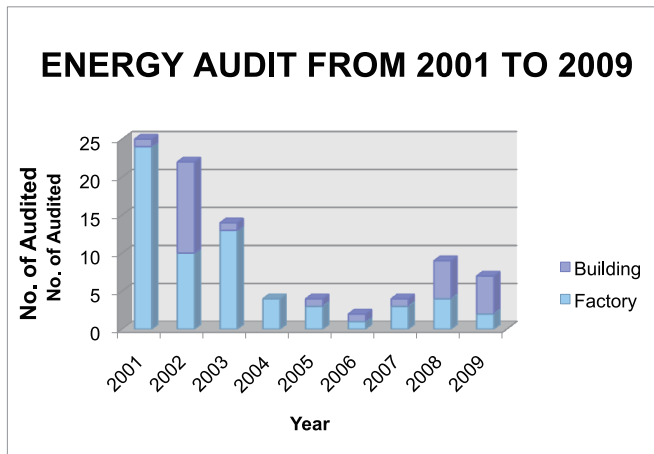


Energy Audit and Best Practice



1. ENERGY AUDIT



2. Best Practice

Pascorp Paper Ind Bhd

(Manufacturing of industrial brown papers)

EE&C Measures Implemented

1. Electrical Aspects

Installation of VSD

Monitoring power factor to above 85%

High efficiency motors

High efficiency equipment – Soft starter

2. Thermal Aspects

Biomass boiler

Steam pipe insulation

(Refer to the table on left side.)

3. EE&C Guideline

- **Published EE&C Guidelines for Malaysia Industries Part 1: Electrical Energy-use Equipment - July 2007**

The equipments include: transformer, motor, chiller, cooling tower & fan & blower, pump & air compressor and lighting

- **Drafting EE&C Guidelines for Malaysia Industries Part 2 : Thermal Energy-use Equipment**

The equipments include: boiler, thermal oil heater, industrial furnace, absorption chiller, heat exchanger, co-generation system

4. Challenges in EE&C

- limited **knowledge or awareness** of EE&C techniques and their economic benefits
- limited access to information for EE&C **techniques and technologies**
- an unwillingness to incur what are perceived to be the 'high-cost/high-risk' transactions involved in implementing EE&C projects
- to **focus on investments in production** rather than on efficiency
- lack of **financiers** prepared to finance EE&EC investments
- insufficiently stringent **regulations** on EE&EC **standards**
- few EE&C technology **demonstration projects** by industry or Government
- inadequate **local energy support services** and lack of trained industry and financial sector **personnel** in energy management

Energy Conservation Effect by Installation of VSD at Pascorp Paper Ind Bhd



| No | Machine Description | Motor kW | Before | After | Saving | | | | Installation Cost (RM) | Payback (Year) |
|--------|-------------------------------|----------|--------|-------|---------|--------|----------|---------|------------------------|----------------|
| | | | | | kWh/day | RM/day | RM/month | RM/year | | |
| 1 | Pulper Discharge Pump | 75 | 97 | 90 | 102.5 | 19.5 | 506 | 6,077 | 16,118 | 2.7 |
| 2 | Blending Chest Pump | 55 | 48 | 41.6 | 93.7 | 17.8 | 463 | 5,557 | 11,047 | 2.0 |
| 3 | M/C Chest Pump | 55 | 58 | 49 | 131.8 | 25.0 | 651 | 7,814 | 11,047 | 1.4 |
| 4 | M/C Chest Pump | 30 | 25 | 22 | 43.9 | 8.4 | 217 | 2,605 | 8,996 | 3.5 |
| 5 | V.H.P Shower Pump | 55 | 95 | 70 | 366.2 | 69.6 | 1,809 | 21,706 | 11,047 | 0.5 |
| 6 | LP Shower Pump | 55 | 95 | 70 | 366.2 | 69.6 | 1,809 | 21,706 | 11,047 | 0.5 |
| 7 | Dryer Exzos Fan No. 3 | 30 | 40 | 37 | 43.9 | 8.4 | 217 | 2,605 | 8,996 | 3.5 |
| 8 | Dryer Exzos Fan No. 4 | 30 | 27 | 17 | 146.5 | 27.8 | 724 | 8,682 | 8,996 | 1.0 |
| 9 | Dryer Exzos Fan No. 7 | 30 | 31 | 22 | 131.8 | 25.0 | 651 | 7,814 | 8,996 | 1.2 |
| 10 | Condensate Water Pump | 15 | 9 | 8 | 14.7 | 2.8 | 72 | 868 | 4,748 | 5.5 |
| 11 | Top Vertical Screen | 55 | 64 | 45 | 278.3 | 52.9 | 1,375 | 16,496 | 11,047 | 0.7 |
| 12 | Highest Filter 1 | 30 | 38 | 30 | 117.2 | 22.3 | 579 | 6,946 | 8,996 | 1.3 |
| 13 | Thickner | 11 | 10 | 9 | 14.7 | 2.8 | 72.4 | 868 | 4,748 | 5.5 |
| 14 | 4 th Stage Cleaner | 15 | 24 | 18 | 87.9 | 16.7 | 434.1 | 5,209 | 4,748 | 0.9 |
| 15 | Purifier Freeding Pump | 15 | 26 | 24 | 29.3 | 5.6 | 144.7 | 1,736 | 4,748 | 2.7 |
| 16 | Pulper Discharge Pump | 132 | 98 | 82 | 234.3 | 44.5 | 1,157.6 | 13,892 | 24,323 | 1.8 |
| 17 | Falt Part L.P Shower Pump | 15 | 17 | 10 | 102.5 | 19.5 | 506.5 | 6,078 | 4,748 | 0.8 |
| SAVING | | | | | | | 11,379.3 | 136,659 | 164,366 | |