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Stirling Engine for Classroom Demonstration Purposes ANDREW MILLER, REX BERNEY, APS — In the study of Thermodynamics, the Carnot cycle is representative of an ideal engine. Such an engine has the maximum efficiency possible for a given temperature difference. The Stirling Cycle engine closely resembles the Carnot cycle in terms of efficiency. In order to demonstrate the Stirling Cycle in a classroom setting, a Stirling engine was built. Robert Stirling first patented the Stirling engine in 1816. The Stirling engine runs on the temperature differential between hot and cold air. As the air is cycled through the engine, the expansion and contraction of the air drives the piston. The work on the piston is transferred into mechanical work via a walking beam. There are no exhaust values that vent gases, because the gases inside the engine never leave. The power for the Stirling engine does not come from explosions like a combustion engine. Rather, the engine is powered by an external heat source. These engines also have practical purposes. They are used in very specialized applications where quiet operation is important. Examples of such uses are in submarines and auxiliary power generators.

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