

This series showcases success stories of PaCT (Partnership for Cleaner Textile) partner factories in the Bangladesh textile sector that have implemented cleaner production projects.

The main purpose of insulation is to limit the transfer of energy between the inside and outside of a system. Insulation is used in buildings and in manufacturing processes to prevent heat loss or heat gain. A thermal insulator has low heat conductivity, thereby reducing heat losses.

Factory Status

Taqwa Fabrics Limited (TFL) is a knitted fabric processing factory that specializes in fabric dyeing and finishing. In 2020, the factory's production was 21.7 tonnes per day.

The primary sources of energy at TFL are natural gas, diesel and electricity purchased from the grid. Natural gas is used for electricity generation (gas engine), steam generation (boilers) and process heating (stenters and dryers). The heating applications and electricity generation account for 75.8% and 19.9% of the primary energy consumption, respectively.

Lack of Insulation Resulting in Heat Loss

During the PaCT assessment, it was observed that the factory was suffering surface heat loss in various locations, particularly from uninsulated surfaces such as feed water pipes, condensate lines, steam lines, steam valves and steam headers. Surface temperatures measured were:

- Feed water pipes - more than 80°C
- Condensate lines - more than 95°C
- Steam lines, steam valves, steam header - more than 145°C

Thus, high heat loss from the various surfaces was resulting in major energy waste.

Implementation

TFL took action to address the high levels of heat loss by insulating the various surfaces. The boiler feed water piping, feed water tank, steam and condensate line, steam valve, and steam headers were insulated with carefully selected insulation material, such as aluminum sheets from India, rock wool from Malaysia, glass wool from China, and black foam rubber, to ensure that the surface temperature did not exceed 40°C after insulation.

TFL initiated the insulation of the targeted areas in July 2021. By August 2021, the company had completed insulation of 98% of the recommended area as per the PaCT expert's guidance.

This initiative aimed to reduce heat loss from different surfaces and bring them under tolerable heat dissipation conditions as per the recommended temperature of below 40°C.

The total investment for these measures was \$2,261. Annual Savings potential of approximately \$966 can be achieved through the implementation of these measures with a simple payback period of 2.3 years.

Though the investment and payback is relatively higher than usual, the factory management decided to import the insulation material from India, Malaysia and China through their service provider to ensure the insulation, quality and longevity of the installation.

Some Observations

- Once proper insulation is applied, negligible maintenance is expected. Care should be taken that no water seeps into the insulated portion of the tank, otherwise it will damage the insulation. Before installation, bare pipelines should be inspected for any leaks and cracks and the factory management should install the right thickness of insulation.
- In the case of retrofitting, the bare surface areas of the boiler feed water tank, steam lines, condensate line, and steam valves/headers needed to be insulated using proper insulation support to ensure that the insulating material was correctly fixed.
- Aluminum cladding and iron support should be used as insulation materials.

Environmental Benefits



**8,462 m³ /year
Natural gas
saved**



**18 tCO₂ /year
Greenhouse gas
avoided**

Investment & Payback Status

\$2,261

Initial Investment

Pay-Back Period

2.3 Years

Estimated Gas savings from Thermal Insulation

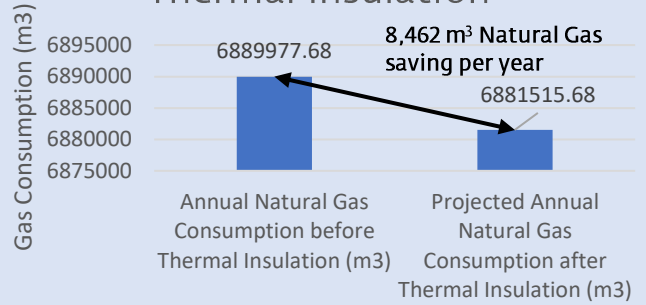


Photo: Thermal insulation in recommended areas

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PaCT program recommendations helped us save resources and make our factory a more comfortable environment to work in.”
– Factory Management

IFC led Advisory Partnership for Cleaner Textile (PaCT)

is a holistic program that supports the entire textile value chain – spinning, weaving, wet processing and garment factories in adopting Cleaner Production (CP) practices and engages with brands, technology suppliers, industrial associations, financial institutions, government to bring about systemic and positive environmental change for the Bangladesh textile sector contributing to the sector’s long-term competitiveness and environmental sustainability.

WHAT PaCT DOES:

- Cleaner Production Assessment
- Water & Energy Management
- Energy Efficiency & Productivity Assessment
- Rooftop Solar PV Pre-feasibility Study
- Rooftop Solar Calculation
- Online Resource Monitoring

DEVELOPMENT PARTNERS



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BRAND PARTNERS



IMPLEMENTER

