

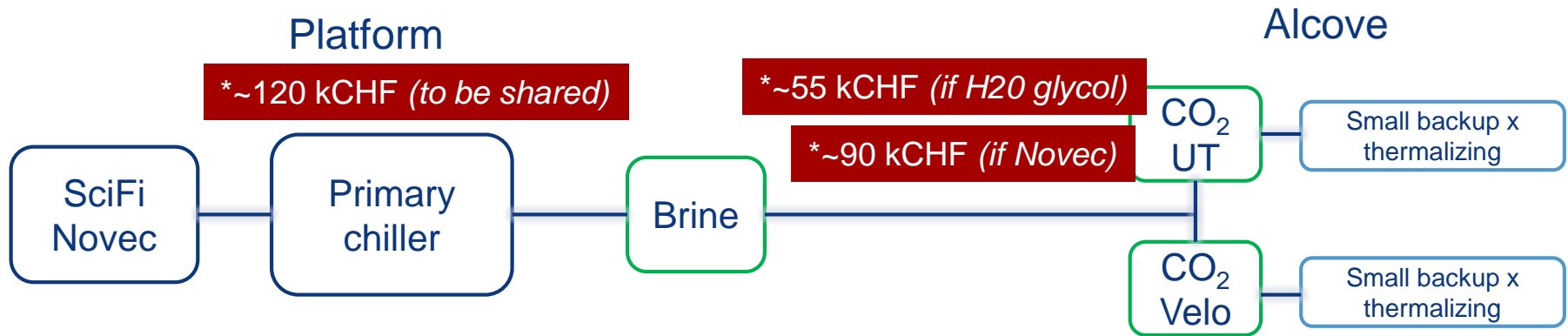
Common Chiller

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ENGINEERING
DEPARTMENT

Possible layout



- Total for UT & Velo:
 - If brine with Novec: $45 + 90 = 135$ kchf
 - If brine with Glycol: $45 + 55 = 100$ kchf
- Advantage:
 - Inertie
 - Full redundancy
 - 4 compressors
 - 2 pumps
- Disadvantage:
 - Complexity
 - Price

***These prices do not include the manpower**

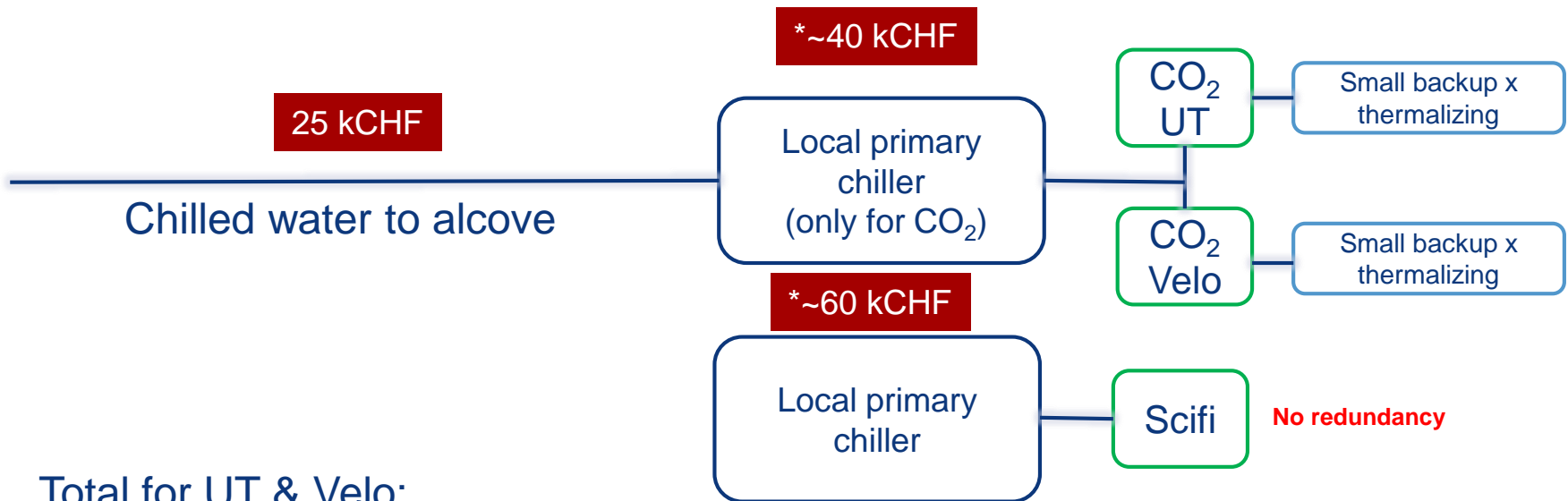
Possible layout



- Total for UT & Velo:
 - Direct expansion: $45 + 17 = 62$ kCHF
- Advantage:
 - Price
 - Full redundancy
 - 4 compressors
- Disadvantage:
 - Around 60kg of R404A
 - Need to be protected to avoid CO₂ freezing

***These prices do not include the manpower**

Possible layout



- Total for UT & Velo:
 - Direct expansion: $25 + 40 = 65$ kchf
 - Advantage:
 - Price equivalent to the other solution
 - Easy to do
 - Disadvantage:
 - Space needed in the alcove
 - No redundancy
 - Need to install water pipes

***These prices do not include the manpower**

Price summary

	Chiller with brine (glycol)	Chiller with brine (novec)	Chiller with direct expansion	Independent chiller
Scifi	75	75	75	60
UT& Velo	135	100	62	65
Total	210	175	137	125
Comment	Full redundancy			No redundancy

If you want to get redundancy with independent chillers you need to add ~10kchf on each

Limit of responsibilities



- EN/CV will provide fluid with specific:
 - Temperature
 - Pressure: Supply & return
- At the end of the piping 2 manual shut off valves will be installed
- EP/DT will be responsible concerning the selection of the components after these valves:
 - Expansions valves
 - Sensors
 - ...

Conclusion

- All the price are not including the manpower
- Due to the current load of works the chiller(s) has to be done by an external company
- A dedicated cooling engineer will arrive beginning of next year
- We have the last and formal numbers for Scifi and we now need UT & VELO ones. (see Paola document).
- Investigation about future refrigerant has to be done