

DESIGN OF

**A SUBCRITICAL AND TRANSCRITICAL
CARBON DIOXIDE
REFRIGERATION SYSTEM**

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- Properties of CO₂
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- SC Simulation v.5
- Full system
- Controller Box



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CO₂ and Global Warming

- Global Warming Potential = 1
- Ozone Depletion Potential = 0
- Naturally Available

e.g.

R404A has a GWP of 3922

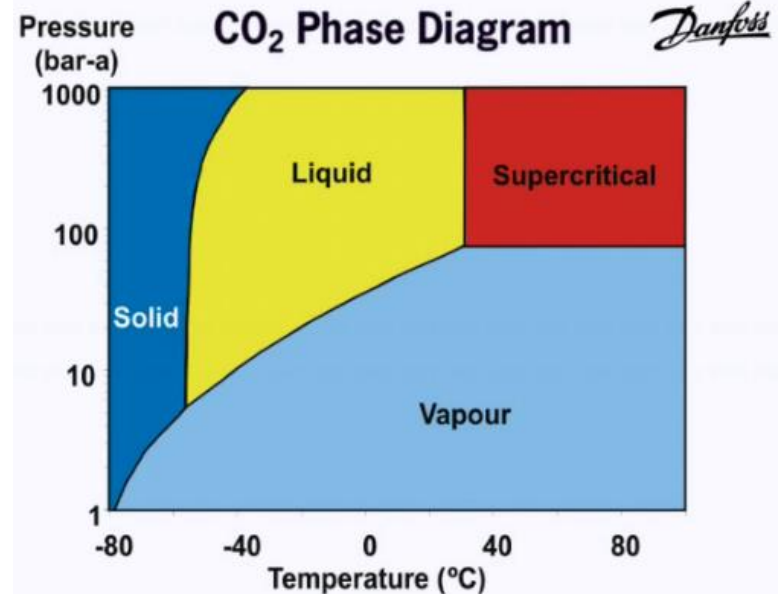
1 kg CO₂ = 3922 kg R404A



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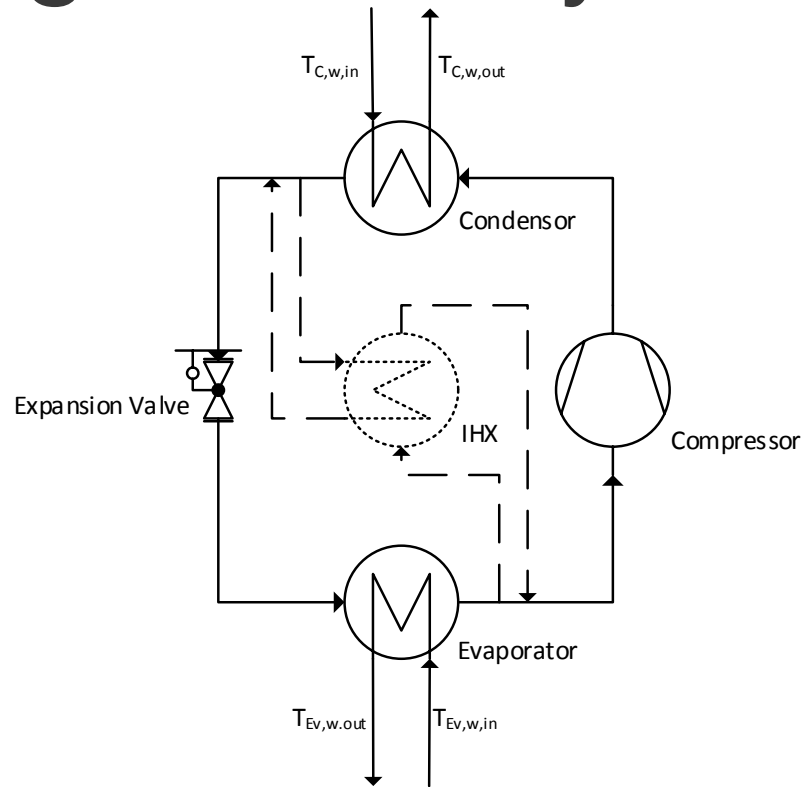
Properties of CO₂

- Critical Temperature: 33.98 ° C
- Critical Pressure: 73.77 bar
- R744
- Non-Toxic
- Non-Flammable



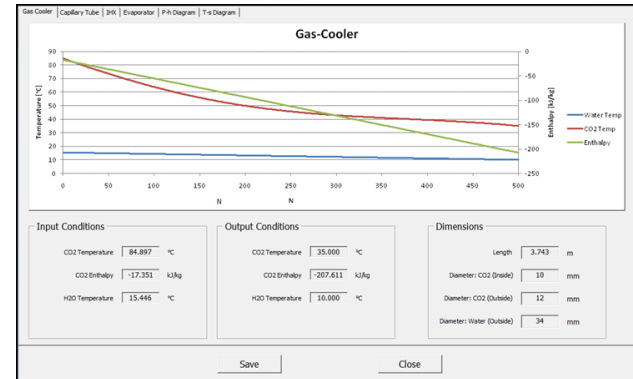
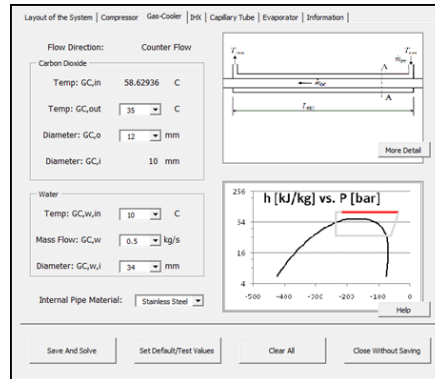
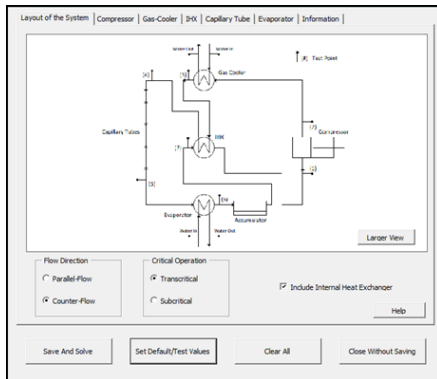
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Refrigeration System



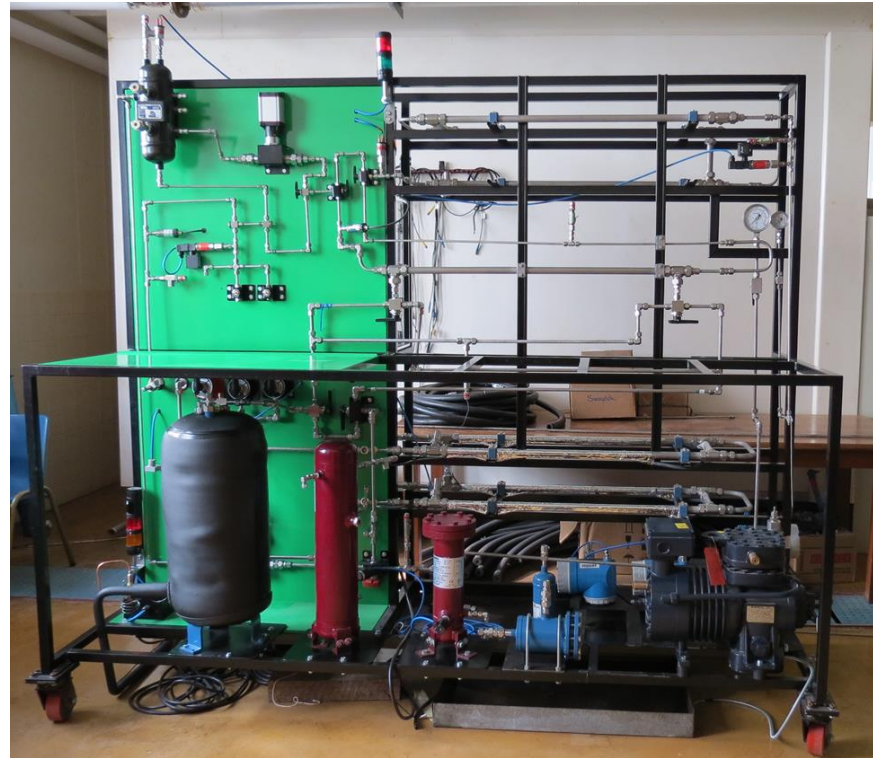
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SC Simulation v.5



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Full System



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Controller Box



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Summary

- CO₂ is Environmentally Friendly
- Complex System
- Design Aided with Simulation
- Extensive Control and Safety Systems



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End

- Thank you

Acknowledgments

- RT Dobson
- Sponsors

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