# *Bangladesh Jute Energy Assessment - Plant Report Card*

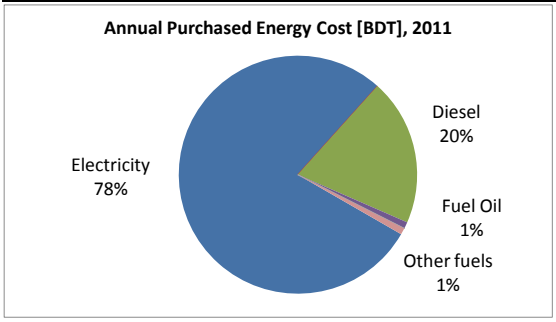
V1-2012

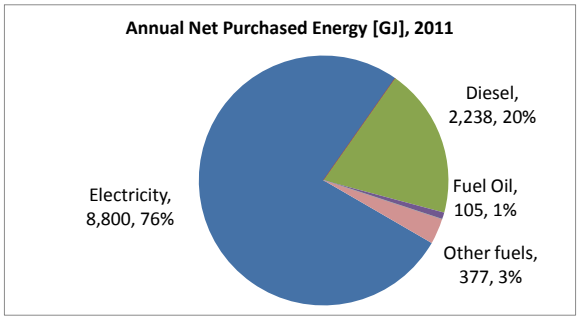
| **Sample Jute Report Card (Confidential Plant Information Removed)** | This report provides a summary of the technical assessment completed for this facility. This includes the purchased energy use and cost profiles, a breakdown of energy consuming systems, a score of the technical best practices implemented, and useful links to Energy programs and benchmarking information. |
|---|---|
| Survey completed by: Marc-André Comeau<br>Date: | |

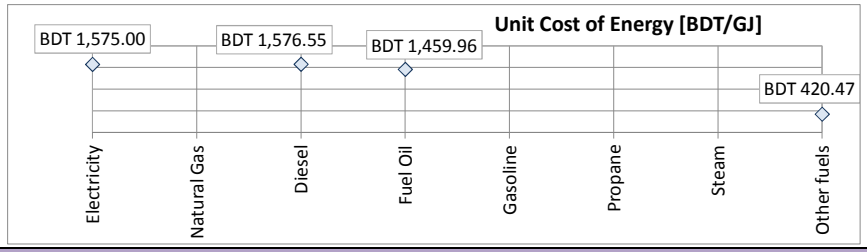
## *Report of Purchased Energy*

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.

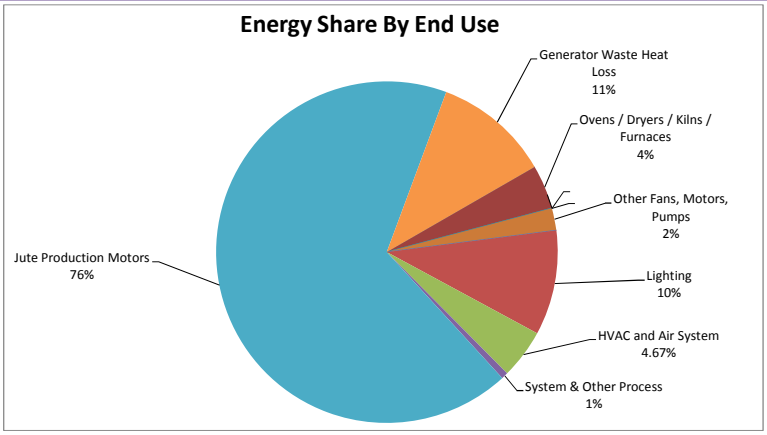
| | | | |
|---|---|---|---|
| Annual Purchased Energy Cost [BDT], 2011 | 17,698,959.80 | Annual Net Purchased Energy [GJ], 2011 | 11,519.03 |

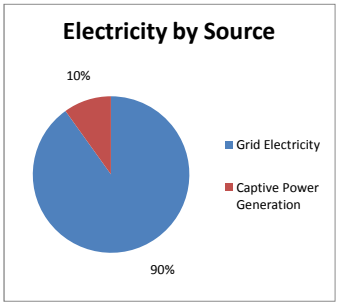



This chart shows energy use by end use as a percent of total purchased energy.



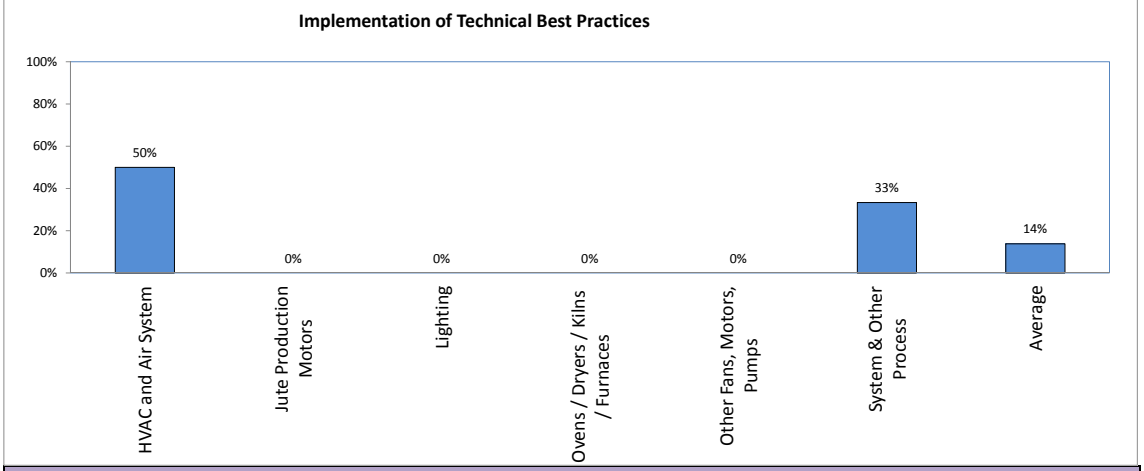




| Scope of Energy Intensity | Main Product [units] | Calculated energy intensity (fuel per **total** unit of product) [GJ/unit] |
|---|---|---|
| Includes process and comfort energy[1] | Total: Sack and Twine [tonnes] | 0.3 |

[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: ***Fans, Motors, Pumps***

| ***Jute 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]* | | | |
| Self lubricating bushes, runners & other components: Save up to 5% of energy use. | 5.00% | 389 | 22 | 590,851 | J-8 | Low | Low |
| Modification in Jute Spreader or softener machine: Save up to 5% of jute softning process electrical energy use. | 5.00% | 8 | 0 | 12,588 | J-6 | Medium | Medium |
| Modification of weaving machines: Save up to 5% of weaving electrical energy use. | 5.00% | 22 | 1 | 33,569 | J-10 | Medium | Medium |
| Replacement of Bailing Press Pump with Hydraulic Oil Power Pack: save up to 10% of bailing pump electrical energy use. | 10.00% | 2 | 0 | 3,788 | J-3 | Medium | Medium |
| Change of belts in drawing ,weaving and carding section to reduce slippage and better utilization of power: Save up to 5% of Jute drawing, carding, and weaving process electrical energy use. | 5.00% | 80 | 4 | 121,337 | J-5 | Medium | Medium |
| Modification of roll and cop winding machine: Save 10 -15% of Jute winding electrical energy use. | 15.00% | 155 | 9 | 236,030 | J-11 | Medium | Medium |
| Replacement of old conventional card machines with new high productivity energy efficient card machines: Save up to 10% of Jute carding process electrical energy use. | 10.00% | 74 | 4 | 111,896 | J-4 | High | High |
| ***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]* | | | |
| Sub-metering and interval metering: save up to 5% for all fuel sources | 5.0% | 293 | 93 | 692,989 | 1 | Medium | Medium |
| HE dry-type transformers: save 1% in electrical energy use | 1.0% | 59 | 19 | 138,598 | 3 | High | High |
| ***Lighting*** | ***Maximum potential Savings*** [7] | ***Energy Savings*** [7] | ***GHG*** [6] | ***Maximum Potential Energy Cost Savings*** [7] | | | |
| Medium Priority End-use | *[%]* | *[GJ]* | *[ton]* | *[BDT]* | | | |
| Use of electronic ballasts saving 20-30% of lighting energy use | 30.0% | 344 | 72 | 541,809 | 29 | Low | Low |
| Lighting controls: occupancy sensors: savings of 15% of lighting energy use | 15.0% | 172 | 36 | 270,905 | 125 | Low | Low |
| Efficient lighting design: savings of 15% of lighting energy use | 15.0% | 172 | 36 | 270,905 | 109 | Low | Low |
| High efficiency lights fixtures: savings of 20 - 75% of lighting energy use | 75.0% | 860 | 181 | 1,354,523 | 108 | Low | Low |
| Lighting controls: on/off timers: savings of 15% of lighting energy use | 15.0% | 172 | 36 | 270,905 | 110 | Medium | Medium |
| ***Ovens / Dryers / Kilns / Furnaces*** | ***Maximum potential Savings*** [7] | ***Energy Savings*** [7] | ***GHG*** [6] | ***Maximum Potential Energy Cost Savings*** [7] | | | |
| Medium Priority End-use | *[%]* | *[GJ]* | *[ton]* | *[BDT]* | | | |
| Exhaust gas heat recovery: savings of 15% of energy use | 15.0% | 72 | 5 | 46,677 | 24,36, 44, 51 | Medium | Medium |
| High efficiency burner: 10% savings in energy use | 10.0% | 48 | 3 | 31,118 | 22, 34, 42, 48 | Medium | Medium |
| Control air-fuel ratio through flue gas monitoring: 2 to 15% savings in energy use | 15.0% | 72 | 5 | 46,677 | 120,121,122,123 | Medium | Medium |
| Advanced heating and process control: savings of 10% of energy use | 10.0% | 48 | 3 | 31,118 | 26, 38, 46, 53 | Medium | Medium |
| Insulation: savings of 5% of energy use | 5.0% | 24 | 2 | 15,559 | 25, 37, 45, 52 | Medium | Medium |
| Air curtains: savings of 15% of heating energy use | 15.0% | 72 | 5 | 46,677 | 23, 50 | Low | Medium |
| ***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% | 36 | 8 | 57,048 | 69 | Low | Low |
| Fan impeller trimming or inlet guide vanes: save 15% in fan energy use | 15.0% | 36 | 8 | 57,048 | 74 | Low | Low |
| Optimized motor control: savings of 5% of motor energy use | 5.0% | 401 | 3 | 19,016 | 81 | Low | Low |
| Preventative maintenance: savings of 5% of motive-power energy use | 5.0% | 401 | 3 | 19,016 | 72, 78, 83 | Low | Low |
| High/premium efficiency motors for pumps: motor energy savings of 0.8 to 8% | 8.0% | 19 | 4 | 30,425 | 68 | Low | Medium |
| High/premium efficiency motors for fans: motor energy savings of 2% | 2.0% | 5 | 1 | 7,606 | 73 | Low | Medium |
| High/premium efficiency motors for equipment: motor energy savings of 2% | 2.0% | 160 | 1 | 7,606 | 79 | Low | Medium |
| Correctly sized motors: savings of 2% of motor energy use | 2.0% | 160 | 1 | 7,606 | 80 | Medium | Medium |
| Premium efficiency control with ASDs: save 20% in pumping energy use | 20.0% | 48 | 10 | 76,064 | 71 | Medium | Medium |
| Synchronous belts: savings of 2% of motor energy use | 2.0% | 5 | 1 | 7,606 | 141 | Medium | Medium |
| Premium efficiency control with ASD: save 20% in fan energy use | 20.0% | 48 | 10 | 76,064 | 76 | Medium | Medium |
| Premium efficiency control with ASDs: save 20% in motor energy use | 20.0% | 1603 | 10 | 76,064 | 35 | Medium | Medium |
| ***HVAC and Air System*** | ***Maximum potential Savings*** [7] | ***Energy Savings*** [7] | ***GHG*** [6] | ***Maximum Potential Energy Cost Savings*** [7] | | | |
| Medium Priority End-use | *[%]* | *[GJ]* | *[ton]* | *[BDT]* | | | |
| High efficiency non-packaged HVAC: savings of 25% of indirect heating energy use | 25.0% | 67 | 28 | 211,727 | 98 | 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.