

# L-V | BOFG as a Source for CO: Process Design and LCA

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Vacuum pressure swing adsorption (VPSA) processes are promising separation technologies to recover valuable compounds from industrial off-gases. In project L-V, CO separation from BOFG is realized using a three-bed VPSA. The combination of process modeling and the assessment of system-wide environmental impacts using Life Cycle Assessment shows that greenhouse gas emissions can be reduced with the current grid mix, and up to 68 % in the future, assuming renewable energy sources.



### PROCESS CONFIGURATION FOR HIGH-PURITY CO SIMULATION RESULTS



Sensitivity analysis to identify conflicting process targets:



Identification of promising operating points



### **KEY MESSAGES**

- VPSA processes are technically feasible for CO enrichment from BOFG for high-purity applications
- The processes were optimized by adjusting the VPSA configuration and the operating conditions for two scenarios:
  1. maximizing recovery
  - 2. maximizing productivity
- In both scenarios: Using CO from BOFG reduces GHG emission by 10 % for today's grid mix
- > Up to 68 % GHG emission reduction is possible for future

renewable energy sources

#### REFERENCES

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