



# Waste Heat Utilization by Shape Memory Alloy (SMA) Engine



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## Background

Current situation: At least 70% of heat generated in a power plant is wasted. Utilizing waste heat contribute energy efficiency.

- Coal fire plant
- Natural Gas fire plants
- Biomass power plants
- Nuclear Power plant
- Geothermal Plant
- Solar thermal Plant

89.5% of energy came from heat generating powerplants in 2009

## Objectives

Why Wasted heat utilization? At least 70% of heat generation in a power plant is wasted. Utilizing waste heat contribute energy efficiency.

Why SMA Engine? Its Self sustaining, SMA does not require any specific het source, help heat exchange process

## Methodology

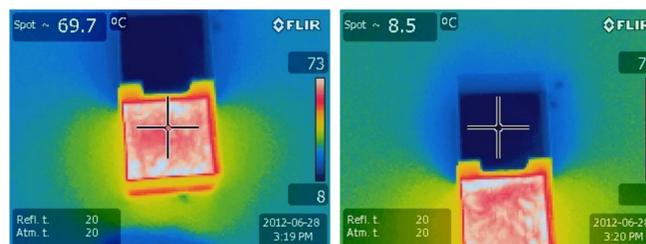
- How our research will be conducted
- CAD modeling simulation
- Pysical model (prototype)
- IR camera Thermal Analysis
- Then compare Simulation With Real life data

## CAD Modeling

## Physical Model

## Results and Discussion

## Thermal Images



These pictures are of water temperture of a small scale model of a Dr. Johnson engine They explain the small amount of energy diffrence required to activate the SMA engine.

## Summary and future work