



# Indo-German Energy Programme (IGEN)

## Energy Efficiency in Industry & Data



german cooperation  
DEUTSCHE ZUSAMMENARBEIT

Implemented by



**giz** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Wholly owned by the Government of the Federal Republic of Germany  
Service providers on behalf of the whole of German Government



120 countries

1467 projects

24977 employees

19 Billion Euros

Over 50 years of experience and expertise in a range of thematic areas

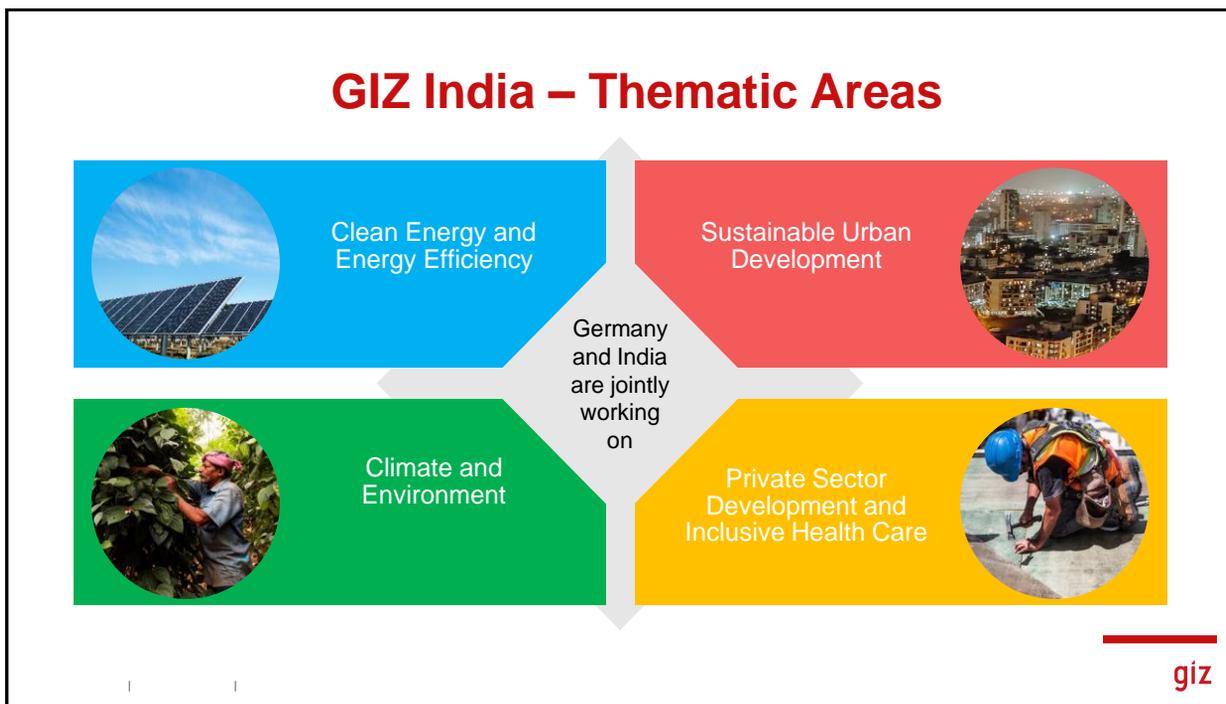
Energy || Environment || Climate Change Natural Resource Management || Skills & Vocational Training  
Education || Water || Health || Good Governance.....and many more!!



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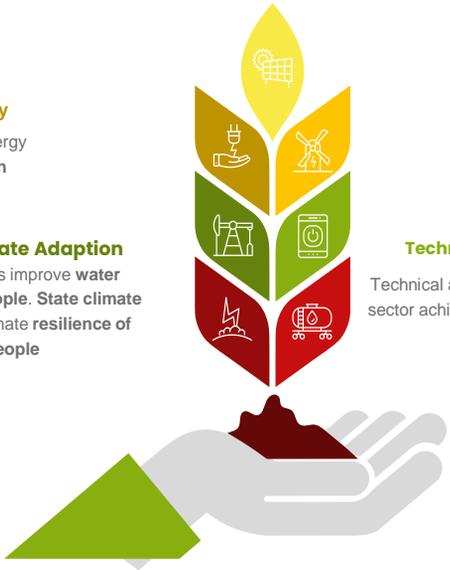


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## GIZ in India – Impacts



**Energy Efficiency**  
The Indo-German program for Energy Efficiency saves **over 90 million tonnes CO<sub>2</sub>** per year

**Climate Adaption**  
Climate Adaption projects improve water security for **2.8 million people**. State climate action plans enhance climate resilience of **150 million people**

**Green Urban Mobility**  
Projects under the Indo-German Partnership for Green Urban Mobility will improve **Metro and bus services for 1.5 million people**

**Green Innovation Centers**  
Green Innovation Centres and ProSoil increase productivity and **income of 139,000 farmers** and **rehabilitation and protection of 153,000 hectares of soil**

**Technical assistance**  
Technical assistance for the Solar Rooftop sector achieved upskilling of **60,000 young solar engineers**

**Private Sector Development**  
Private Sector Development & Vocational Education and Training provided cooperative training opportunities **have skilled 11,000 youth across 4 Indian states**

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## Energy Efficiency



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## IGEN-EE Achievements



1st Indo-German energy efficiency project launched between GTZ and EMC, in 1995, followed by EC Act 2001, and establishment of BEE

Support towards formation of EESL



Implementation of PAT scheme including its deepening and widening - 92.3 Million tonnes Of CO2 reduction • 21.95 Million Tonnes of Oil Equivalent energy savings

- **Brick Industry Market Transformation:** Developed and Approved- market approach for encouraging energy efficiency in Brick manufacturing • Potential Impact- Energy Efficiency Enterprise (E3) Mark for manufacturers



Above 8.4 million school children participated in national painting competition-2019 on energy conservation

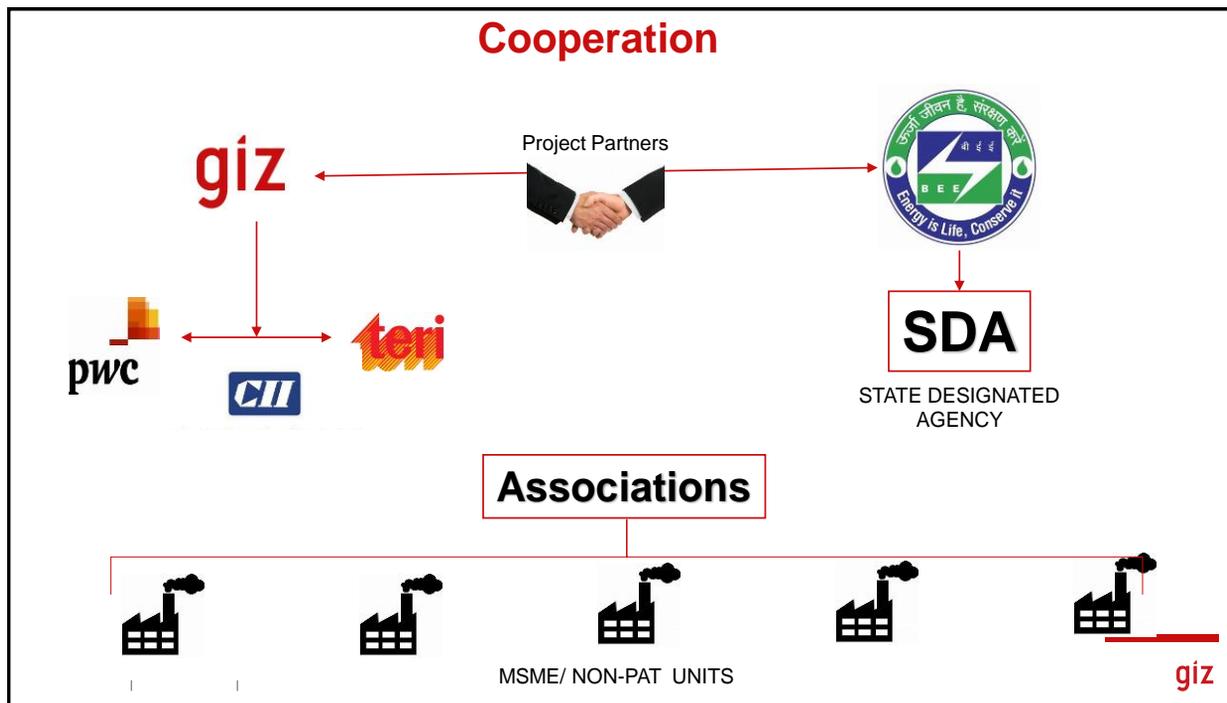


Bachat Lamp Yojana (BLY) – transformation from incandescent bulbs to CFLs

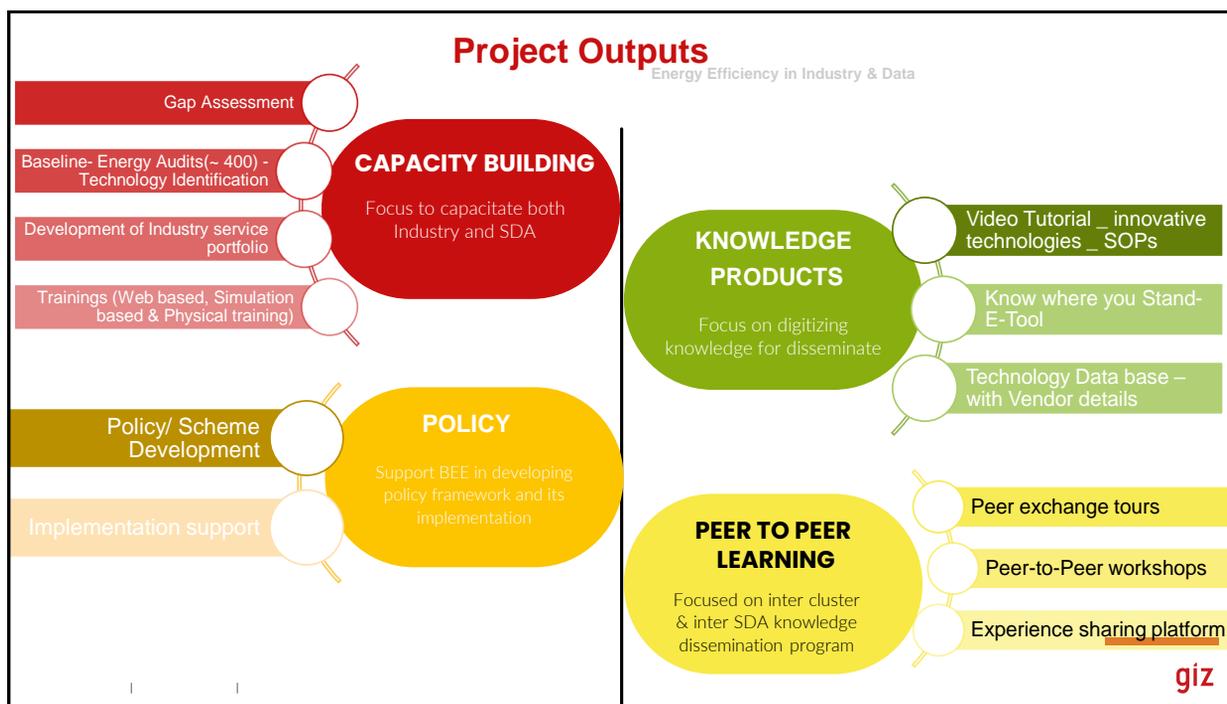
Certification examination for Energy Managers (EM) and Energy Auditors (EA)

## Energy Efficiency in Industry & Data





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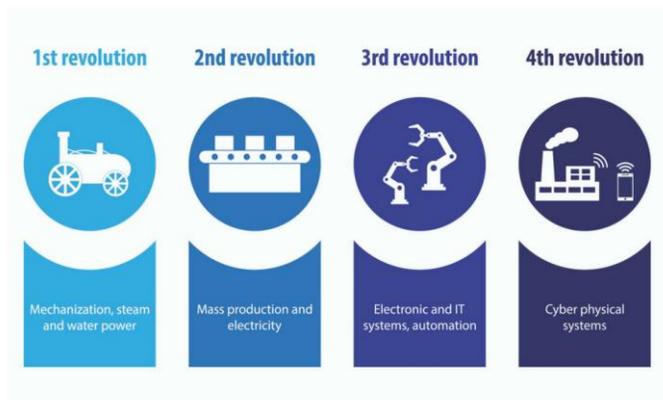


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## Project Interventions for Scaling up



## Industry 4.0



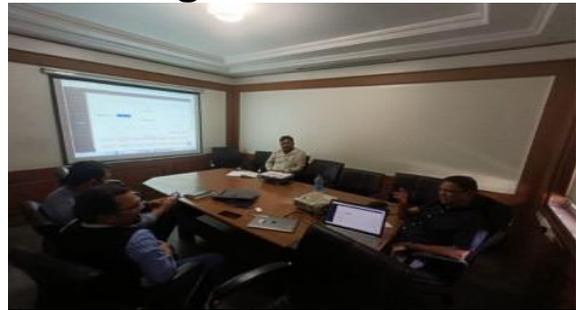
## MOU Signing



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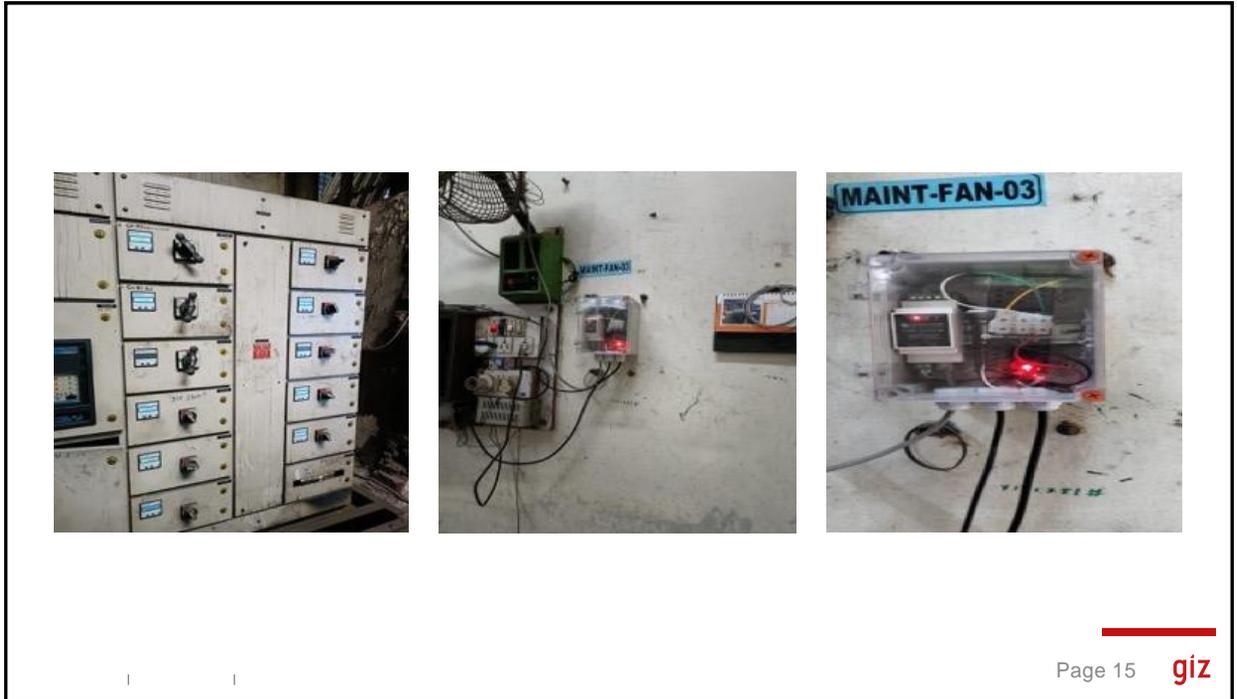
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## Inception meeting



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### Forging sector

- Plant level data
- Transformers
- Induction billet heaters
- Air compressors
- Cooling towers
- Forging Hammers
- Forging presses
- Department total loads
- Shot blast machine
- Heat treatment furnaces
- Auxiliary total load
- Machine shop total

### Foundry sector

- Plant level data
- Transformers
- Induction Melting furnaces
- Air compressors
- Cooling towers
- Sand plant total
- Sand mixers
- Department total loads
- Shot blast machine
- Lighting
- Auxiliary total load
- Machine shop total

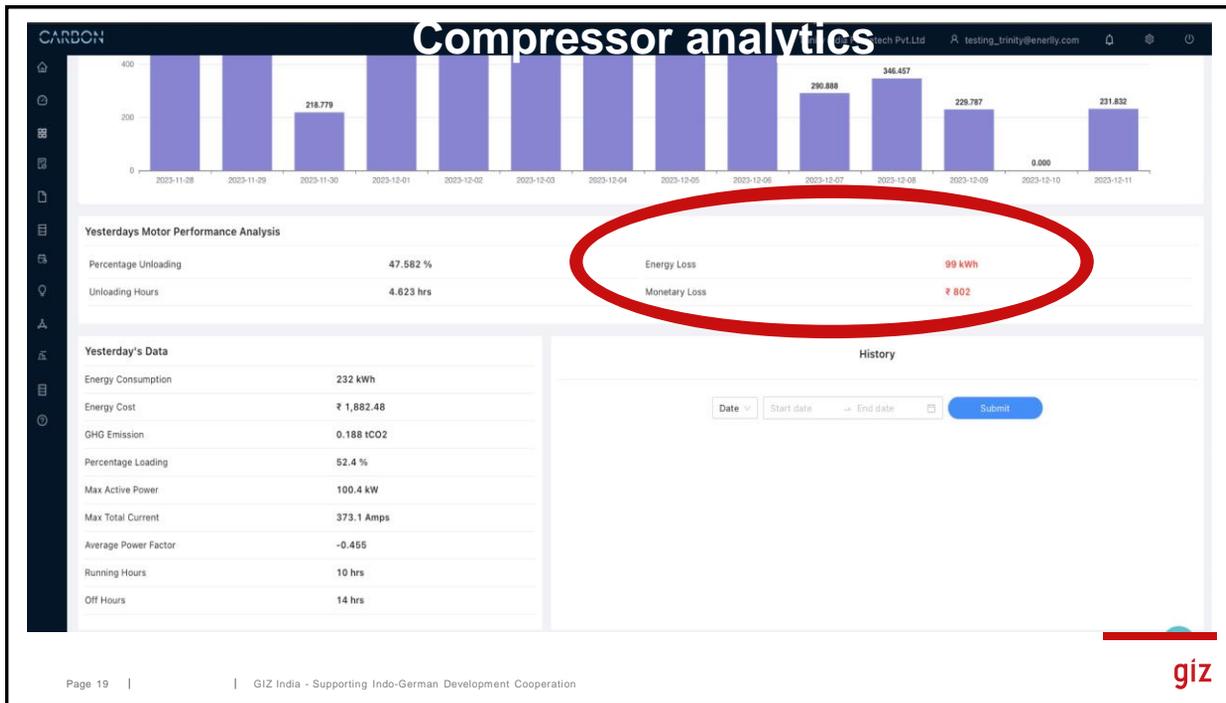
The screenshot shows the CarbonMinus login page in a Chrome browser. The page features a dark blue header with the text "YOUR GREEN BUSINESS ALLY" and "Reach Net Zero". Below this, there is a section titled "Achieve Carbon Neutrality with CarbonMinus" with a sub-header "Dive deep into historical data, visualize energy grids, monitor equipment conditions, and track emissions. Embark on a transformative journey toward a sustainable future." To the right, there is a "LOG IN" section with fields for "Email ID" and "Password", a "CONTINUE" button, and a "Forgot password?" link. Below the login section, it says "In Association With" followed by the GIZ logo. The browser's address bar shows "app.enerlily.com/funded/login".

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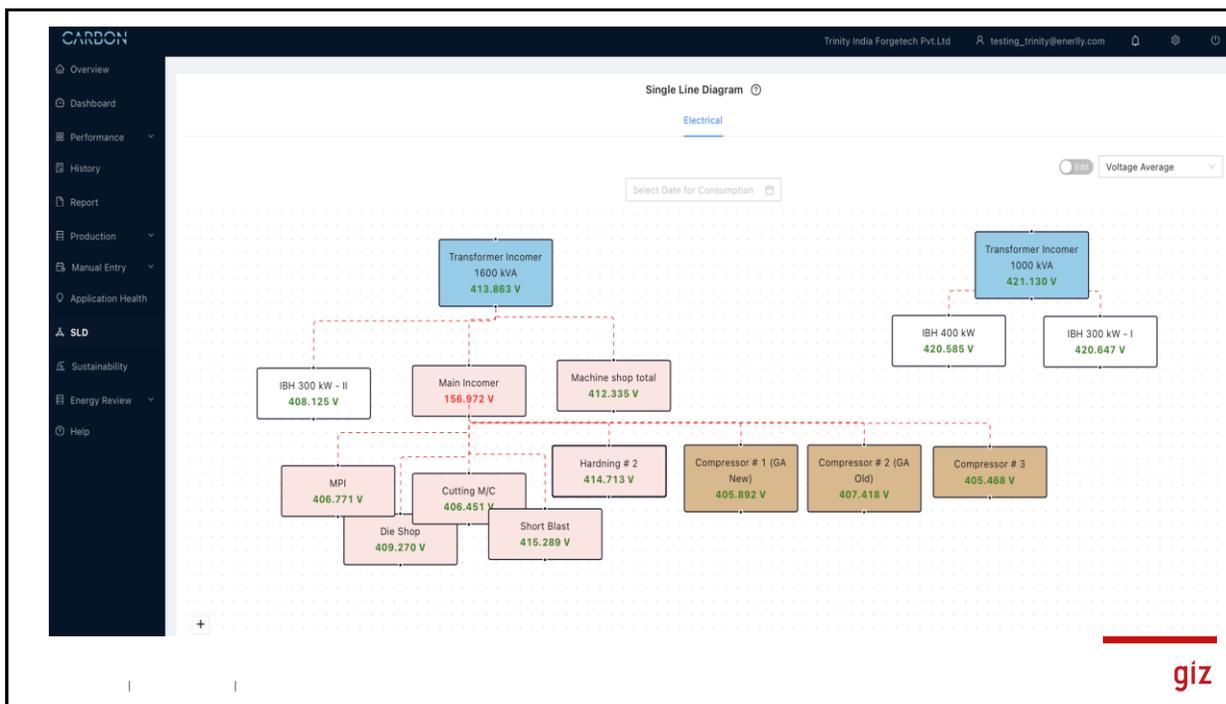
The screenshot shows the CarbonMinus "Deviation" dashboard for "Machine shop total" under "CONSUMPTION BASED". The dashboard includes several key performance indicators (KPIs) and a bar chart. The KPIs are: Total Energy Consumption (18217.296 kWh, ₹ 147924.444), Total Energy Saved (10358.220 kWh, ₹ 84108.746), Total Energy Loss (575.520 kWh, ₹ 4673.222), GHG Emission (14.756 tCO2), Average KPI (18217.296 kWh), and Tons of Oil Equivalent (TOE) (1.567). The bar chart shows KPI values from 2023-12-05 to 2023-12-11. A table at the bottom provides detailed data for the date 2023-12-05, with the "Deviation w.r.t Baseline (%)" value of 12.62 circled in red.

Date	Consumption (kWh)	KPI	Deviation w.r.t Baseline (%)	Deviation w.r.t Target (%)
2023-12-05	4504.976	4504.976	12.62	18.55

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## Impact: Forging: M/s Trinity India Forgetech Pvt Ltd

**Medium scale | % savings: 15.6%**

ECM No.	Energy conservation measures	Electricity Energy saving (kWh/year)	CBFS Energy saving (litres/year)	Investment	Monetary Saving	Simple Payback	Energy saving	Emission reduction
				(Rupees lakh)	(Rupees lakh/year)	(Years)	(toe)	(tCO2)
1	Pressure reduction in air comp #1, #2 and #3	82,977	0	0	8.3	Immediate	7.1	59.7
2	Air leakage reduction	547200	0	0	5.5	Immediate	4.7	39.4
3	Installation of air manager for forging air compressors	104503	0	5.0	10.5	0.5	8.99	84.65
4	Reduction in Transformer losses by load shifting from TR#2 to TR#1	19,374.34	0	0	1.9	Immediate	16.7	139.5
5	Reduction in drop offs by improving operating practices using ISO50001 EnMS guidelines	57713	0	0	5.8	Immediate	5.0	41.6
6	Heat reflecting coating for heat treatment furnace hardening	0	13500	5	6.8	0.74	13.2	37.0
7	Heat reflecting coating for heat treatment furnace tempering	0	12000	6.0	5.0	1.20	11.8	32.9
<b>Total</b>		<b>8,11,767</b>	<b>25,500</b>	<b>16.0</b>	<b>43.68</b>	<b>0.37</b>	<b>67.4</b>	<b>447.1</b>

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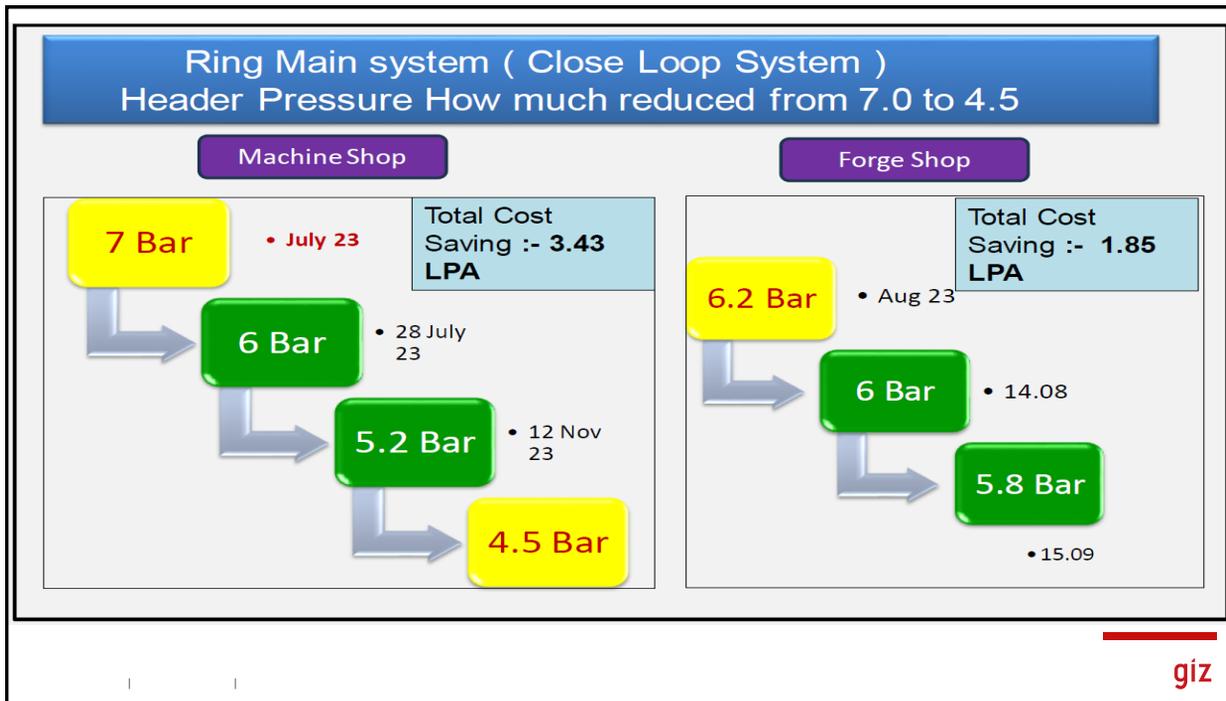
## Impact: Foundry: M/s Chougule Industries

**Small scale | % savings: 4.67%**

ECM No.	Energy conservation measures	Electricity Energy saving (kWh/year)	Investment	Monetary Saving	Simple Payback	Energy saving	Emission reduction
			(Rupees lakh)	(Rupees lakh/year)	(Years)	(toe)	(tCO2)
1	Reduction in KPI of Induction melting furnace	1,92,000	0	18.2	Immediate	16.5	138.2
2	Improving FAD of air comp by best operating practices	27529	0	2.6	Immediate	2.4	19.8
3	Energy savings by adding buffer air receiver in compressed air piping network	15,600.00	0	1.5	Immediate	1.3	11.2
<b>Total</b>		<b>2,35,129</b>	<b>0.0</b>	<b>22.3</b>	<b>0.00</b>	<b>20.2</b>	<b>169.3</b>

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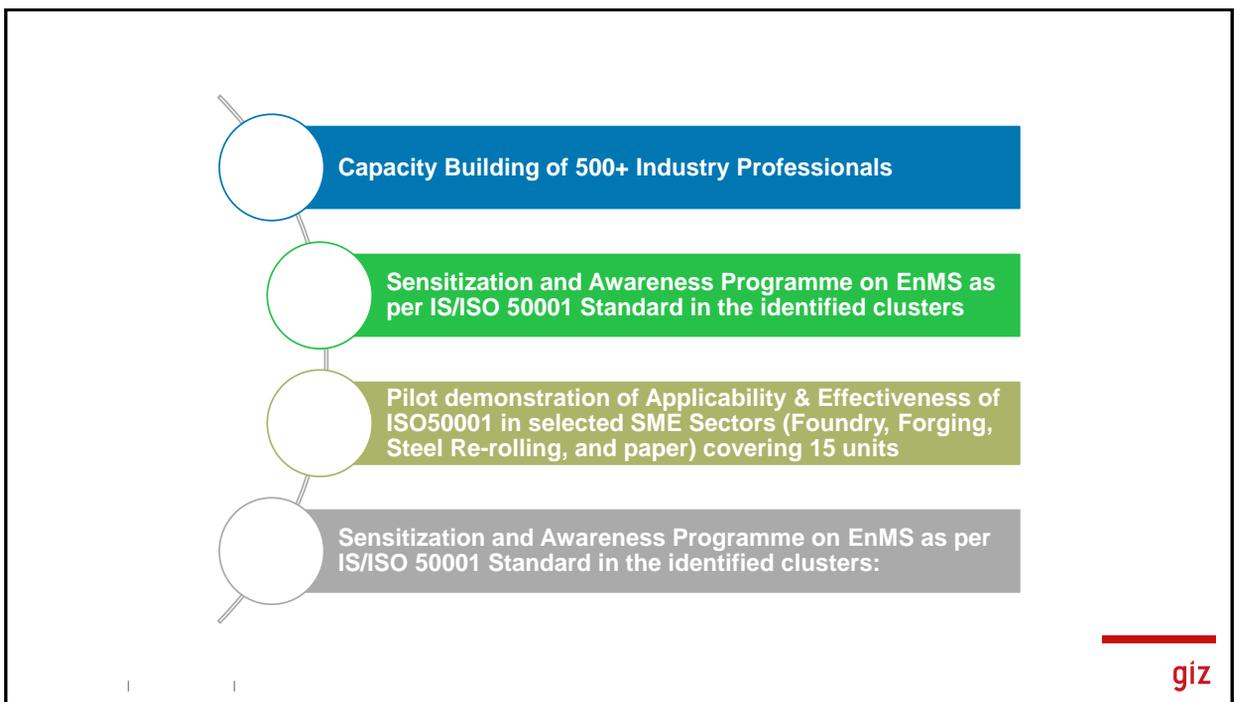
### Carbon Foot Print Calculation – Current Status

Carbon Footprint- Carbon Emission Sheet											
Sr. No	Type	Unit of Measure	Multiplying Factor to get Kg of CO2	Existing Status (Before Cluster-Up to July 23)		Improved Status as on Feb 24		Action Plan further reduction of carbon Emission	Target Date	Status	Resp
				Consumption Per month	Total Carbon Emission in KG	Consumption Per month	Total Carbon Emission in KG				
1	Electricity	Kwh	0.18	543160	97117	566380	90090				
2	Fuel(Diesel)	Ltrs	0.74	3452	2554.48	1800	2960				
3	Fuel-FO	Ltrs	0.74	50690	35424	50446	35828.58				
4	Compressed Air	Cfm	0.16	36400	5824	77519	10873.92				
5	Aluminium	Kg	0.02	0	0	0	0				
6	Steel/Iron	Kg	0.04	750000	28160	822000	32880				
7	Copper	Kg	0.07	0	0	0	0				
8	Plastics	Kg	2.56	120	307.2	468	962.56				
9	Coolent	Ltrs	1.35	31200	42120	0	0				
10	LPG Gas	Kg	2.93	190	556.7	380	1781.44				
11	Wood	Kg	1.83	450	512	0	0				
12	Oil	Ltrs	1.46	480	2453	5309	9735.28				
13	Coal	Kg	2.73	0	0	0	0				
14	Chemicals	Ltrs	0.73	7	5.11	3	2.19				
15	Paints	Ltrs	1.83	60	219	69	109.8				
16	Transport	Km	0.24	41350	9924	4100	10399.68				
Total Carbon Emission in KG					225176.49		195623				
Total Carbon Emission in Metric tonnes					228		195.62				

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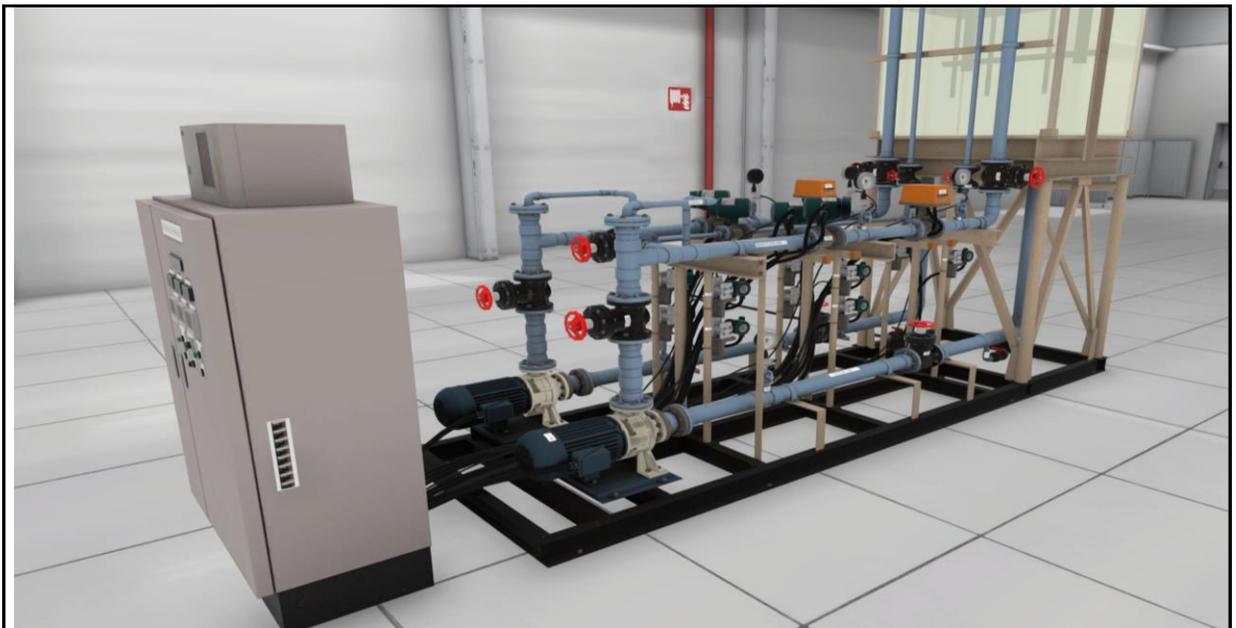
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# DIGI-TWIN



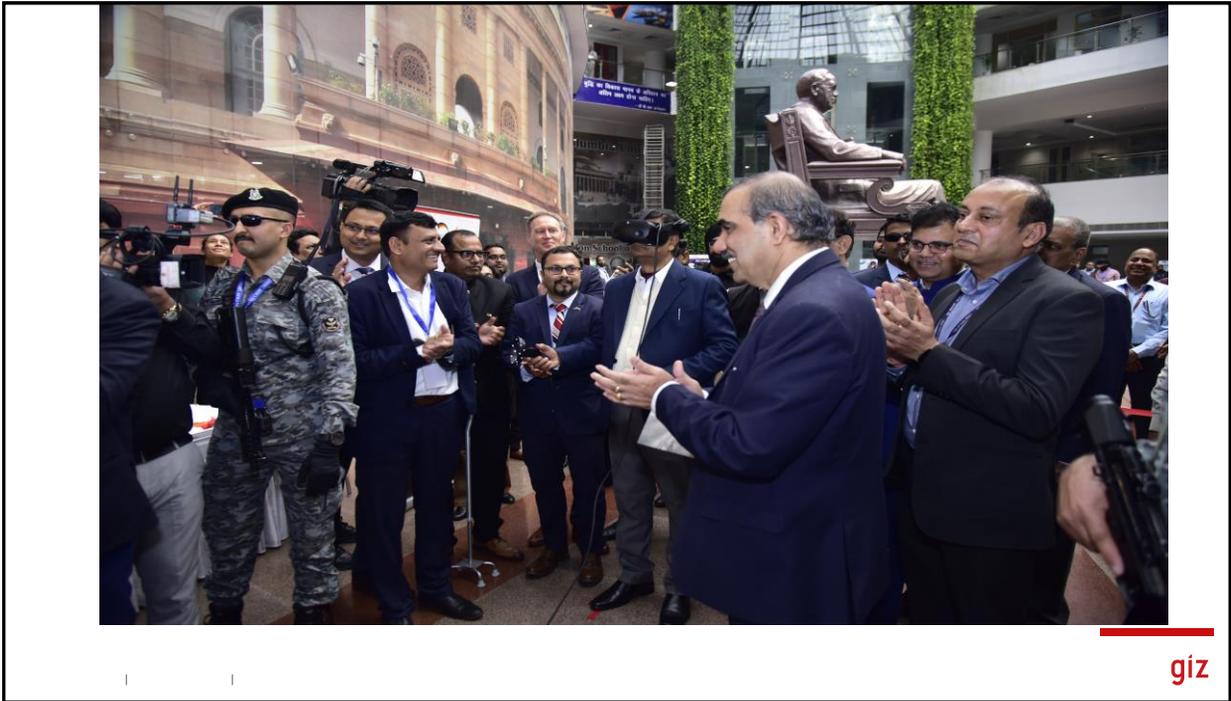
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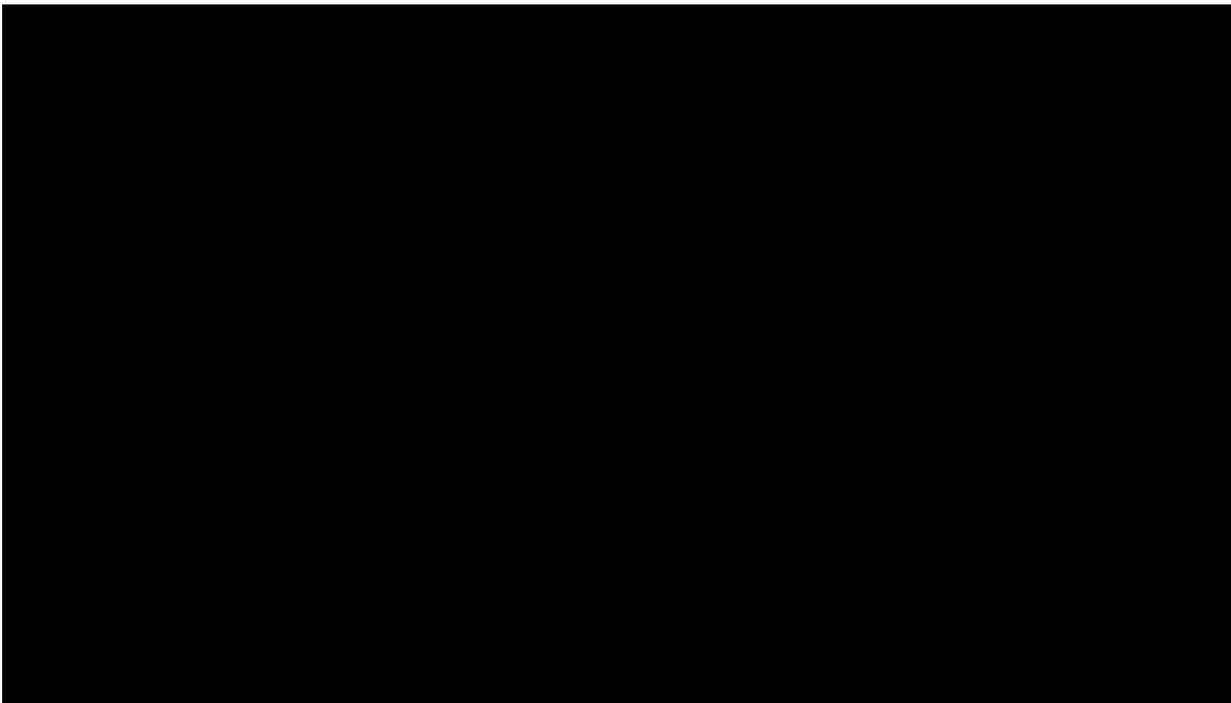


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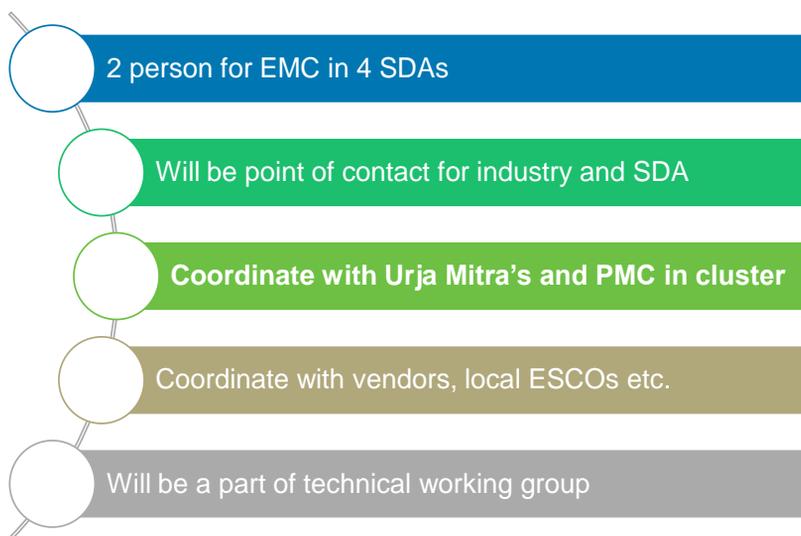
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## Activation of EMC



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**SDA Trainings & portfolio development**

**PORTFOLIO**

An illustration of a meeting. Four people are seated around a table with laptops. One person is standing and pointing at a whiteboard. To the right of the illustration is a large, stylized pencil graphic with the word 'PORTFOLIO' written in purple, block letters across its body.

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## Supporting SDA

2 SDA staffs of every SDA to be trained for AIP NPC, it will be an inhouse training of 2 days

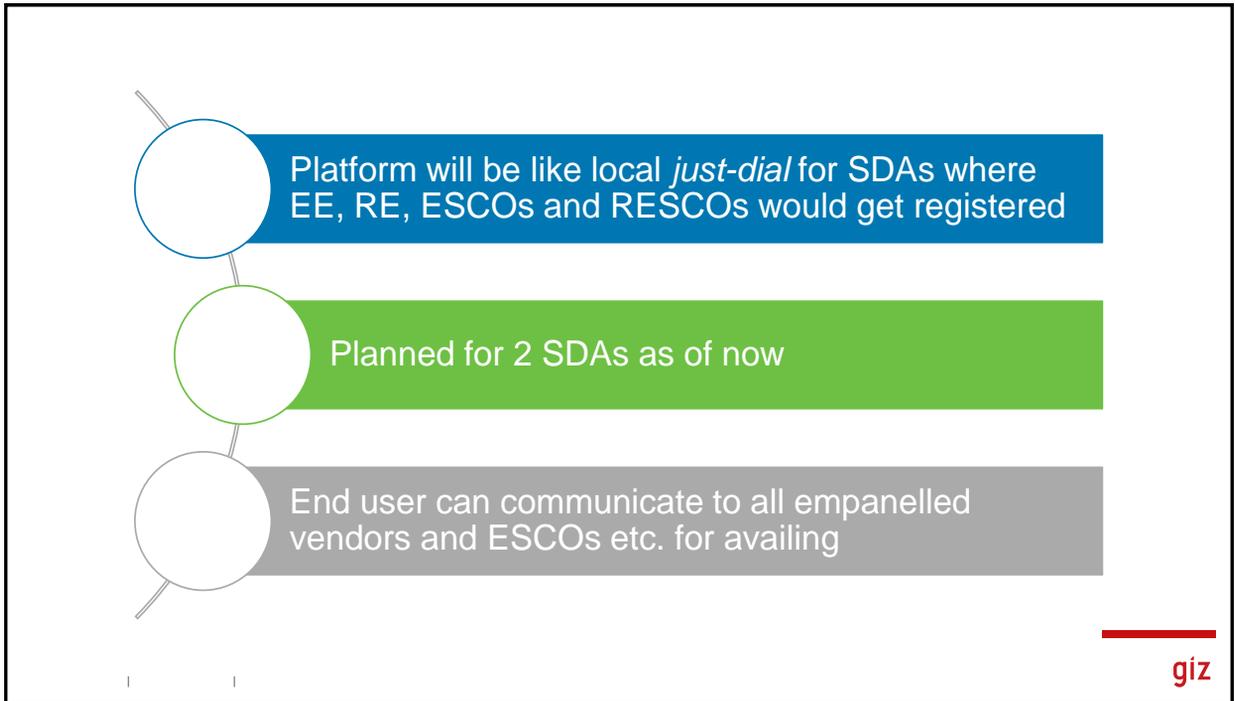
4 peer learning actives in next four months

In house trainings for SDA man power on Energy Audit

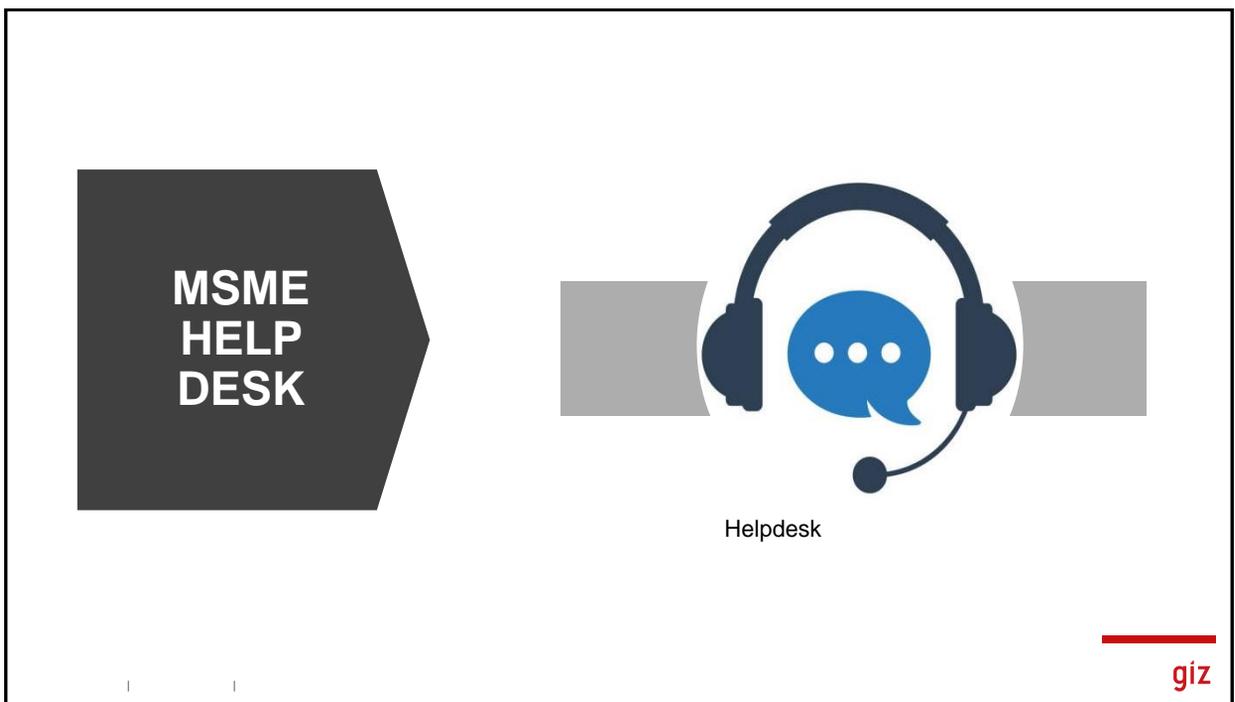
Set up DIGI-TWIN training facilities in 2 SDA

Developed formats for implementation based TORs, EOIs, Empanelment etc.

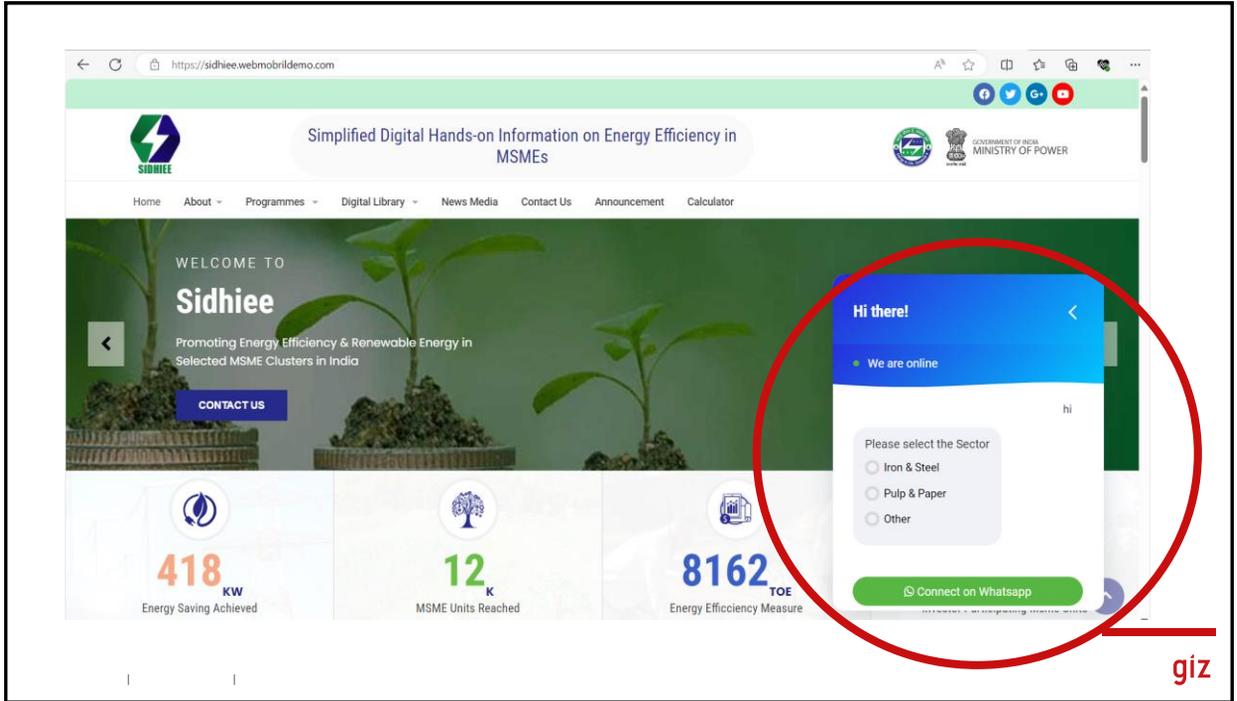




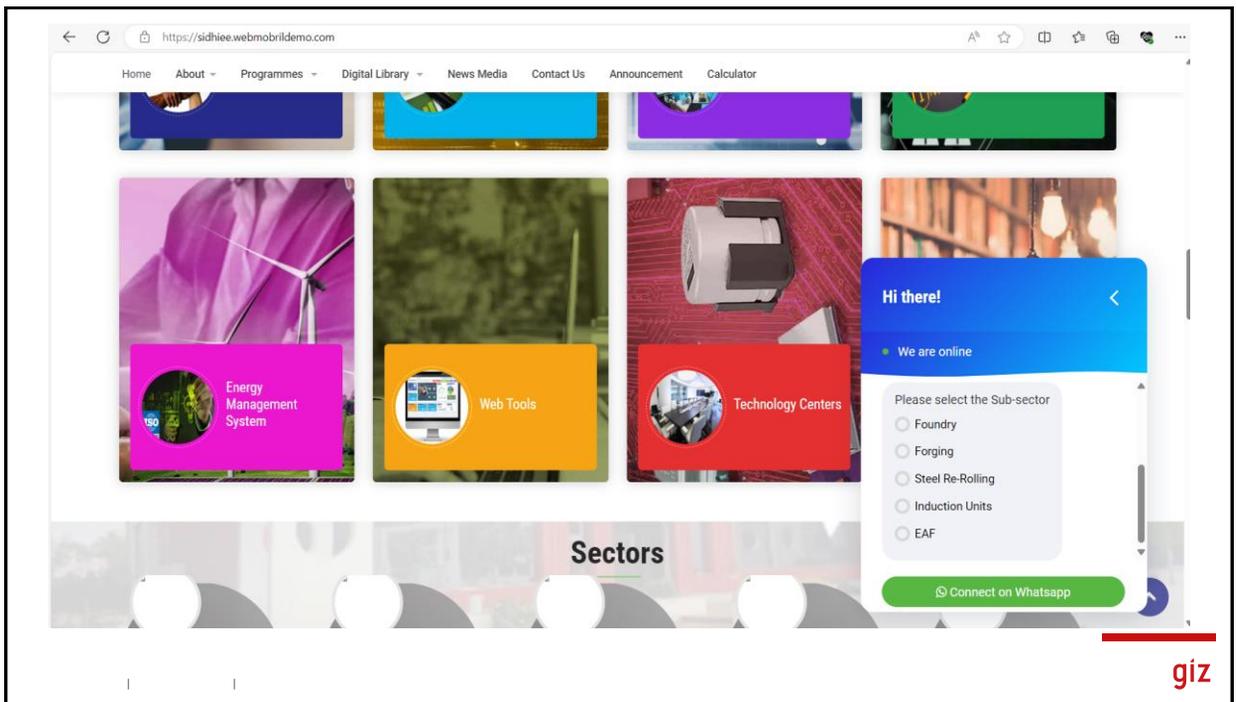
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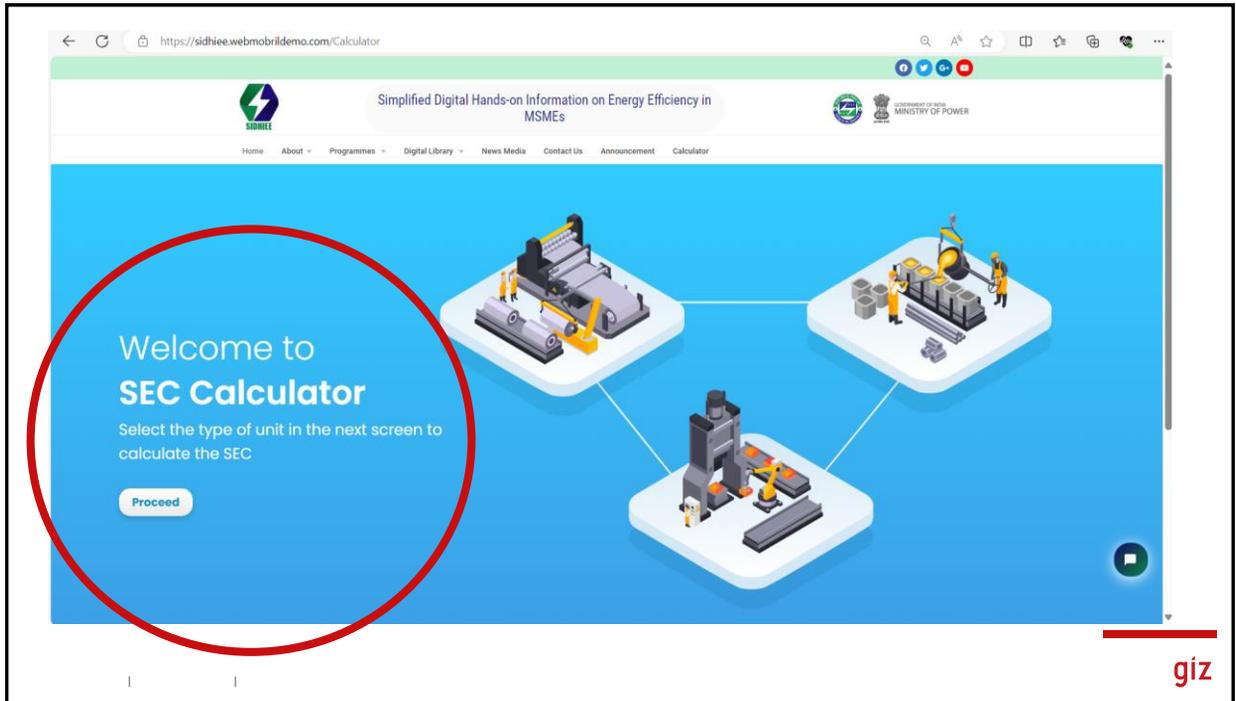
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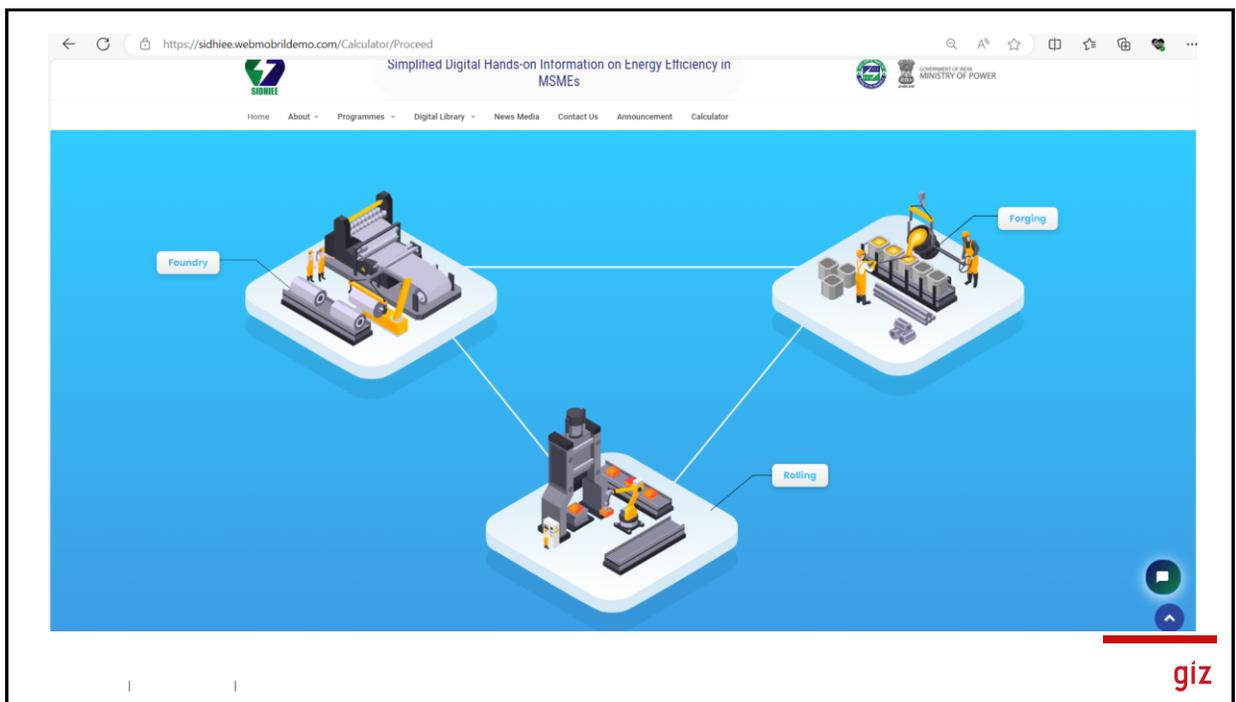
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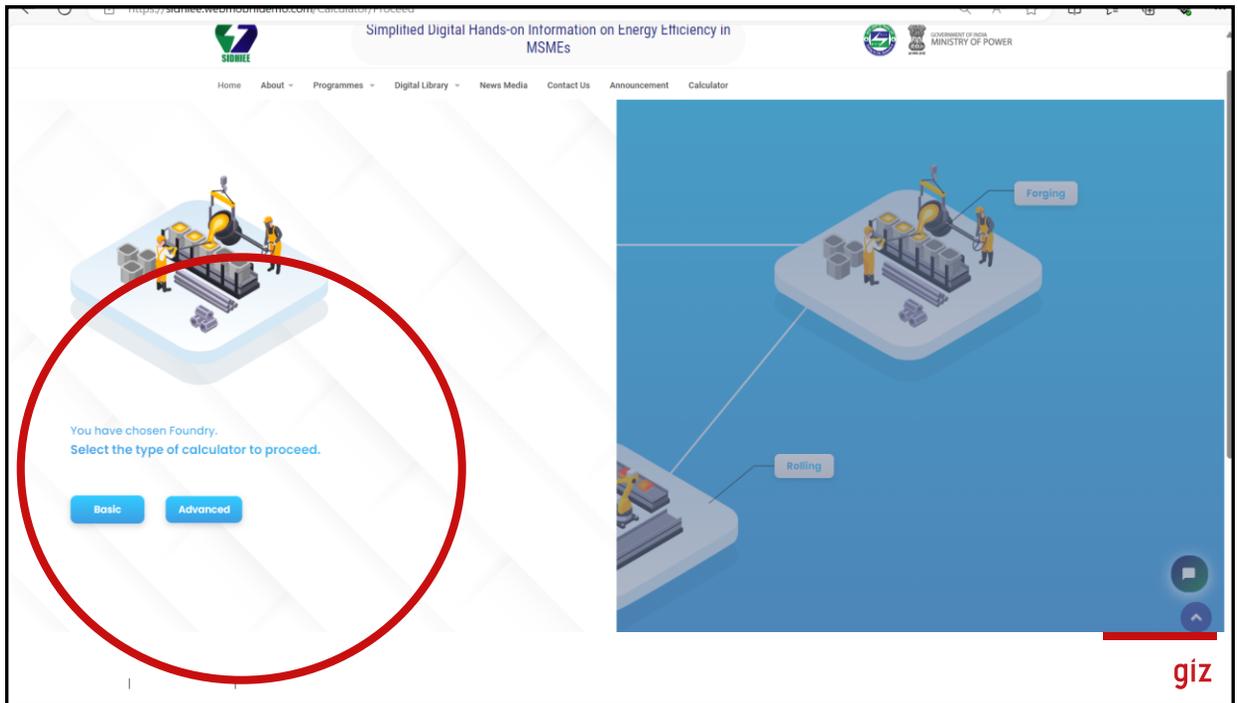
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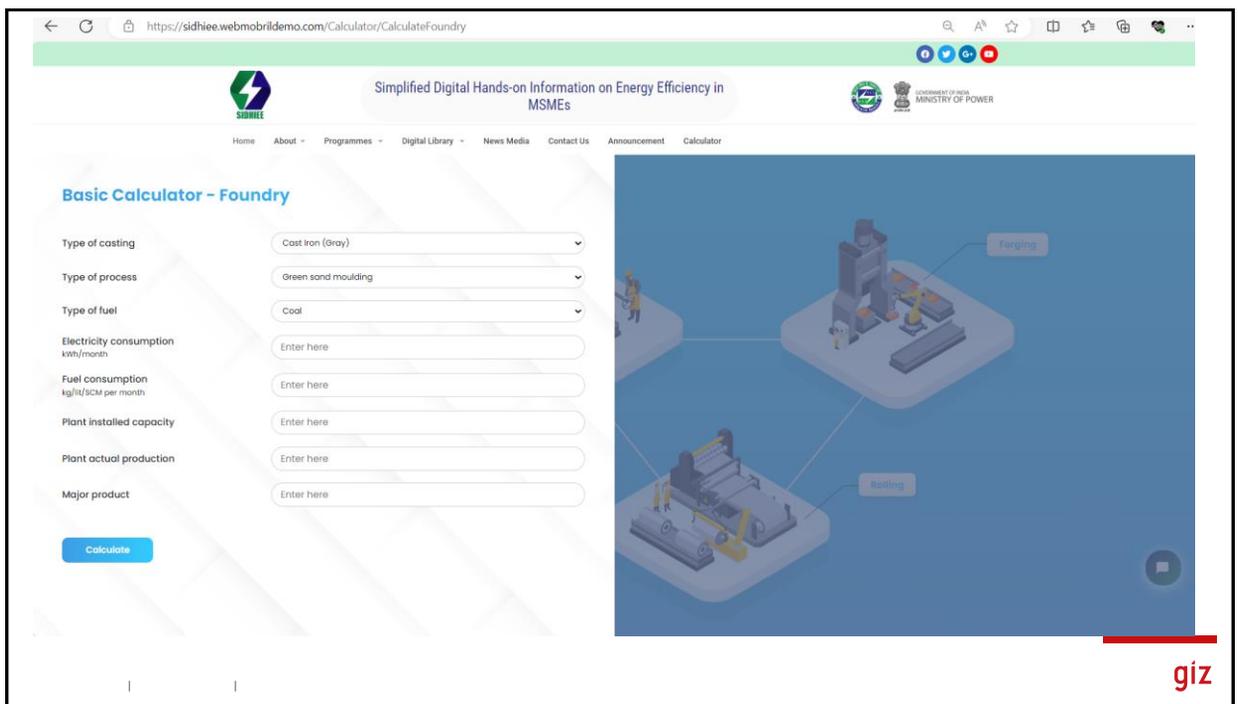
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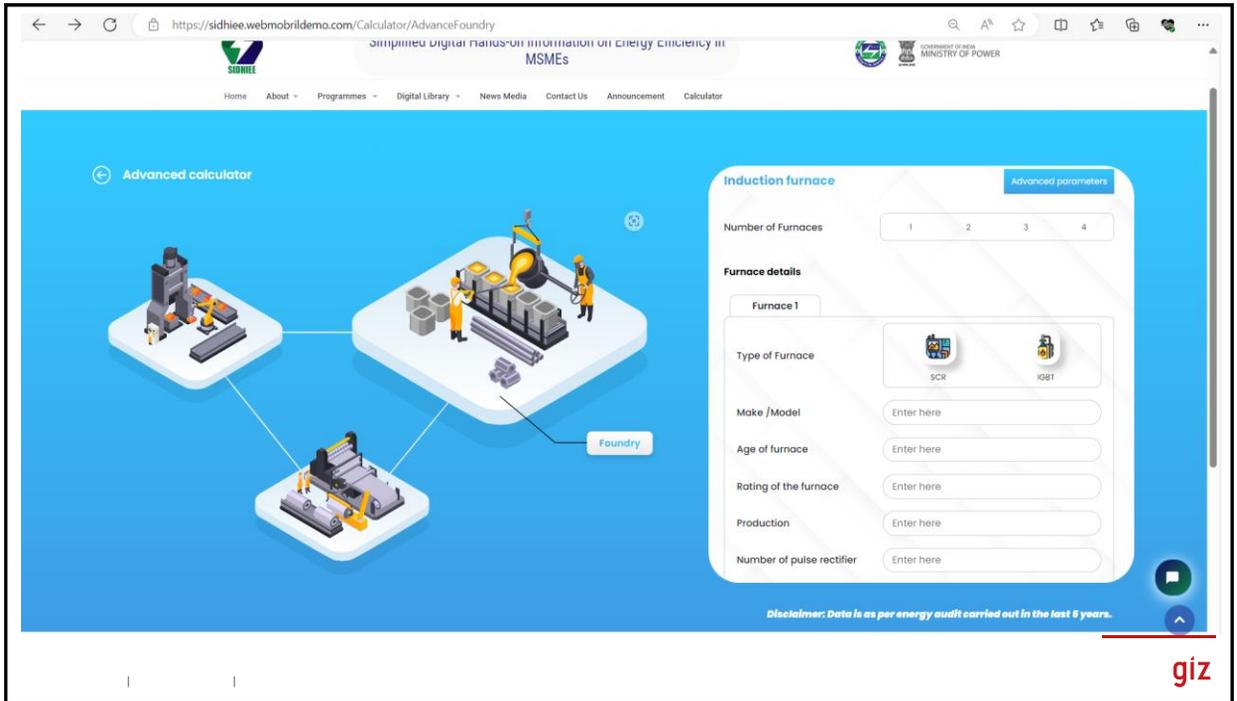
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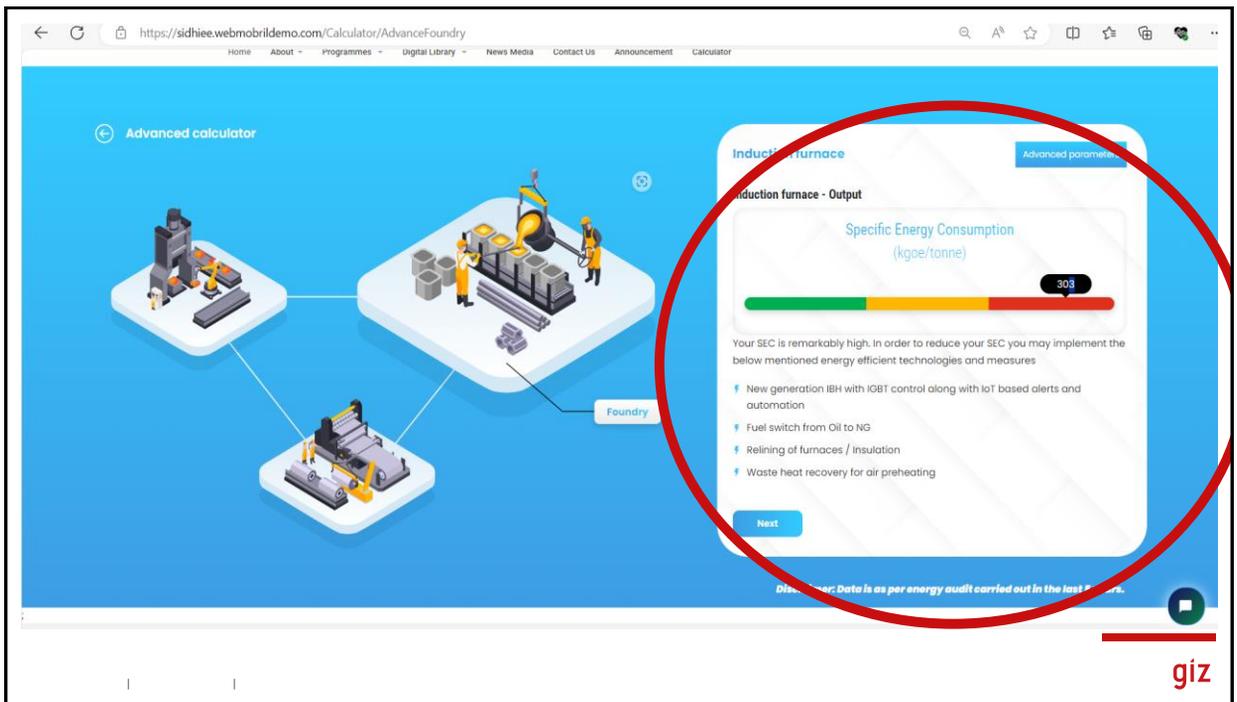
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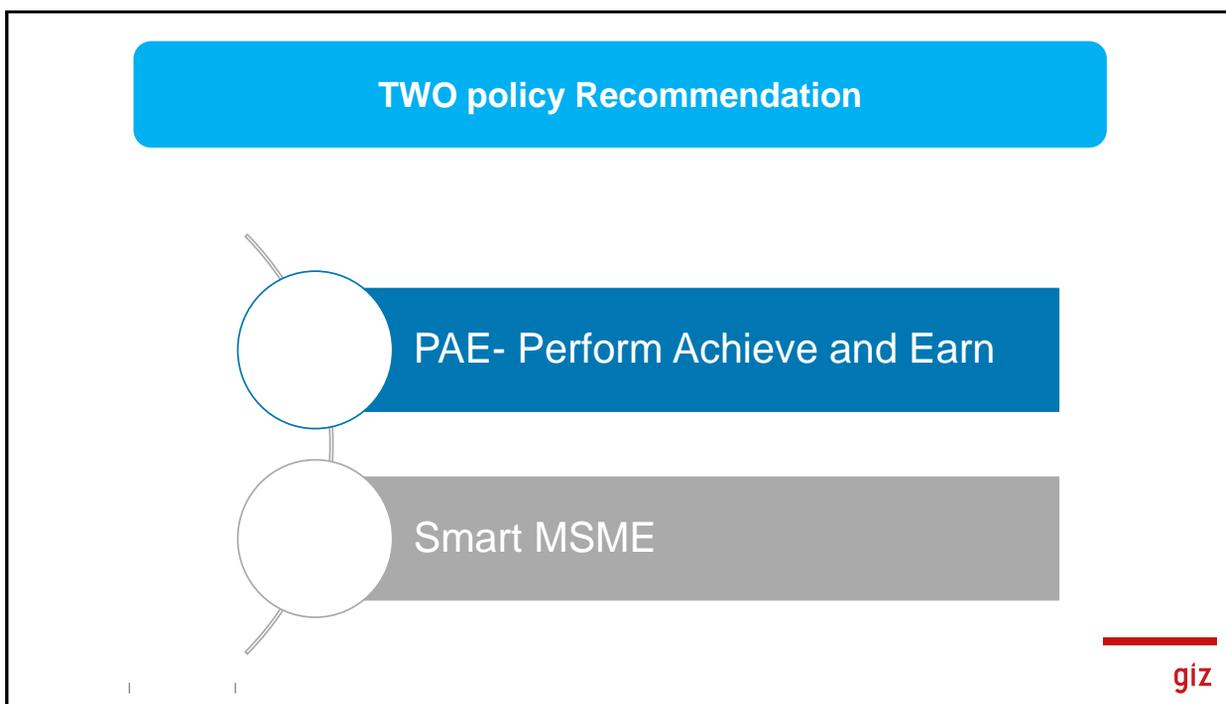
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