

DA-MON TRADE COMPANY LIMITED

Circulate Drained Water from Agent Tank for Reuse in Agent and Fermentation Tanks

SUMMARY OF THE OPTION

Da-Mon Trade Company Limited is a producer of spirits (mainly vodka) and was established in 1988 in Darkhan, Mongolia. The company employs 210 staff working in four shifts.

Circulating hot cooling water was being drained from the agent tank. A collection tank and pipeline connections were installed to collect the water and reuse it in the fermentation tank. Investment costs were US\$ 2583, net cost savings were US\$ 4064 and the payback period was 7.6 months. Coal consumption was reduced by 15.6 tons per year and water consumption by 12,960 m³ per year. Greenhouse gas emission reductions from reduced coal consumption were 39 tons CO₂ per year.

KEY WORDS

Chemicals, Distillery, Mongolia, Cooling towers, Cooling water

OBSERVATIONS

During the energy assessment of the plant, it was found that circulating hot water is drained from the agent tank. This causes a loss of water and energy through heat loss.

OPTIONS

The Team suggested reusing the drained hot water in the fermentation and agent process. Figure 1 illustrates this option, which involved the installation of:

- A cooling water collection tank with a volume of 60 m³ (see Figure 2)
- Two pumps for circulating of the collected cooling water from the agent tank to the agent and fermentation tanks
- A building for the cooling water collection tank (see Figure 3)



Figure 2: Cooling water collection tank



Figure 3: Additional small building for cooling water collection tank

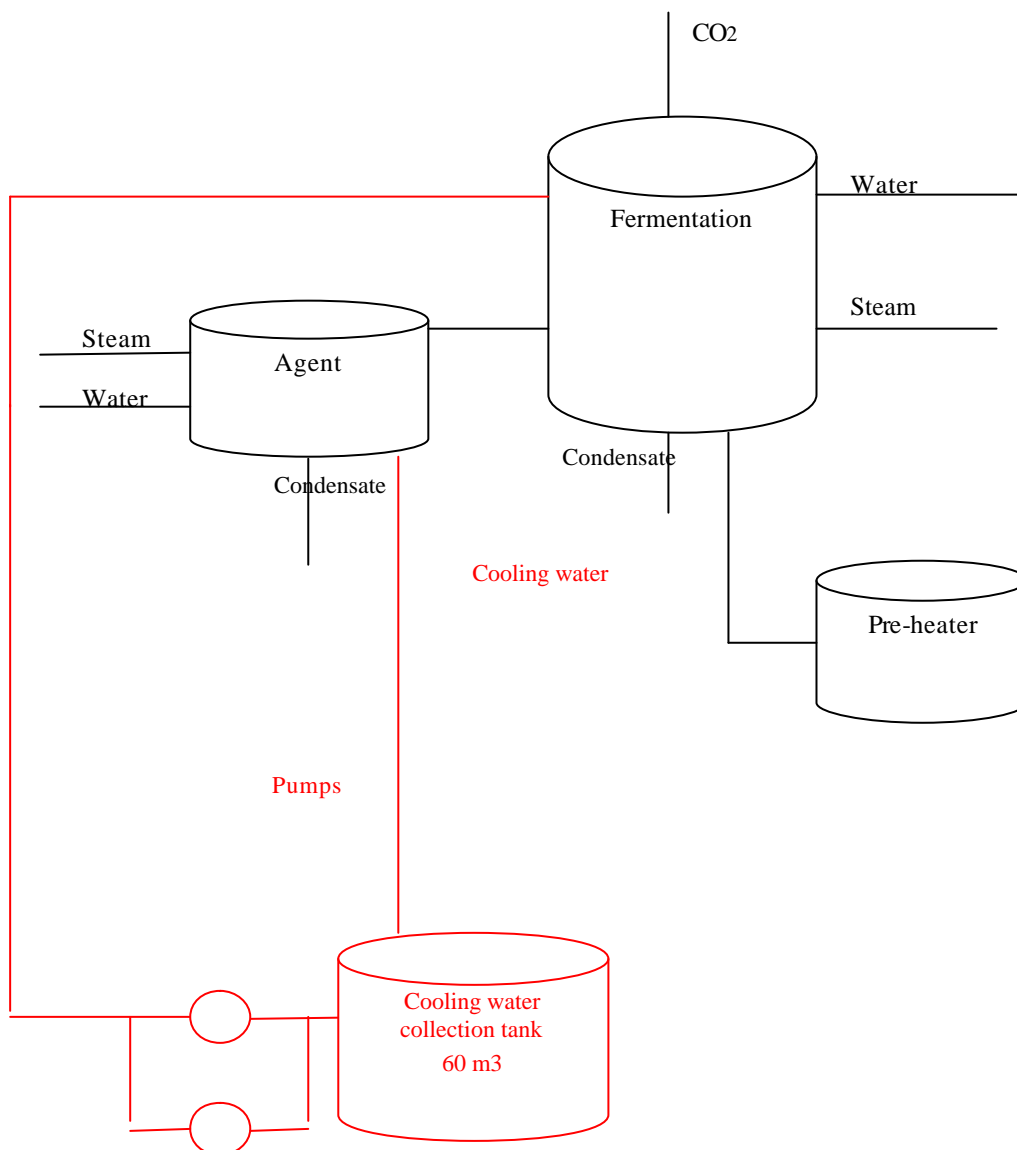


Figure 1: Schematic illustration of the installation of the cooling water collection tank (changes are shown in red)

RESULTS

Results are given below, based on a 1 US\$ = 1200 MNT exchange rate (September 2005).

Financial benefits

- Investment: US\$ 2583 (MNT 3,100,000), consisting of:
 - Water collection tank: US\$ 500 (MNT 600000)
 - Pipelines: US\$ 167 (MNT 200000)
 - Pumps: US\$ 917 (MNT 1,110,000)
 - Building for collection tank: US\$ 1,000 (MNT 1,200,000)
- Annual operation cost: US\$ 2525 (MNT 3,029,400 MNT for 59,400 kWh electricity/year)
- Annual cost savings: US\$ 6588 (MNT 7,905,600 through water and coal savings)
- Annual net cost savings: US\$ 4064 (= US\$ 6588 – US\$ 2525)
- Payback period: 7.6 months

Environmental benefits

- Annual energy savings: 15.6 tons of coal
- Annual GHG emissions reduction: 39 tons (= 15.6 tons coal X 2.51 tCO₂ / t coal)
- Annual water savings: 12,960 m³

FOR MORE INFORMATION

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