UNIVERSITY OF CAMBRIDGE

Nuclear Options for Generation-Integrated Energy Storage

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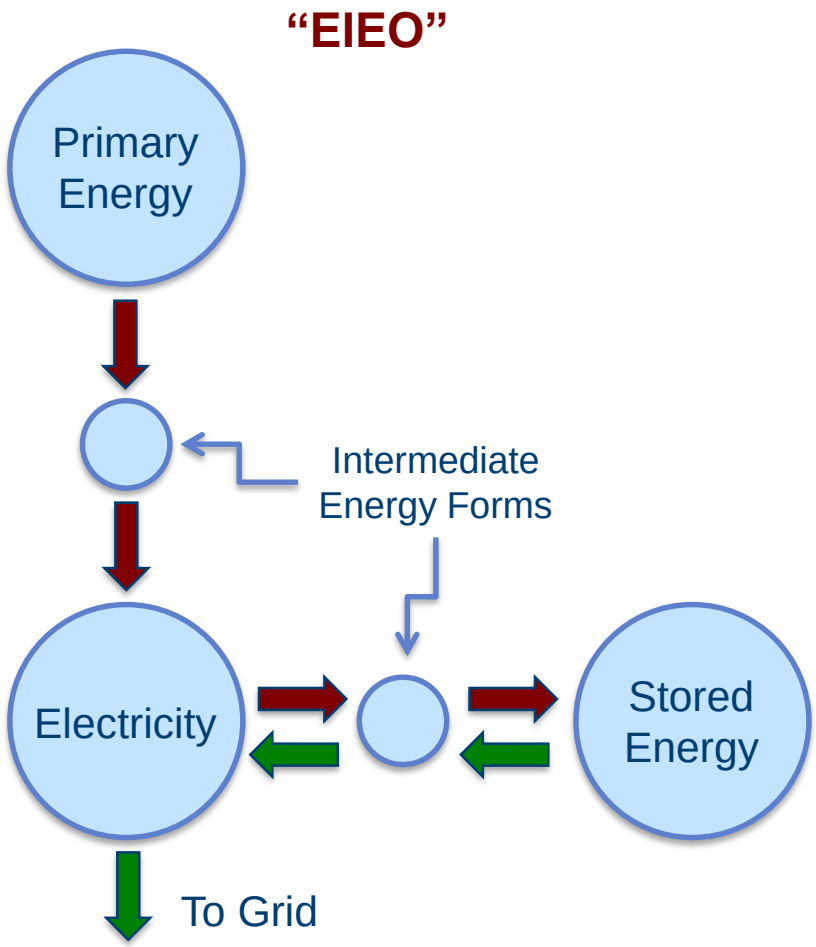
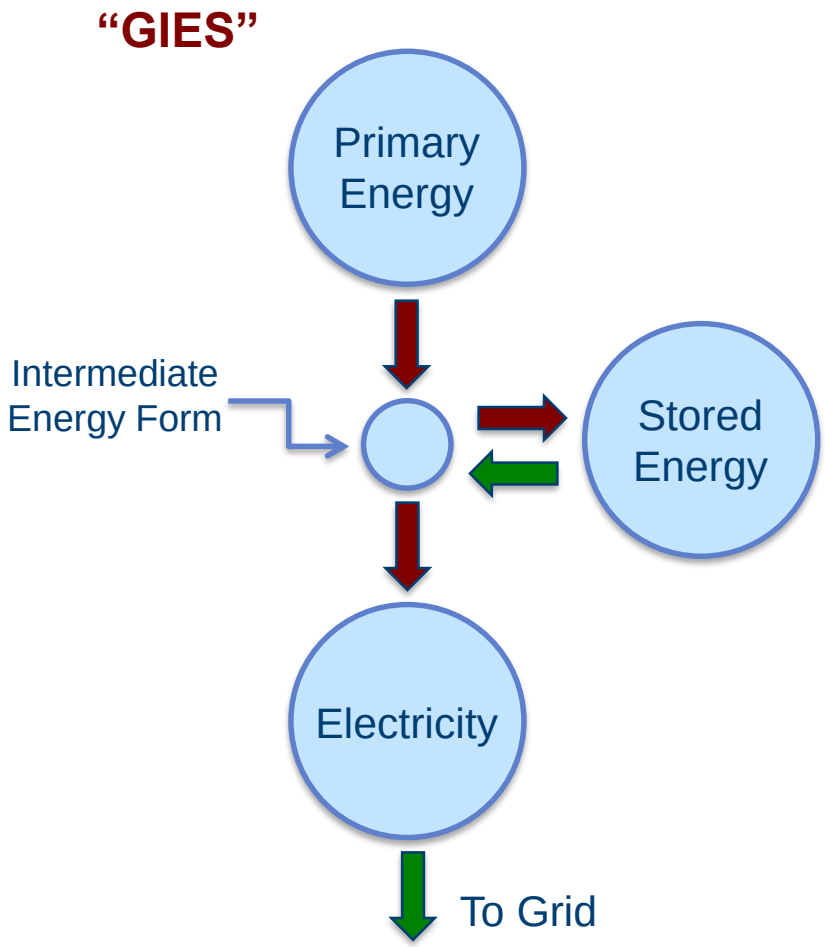
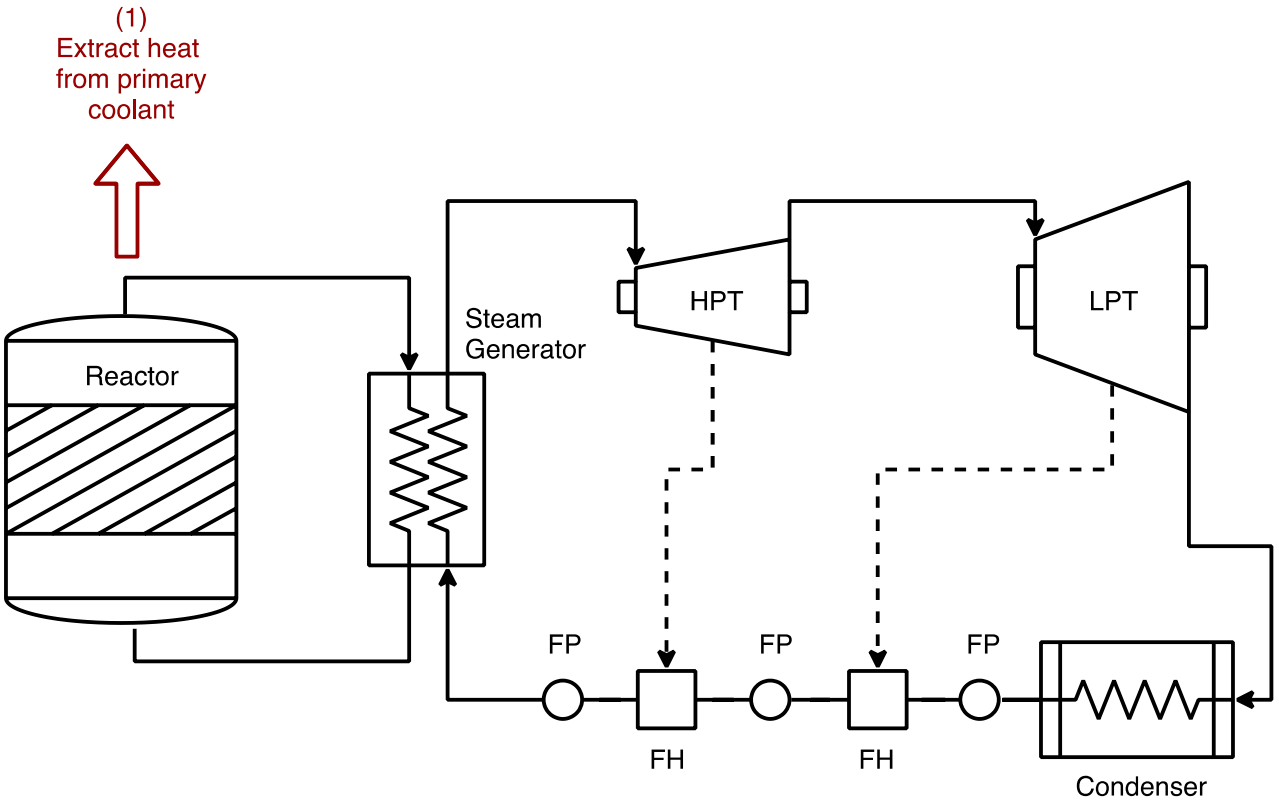
Stand Alone (EIEO) vs. Generation-Integrated Energy Storage (GIES) (based on Garvey *et al,* 2015)





Possible Thermal Storage Locations



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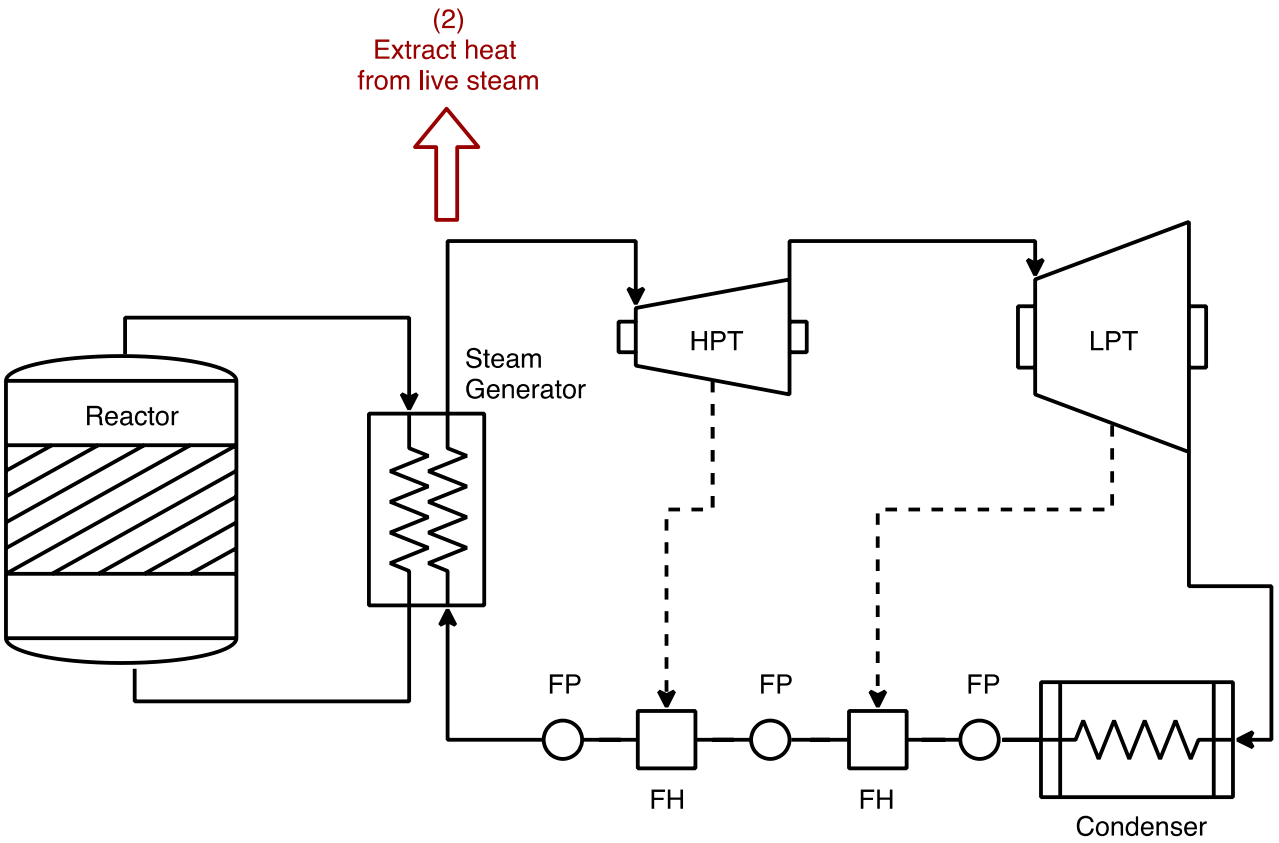

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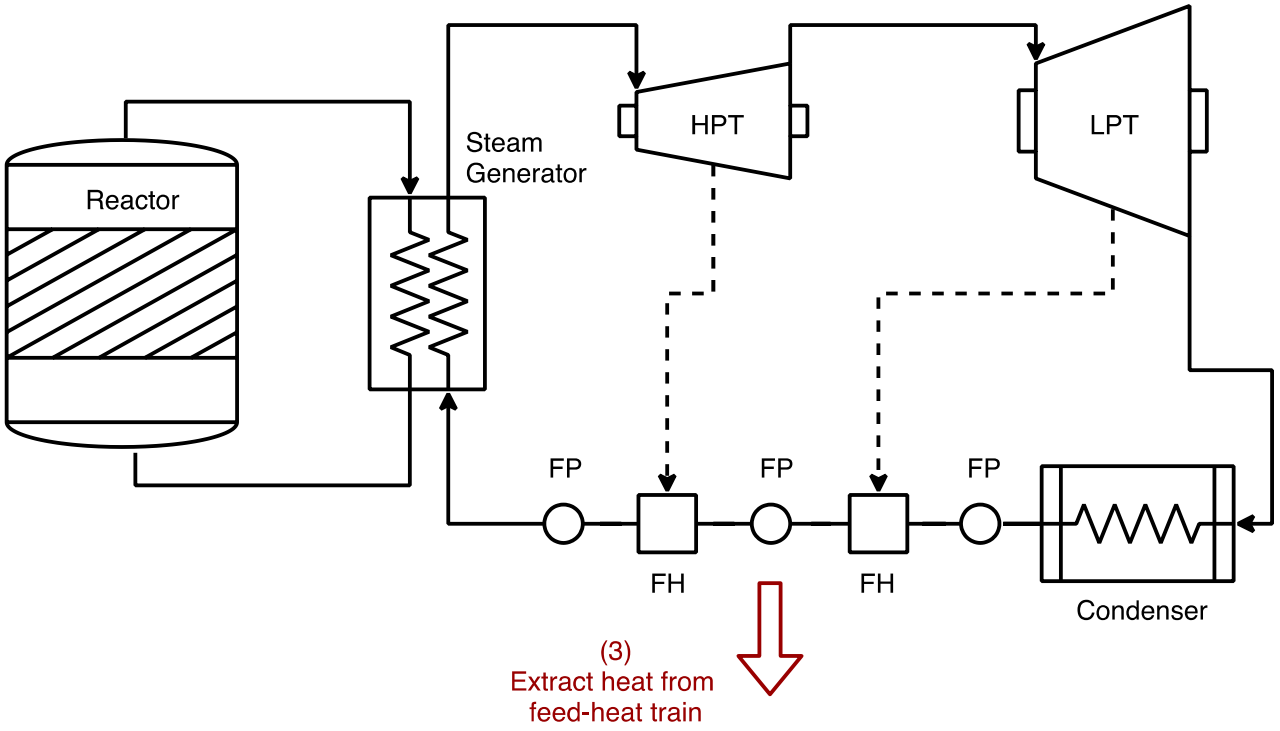

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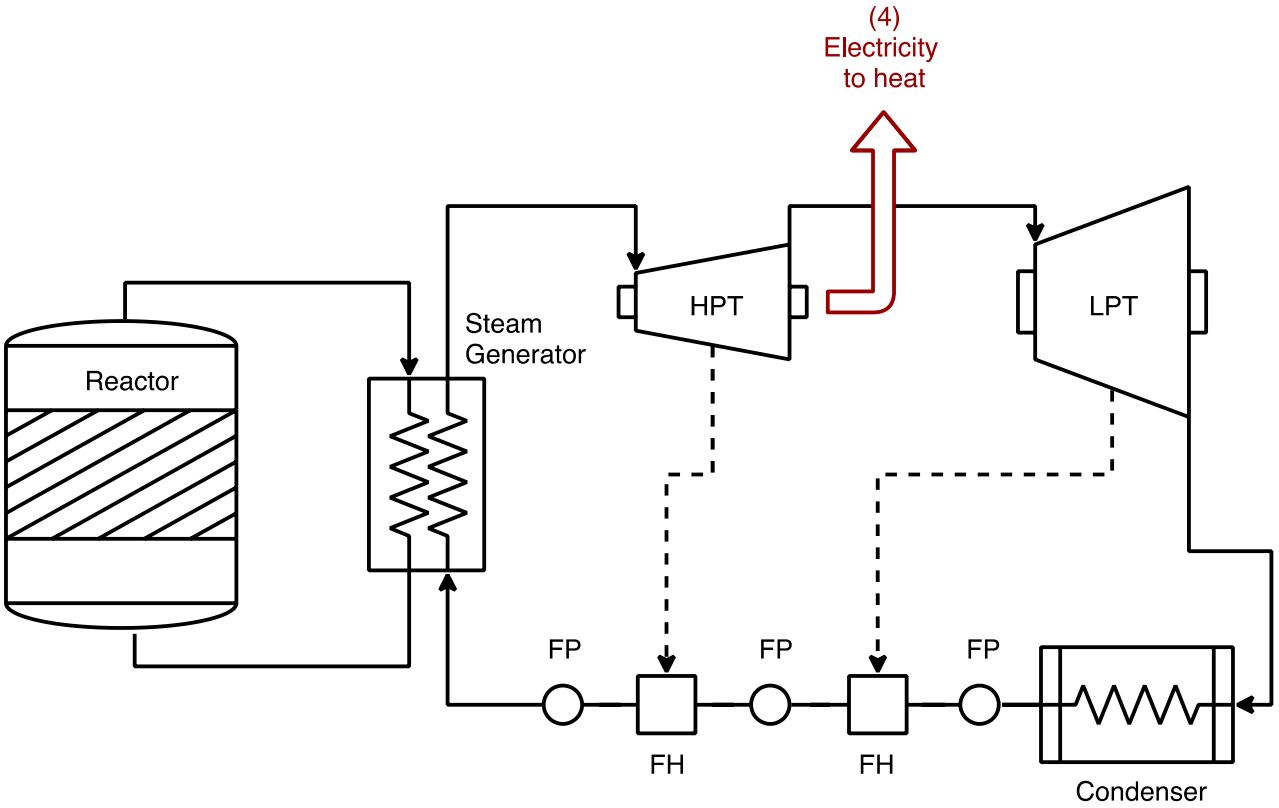
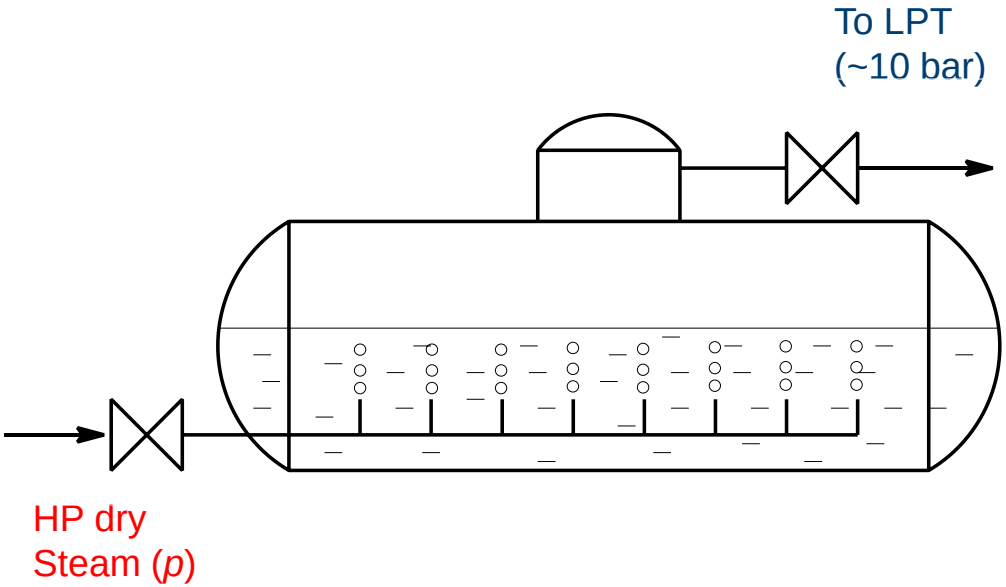
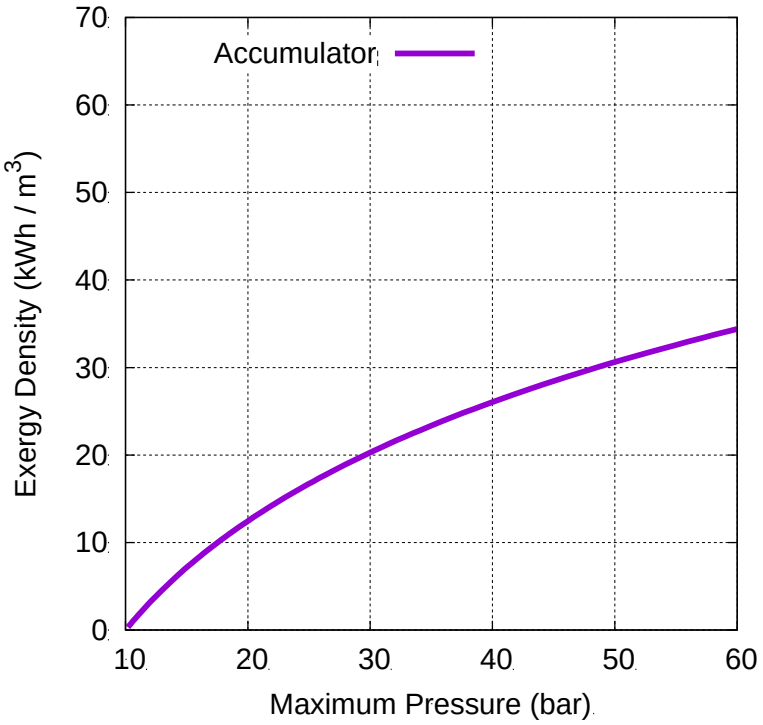


(2) Steam Accumulator Storage



Main loss due to throttling



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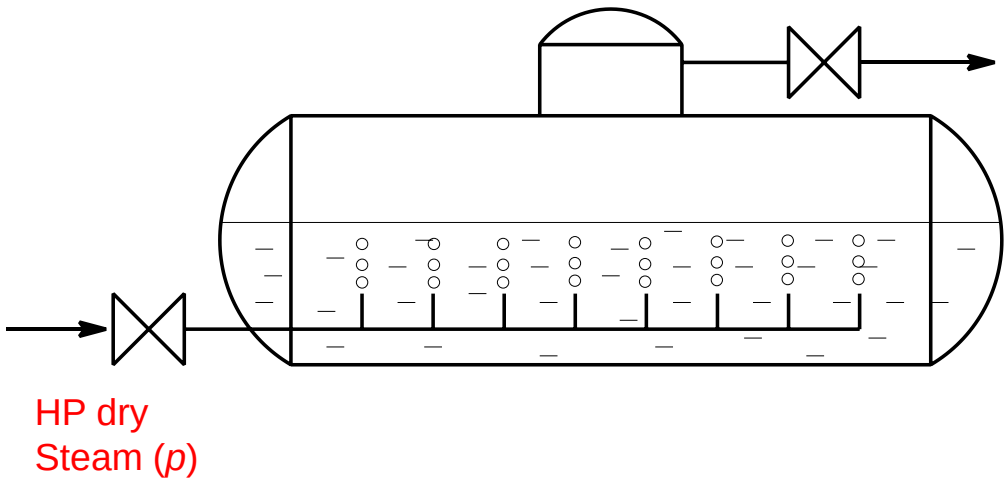
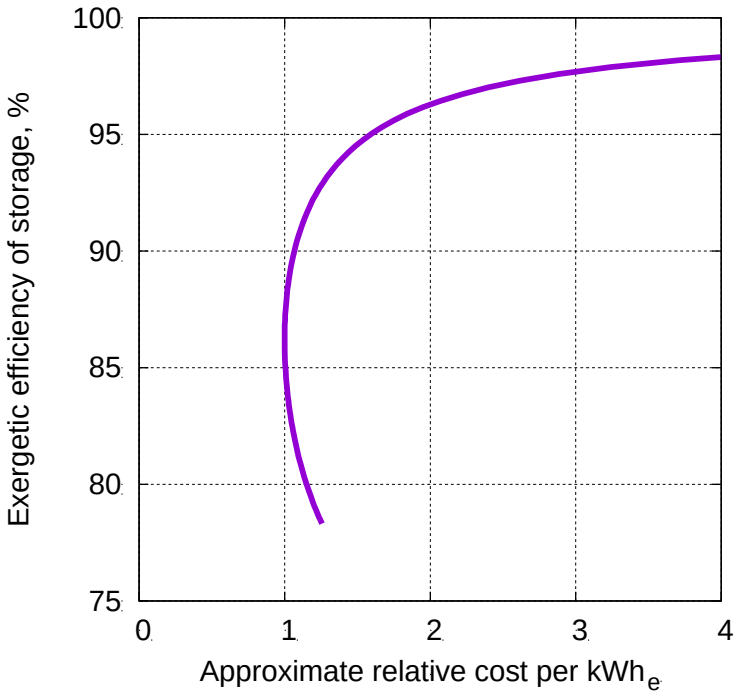


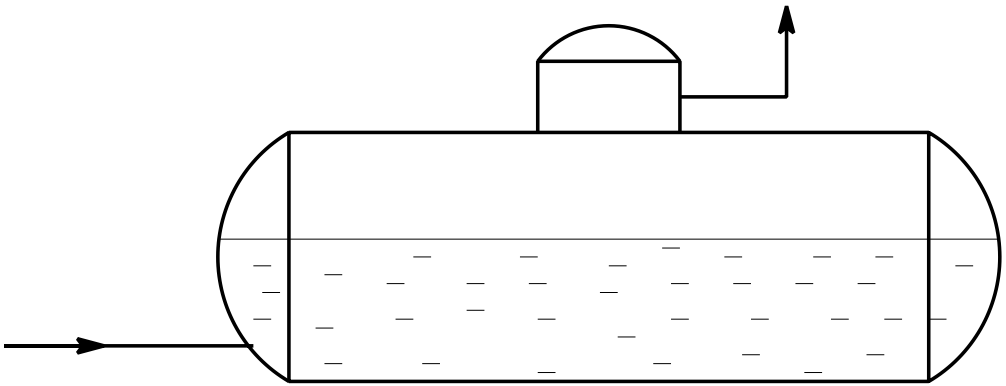
Main loss due to throttling

Cost assumed proportional to *p*



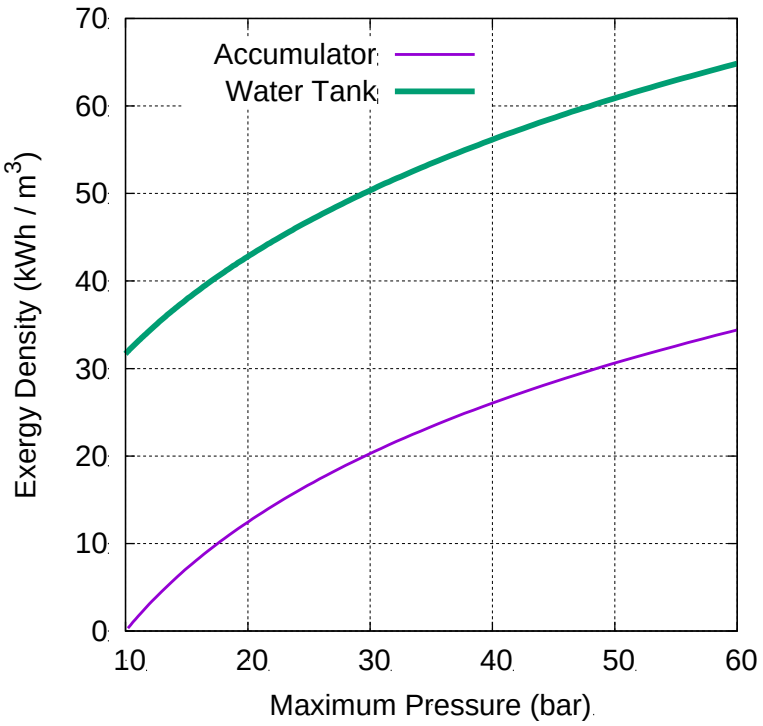
(3) Storage from Feedheat Train

Excess dry steam to somewhere in cycle



Saturated feedwater at *p*

Isobaric operation



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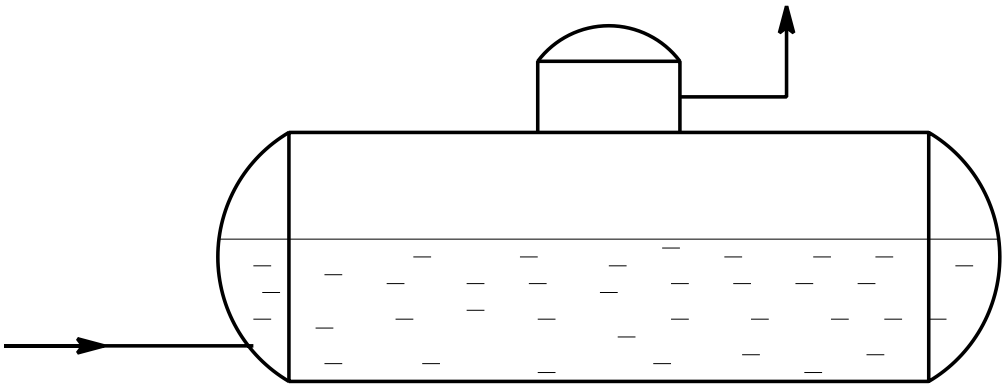

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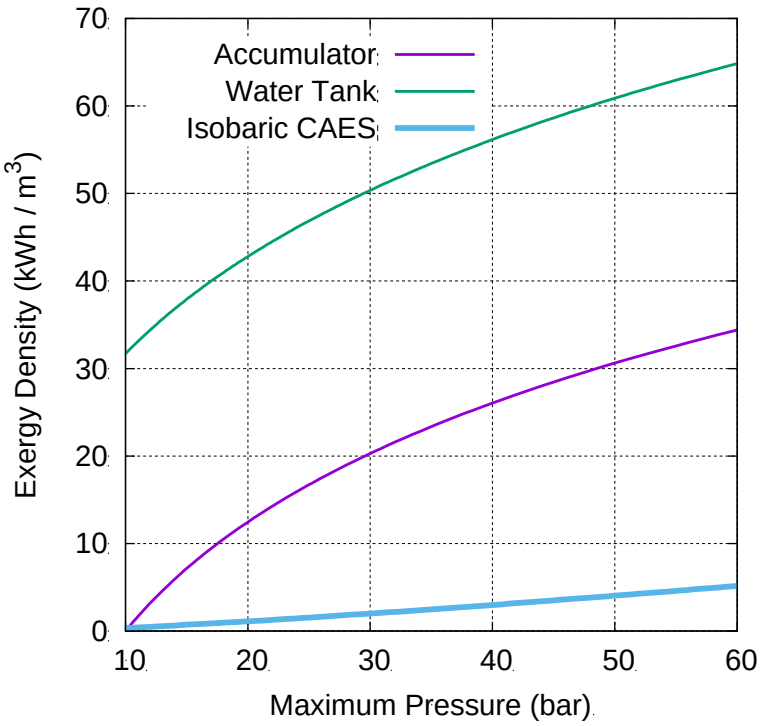

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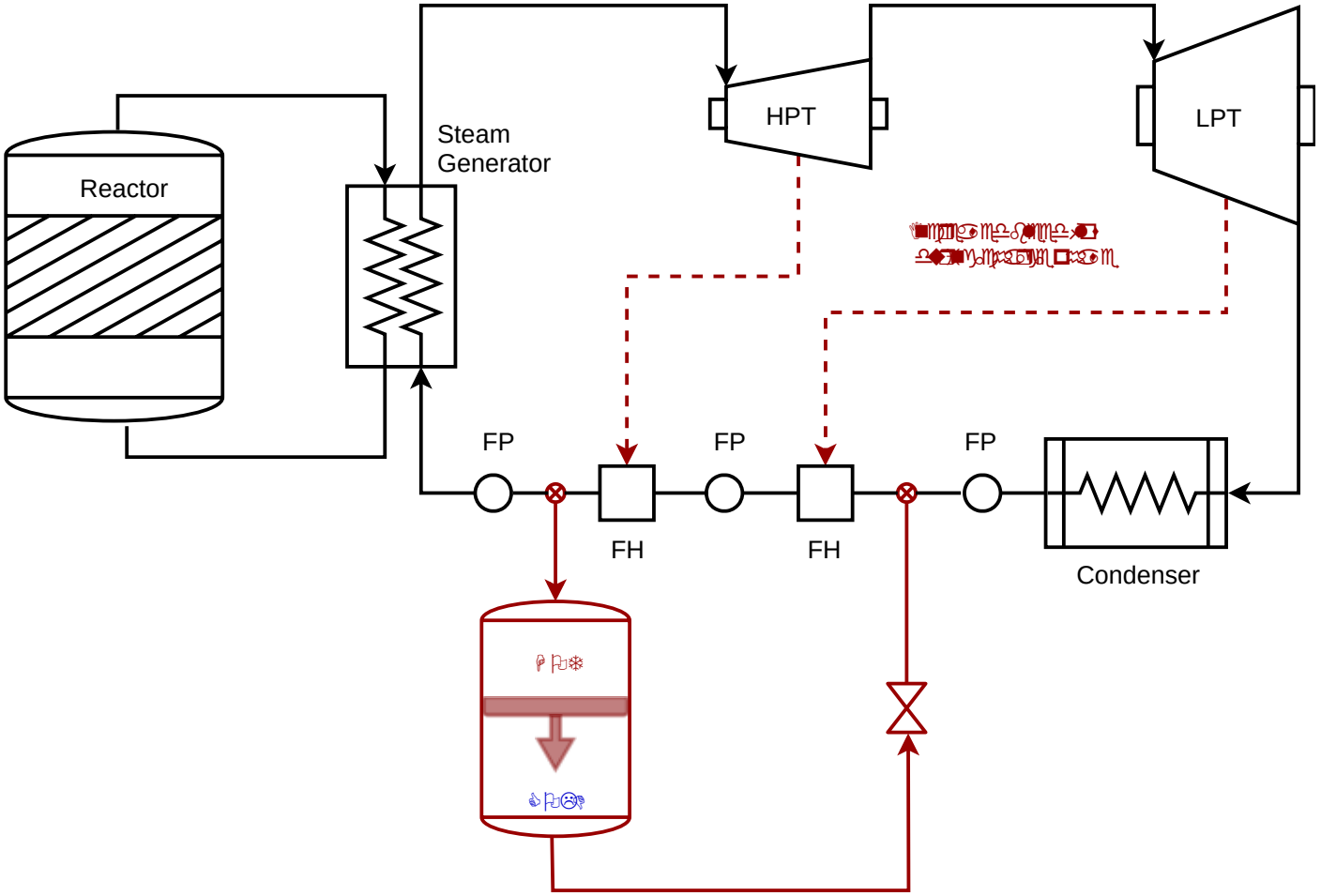
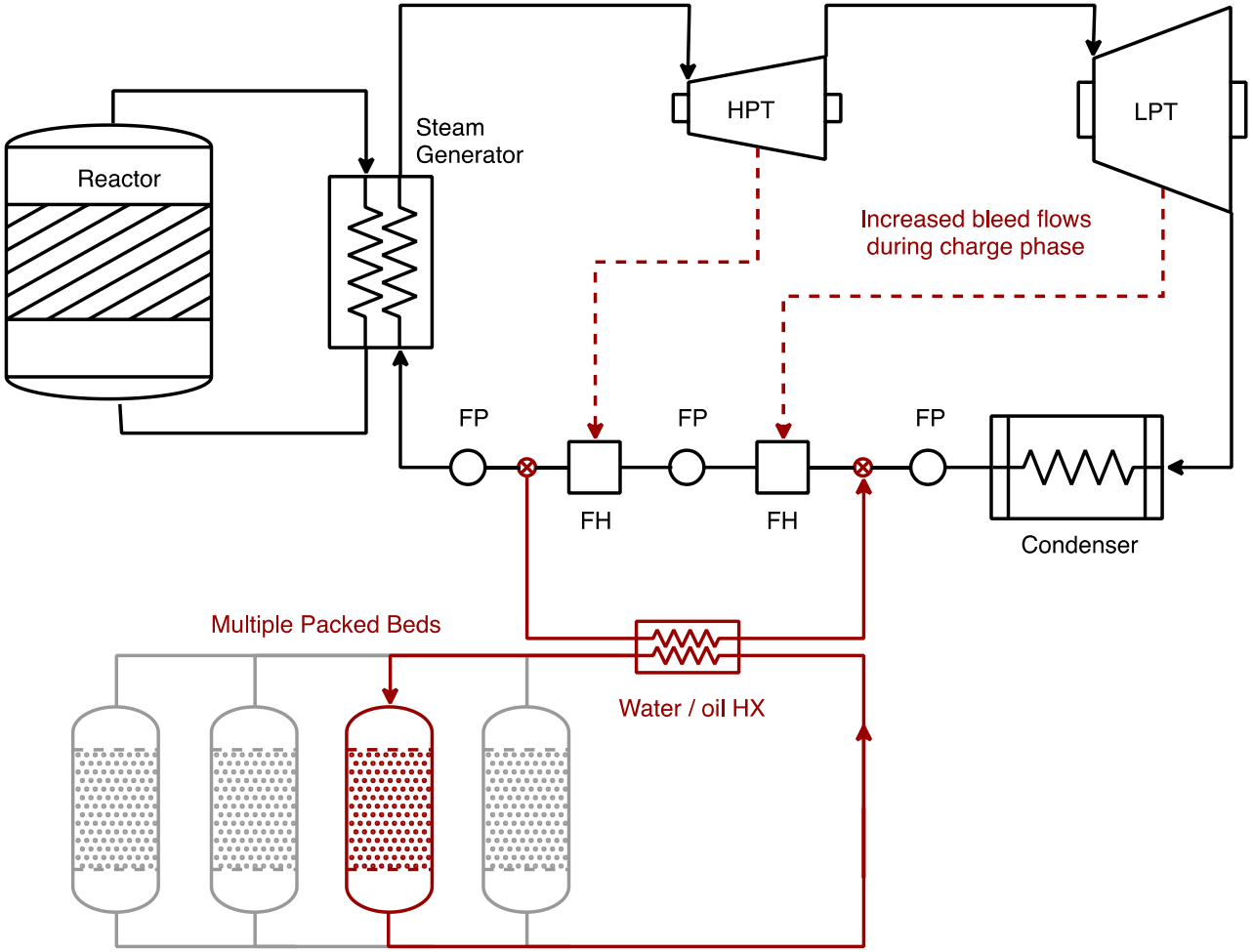


(3) Storage from Feedheat Train – Alternative Implementation



Potential Benefits with Different Generation Methods

Generation Technology	Implementation	Thermodynamic Benefits	Cost Benefits
Wind (Intermittent)	e.g., Hydraulic & CAES	?	✓
CSP (Intermittent)	Thermal Storage	✓	✓
Nuclear (Continuous)	Thermal Storage	✓	?