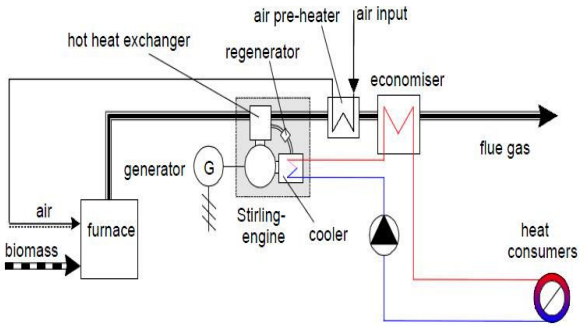
Stirling Engine



Schematic of the Stirling Engine used for the CHP process

Mid-West Potential

State	Stover Production Million Metric tons	% of U.S. Total
Iowa	35.9	18.3
Illinois	31.0	15.8
Nebraska	23.5	12.0
Minnesota	19.4	9.9
Indiana	15.3	7.8
Ohio	9.0	4.6
Wisconsin	8.0	4.1
Kansas	8.0	4.1
Missouri	6.1	3.1
Michigan	5.1	2.6
10 State Total	**161.3**	**84.2**
U.S Total	**196.2**	**100**

Conclusion

•The group constructed a viable process of converting corn stover to usable energy via cogeneration .
•The use of a CHP process provides more energy for the farmer in comparison to separate generation of heat and electricity.
•68% of stover energy can be utilized by farmer for electricity and heat and can also be sold back to the grid for profit.
•The proposed test model is ready for detailed analysis and possibly implementation.

Recommendations

•Interactive database and website.
•Gasification: More energy (9:1).
•Nitrogen: Direct use on farms.
•Test Model: Small scale model.
•Large Scale: Scaled up model.
•Utilize 220 million tons of stover in the U.S.
•Piping: Efficient transport of stover.
•Equipment specifications required for steam turbine .

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Solid Fuel from Biomass for Cogeneration