



## **UNITED PULP AND PAPER COMPANY, Inc**

### **Installation of Variable Speed Drive (VSD) for Deaerator Pump, Heavy Fuel Oil Pump and Mill Water Pump**

#### **SUMMARY OF THE OPTION**

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United Pulp and Paper Company, Inc (UPPC) is the Philippine's leading manufacturer of high quality industrial grade paper, including corrugated medium paper and liner board that are used in carton packaging products.

Motor loading of the deaerator pump, heavy fuel oil pump and the mill water pump were not optimized and are below the rated values. It was recommended that the company use a variable speed drive motor or an inverter to reduce the energy consumption of the above mentioned electric motors. Implementation would require an investment of US\$ 79,342 and result in annual savings of 1,123,312 kWh or US\$ 60,177, giving a payback period of 1.3 years. Greenhouse gas emissions would be reduced by 225 tons of CO<sub>2</sub> per year. However, the option will not be implemented because existing boiler will be replaced.

#### **KEY WORDS**

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Pulp and Paper, Philippines, Pump and pumping systems, Electric motors, Variable Speed Drive (VSD)

#### **OBSERVATIONS**

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An assessment of the deaerator pump, heavy fuel oil pump and the mill water pump found that actual flow of the pumps are below rated values. In addition, it was observed that motor loadings were not optimized.

#### **OPTIONS**

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It was recommended to install a:

- 150 hP Baldor inverter for the deaerator pump
- 30 hP Baldor inverter for the Heavy fuel oil pump
- 300 hP Baldor inverter for the mill water pump

Installing the inverters would reduce the energy consumption of the electric motors. It was also recommended that the company verify the actual pump flow output and energy input. However, the option will not be implemented because existing boilers were replaced with the co-generation system. This will make these options obsolete.

#### **RESULTS**

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Financial benefits (expected)

- Investments: US\$ 79,342 (at 56 Php = 1 US\$)
- Annual operating costs: not given
- Annual cost savings: US\$ 60,177 (at 3 Php/kWh and 56 Php = 1 US\$)
- Payback period: 1.3 years

### **Environmental benefits (expected)**

- Annual electricity savings: 1,123,312 kWh
- Annual GHG emission reductions: 225 tons CO2

	<b>Dearator pump</b>	<b>Heavy fuel oil pump</b>	<b>Mill water pump</b>	<b>Total</b>
<b>Electricity consumption before option implementation</b>	584,704 kWh	80,689 kWh	1,048,959 kWh	1,505,930 kWh
<b>Annual electricity savings (expected)</b>	234,406 kWh	48,363 kWh	840,543 kWh	1,123,312 kWh
<b>Investment (Php)</b>	Php 1,377,000	Php 426,000	Php 2,640,180	Php 4,443,180
<b>Annual cost savings (expected)</b>	Php 723,028	Php 145,089	Php 2,521,629	Php 3,369,936
<b>Payback period (expected)</b>	2 years	3 years	1 year	1.3 years

### **FOR MORE INFORMATION**

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