Bangladesh Steel Re-Rolling Energy Assessment - Plant Report Card

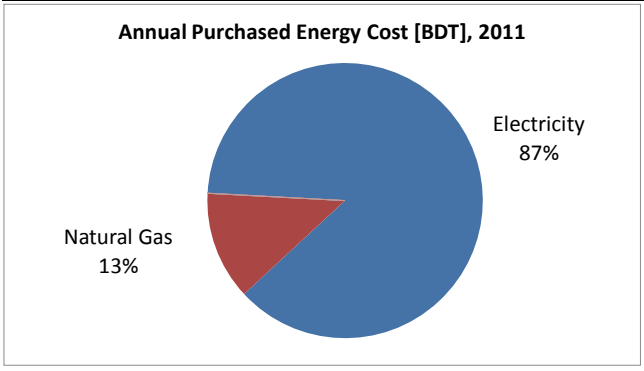
V1-2012

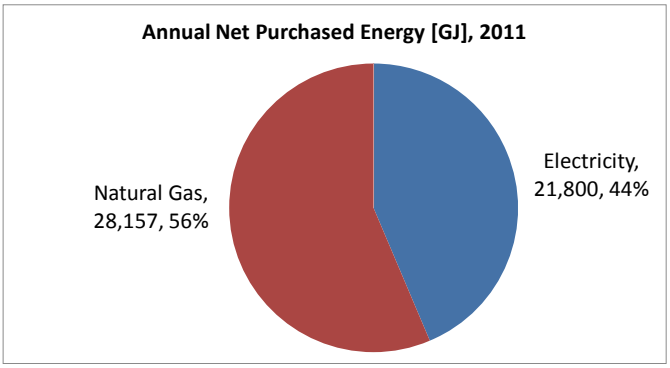
Sample Steel Re-rolling Report Card (Confidential Plant Information Removed)	This report provides a summary of the technical assessment completed for this facility. This includes the purchased energy use and cost profiles, a breakdown of energy consuming systems, a score of the technical best practices implemented, and useful links to Energy programs and benchmarking information.
Survey completed by: Henri van Rensburg Date:	

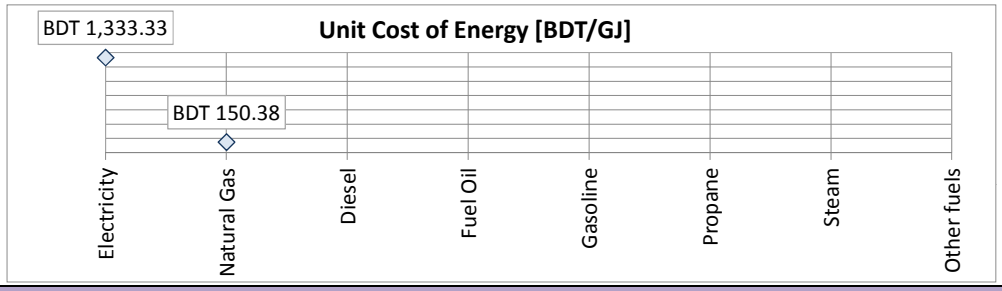
Report of Purchased Energy

The charts below represent the purchased energy for your facility. The quantity of energy purchased has been converted to a common unit (GJ) to allow comparison between fuels.

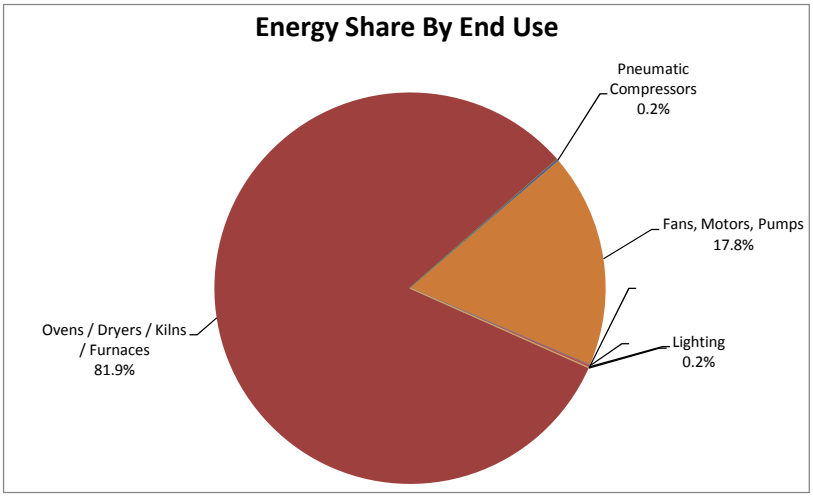
Annual Purchased Energy Cost [BDT], 2011	33,300,583.00	Annual Net Purchased Energy [GJ], 2011	49,956.82







This chart shows energy use by end use as a percent of total purchased energy.

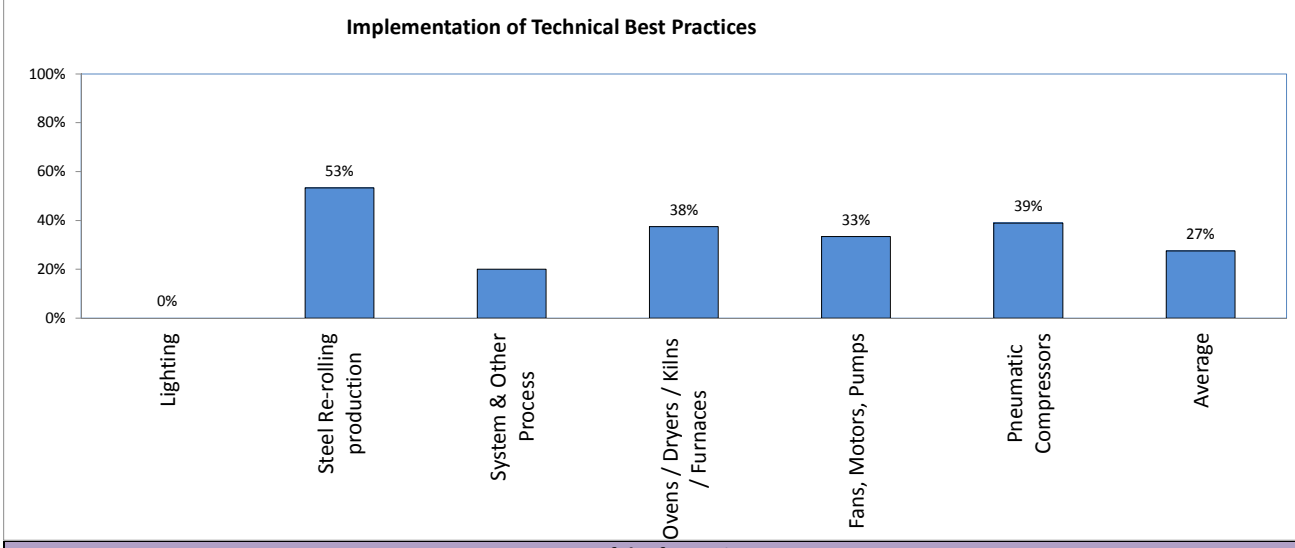


Scope of Energy Intensity	Main Product [units]	Calculated energy intensity (fuel only) per **main** unit of product (excludes sold fuel) [GJ/unit]
Includes process and comfort energy[1]	Steel rods [tons]	4.8

[1]Comfort energy includes energy used for heating, ventilation, air conditioning and lighting

Best Practice Scores

The best practices below represent the scores out of a possible 100% of applicable best practices (not weighted)



Useful Information

Industry Best Practice Examples

Additional information on examples and experiences of international best practices in industry can be found on the website links below:

- Energy Star (US): www.energystar.gov
- Intelligent Energy e-Library (EU): www.iee-library.eu/
- Carbon Trust (UK): www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/technology-advice/
- Office of Energy Efficiency (CAN): http://oee.nrcan.gc.ca/industrial/technical-info/
- Industrial Technologies Program (US): www1.eere.energy.gov/industry/bestpractices/
- Sustainable Energy Authority of Ireland (IRL): www.seai.ie/Your_Business/Large_Energy_Users/Resources/
- Swedish Energy Agency (SWE): www.energimyndigheten.se/en/Energy-efficiency/Companies-and-businesses/Programme-for-improving-energy-efficiency-in-energy-intensive-industries-PFE/

Bangladesh Industrial Energy Assessment and Management Study - Opportunities Identification

Technical Energy Management Opportunities

The following table prioritizes energy savings opportunities[5] (high, medium and low energy savings potential in each area) in your facility, in terms of your current energy use and implementation of best practices. The opportunities listed include their approximate annual savings for each end use.

Press here to sort opportunities

Warning: any data entered in column B of this tab will be erased

The largest area of opportunity for energy savings in this facility is: ***Steel Re-rolling production***

Steel Re-rolling production	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]	***Measure Lib Tab No.***	***Relative Implementation Difficulty***	***Relative Implementation Cost***
High Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
Optimize temperature levels in the furnace: Savings of up to 8-10% of Furnace natural gas energy use.	10.00%	1314	426	423,413	S-10	Low	Low
Maintain desired air pressure at the gas burners: Save up to 3% of Furnace natural gas energy use.	3.00%	394	128	127,024	S-8	Low	Low
Minimize overheating of material to reduce scale losses: Savings of up to 5-7% of Furnace energy use.	7.00%	1336	298	1,485,799	S-12	Low	Low
Monitor temperatures of flue gas and air at inlet and outlet ports in the recuperator: Savings of up to 3% of furnace natural gas energy use.	3.00%	394	128	127,024	S-28	Low	Low
Optimize furnace hearth loading in accordance with rated furnace capacity: Savings of up to 5-10% of Furnace natural gas energy use.	10.00%	1314	426	423,413	S-13	Low	Low
Maintain insulation of ducts carrying preheated air: Savings of up to 5% of Furnace natural gas energy use.	5.00%	657	213	211,707	S-21	Low	Low
Automatic controls of furnace temperature and pressure: Savings of up to 5-12% of Furance Natural gas energy use.	12.00%	1577	512	508,096	S-2	Medium	Medium
Rolling mill optimization: Savings of up to 15% of rolling electrical motor energy used.	15.00%	266	120	760,542	S-6	High	High
High-Efficiency Recuperators: Savings of up to 10-15% of Furnace natural gas energy use.	15.00%	1971	639	635,120	S-1	High	High
Ovens / Dryers / Kilns / Furnaces	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]			
High Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
Preventative maintenance: savings of 5% of heating energy use	5.0%	1278	213	1,061,285	28, 33, 41, 55	Low	Low
Air curtains: savings of 15% of heating energy use	15.0%	3834	639	3,183,855	23, 50	Low	Medium
Control air-fuel ratio through flue gas monitoring: 2 to 15% savings in energy use	15.0%	3834	639	3,183,855	120,121,122,123	Medium	Medium
Advanced heating and process control: savings of 10% of energy use	10.0%	2556	426	2,122,570	26, 38, 46, 53	Medium	Medium
Infrared ovens and/or use of radiant heat instead of convection heating: savings of 5% - 15% of heating energy use	15.0%	3834	639	3,183,855	30	High	Medium
System Practice - Electricity	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]			
High Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
Electricity demand management control system: cost savings only (no energy savings)		0	0	0	119	Medium	Low
Sub-metering and interval metering: save up to 5% for all fuel sources	5.0%	872	230	1,453,323	1	Medium	Medium
HE dry-type transformers: save 1% in electrical energy use	1.0%	174	46	290,665	3	High	High
Integrated control system: save up to 8% for all fuel sources.	8.0%	1395	367	2,325,316	2	High	High
Fans, Motors, Pumps	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]			
High Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
Impeller trimming: save up to 15% in pump energy use	15.0%	65	21	130,495	69	Low	Low
Fan impeller trimming or inlet guide vanes: save 15% in fan energy use	15.0%	36	11	72,384	74	Low	Low
High/premium efficiency motors for pumps: motor energy savings of 0.8 to 8%	8.0%	35	11	69,597	68	Low	Medium
High/premium efficiency motors for fans: motor energy savings of 2%	2.0%	5	2	9,651	73	Low	Medium
Premium efficiency control with ASDs: save 20% in pumping energy use	20.0%	87	27	173,994	71	Medium	Medium
Premium efficiency control with ASD: save 20% in fan energy use	20.0%	48	15	96,512	76	Medium	Medium
Premium efficiency control with ASDs: save 20% in motor energy use	20.0%	1047	331	2,094,720	35	Medium	Medium
Correctly sized motors: savings of 2% of motor energy use	2.0%	118	37	236,523	80	Medium	Medium
Optimization of pumping system: savings of up to 17% of pumping energy use	17.0%	74	23	147,895	70	High	Medium

Pneumatic Compressors	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]			
Low Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
Air leak survey and repair: up to 15% energy savings	15.0%	7	2	15,292	94	Low	Low
Minimize operating air pressure: savings of 20% of compressed air energy use	20.0%	9	3	20,390	86	Low	Low
Preventative compressor maintenance: savings of 5% of compressor energy use	5.0%	2	1	5,097	95	Low	Low
Improved Distribution System: save 10% in compressed air energy use	10.0%	5	2	10,195	85	Medium	Low
Premium efficiency ASD compressors: save 5 to 20% in compressed air energy use	20.0%	9	3	20,390	84	Medium	Medium
Optimized sizing of compressor system: savings of 10% of compressed air system energy use	10.0%	5	2	10,195	87	Medium	Medium
Lighting	***Maximum potential Savings*** [7]	***Energy Savings*** [7]	***GHG*** [6]	***Maximum Potential Energy Cost Savings*** [7]			
Low Priority End-use	*[%]*	*[GJ]*	*[ton]*	*[BDT]*			
High efficiency lights fixtures: savings of 20 - 75% of lighting energy use	75.0%	83	17	110,105	108	Low	Low
Lighting controls: occupancy sensors: savings of 15% of lighting energy use	15.0%	17	3	22,021	125	Low	Low
Lighting controls: on/off timers: savings of 15% of lighting energy use	15.0%	17	3	22,021	110	Medium	Medium

The potential savings presented are an estimate of ***maximum*** savings per individual opportunity and are not additive. Interactive effects will reduce the total potential savings if more than one opportunity is implemented.
General practices for implementation of energy efficiency opportunities:
a) Sequence of implementation i) Optimize the demand and output of equipment as a first step (eg. fix air leaks) ii) Properly size the supply equipment and, if possible, upgrade to more efficient equipment, at the same time.
b) If the equipment demand is low, then consider optimization of the equipment characteristics, such as efficiency. If demand is fluctuating, consider implementing measures to meet the fluctuating demand, such as variable speed drives or other controls.
c) When implementing control equipment to optimize energy use (such as VSDs or advanced control), consider the effects on the power factor of the facility.

Notes
5.The opportunities are based on both the energy consumed and the technical best practices for your facility. Please note that the values shown are approximations and are based on site specific conditions.
6.Greenhouse Gases (GHGs) factors are based on The Guidelines for Measurement, Reporting and Verification of GHG Emission Reductions in JBIC's GREEN (the "J-MRV Guidelines"). June 2010. Japan Bank for International Cooperation
7. Energy savings are maximum values based on all energy consumed by each grouped end use and does not consider equipment that is already efficient. More detailed analysis is required to determine precise energy and cost savings.
8. For compressors using steam derived from natural gas driven processes, the steam energy use is not corrected by a service factor. Savings for natural gas derived steam is based on natural gas costs.