Energy Efficiency Improvement &

Cost Saving Opportunities for the Industrial Plant

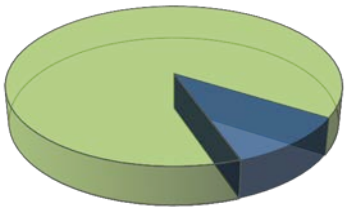
IPS Engineering

BASIC INFORMATION

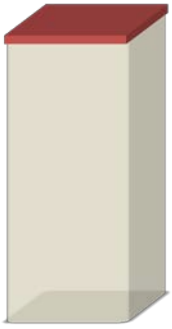
Energy Efficiency Improvement

Executive summary

The Italian chemical and petrochemical industry consumes almost **475 PJ** annually.
According to the study carried out by the IEA (International Energy Agency) the potential improvement for energy recovery is around 10.7% by applying best practice technology.
According to the same IEA report based on a rough estimation, the potential of energy integration related to energy recovery from process plant, in particular, is around 3% of the total energy used by process.



Potential energy saving : 10.7%



Potential energy saving : 3%

Energy efficiency improvement is an important way to reduce these costs and to increase predictable earnings, especially in times of high energy price volatility.

Think of how much you currently spend on utilities. Then imagine reducing this amount minimum by 3 to 5 percent in normal cases, up to 15 percent if your plant is a heavy energy consumer or generates its own steam or electricity. IPS energy efficiency consulting services make it possible through a proven methodology.

We can help you identify areas of suboptimal energy efficiency, improve your process plant energy efficiency and reduce your operating costs with a fast payback.

Optimizing energy usage is not only a more responsible way to operate your business, but also improves your profitability and sets you apart in the marketplace.

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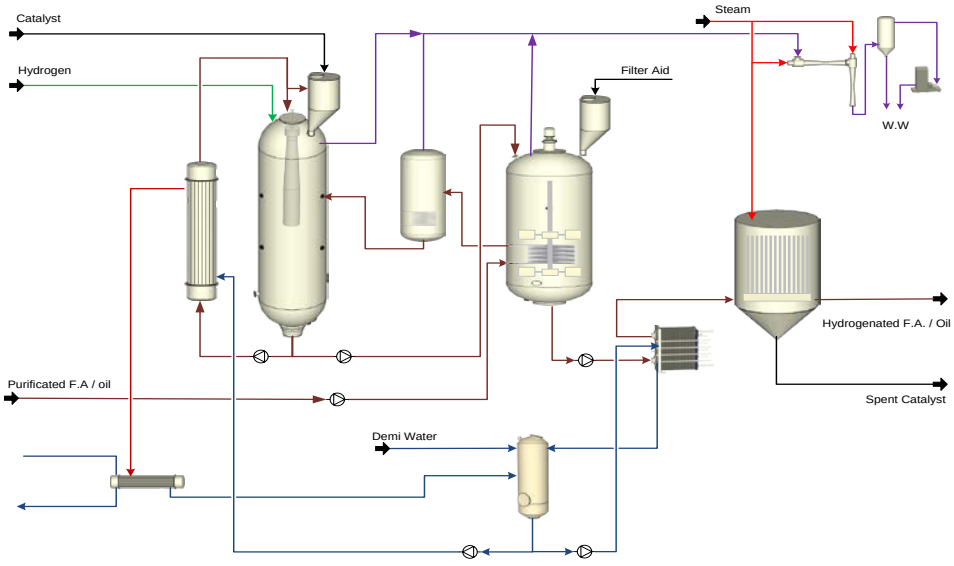
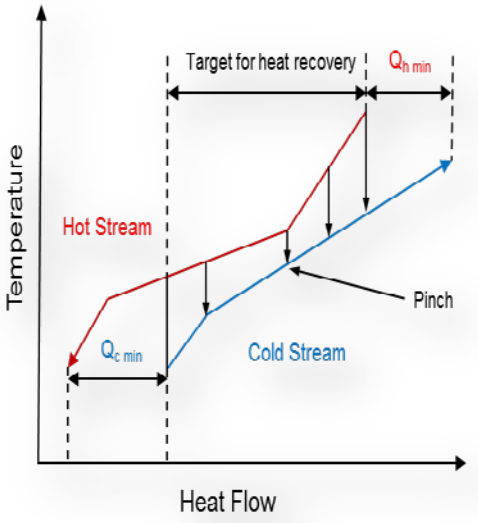
Methodology

The Best Practice (BP) represents the most advanced methods that are currently in use at industrial scale and are therefore, by definition, economically viable.

IPS methodology is in line with the approach explained in the IEA publications (IEA, 2007; 2008a) and refers exclusively to energy saving by heat cascading (including Pinch technology) and by process integration in the processing plant that use fuel as primary energy source.





The IPS methodology can also be applied on Pharmaceutical Industry. In fact, there are seven major activity areas in this field which can be considered as an energy efficiency opportunity, R&D, bulk manufacturing, formulation, packaging and filling, warehouses, offices, and miscellaneous. However, the IPS methodology can be applied to the HVAC plant that has a energy consumption about 65% of the total energy use.

Energy Efficiency Improvement

What we do and how we do it

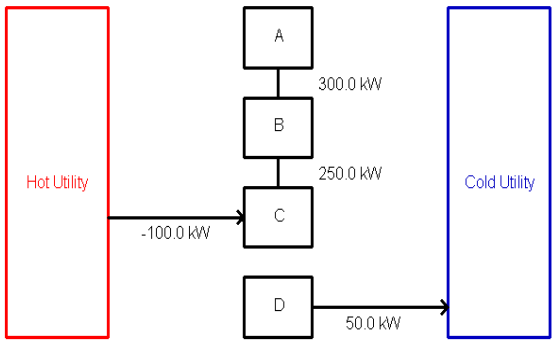
We evaluate your plant energy usage and opportunities for utility cost reductions through an energy efficiency study, which is divided in two steps:

First step:

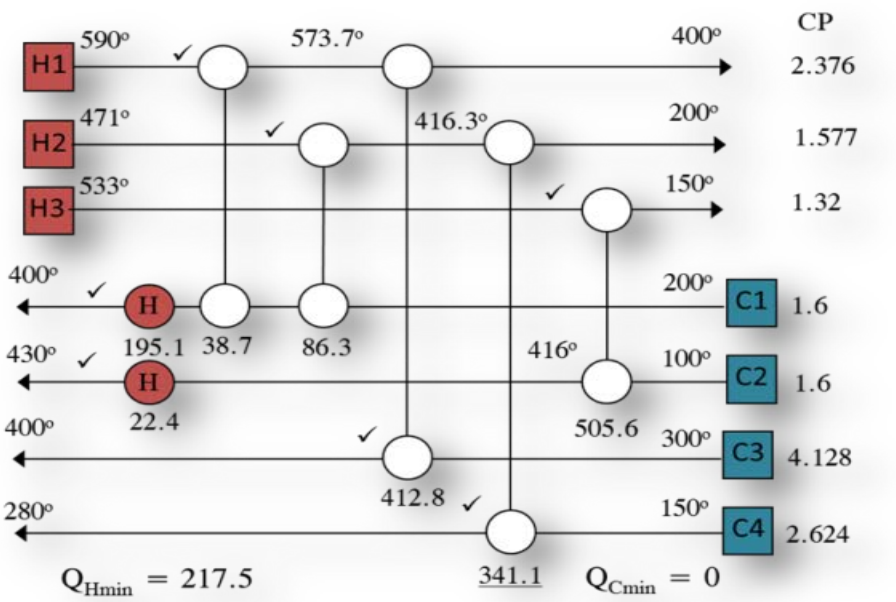
Pre feasibility

We'll review the way your process plant is operated and maintained to understand how much energy your plant uses. We do it through the analysis of the collected data that you provide to us.

Then we will perform a preliminary analysis to determine if energy optimization modifications would help you save money and how much, considering cost of modifications and if these modifications are available, feasible and sustainable.



Cascade Diagram



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Energy Efficiency Improvement

Second step:

Once decision made based on the first step results, we can proceed to implementation of energy saving study that include the following activities:

Inspection

Our team will inspect your plants and review available documentation to conduct Pinch Analysis for process plant.

Calculation and cost analysis

We implement calculations to identify the changes to be made and costs of these modifications to achieve savings.

Documentation

You will receive a report containing a summary of our findings, a detailed cost-benefits analysis and all of IPS's expert recommendations for specific improvements that will reduce your energy costs and make your manufacturing process more energy efficient.

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References

CERTIFICATO

Nr 50 100 12070

Si attesta che / *This is to certify that*

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THIS CERTIFICATE IS VALID FOR THE FOLLOWING SCOPE

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Design and development of industrial plants and processes related to industrial activity *(IAF 34)*

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For the Certification Body
TÜV Italia S.r.l.

Paolo Merenda
Direttore Divisione Management Service

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