BEE's List of Energy Efficient Technologies (as on 10th November 2022)

Sl. No.	Name of Technology	About technology	Potential Savings(%)	Sector	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)	Equipment Capacity	Source
Electrical									
1	Automation and Control System	Automation and control system provides effective monitoring of process and utility for better resource utilization and loss reduction	5-15 %	Cross-sectoral - Electrical	20-25	25-30	8-10	Not Applicable	BEE-Sidhiee; EESL-MSME
1.1	Automation of Withering Troughs	The automation of withering trough will ensure achieve optimum temperature and ensure effective control thereafter for proper withering of tea leaves	10-15%	Cross-sectoral - Electrical	15-20	6-8	30-36	8 nos. of Enclosed Trough & 96 HP Motor	EESL-MSME
1.2	Combustion Control System for Boiler	Combustion control system in boiler provides effective monitoring of flue gas parameters, their temperature and pressure for complete combustion	15-20%	Cross-sectoral - Electrical	9-10	4-5	25-30	12 TPH	BEE-Sidhiee; SAMEEEKSHA
1.3	Energy Management System	The EMS is effective in managing energy flow and consumption, reduce wastage and do necessary rectification in case of any fault	15-30%	Cross-sectoral - Electrical	7-10	3-4	24-36	For 300 smart energy meters	Sameeeksha
2	Electrical Servo Drives	The servo drive is quite efficient in smooth start and stoppage of machine having frequent load fluctuation, and helps reduce energy wastage as well as wear and tear of machine	20-30%	Cross-sectoral - Electrical	10-15	10-20	10-12	200 KVA	Detailed Energy Audits (DEA)
3	Energy Efficient Pumps - 5 Star Rating Pumps	EE pumps have optimum impeller design, thereby leading to optimum discharge flow and pressure and energy consumption	15-30%	Cross-sectoral - Electrical	0.7-4.5	0.25 - 5	20-25	10 - 20 HP	Detailed Energy Audits (DEA)
4	Energy Efficient Screw Compressor	The screw compressors are the most efficient one to generate compressed air as well as less heat compared to normal air compressor	25-40%	Cross-sectoral - Electrical	2.5-6.5	1.5 - 7.5	20-25	15 - 150 HP	Sameeeksha
5	Energy Efficient Turbo Blower	Turbo blower is made of anodized aluminium impellers and air foil bearings. As a result it has low weight and high corrosion resistance bearings to provide excellent control over varying rpm	30-45%	Cross-sectoral - Electrical	30-40	20-25	18-24	20,000 and 50,000 rpm	DEEP-EESL
6	Gasifier for Electrical Application	Gasifier gasifies coal or biomass to produce gas that can be used for power generation in gas genset or gas turbine	15-25%	Cross-sectoral - Electrical	20-25	9-12	20-24	50 KW	Sameeeksha
7	Hanger Shot blast Machine	Shot blasting systems offer you nearly unlimited options from deflashing, descaling, sanding and rust removal to roughening, matting, smoothing, edge rounding and shot peening.	30-40%	Cross-sectoral - Electrical	18-20	8-10	24-30	500 Kg	BEE Report
8	Harmonic filter	The harmonic filter is essential in ensuring the power quality and help prevent and fault in electronic component	3-8%	Cross-sectoral - Electrical	8-10	5-7	15-18	3rd & 5th Harmonic Filter	Detailed Energy Audits (DEA)
9	IGBT based Induction furnace	An induction furnace is a clean, energy-efficient furnace which provides well-controlled melting process, compared to conventional means of metal melting	20-30%	Cross-sectoral - Electrical	20-25	15-20	15-18	750 KG	Detailed Energy Audits (DEA)
10	IGBT based temperature control	Installing Insulated Gate Bipolar Transistor (IGBT) based temperature controller for furnace ensures precise controlling of temperature.	10-15%	Cross-sectoral - Electrical	18-20	5-6	38-40	50-60 KW Furnace	DEA Report
11	Infrared (IR) Heaters	Use of IR Heaters results in uniform heating and reduces the baking time. Infrared heaters are extremely quiet and energy-efficient heating devices that produce a very gentle heat.	10-20%	Cross-sectoral - Electrical	3.5-10	1.8-2.0	18-24	100 Kg-5 MT per hour	DEA Report
12	Light emitting diode (LED) Lighting	Light emitting diode (LED) is a semiconductor light source that emits light when current flows through it. These are energy-efficient lights with long life, durable, and offer better light quality than other types of lighting	35-50%	Cross-sectoral - Electrical	13-15	30-35	3-5	connected load 625 kW	BEE-Sidhiee
13	Micro Turbine	Micro-turbines are tiny gas turbines that can generate both electricity and heat, and may vary in electrical output from around 25 kW to 250 kW	15-30%	Cross-sectoral - Electrical	40-45	25-40	14-20	20 - 60 KW	DEEP-EESL
14	Motors (IE3 or IE4 or IE5)	EE motors are constructed with improved manufacturing techniques and superior materials, longer insulation and bearing lives, lower waste heat output, and less vibration, all of which increase efficiency and reliability	25-40%	Cross-sectoral - Electrical	5-7	2-3	20-25	connected load 730 kW	Detailed Energy Audits (DEA)
15	Screw Compressor with Permanent Magnet (PM) mot	Screw Compressor is driven by Permanent Motors and thus there is no rotor loss or transmission loss that results from rotor winding	15-20%	Cross-sectoral - Electrical	6-7	3.5-4	18-24	20 HP; 92.5 CFM	DEEP-EESL
16	Static Reactive Power Generator with Harmonics Filter	In an electric power system, a load with a low power factor & Higher Harmonics draws more current and this results in higher current withdrawal and energy losses. The Static Reactive Power Generator, an IGBT based INVERTER, helps to compensate reactive power as well as selective harmonics (5th, 7th, 11th & 13th Order Only) created by the load and unbalance in the system. This helps to minimize losses	4-5%	Cross-sectoral - Electrical	5	6	11-12	100 KVAr	Technology Vendor

17	Temperature controller for cooling tower fan	This intervention increase the efficiency of electrical energy utilization in the cooling tower by automatic control of cooling tower fans, based on a feedback from the water temperature from the cooling circuit	10-25%	Cross-sectoral - Electrical	0.2-0.3	0.2-0.3	12-15	Not applicable	DEA Report
18	Tri-generation	Tri-generation technology provides thermal, cooling and electrical energy and it has higher efficiency compared to power generation and cogeneration plants	20-25%	Cross-sectoral - Electrical	2500-3000	700-1000	36-40	Capacity: 2.75 MW, 20 TPH	Punjab Renewable Energy Systems Private Limited
19	Variable Frequency Drives (VFD)	To control speed of various appliances like motors, pumps, compressor motors, ID fan, FD fan, hydraulic press, jet drying machine, Thermic Fluid Pump, Grinding Machine etc	30-40%	Cross-sectoral - Electrical	2.5-3	3.5-4	8-10	connected load 430 kW	Detailed Energy Audits (DEA)
20	Variable Refrigerant flow (VRF) in HVAC	Variable Refrigerant Flow (VRF) Systems are an excellent choice for buildings that require both heating and cooling to coexist simultaneously. VRF systems have the ability to regulate the flow of refrigerant to various indoor units so that one location can stay cool while the other remains warm.	15-20%	Cross-sectoral - Electrical	45-50	15-20	36-48	100 TR	BEE Report
21	Vertical Roller Mill (VRM)	Vertical roller mill is a type of grinder used to grind materials into extremely fine powder for use in mineral dressing processes, paints, pyrotechnics, cements and ceramics. It is an energy efficient alternative for a ball mill. Typical Sector: Cement, Ceramics, limestone, etc.	6-10 KWH per MT raw material	Cross-sectoral - Electrical	20-24	5-6	36-48	1 TPH	BEE Report
Thermal									
22	Cogeneration	Cogeneration technology provides thermal and electrical energy both and it has higher efficiency compared to power generation plant	30-50%	Cross-sectoral - Thermal	1000-1200	200-250	50-60	2 MW and 12 TPH extracted steam at 6.5 kg/cm2 and 245 C	BEE Cluster Reports
23	Condensate recovery system in boiler/jet dying machine	For applications with zero contamination, the condensate recovery system can be effectively used to conserve and reuse water in boiler	10-15%	Cross-sectoral - Thermal	12-15	7-8	18-20	4 TPH	Sameeeksha
24	Energy Efficient Boilers	Energy Efficient Boilers offer effective combustion of fuel with maximum utilization of energy	10-15%	Cross-sectoral - Thermal	25-30	5-6	55-60	4 TPH	Sameeeksha
25	Energy efficient Refrigeration Compressor	The refrigeration compressor of latest technology, having good automation and higher Coefficient of Performance (COP) must be used to save electrical energy during refrigeration cycle	10-15%	Cross-sectoral - Thermal	3.5-5	2-3	18-24	60 HP	BEE Report
26	Gas fired Annealing furnace	The gas-fired annealing furnace is essential to ensure high level of operational efficiency of the furnace w.r.t the electrical-fired furnace, due to high GCV of Gas w.r.t electricity	20-30%	Cross-sectoral - Thermal	14-15	5-6	30-36	1000 MT	DEA Report
27	Heat Pump	A heat pump is a device that can heat a building/utility by transferring thermal energy from the outside using the refrigeration cycle	30-40%	Cross-sectoral - Thermal	30-35	20-25	15-18	339 KW	BEE-Sidhiee
28	Hot Air Generator from Briquette	Briquette is locally available and commercially cheap alternative fuel compared to coal /wood, prepared by using agro waste, and can be used for low temperature application	20-30%	Cross-sectoral - Thermal	50-55	35-40	18-20	10 Lac Kcal /Hr	Sameeeksha
29	Hot Water Generator	The hot water generator is of natural draft system and doesn't have FD and ID fans. They are the efficient and cost-effective way to generate hot water instantly	20-25%	Cross-sectoral - Thermal	2.5-3.5	1.68 - 1.85	19-23	1000 - 80000 Kcal/hr	Sameeeksha
30	PUF insulation	Polyurethane Foam (PUF) is the most effective thermal insulation material and having high strength to weight ratio at low temperature, are durable for years, with high mechanical strength	20-30%	Cross-sectoral - Thermal	3.5 - 4.0	0.6-0.7	60-72	100 sq.m surface of 120 mm thickness	CA Store
Thermal - Waste Heat Recovery (Low Temperature)									
31	Heat Exchanger	A heat exchanger is a system used to transfer heat between a source and a working fluid.	10-15%	Cross-sectoral - Thermal	4-4.5	8-8.5	6-12	7000 Kg/h	BEE Report
32	Hot water generation from cement kiln	The waste heat, which otherwise would escape in atmosphere may be recovered using appropriate heat exchanger to pre-heat water for use in utility or process	20-25%	Cement - Thermal	100-125	30-40	30-36	3000 TPD kiln 60 TR VAM system	BEE Report
33	Low-Grade Waste Heat Recovery System (LGWHRS)	Waste heat even below 100 C is recovered by LGWHRS and can be used in the low temperature applications. These heat exchangers are specially designed for low-grade waste heat recovery.	10-15%	Cross-sectoral - Thermal	10-15	5-7	30-36	24-36 TPH	DEEP-EESL
34	Thermo Compression	Utilization of waste flash steam in chiller and process usage	20-25%	Cross-sectoral - Thermal	150-200	70-80	24-30	3000TR	Punjab Renewable Energy Systems Private Limited

Thermal - Waste Heat Recovery (Medium Temperature)									
35	Air Pre Heater & Drying Bed in furnace	Use of waste flue gas to pre-heat the material and save fuel	18-20%	Cross-sectoral - Thermal	5-5.5	5.5-6	12-14	1.5 TPH	Sameeeksha
36	Economiser in boiler/Thermic Fluid Heater	The use is Economizer is highly recommended to save fuel in thermal application by use of high heat content in flue gas to pre-heat water, which can then be used in utility or process application	10-15%	Cross-sectoral - Thermal	3-3.5	4-4.25	6-8	4 TPH	BEE Report
37	Gas-fired Reheating Furnace with WHR System	A fully automated system ensures better control on temperature of metals in rolling mills, with efficient combustion owing to the use of gas as fuel. In addition, the WHR system will save substantial energy by preheating the metal to the extent possible before reheating	15-45%	Cross-sectoral - Thermal	19-21	16 - 28	9-14	2 - 12 TPH	Sameeeksha
38	Waste Heat Recovery Boiler	WHR Boiler is a system which recovers various kinds of waste heat generated from the production process of steel, chemical, cement etc and convert such recovered heat into useful and effective thermal energy	10-15%	Cross-sectoral - Thermal	3.5-4	3-3.5	12-15	4 TPH	Sameeeksha
39	Waste Heat Recovery System for Coke Drying Quenching (CDQ)	Smelting furnace generates flue gas at high temperature. This flue gas temperature is utilized to heat the atmospheric air that is utilized for coke drying	20-25%	Cement - Thermal	300-350	200-250	18-24	7 TPH Coke Drying from 15% - 2% W/W	Vedanta Fecor
40	Waste Heat Recovery for power generation	The WHR process is a fuel conservation measure where the heat from waste stream of gases is recovered to generate steam which in turn is used to drive turbine and generate power, instead of using conventional process of burning fuel	10-15%	Cross-sectoral - Thermal	900-1100	230	54-60	1 MW	Sameeeksha
Thermal - Waste Heat Recovery (High Temperature)									
41	Recuperators	A recuperator is used to recover the waste heat, usually from the exhaust flue gas generated from furnace and use it to preheat the combustion air, thereby ensuring fuel saving and process efficiency	20-25%	Cross-sectoral - Thermal	4.5-5	3.5-4	12-14	3 MT	Sameeeksha
42	Recuperative burner for heat recovery for high medium temperature furnaces	A recuperative burner is the one where recuperator is the integral part of the burner, and the waste heat is recovered to pre-heat the combustion air, thereby ensuring substantial energy saving	25-30%	Cross-sectoral - Thermal	200-225	200-225	12-15	15TPH rolling mill	Detailed Energy Audits (DEA)
43	Regenerative burners for high temperature furnaces	In regenerative temperature can go to 1000 degC, resulting huge energy savings and improved furnace productivity. Applicable only for gas fired furnaces	15-20%	Cross-sectoral - Thermal	20-30	20-30	12-15	One unit burner for 110 TPH furnace	http://www.iipinetwork.org/wp-content/letd/content/regenerative-burners-reheating-furnaces.html
Sectoral									
44	Alternative Fuels & Raw Material (AFR) Utilization	Utilize Alternative Fuels such as PTA Sludge, Syngenta Waste, Pines leaves etc, Municipal Solid Waste for thermal energy generation	Thermal Substitution rate of 5-10%	Cement	8000-10000	1600-2000	60-72	3.1 MTPA	Ambuja Cement Bhatapara (CG)
45	Adiabatic Pre-reformer	Adiabatic pre-reforming is a well-established process in modern syngas production and implies both economic and operational benefits. The adiabatic prereformer converts hydrocarbon feed-stocks by steam reforming reactions in the low temperature range, 350–550°C	4-10%	Fertilizer	1500-1600	600-900	20-30	2000 TPD	DEA Reports
46	BEE 5 Star Rated AC	Replacement of Conventional Split/Window AC with 5-star AC having higher COP or EER /ISEER	20-45%	Building	0.40-0.50	0.18-0.20	24-30	connected load 57 kW	Sameeeksha
47	Bleached Chemi Thermo Mechanical Pulp (BCTMP)	It is an advanced technology for the production of high-quality chemi-mechanical pulps from hardwoods and annual plants, which is very reliable and achieves highest pulp quality at minimum operating cost and lowest	15-20%	Pulp & Paper	40000-45000	10000-12000	48-50	1 Lac TPA BCTMP	BEE Report
48	CNC Machine (Special Purpose Machine)	CNC machine helps enhance productivity and lower Specific Energy consumption as one machine take care of all cutting, boring, drilling, milling, grinding operations, etc.	30-35%	Machine Tool	35-40	25-30	17-20	400 KN	Sameeeksha
48.1	CNC Bending Machine	As above	32%	Machine Tool	36.35	26.07	17	400 KN	SAMEEKSHA
48.2	CNC Gear Hobbing Machine	As above	25%	Machine Tool	225.00	72.27	38	NA	SAMEEKSHA
48.3	CNC Grinding Machine	As above	23%	Machine Tool	45.61	33.73	16	NA	SAMEEKSHA
48.4	CNC Horizontal M/c Centre	As above	30%	Machine Tool	151.00	67.73	27	NA	SAMEEKSHA
48.5	CNC Lathe Machine	As above	30%	Machine Tool	40.80	14.88	33	NA	SAMEEKSHA
48.6	CNC Milling M/C	As above	30%	Machine Tool	73.41	28.86	31	NA	SAMEEKSHA
48.7	CNC Turn –Mill Centre	As above	25%	Machine Tool	50.48	17.62	35	NA	SAMEEKSHA
48.8	CNC Turret Punch Machine	As above	41%	Machine Tool	88.66	51.27	21	20 TON	SAMEEKSHA
48.9	CNC Wire Cut Machine	As above	35%	Machine Tool	61.00	26.07	28	NA	SAMEEKSHA
49	Divided blast cupola	For replacement of conventional cold blast cupola for better melting of metals, generated less pollution and saves coal as well	20-25%	Foundry	6-8	3-4.5	20-24	2 MT/Batch	Sameeeksha

50	Electrical Annealing Bogie Furnaces	The energy cost in electrical annealing furnaces is low comparatively with wood fired furnaces due to more efficiency of electrical heating, less manpower cost and low energy cost. Further, this also ensures maintain uniform temperature throughout the furnace	25-30%	Brass & Aluminium	8-10	4-5	22-24	60 kW	Sameeeksha
51	Energy Efficient Brushless Direct Current (BLDC) Fan	BLDC fans consumes lower energy compared to conventional fans, having high reliability and life expectations as well	35-50%	Building	4-6	1-2	24-36	connected load 243 kW	Sameeeksha
52	Energy efficient cyclone	Energy efficient cyclone has 97.5% efficiency and it can be installed at the last stage in Pre-heater	1.03 KWH & 7000 KCal/MT of Clinker	Cement	600-650	200-220	36-40	105 TPH	BEE Report
53	Energy efficient gas fired pot furnace	It has several pots or crucibles in which different small batches of glass can be melted	30-35%	Glass	10-15	10-15	10-12	10-12 pots, each of 500-550 Kg capacity	Sameeeksha
54	Energy efficient impeller	Energy efficient Impeller 84% efficiency. The can improve the performance of Fans installed in industries	1.08 KWH/MT Clinker	Cement	100-120	42-45	24-30	250 Ton of Clinker	Sagar Cements Limited
55	Energy Efficient Modulating Burner	These burners are provided with variable air/fuel ratio leading to better heat generation and drying of leaves, thereby producing good quality tea	10-15 %	Tea Processing	5-7	8-10	9-12	Dryer 1 @450 kg/h; Dryer 2@250kg/h.	Sameeeksha
56	Energy Efficient Tank furnace	Tank Furnaces are primarily used in glass industry where continuous flow of glass is needed to feed automatic glass forming machines.	15-20%	Glass	400-450	200-300	24-30	25-40 TPD	BEE Report
57	Energy Efficient technology for ECBC/Eco-niwas Samhita	The efficient building envelope helps prevent heat loss /gain between inside space of building and outside atmosphere, thereby ensuring more comfort, maintain appropriate building temperate and also reduce heating /cooling load, thereby saving electrical energy to a great extent.	15-25%	Building	220-240	230-250	10-12	connected load 15000 kW	Sameeeksha
58	Energy Efficient Tray Dryer	The Tray drying is a batch process used to dry materials that are liquid or wet cake, and works well for material that requires more gentle processing or cannot be atomized in an air stream due to viscosity.	15-20%	Chemical	10-12	6-8	15-20	400 Trays	EESL-MSME
59	Exhaust humidity measurement & control system	To control outlet moisture of Fabric on stenter and control blower motor speed and power consumption as well	5-15%	Textile	2-2.5	1-1.25	24-30	1 unit	Sameeeksha
60	Fiberglass Reinforced Plastic (FRP) Fan in Withering Units	The Fiberglass Reinforced Plastic (FRP) is light in weight compared to metallic blade and can resist any weather situation and withstand corrosion, waterborne bacteria, and organisms.	10 - 15 %	Tea Processing	8-10	12-15	6-8	31 troughs, 39 nos. fans	Sameeeksha
61	Fluidised Bed dryer system	The Fluidised dryer system will ensure better quality tea by ensuring effective drying of tea leaves	10-15%	Tea Processing	15-20	7-10	24-30	500-700 Kg/hr	EESL-MSME
62	Forging Furnace	The energy efficient forging furnace provides effective heat for the heating and reheating of large steel ingots, blooms and cast parts, with better temperature control and reduced skin losses from outer surface of chamber	15-20%	Forging	20-25	20-25	10-12	250 KW	Sameeeksha
63	Gas Engine based co-generation technology	A Cogeneration is a system having gas engine produces heat and electricity simultaneously in a single plant, powered by gaseous fuel having better combustion and less ash generation, thereby guaranteeing a better energy yield	30-40%	Ceramics	800-1000	320-350	30-35	2.72 MW	Sameeeksha
64	Gas fired hot air generator system	For replacement of conventional wood fired hot air generator system with better combustion control and less emission	20-25%	Chemical	4-5	3.5-5	10-12	120000 Kcal/hr	Sameeeksha
65	Gasifier For Kilns	The Gasifier is a cheaper energy source having better yield compared to conventional fuel for combustion in kilns	30-35%	Limestone	55-65	24-30	28-32	30 TPD	Sameeeksha
66	Gasifier for Melting And Reheating Process	Rice husk works as renewable source of energy. Hence use of rice husk reduced cost of production and waste utilization as well	20-25%	Brass & Aluminium	40-45	25-30	18-24	500 KG	Sameeeksha
67	Induction Billet Heater	For replacement of Oil Fired Furnaces with having better control on temperature and energy saving as well	20-25%	Forging	38-42	37-42	10-12	3-4 ton capacity oil-fired furnace	BEE Report
68	Latest Generation High Efficiency Clinker Cooler	It offers significant potential for electrical and thermal energy saving; The total heat loss of latest generation clinker is less than 100 Kcal /Kg Clinker compared to conventional cooler where heat loss is more that 120-150 kCal /Kg Clinker	15-20%	Cement	1800-2000	400-500	48-60	3000 TPD Clinker	BEE Report
69	Liquid Ring Compressor	This Liquid Ring Compressor will function as flare gas recovery system (FGRS) to recover the flare gas and sending it to Delayed Cooker Unit (DCU) wet gas compressor suction, which will further be directed to Fuel gas header to use it as fuel gas in refinery fired heaters. This has also avoided the requirement of dedicated FGRS.	10-15%	Refineries	500-600	800-900	6-8	8.5 MT per day fuel oil equivalent	BEE Report
70	Louisiana State University (LSU) Port Dryer	This technology ensured uniformly dried product and can be used for different types of grains as well	25-40%	Food Processing	30-35	16-20	22-25	24 MT	EESL-MSME

71	Low Thermal Mass cars in Tunnel Kiln	The reduction in weight of kiln cars in Tunnel kilns provides significant amount of energy saving and improved material to car weight ratio	10-13%	Glass & Ceramic	0.55 per car	2.5-3	2-3	1130 Kg per car	DEA Reports
72	Medium frequency Induction Furnace	The medium frequency induction heating furnace adopts the basic principle of induction heating. It is a high-tech product replacing the traditional oxygen, oven and salt slag furnace. It can save energy, save time, fast and improve the quality of the product	10-15%	Iron & Steel	30-35	13-15	24-30	250 KW	DEA Report
73	Membrane Filter Press	For replacement of conventional Filter Press with better drying of sludge	30-40%	Chemical	40-45	15-20	30-35	60 Plates	Sameeeksha
74	Nutsche Filtration and Drying Process	ANFD is used for active pharmaceutical ingredient (API) filtration. It is a combination of slurry filtration, product washing, and vacuum drying processes into a single unit.	10-20%	Pharmaceutical	25-30	20-25	15-18	3 KL	EESL-MSME
75	Palletisation plant - Sponge Iron	The palletisation ensures agglomeration of fine iron ores which is easy to handle in blast furnace or EAF	10-15%	Sponge Iron	4000-5000	800-1000	48-60	0.3 MTPA	BEE Report
76	Rapier or Auto Loom	For replacement of conventional Power Loom thereby ensuring enhanced productivity and production, reduced energy and manpower cost	15-20%	Textile	50-52	25-30	24-30	220 rpm	EESL - MSME; Sameeeksha
77	Recovery of BOF gas and sensible heat in Basic Oxygen Furnace	The gas produced in the BOF has a temperature of approximately 1200°C and a flow rate of approximately 50-100 Nm3/t-steel. The gas contains approximately 70-80% CO when leaving the BOF and has a heating value of approximately 8.8 MJ/Nm3 (NEDO, 2008) or 0.84GJ/t-steel	3-5%	Iron & Steel	3753.3	1003.8	45	30-400 MT	Online Journals
78	Replacement of steam turbine drive with high speed motor drive	Replacement of steam turbine drive with high speed motor drive will result in saving of steam and extra power generation	15000 Ton of NG per year	Refineries	22500-25000	7500-8000	48-50	7.5 MW High Speed Motor	IOCL Plant
79	Screw washer	For replacement of twin drum washing system with high efficient screw washer to save energy	10-15%	Paper	45-50	18-20	24-30	20000-22000 TPA	BEE Report
80	Tube ice plant	Tube ice machine performs continuous Freezing and Harvesting function, thereby ensuring steady supply of high quality ice at a rate determined by the user	10-15%	Ice Making	17-20	8-10	30-35	20 TPD Plant	BEE Report
81	Ultra-High Power Electric Arc Furnace	Ultra High Power (UHPs) have become one of main tools for the steel making process since they have high productivity, low cost and high quality of products	10-15%	Iron & Steel	723.7	714	12	100-400 MT	Online Journals
82	Veneering for Industrial furnaces	Reduction in surfaces heat losses from furnaces and also store the residual heat during non-firing time	20-25%	Foundry	6-7	6-7	11-12	Hearth area - 40 sq ft	Sameeeksha
83	Vertical Agitator System for Reaction Vessel	The vertical agitation system is more versatile compared to horizontal agitation system, allowing mixing various feed material in one go, is easy to maintain and operate	20-25%	Chemical	2-2.5	1-1.5	20-24	20 KL	Sameeeksha; EESL-MSME
84	Vertical shaft brick kilns	It is a continuous, updraft, moving ware kiln in which the fire remains stationary while there is counter current heat exchange between air (moving upward) and bricks (moving downward)	15-20%	Bricks	10-15	5-7	24-30	40-50 Lacs bricks per year	Sameeeksha; EESL-MSME
85	Zig-Zag Firing	The zig-zag type firing ensure better turbulence and contact time between flame and bricks, thereby better productivity and reduced SEC	20-25%	Bricks	30-50	15-20	24-36	20,000-60,000 bricks per day	BEE Report
Innovative decarbonisation technologies									
86	Aluminium pipe for distribution of compressed air system	Aluminium pipe doesn't rust, unlike mild steel pipes, due to moisture present in compressed air and this avoid leakages and saves 10-20% of losses	10-20%	Cement, Iron & Steel, Textile, Other sectors	300-350	120-150	24-36	6000 MT per day of Clinker	Sagar Cements Limited
87	Electric Vehicles and Charging Infrastructure	Electric vehicles are power by battery and electric motor	1 Liter Diesel per 15 km	Transportation	12-15	3-4	48-60	Diesel sedan car	Blu smart
88	Fuel efficient industrial furnace burners specially for rotary kiln	Improved overall combustion efficiency of burners in rotary kilns in Alumina, chemical, lime, sponge iron plants using gas and liquid fuel	5-7%	Cement, Iron & Steel	30-35	15-20	20-24	Not Applicable	Report
89	Nano composite surface treatment for condenser in power plant	It protects from fouling, scaling, and deposition resulting improvements in power generation efficiency	13000 tons of coal/Yr	Power Plant	250-300	250-300	12-15	135 MW	Report
90	Plasma Technology in steel melting shop	The use of Plasma Technology ensures superhot electrically heated gases that are extremely efficient in melting metals	15-20%	Iron & Steel	8000-10000	3200-4000	30-36	20 crore for each plasma torch	Technology Vendor
91	Torrefaction Technology	Torrefaction is thermochemical conversion method to produce coal fuel (bio char) from biomass. It is carbon rich material can be easily burnt in industrial furnaces, boilers driers, etc.	Not applicable	Power Plant	15-20	15-20	12-15		Report
92	XPLATE on FD Fan to improve boiler combustion efficiency	XPLATE technology breaks the clusters of gaseous fluid flows inside the boiler and releases trapped molecules of Oxygen (O2) & Nitrogen (N2) in the clusters. This provides more reacting oxygen inside the boiler that enables more complete combustion	3-5%	Multiple sectors	50-60	20-25	36-40	55 TPH	Bombay dyeing