



## Chemwork

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Dear all, could somebody give me some advices about when we would better use a side reboiler (pump around) for our distillation tower? and also about its design criteria.

[Reza Modanloo](#)

Senior Process Engineer /Open to new opportunities  
Top Contributor

For designing a pump around in hysys, we have to determine optimum draw off tray and at least two of these items:

- pumparound(side treboiler) duty
- pump around flow rate
- stream vapor fraction

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### Comments

6 comments



Jeremy

[Jeremy Goldbloom](#)

Oil & Energy Professional

You dont say what other units are involved. Side PA reboilers are typically employed for energy efficiency on an Atmospheric Crude unit or similar columns on a refinery. There are usually a lot of hot process streams which need to be cooled, and a heat network study can identify suitable sinks.

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Hooman

[Hooman Tabaraei](#)

Specialist Process Engineer (MIChemE, CEng)

Hi Reza,

Normally two types of thermosyphone reboiler (kettle type), is used to vaporising bottom (liquid) of distillation counn, side draw-off and bottom draw-off reboiler. And both types can circulate liquid and vapour properly (in equilibrium contact) into column as per suitable selection of line size, inlet/outlet nozzle elevation above ground, and kettle type reboiler - shell side low pressure drop. In case of vaporizing a fluid with high viscosity (such as bottom of VDU), you may need to utilise pump for circulation, and thermosyphone phenomena is not applicalbe in this case.

I've prepared previously 2 (verified) spreadsheets for performing proper selection of line size, and nozzle elevation of kettle type (for both side draw-off, and bottom draw-off configurations) in order to have a suitable selection of thermosyphone (kettle type)reboiler. I can forward them to your mail box, if you let me have your contact address.

One more thing - You can build the mentioned hydraulic calculation for kettle type reboiler in HYSYS or UNISIM environment, too. But be noted, if hot liquid (in equilibrium with vapor) outlet from kettle type reboiler returns to column, UNISIM or HYSYS are unable to perform calculation. And you can do that by spreadsheets easily.

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Reza

[Reza Modanloo](#)

Senior Process Engineer /Open to new opportunities  
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Dear Hooman,

Thanks again for your advices.your explanations show that you have a pretty good knowledge on detail engineering of reboilers. but my question was about side reboilers which takes a stream from a tray and returns vaporized stream to below tray.side reboiles are used for increase the heat efficiency.

you are kindly invited to join my professional Group in linkedin ( IPEO) and take part in our discussions. i have sent an invitation for you through e-mail regards

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**Reza Modanloo**  
Senior Process Engineer /Open to new opportunities  
Top Contributor

Reza

Dear Jeremy

Thanks very much for your explanations.the case i have is stabilization tower a gas plant  
The working pressure of this column is about 10 bars and bottom temperature is 190 o C. product is used as heating medium of side reboiler. if you send your e-mail to me i can sent the PFD for you.my general question are as follow:how can we determine the best point (tray) where we take the stream for our side reboiler and also how to determine the side reboiler flow or its duty.i will be grateful if you can give me some advise about how can we design a side reboiler.

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**Wilfredo Garcia**  
Process Specialist at Ecopetrol

Wilfredo

Dear Reza,

Could you please submit the PFD to my email too?, I think the answer you're looking for is more easy then expected and I could help you too. My email wilfredo.garcia@btinternet.com

Cheers,

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**Reza Modanloo**  
Senior Process Engineer /Open to new opportunities  
Top Contributor

Reza

Hi Wilfredo,

my pleasure. i would send the PFD for you as well.

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