

Exhaust Heat Recovery for Rural Alaskan Diesel Generators

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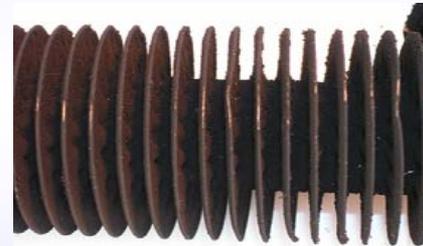


Background: Number of Alaskan Villages- 183 (remote area)
Total Diesel Power Generation (2005): 374,207 MWh (individual systems)
 (Exhaust Heat Recovery Never Been Considered due to the concerns of back pressure increase, soot deposition, and corrosion.)
Goal of This Project: Evaluate feasibility, economic effect, and the above concerns.
Potential Benefit of Exhaust Heat Recovery: Potential fuel savings and CO2 reduction.
Selected Application: Space and water heating (For best overall benefit. Also proposed by AEA.)

Introduction: Experimental engine generator system. Experimental heat recovery system. Instrumentation and calibration. Test process.

Results and Conclusion (350 hours test):

- > System is **reliable and consistent.**
- > No effect on **engine performance.**
- > No **corrosion spots** were observed
- > Amount of **heat recovered** is equivalent to **16%** of the **energy contained in the fuel** consumed.



(Exhaust heat was recovered with **HX exhaust outlet temperature high** enough to avoid major maintenance problems).
 > **Soot is not expected** to cause significant maintenance **problem.**
 > **Pay back time** for a 100% use of recovered heat would be **3 to 4 years** at fuel price of **\$3/gal.** (Parameters: Initial, Operation, and maintenance costs. In rural villages fuel, travel, and shipping are costly.)

