Case Study: **Energy / Heat Recovery**

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**Background:**

While conducting energy audit for the fish processing industry; the energy loss through effluent water was observed to be abnormally high.

**Operating Scenario:**

The operating practices included:

- The fish was delivered in trucks in baskets/tubs; which were laced with ice.
- The fish was separated from ice and taken up for processing; while the ice was removed and thrown in the effluent tank.
- The fish was washed with chilled water (at 8 to 10°C).
- The washing was a once through process and the wash water still quite cold (at 11 to 15°C) was pumped into the effluent tank.
- The average water temperature of in the effluent tank was observed to be 10 to 12°C.

**Energy Conservation Measures:**

The above concerns and issues were addressed by taking the following measures:

- The storage tank for cold water as well as ice was properly segregated from the other effluent.
- A suitable heat recovery system comprising of plate type heat exchanger with requisite pump and piping was installed to recover energy of cold water to pre-cool was water.
- The temperature of effluent water was raised from 10 to 26°C; while cooling the incoming wash water from 30°C to 14°C.

**Outcome:**

- The energy consumption of the refrigeration compressor for wash water reduced by around 75%; leading to 15% saving in the overall energy costs.
- The additional capacity could be used to enhance the production by 10 to 15%.