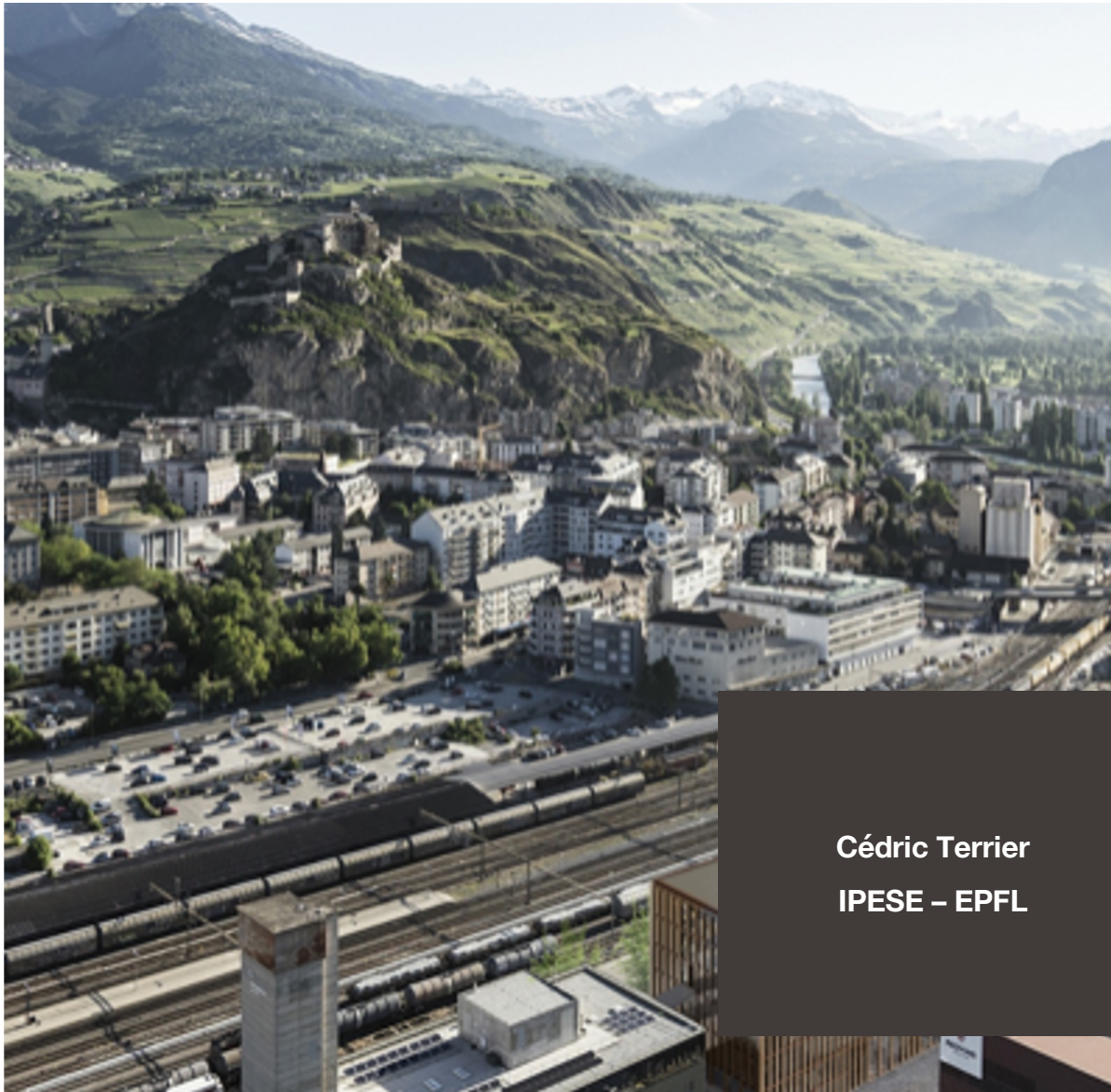




Heat Exchanger Design Network

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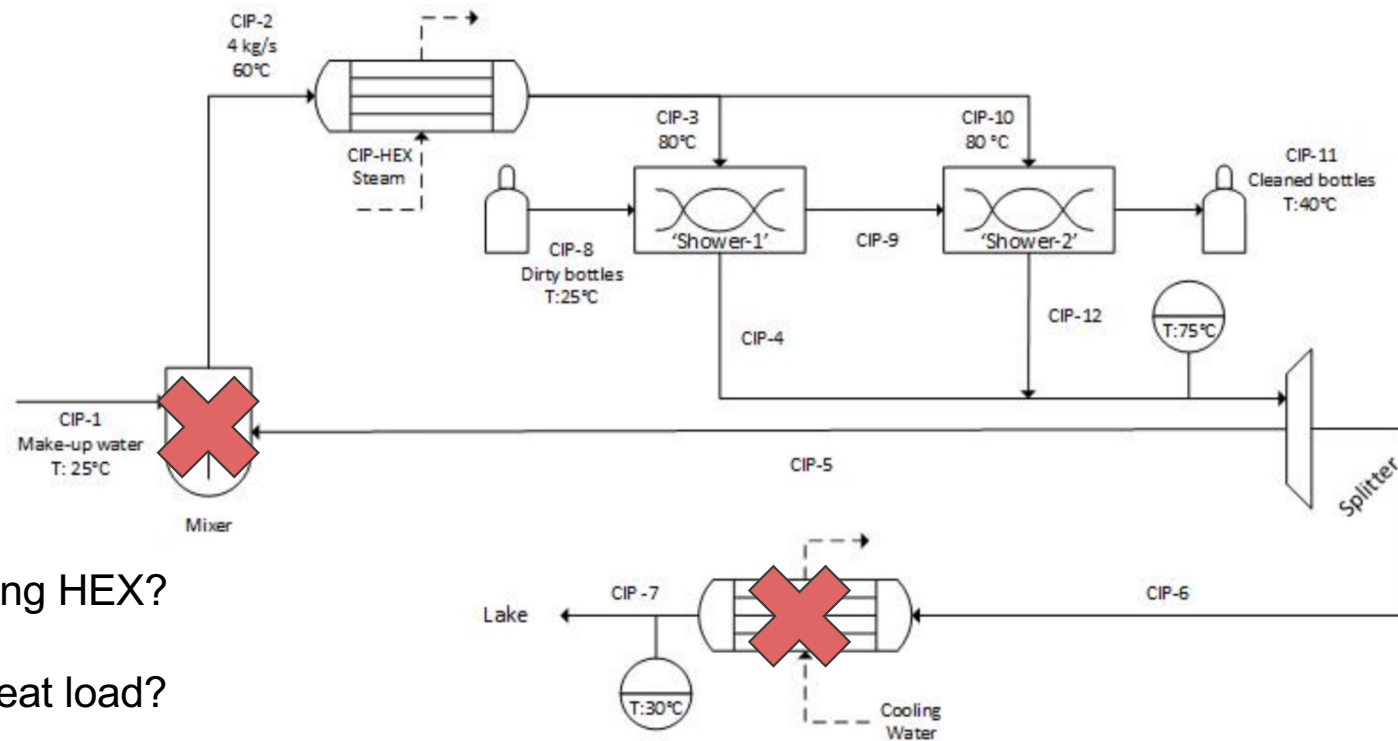
Sion – 21.11.2022

Identify penalizing HEX

Let's assume the pinch point is at 50°C



Penalizing HEX



Which types of penalizing HEX?

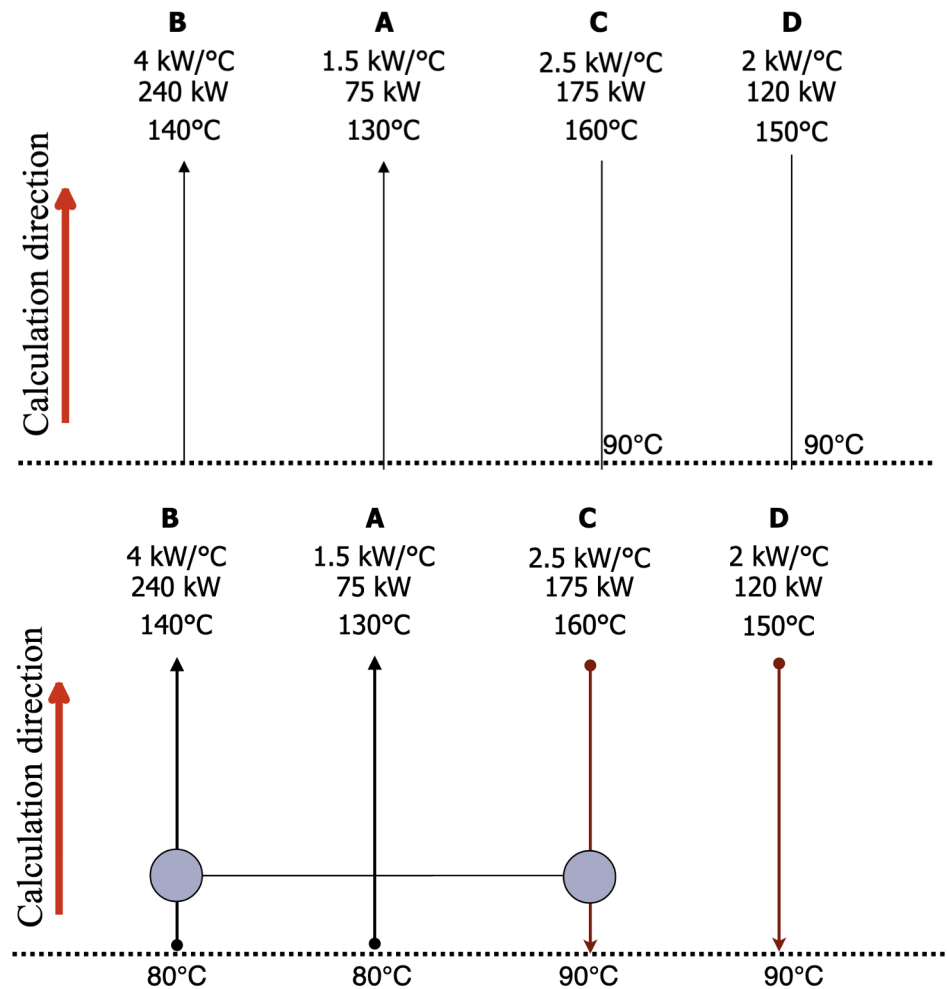
How much penalized heat load?

How it affects the energy bill?

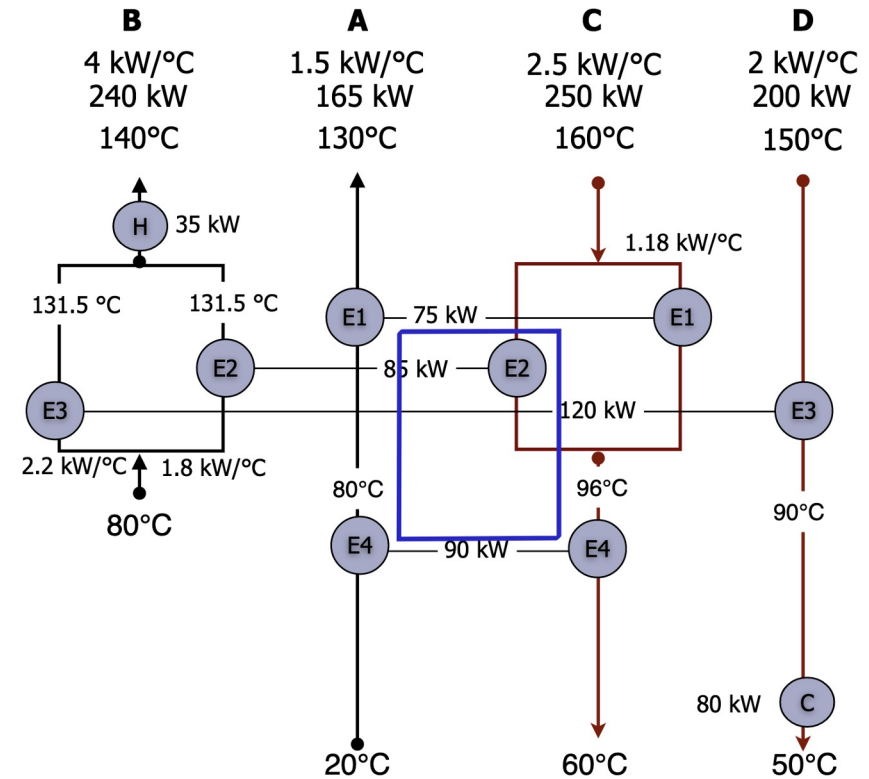
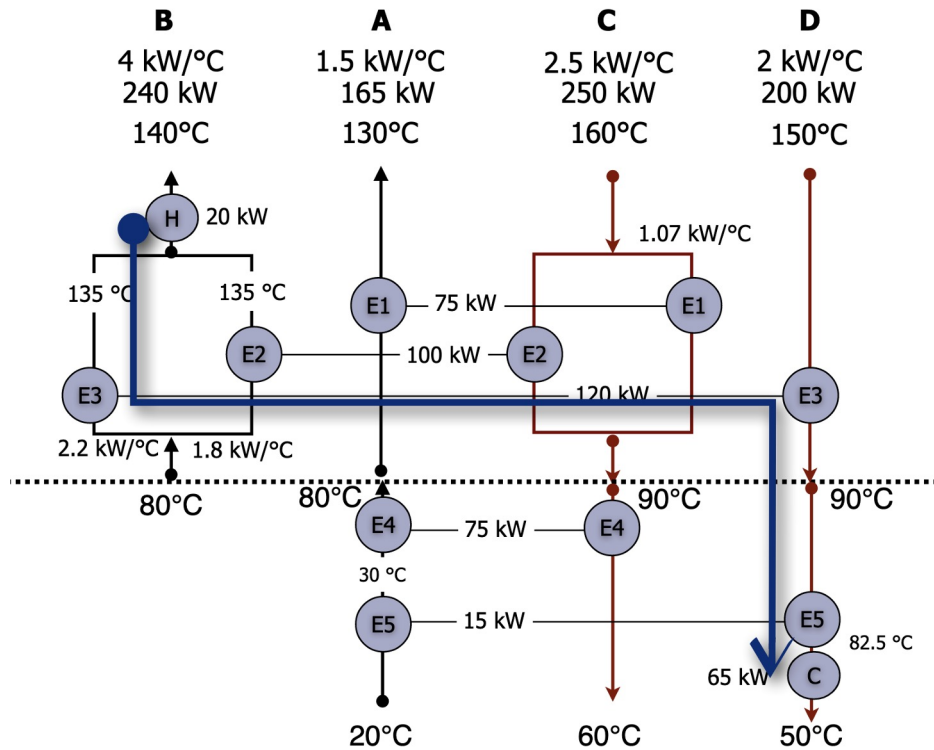
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Build the HEN representation

- Draw the grid representation for the pasteurisation and cleaning in place sections. Use corrected temperatures.
- Fix the non penalizing heat exchanger.
- Finalize the design applying the pinch design method.



Path and loop following methods



Conclusion

- Compare your different layouts (initial layout, new layout after pinch method, optimized new layout after loop and path methods)
- Use meaningful key performance indicators (KPI) for your analysis (costs, total heat exchange area, total heat being recovered, energy bill, ...)
- Show the final layout that you would present to your boss

TODO Summary

- Based on the pinch point of the overall process, find the penalising heat exchangers in every section. Don't forget to mention the type of penalizing HEX. Calculate the penalized heat loads and the associated operating costs.
- Draw the grid representation of the heat exchanger network for the **pasteurisation and cleaning in place**. Since your boss doesn't want to change all the layout of the factory, fix the non penalizing heat exchanger. Ideally you won't change them.
- Apply the pinch design method to design the HEN. Use corrected temperature for the HEN design and the real ones to calculate the area of the HEXs
- Once you have a design, improve it using the path and loop following methods
- Compare the costs, the total heat exchange area and the total heat being exchanged for your different layouts (initial layout, new layout, optimized new layout)