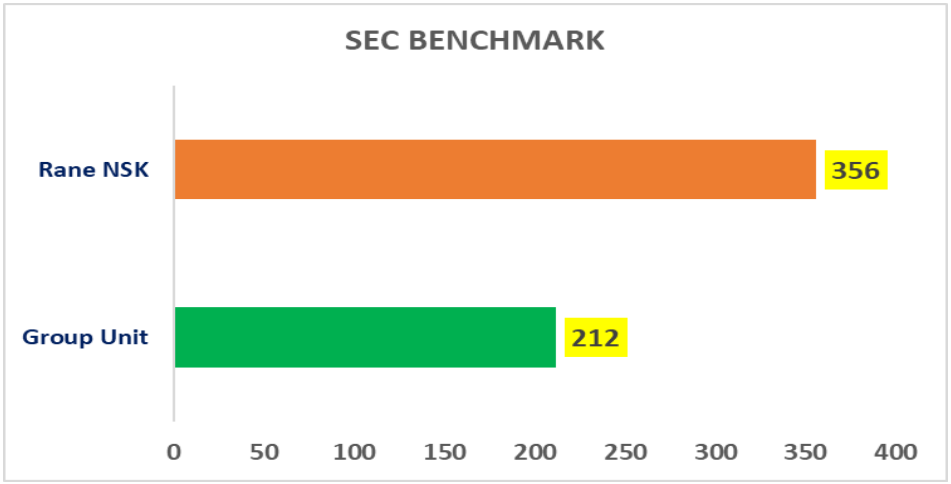
Energy Projects implementation – Last 5 Years…

S.No	Technique	Completed Task
1	Idle Time Trip	67
2	Delta to Star Convertion	14
3	VFD	24
4	Process based On/Off (Interlocks)	7
5	Motor Class Conversion IE3 / IE4	15
6	Thyristor to invertor Control for welding power source	17
7	AC Controller	65
8	Lighting (Timed on / off & Dawn to dusk	225
9	LED Lighting	225
10	Drier to Compressor Interlock	2
11	Efficiency Improvement (Magnetron) for DG	5

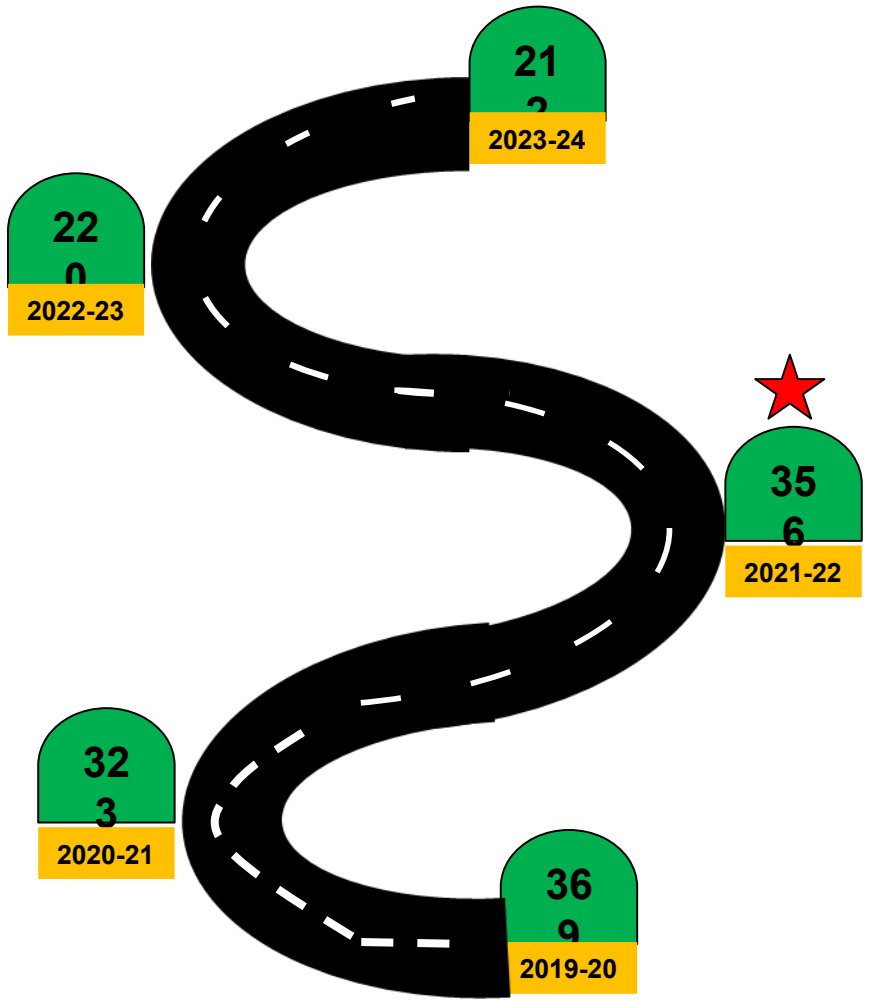
% 34 of Improvement of SEC FY 2018 - 22

4. Information on Competitors , National & Global benchmark

SEC BENCHMARK



ROAD MAP TO ACHIEVE SEC



Long Term Plan to achieve Target SEC

- *All Motors in IE4 Class*
- *Energy Purchase Vs Renewable - 35% : 65%*
- *Compressed Air Usage reduction by 28%*

4.1 ENCON PROJECTS FY 2022-2023

SL. NO	PROJECT TILTLE	ANNUAL SAVING (KWH)	ANNUAL SAVING (INR MN)	INVESTMENT (INR MN)
1	Paintshop operation Energy optimisation	58968	0.468	0.45
2	VFD Installation for machines	67128	0.532	1.2
3	Compressor ring line & capacity improvement	132912	1.054	1.8
4	Motor Class conversion IE1 to IE4	66000	0.524	0.5
5	BLDC Air circulator fan	64396	0.511	0.91
6	Heat Pump for Phosphating plant	121800	0.966	1.3
7	Motor Pressure optimisation	11760	0.119	0.25
8	PID controller for heater	15000	0.093	0.22
	Total	537694	4.267	6.63

Total Saving 537694 Units/ Year

Total Investment 77Lakhs

Co2 Reduction 233MT

Total cost Saving 42 lakhs

5. Energy Saving projects Summary (FY 2018-22)

YEAR	NO OF ENERGY SAVING PROJECTS	INVESTMENS (INR MILLION)	ELECTRICAL SAVINGS (MILLION KWH)	SAVINGS (INR MILLION)	IMPACT ON SEC
2018-2019	7	0.55	0.068	0.6	3.3%
2019-2020	5	0.5	0.053	0.44	5.09%
2020-2021	7	1.2	0.14	1.14	12.03%
2021-2022	8	`2.98	0.37	2.55	9.26%

4.1 ENCON PROJECTS FY 2021-2022

SL. NO	PROJECT TILTLE	ANNUAL SAVING (KWH)	ANNUAL SAVING (INR MN)	INVESTMENT (INR MN)
1	Air conditioner external temperature controller -64 Nos	40354	0.33	0.52
2	Heat pump system in phosphating plant	69000	0.57	0.8
3	Air line Ring type System.	16524	0.13	0.35
4	Servo stabilizer in main Lightning distribution board	31800	0.26	0.11
5	Motor class conversion IE3-18 nos	33150	0.27	0.38
6	VFD For Hydraulic & Blower motor -17 nos	60732	0.5	0.56
7	IGBT Controlled air heater	540	0.004	0.12
8	Paintshop JIG Modification	85000	0.55	0.15
	Total	337100	2.55	2.98

Total Saving 337100 Units/ Year

Total Investment 29Lakhs

Co2 Reduction 179MT

Total cost Saving 25.5 lakhs

5.1 ENCON PROJECTS FY 2018-19

SL. NO	PROJECT TILTLE	ANNUAL SAVING (KWH)	ANNUAL SAVING (INR MN)	INVESTMENT	ROI IN YEARS
1	Paint shop Exhaust and Air circulation Motor Interlock	864	0.0073	0.012	1.65
2	Tube light 40W(Including choke 55W) to led 18W replacement	11774	0.099	0.026	0.26
3	Thyristor(22KW) to Inverter Type welding power source (14KW)	18720	0.16	0.162	1.01
4	Exhaust fan interlock with welding machines	1440	0.013	0.019	1.46
5	Amano fume collector interlock with welding machine	2201	0.019	0.003	0.15
6	Idle Off for press and hydraulic machines	8928	0.075	0	0
7	VFD for Hydraulic machines machine	23136	0.194	0.325	1.68
	Total	67063	0.56	0.54	0.96

5.2 ENCON PROJECTS FY 2019 - 20

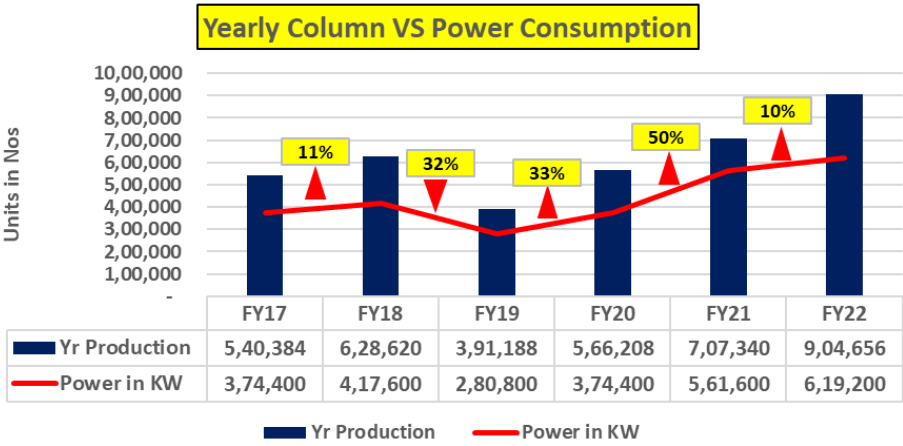
SL. NO	PROJECT TILTLE	ANNUAL SAVING (KWH)	ANNUAL SAVING (INR MN)	INVESTMENT (INR MN)	ROI IN YEARS
1	Compressor and Drier Interlock	540	0.005	0.003	0.60
2	VFD for Broaching machine	7212	0.06	0.045	0.75
3	Idle Off for press and hydraulic machines	16524	0.138	0	0
4	Thyristor(22KW) to Inverter Type welding power source (14KW)	20208	0.168	0.312	1.86
5	VFD drive for phosphating Scrubber for 45KW motor	8280	0.07	0.135	1.93
	Total	52764	0.44	0.495	1.13

5.3 ENCON PROJECTS FY 2020-21

SL. NO	PROJECT TILTLE	ANNUAL SAVING (KWH)	ANNUAL SAVING (INR MN)	INVESTMENT (INR MN)	ROI IN YEARS
1	Thyristor (22KW) to Inverter Type welding power source (14KW)	18720	0.16	0.15	0.94
2	Hi- Bay light 250W CFL lamp to 150W LED light	10920	0.09	0.17	1.9
3	Air conditioner Temperature external controller	4236	0.036	0.007	0.19
4	Magnetic Resonator for Diesel generator	2630	0.022	0.026	1.18
5	133 CFM Compressor pressure Optimisation	84864	0.71	0.78	1.09
6	CFL 55W to LED base light 25W	6739	0.057	0.06	1.05
7	Tube light 40W(Including choke 55W) to led 18W replacement	8311	0.07	0.012	0.17
	Total	136421	1.14	1.204	1.05

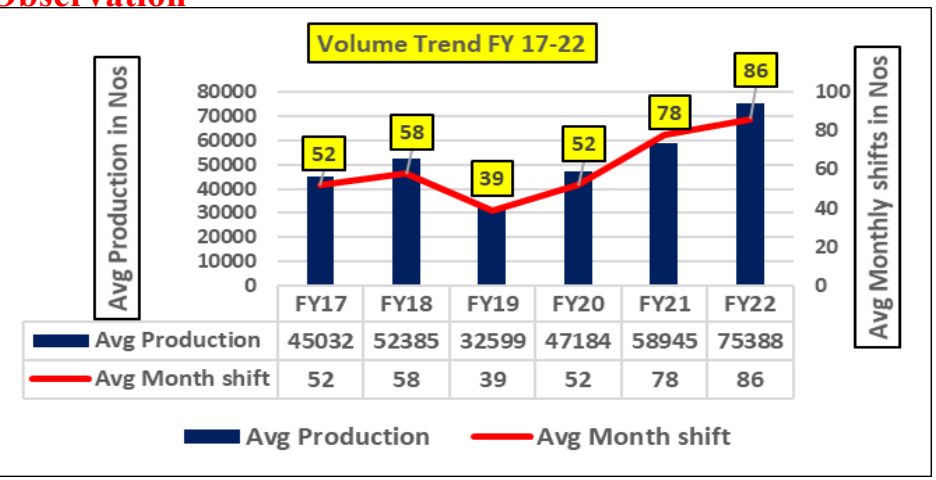
6. INNOVATIVE PROJECT -1 To Reduce Paintshop power consumption

Trigger for Implementation



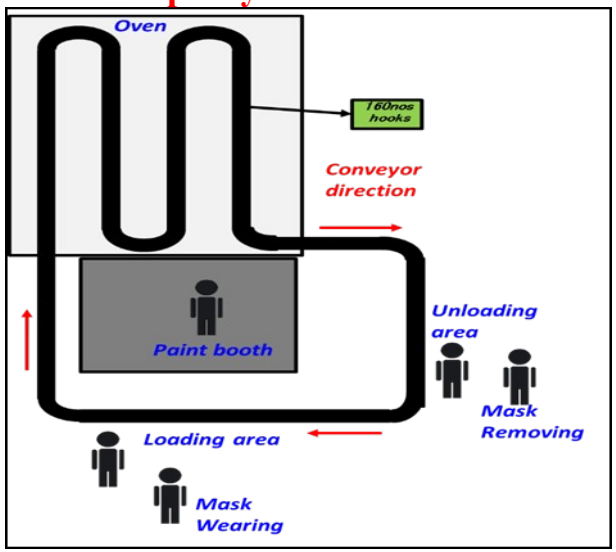
Target : Power Consumption Units 6,19,200 to 561,600 per annum

Observation



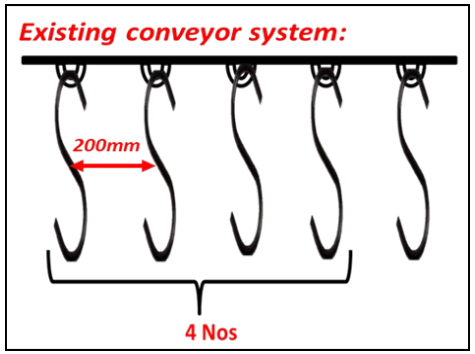
CUSTOMER DEMAND ↑ ***PRODUCTION SHIFTS*** ↑ ***POWER CONSUMPTION***

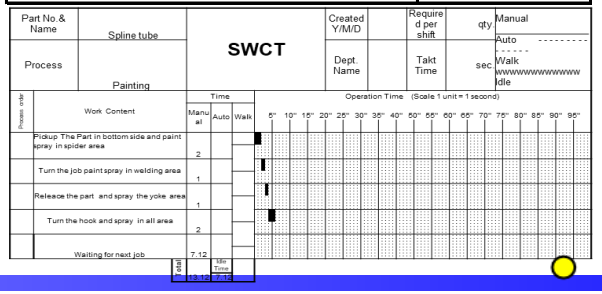
Paint shop Layout



Analysis

Number Of Hooks	160 Nos
Conveyor Speed Pitch to pitch	13.12 Secs
Number of painter	1
Output Per Shift	1600 Nos
Output Per Day	4800 Nos
Per shift Power consumption	600
Per Day Power Consumption	1800
Monthly Power Consumption	46800





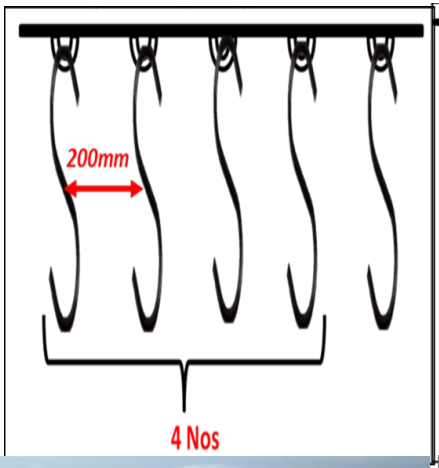
Man time – 6 s
Idle time –7.12 s
Conveyer time – 13.12 s

6. INNOVATIVE PROJECT -1 To Reduce Paintshop power consumption

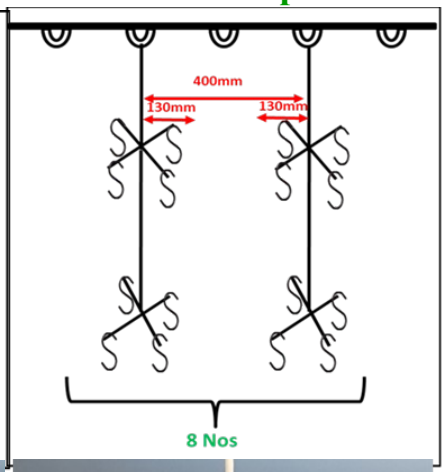
Action

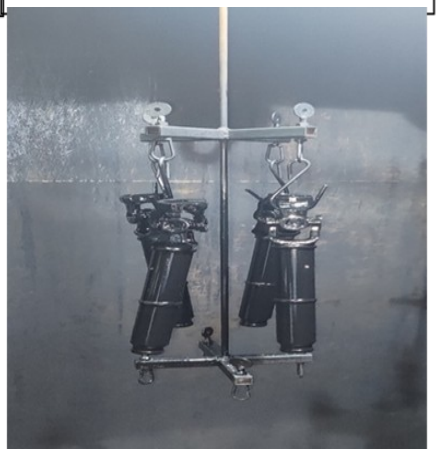
To reduce man idle time 7.12 s to 1.74 s

Before Setup



After Setup

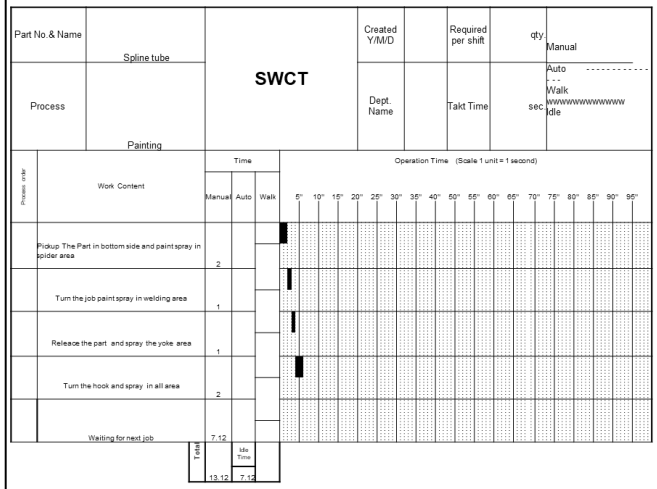




Standardization

What?	Why?	Where?	Who?	When?	How?
Paintshop Capacity Enhancement	To reduce paintshop power consumption	Paintshop	CFT	Mar-22	Paintshop Hook Jig modification

Check



Man time – 26 s
Idle time –1.74 s
Conveyer time – 26.24 s

Conclusion

Paintshop shop capacity has been increased from 4800Nos per da to 8000Nos per day
Sunday Over time of 16 Hrs has been eliminated
Total hours per month over time eliminated – 4* 16 – 48 Hrs
Total Power savings month – 7083 Units
Total power savings / year - 85,000 Units
Total Cost savings / year – Inr 5,39,750
Paint shop power reduced from 6,19,200 to 5,61,600 units / Annum
Percentage of power : 10.25%

Lessons Learnt

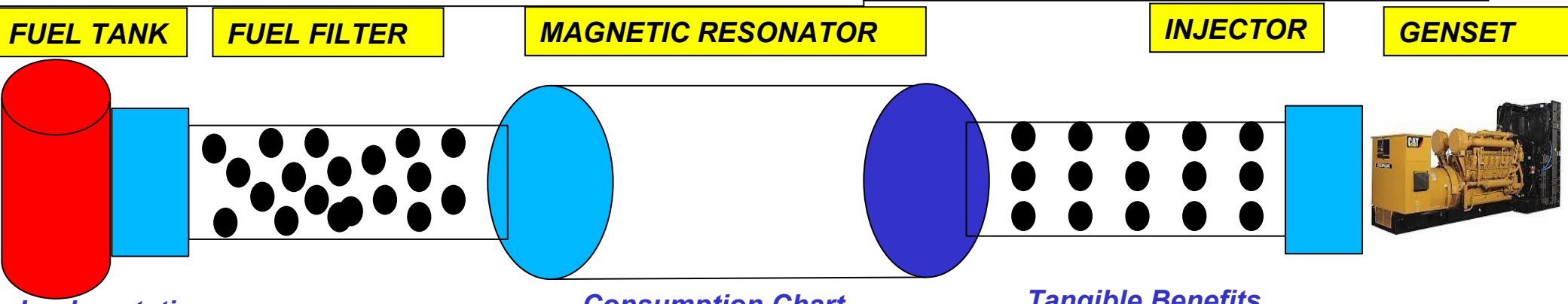
- ***Simple Jig Design makes huge impact in Power consumption.***
- ***Low cost design change techniques***
- ***Standard Work Combination Table.***

Trigger for Implementation

- High Diesel Power cost due to market inflation.
- Fuel Combustion is partly carried out because of inadequate positive and negative ions and carbon vanishing.
- Due to Low combustion high fuel consumption, excess carbon monoxide in exhaust of Dg

Concept

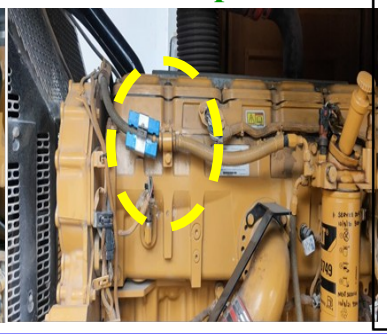
- Magnetic Frequency Resonators, that separate and align the molecules of the fuel passing between the two magnetic parts .
- It converts attracts negative charged fuel into positive ion which converts oxygenated fuel for superior combustion



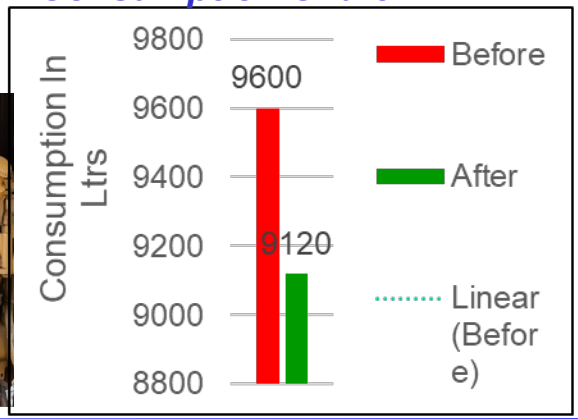
Implematation area

Before Setup

After Setup



Consumption Chart



Tangible Benefits

- *Fuel consumption decreased to 480Ltrs.*
- *Cost savings Rs 48000/ Per annum.*
- *ROI - 3 Months*
- *Replication in all our plants of totally 16 DG's*

Intangible benefits

- *Learnt about fuel combustion and magnetic resonators*

Trigger for Implementation

- High Power consumption nearly 21 % of Eb bill.
- Set Temperature not attainted due to low set value (< 24 ° C) & Surrounding temperature.
- Compressor Switching On/ off Continuously to maintain set Temperature.

Concept

To Control Switching On/ Off AC Compressor by installing two temp sensor with programmable logic device

Room Temperature RT

Indicates Compressor status

Set Temperature Locking with password protection

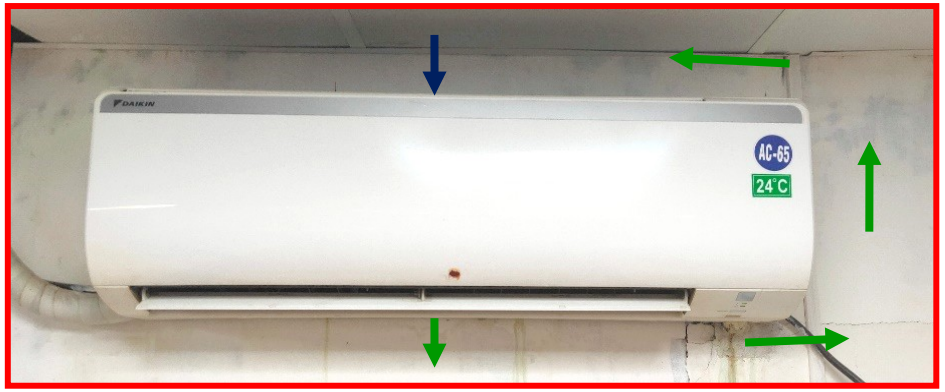
Coil Vent Temperature CT

Indicates Temperature stat

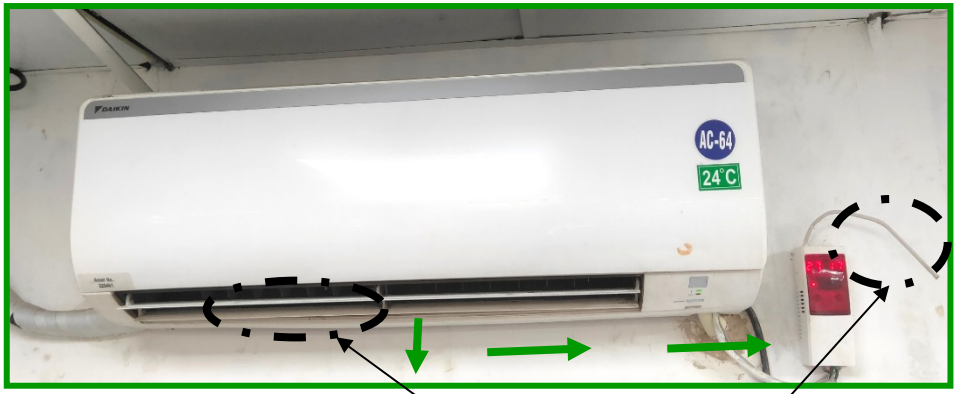
Compressor	Run time
I Run time	15-50 min
II Run time	15-44 min
III Run time	15-38 min
IV Run time	15-30 min
Over Cooling	00-15 min
Ideal time	00-12 min

6. INNOVATIVE PROJECT -3 To Reduce AC Power consumption

BEFORE



AFTER



Impact

Energy saving Units/ Year : 630.4 Units
Cost saving / year : Rs 5264
Co2 foot print reduction : 0.45 MT
Investment : Rs 7000 per unit

ROI 1.3Years

Replication Potential (2021-2022)

Total Number of Devices to be installed : 64
Total Investment : 5.2 Lakhs
Expected Units of Saving / Year : 40354 Units
Cost saving / year : Rs 336955
SEC Improvement : 2%

Team Contribution

- **Project Study**
- **Installation & Performance Monitoring**

Set Temp	Units Savings Per day (10 hours)
26	2.20
24	2.02
22	1.85

7. Utilization of Renewable Energy Sources

YEAR	Technology (Electrical)	Type of Energy	Onsite / Offsite	Installed Capacity (MW)	Generation (million kWh)	% of overall electrical Energy
2018-2019						
2019-2020	PV Module Ground mounted	Solar	Offsite	10.5	0.56	38%
2020-2021					0.723	40%
2021-2022					0.80	42%

Renewable Energy (Solar) Details

Source	Radial Renewables, Mumbai
Type	Group Captive @ 30% Equity Share
Capacity	10.5MW for Group / 0.5 MW RNSS -Chennai

7.1 Utilization of Renewable Energy Sources

Roof Mounted Ventilators installed Shop floor – 58 Nos
Annual Savings 13282 Kwh
Investment : 2.8 Lakhs

Translucent roofing sheets (25%) provided in sheds to use natural light.
Annual Equivalent Savings: 21060 KWh
Investment : 1.25 Lakhs

Solar water heater for Dish washing
Annual Savings 3744 Kwh
Investment : 1.0 Lakhs

8. Waste Utilization and Management

Sl.no	YEAR	Type of Waste Generated	Quantity of Waste generated (MT/Year)	Disposal Method
1	2018-19	Hazardous Waste	9934	➢ Hazardous Waste Sent to TNPCB authorized Vendor ➢ Solid Waste sent to Scrap Dealer through Auction
		Solid Waste	140472	
2	2019-20	Hazardous Waste	5504	
		Solid Waste	98719	
3	2020-21	Hazardous Waste	10960	
		Solid Waste	96101	
4	2021-22	Hazardous Waste	10553	
		Solid Waste	153440	

Hazardous waste

- *Paint ,Phosphating , ETP ,Oil Soaked Cotton waste*

Solid waste

Metal Scrap from process , Alu. Oxide

Complete Waste Management carried out through Eco Track System, NSK Portal

8.1 WASTE UTILISATION

1

Moisture, dirt contained Hydraulic Oil Quantity - 2400 Litres / Year

↓

Sent to refineries for filtration

↓

(Avg 1600Litres / Year) Filtered oil from refineries used in process with combination of 3:1

2

Aluminum Oxide wastages from Shot blasting 5 T / Year

↓

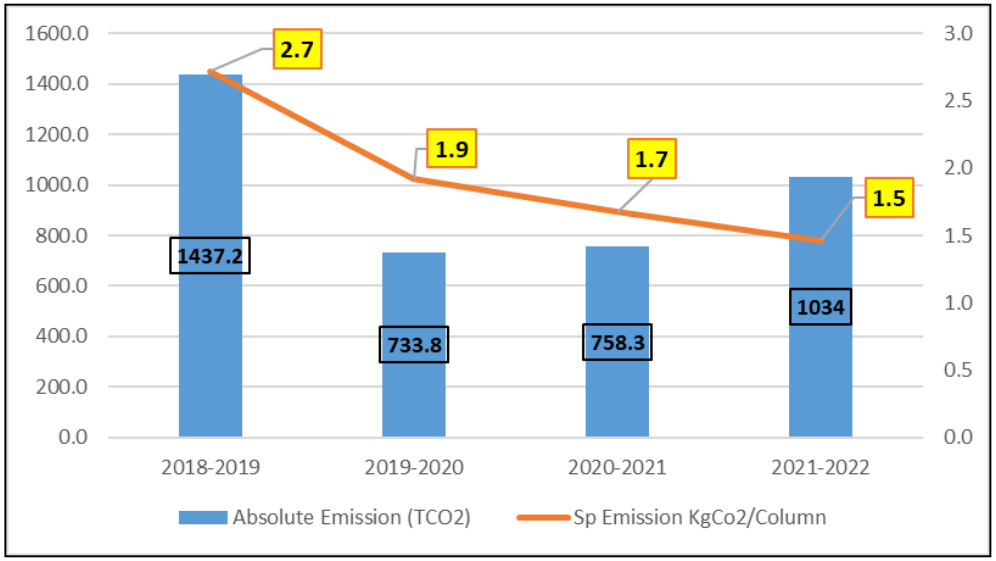
Filtered from other foreign particles

↓

Used for Flooring material in building construction

9. GREEN HOUSE GAS INVENTORISATION

ABSOLUTE EMISSION & EMISSION INTENSITY



% of Reduction of GHG emission 29%

SHORT TERMS GOAL

- Paper Usage reduction through E - Procurement
- Solar street light implementation
- Phosphating plant technology advancement for elimination of heater load
- Load End Capacitor bank
- All pneumatic doors into electrical motor doors.

LONG TERM GOALS

- Addition 42K Units/Month from Renewable
- Class IE3 Motor Implementation
- Centralized Air Conditioner Implementation
- Compressor Efficiency Improvement
- Exhaust Duct Design change for Paint Shop

DAILY EMISSION DATA UPDATED TO PUBLIC VIEW IN FRONT OF THE FACTORY GATE

9.1 GREEN HOUSE GAS EMISSION REDUCTION

Magnetic Resonator for DG

Annual Diesel Power Consumption : 19200 Litre
Annual Diesel Savings : 960 Litre
Annual Cost Savings : Rs 84480
Investment : Rs 7800
Return on Investment Months : 4

Co2 Emision Reduction : 2.3 MT

Kilometers driven by a passenger car : 9094 Km

Battery Operated Forklift

Annual Diesel Power Consumption: 1440 Litre For diesel forklift
Annual Diesel Savings : 1440 Litre
Annual Cost Savings : Rs 136800
Investment : Rs 6 Lahks
Return on Investment Months : 4.5

Co2 Emission Reduction : 3.4 MT

Kilometers driven by a passenger car : 13695 Km

Green Procurement Policy

Rane NSK Rane NSK Steering Systems	STANDARD OPERATING PROCEDURE	Doc No.: CPUR SOP-S2 Rev No.: 0
	Green Procurement	Date: 10 Apr 2017 Page No.: 1/1

PURPOSE: To check supplier's Environmental Safety Status

SCOPE: To control Harmful Substances Waste in environment

RESP: Role holder for the position

PROCEDURE:

1. Use the template "NSK Environmentally harmful Substance Management System Ver.1.2(Apr.2014)" for referance.
2. Send NSK Environmentally harmful Substance Management System Ver.1.2(Apr.2014) check sheet to all supplier for self evaluation.
3. Get the check sheet filled from suppliers.
4. Plan Audit accordingly with suppliers.
5. Visit the supplier with self evaluation sheet and verify the same with all other required documents (Refer GP FORMS & FORMATS CHECK SHEET (Ver. 01))
6. Get the NSK Form 1, Form 2 and Form 3 filled from the supplier (Refer NSK Group Green Procurement Standard Edition E001)
7. Compile the report and share it with the department heads.

Reviews and approvals:

1. Reviewer to review the report.

Sl.No	Rev.level	Rev.Date	Rev.Details	Updated By

Prepared By	Approved By
Kanwaljeet Singh	ManojMalkothra

Supplier Evaluation Sheet

port on assurance system check of NSK substances of conc... **Form 9-3**

This check sheet is used for self-audits by your company (Company A) and on-site audits by NSK Group. The first level business partner (manufacturer) of NSK Group shall be called Company A, the second level business partner (manufacturer) shall be called Company B, and the third and fourth level business partners shall be called Company C and Company D, respectively.

A business partner, Company A that underwent an on-site audit by NSK Group has to prepare and submit a plan of corrective actions for nonconformity described in audit reports of the assurance system (matters to be pointed out) by NSK Group and submit a report on correction results within a half year. The audit shall be completed upon approval of the correction results by NSK Group or a follow-up audit. Audits and improvement will be continued until the perfect score is attained thereafter in principle.

Evaluation rank (percentage to the perfect score) A: 100 - 90%, B: 89 - 70%, C: 69 - 50%, D: 49 - 30%, E: 29 - 0%

As for "Details of evaluation at an audit," items whose perfect score is 10 (bold) are the items to assure that NSK's prohibited substances are not included.

Regardless of the total score, if not obtaining 10 points for the items whose perfect score is 10 (bold), the evaluation result shall be an E.

Name of person in charge: Santosh Bose
Name of business office/plant: Roop polymers
Address: No: 19, Sector 9, HE SIDCUL, Pantnagar, Uttarakhand
Prepared on:

<Registration of ISO 14001>
Registration date: 18th July 2011
Registrar:

"Matters to be confirmed and results"

Matters to be confirmed	Number of items	Self: Evaluation score	Self: Perfect score	Audit 28.02.2018: Evaluation score	Audit: Perfect score
1. Establishment and maintenance of Company A's assurance system of substances of concern	16	0	48	48	48
2. Proof that products delivered to NSK Group do not include NSK prohibited substances	4	0	19	16	19
3. Proof that products delivered to NSK Group do not include substances subject to ELV or RoHS	3	0	9	9	9
4. Clarification of requirements to the business partner (Company B) from Company A and thorough management of business partners	9	0	31	22	31
5. Thorough management of the business partner (Company B) and products Company A purchases from Company B	9	0	32	28	32
	Total score	0	139	123	139
	Score/Perfect score	0%		88%	
	Evaluation rank			B	

Approved by your company (Company A): Person in charge of environment or business manager
Approved by (signature) (Seal)
Title:

Contact information on your respondent (Company A)
Person in charge: Santosh Bose
Dept.: Quality
Tel.: [illegible]
E-mail: [illegible]

Contact information on the respondent of a trading company
Person in charge:
Dept.:
Tel.:
E-mail:

NSK Group Green Procurement Standards [Form 9-3] (Revised on April 1, 2014)

Supplier Audit Plan Vs Actual (FY 2022-23)

Ref No : 4.1.2	Green Procurement Audit Plan P1 (Prioritized Suppliers)			YEAR : FY 18 -19 / Rev. : 00							
S. NO.	SUPPLIER NAME	LOCATION		Oct'18		Nov'18		Dec'18		Jan'19	
				1 - 15	16 - 31	1 - 15	16 - 30	1 - 15	16 - 31	1 - 15	16 - 31
1	HITECH ARAI LTD	Tamil Nadu	PLAN								
		Madhurai	ACTUAL								
2	INNOVA RUBBERS PVT LTD	Maharashtra	PLAN								
		Nasik	ACTUAL								
3	PAVITRA TOOLINGS	Karnatka	PLAN								
		Banglore	ACTUAL								
4	ROOP POLYMER LTD	Haryana	PLAN								
		Gurugram	ACTUAL								
5	SHAKTI PLASTIC	Tamil Nadu	PLAN								
		Chennai	ACTUAL								

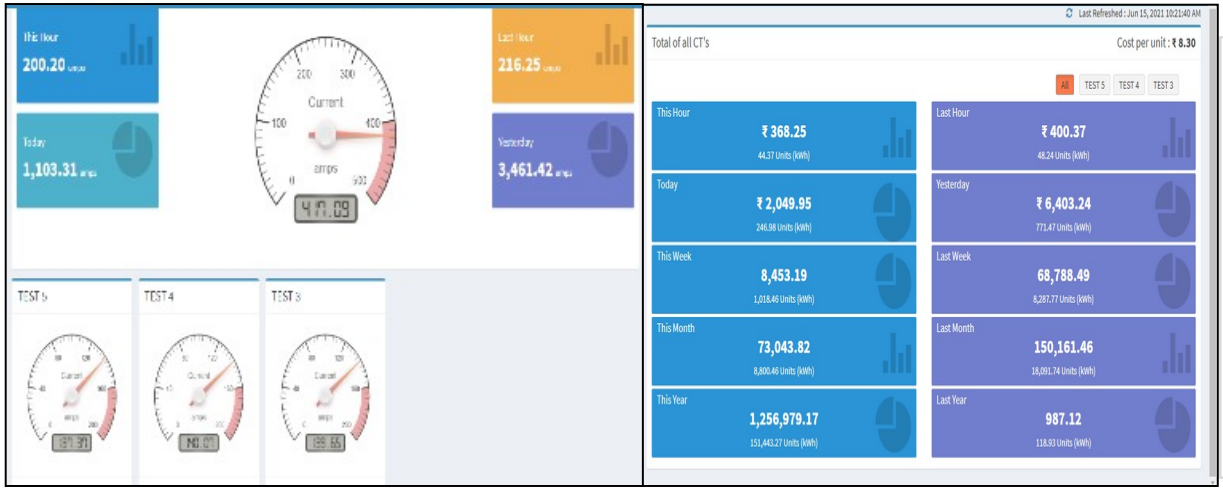
Deneid | PLAN | ACTUAL | Delay

Supplier Audit Plan (FY 2022-23)

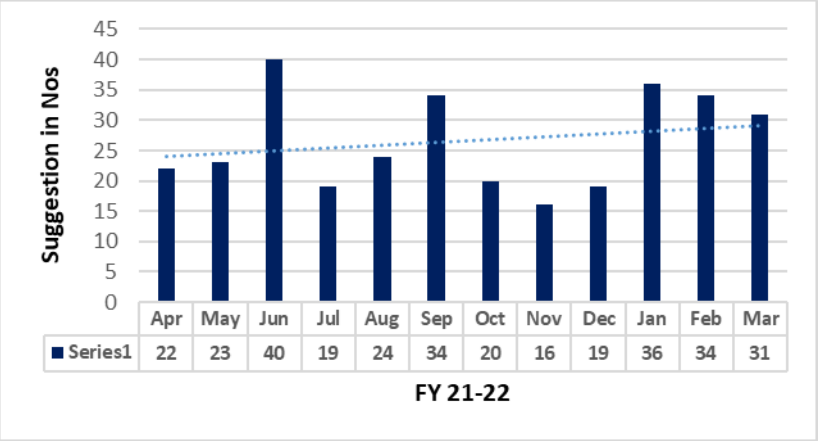
Ref No : 4.1.2	Green Procurement Audit Plan P1 (Prioritized Suppliers)			YEAR : FY 21- 22 / Rev. : 00							
S. NO.	SUPPLIER NAME	LOCATION		Aug'21		Sep'21		Oct'21		Nov'21	
				1 - 15	16 - 31	1 - 15	16 - 30	1 - 15	16 - 31	1 - 15	16 - 31
1	ASHWIN COLD FORGE	Tamil Nadu	PLAN								
		Chennai	ACTUAL								
2	LAKSHMI LIFE SCIENCE LTD	Tamil Nadu	PLAN								
		Coimbatore	ACTUAL								
3	MANGAL PRECISION	Andhra Pradesh	PLAN								
		Chittoor	ACTUAL								
4	NUTECH CNC PVT LTD	Tamil Nadu	PLAN								
		Chennai	ACTUAL								
5	PRECITEK COMPONENTS PVT LTD	Tamil Nadu	PLAN								
		Chennai	ACTUAL								
6	PREMIER SEALS	Maharashtra	PLAN								
		Pune	ACTUAL								
7	SIMMONDS MARSHALL	Maharashtra	PLAN								
		Pune	ACTUAL								

PLAN | ACTUAL | DELAY

IOT BASED ENERGY MONITORING



OPERATOR SUGGESTIONS



ENERGY COMMITEE REVIEW CHAIRED BY PLANT HEAD

PROJECTS IMPLEMENTED BY OPERATOR

- Idle off Hydraulic machines
- Fume Collector interlock with welding machine
- Welding machine and Job Cooler interlock
- Timer based Switching On/Off of HI bay lights.
- Machine Pressure and power pack Optimisation.
- Alternative switching of Air conditioner

BUDGET FOR ENERGY SAVING PROJECTS FY 2022-2023 : 10.0Mn

TITLE : Reduce Energy consumption in Air Conditioner

1. Problem :

1.1 Problem definition :

High Energy consumption in Air conditioner

1.2 Importance of the Problem :

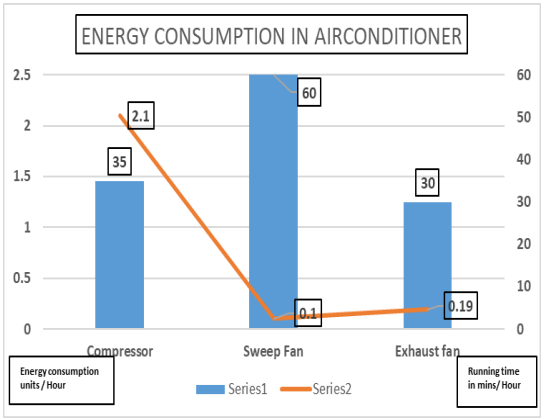
21% of fixed load power consumption / Month

1.3 Theme & Target :

To Optimize Air conditioner temperature and Compressor running time by sep-21

2. Observation

2.1 Major contributor for Air Conditioner Energy consumption AC-64

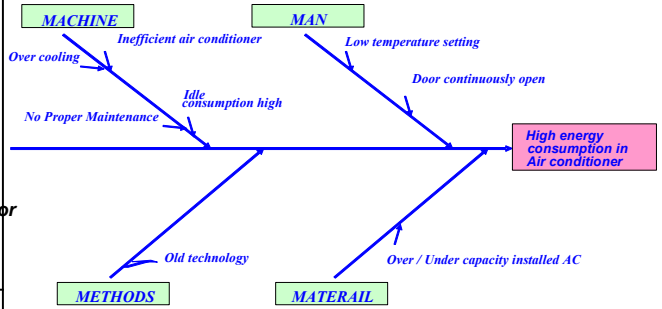


In airconditioner Compressor is the high energy consumption equipment

- A.C Compressor high contribution
- Consumption per Day- 11.17 Units/ Day/AC
- Monthly consumption- 290.68 Units/Month/Ac
- Annual consumption – 3487Units/ year/AC

3. Analysis :

3.1 Cause and effect Diagram:



3.2 Validation of Probable Causes

Sl. No	Probable cause	Validation	Result
1	Inefficient air conditioner	AMC record verified and found ok	Insignificant
2	Idle consumption high	Verified in idle consition and found ok	Insignificant
3	No Proper Maintenance	Verified AMC report, found ok	Insignificant
4	Over cooling	Verified , Over cooling over set temperature, Found not ok	Significant
5	Low temperature setting	Observed employees are setting temperature as 18deg/cel	Significant
6	Door continuously open	Verified Door has pelmet vale found ok	Insignificant
7	Old technology	Verified , With inverter technology power saving , Found nominal	Insignificant
8	Over / Under capacity installed AC	As per room size , installed found ok	Insignificant

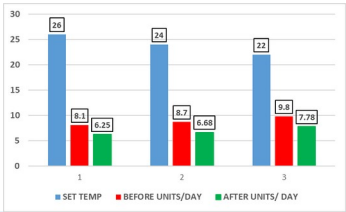
Action

S.No	What (Root cause)	How	Who	When
4	Over cooling	To Add two temperature sensors one for room monitoring and another one for coil temperature monitoring and connecting to Intelligent power saver device	Ple	Aug-21
5	Low temperature setting	Indication of Temperature setting value in ac with password protection and set temperature to 24 deg/cel	PLE	Aug-21

Without External Temperature sensor

With External Temperature sensor

5. Check & Benefits:



Set Temp	Units Savings Per day (10 hours)	Units saving/ Month	Units Saving/ Year
26	2.2	57.2	686.4
24	2.02	52.52	630.24
22	1.85	48.1	577.2

6. Standardization :

Sl . No	What	Why	When	Where	Who	How
1	In Utility Machine procurement checksheet device to be added to AC	For energy Saving	20.9.2021	Machine Procurement List	PLE	By ensuring during new machine procurement

7. Conclusion :

Energy saving achieved 630.24 Units/Year.

Energy saving per Year Inr 5262.

Tools used :

Cause and effect diagram

Bar graph

TITLE : Reduce Energy consumption in Welding

1. Problem :

1.1 Problem definition :

High Energy consumption in welding

1.2 Importance of the Problem :

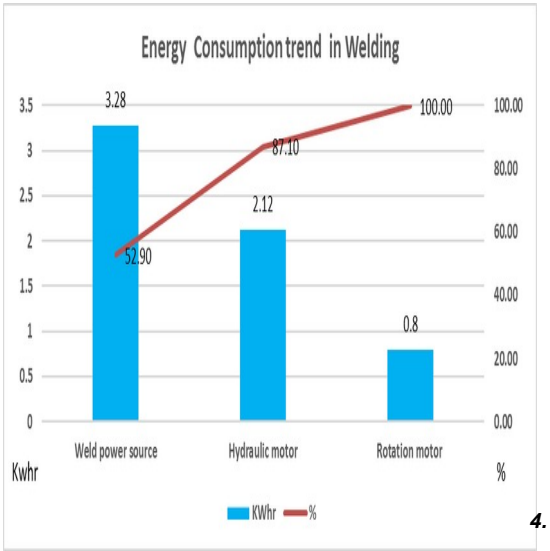
Energy cost is 14% of the total variable cost in plant

1.3 Theme & Target :

To reduce Energy consumption by 400kwhr/month in welding machine WCJ-004 by Apr-21

2. Observation

2.1 Major contributor for welding machine Energy consumption WCJ 04

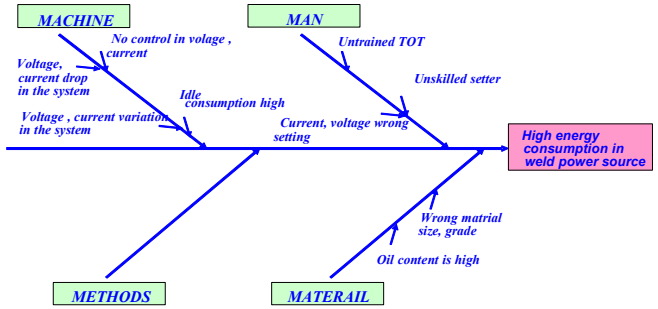


In welding machine Power source is one of the high energy consumption equipment

- welding power source high contribution
- Consumption per Day- 52.51 Kwhr
- Monthly consumption- 1365.37 Kwhr / Machine
- Annual consumption – 16384.52 Kwhr / Machine

3. Analysis :

3.1 Cause and effect Diagram:



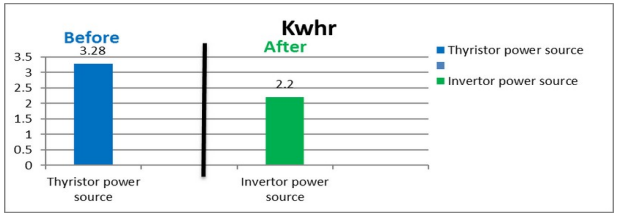
3.2 Validation of Probable Causes

Sl. No	Probable cause	Validation	Result
1	No control in voltage, current	Control available found ok	Insignificant
2	Voltage current drop in the system	Voltage control verified ,found ok	Insignificant
3	voltage current unbalance in the system	verified as per spec, found ok	Insignificant
4	During idle time high consumption	Verified, thyristor type,	Significant
5	Unskilled setter	Trained person and OJT followed	Insignificant
6	Untrained TOT	Trained person and OJT followed	Insignificant
7	Current voltage worng setting	setting verified as per process sheet, found ok	Insignificant
8	Wrong material size, grade	Verified as per process sheet, found ok	Insignificant
9	oil content is high	Verified as per process sheet, found ok	Insignificant

4. Action

S.No	What (Root cause)	How	Who	When
2	During idle time ,the consumption is high	To replacing with invertor model power source	Ple	Apr-21

5. Check & Benefits:



- Consumption per Day- 52.51 Kwhr
- Monthly consumption- 1365.37 Kwhr / Machine
- Annual consumption – 16384.52 Kwhr / Machine

- Consumption per Day -35.27 Kwhr
- Monthly consumption- 917.16 Kwhr / Machine
- Annual consumption -11005.92 Kwhr /Machine

6. Standardization :

Sl . No	What	Why	When	Where	Who	How
1	Procurement of Invertor type power source	For energy Saving	20.5.2021	Machine Procurement List	PLE	By ensuring during new machine procurement

7. Conclusion :

Energy saving achieved 448.2 Kwhr/month against 400 Kwhr/month..

Energy saving per Year 5378.6 Kwhr

Tools used :

Cause and effect diagram

Bar graph

Trend graph

12. Implementation of ISO 50001 / IGBC rating

Approach

- Developing an Energy Management System.
- Continual Improvement Energy Management System.
- Facilitate a holistic approach to create environment friendly buildings.
- Improve indoor Environmental quantity enhancement.
- Calculate life cycle.
- Optimize water Usage.

Target for Implementation

IGBC Rating : 2023-24
ISO 50001 Certification : 2023-24

ACTIVITY CHART IMPLEMENTATION OF IGBC RATING

Sl.no	Activity	Plan/ Actual	2021-22				2022-23				Remarks
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1	IGBC Guideline Study	P									
		A									
2	Audit Check Sheet Preparation	P									
		A									
3	Audit 1 : Self Audit internal CFT	P									
		A									
4	Score evaluation	P									
		A									
5	Improvement Actions for observations	P									
		A									
6	Audit 2 : Group Company audit	P									
		A									
7	Improvement Actions for observations	P									
		A									
8	Audit 3 - IGBC Team	P									
		A									

Legend Plan Actual ---------Delay

Our Self Evaluation Score 60%

QCFI

LEARNING FROM CII

- Cross Company Learning
- Easy to implement Proven projects

Suggestion

Deming Award Rane NSK

QCC

KAIZEN

One Time Use & throwaway Plastics – Awareness Campaign to Local Community

Factory – Green Environment

Tree Sampling & Jute Bag Distribution to all Employees

Thank You

Rane NSK Steering Systems Private Limited
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