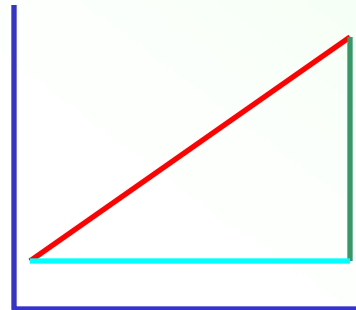
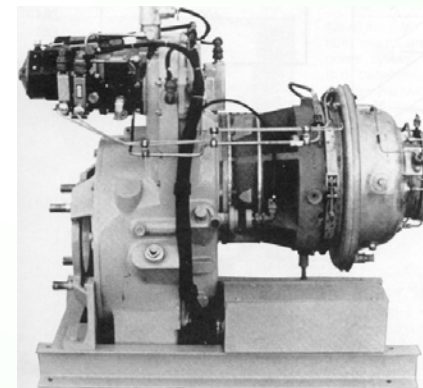
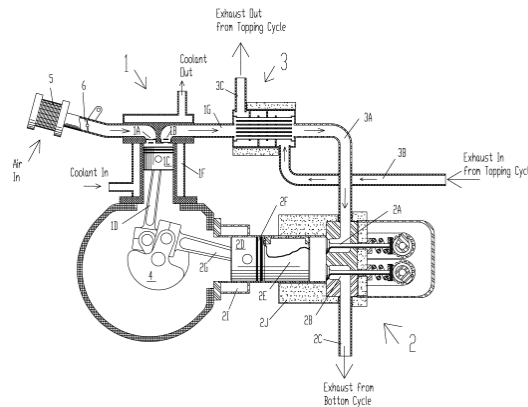
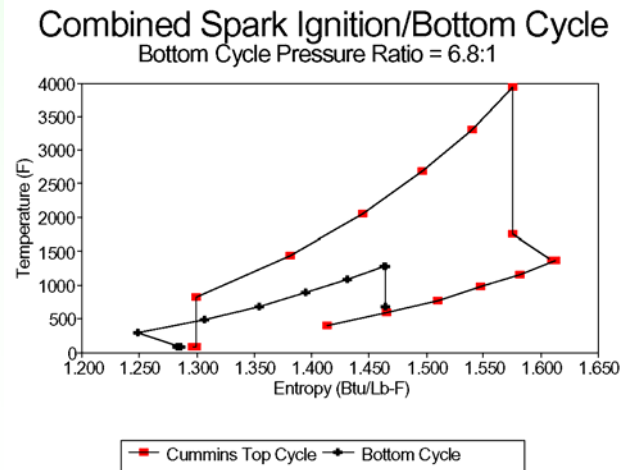


Proe HRPG[®] Heat Recovery Power Generator for 15-20% Additional Electric Power From Existing Reciprocating and Gas Turbine Gensets – **WITHOUT STEAM**



Proe HRPG[®]
Heat Recovery Power Generator



Proe HRPG[®] US Patent #6,672,063
Afterburning Ericsson Cycle Engine, Proe 90[™] Recuperator, and Proe Afterburning[™] Cycle Engine are protected by US Patents Number: 5,894,729; 6,390,185 and 7,028,476
HRPG[®] is a registered trademark of Proe Power Systems, LLC

For Additional Information Contact Richard Proeschel
at (800)315-0084 or (330)723-4469
raproe@proepowersystems.com



Proe Power Systems, LLC

Why Did Proe Power Invent Two Types of Engines?

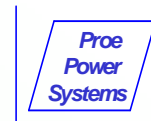
... for Two Applications:

1) Proe Afterburning™ Cycle Engine:

- Purpose: Produce the maximum amount of mechanical energy from a combustion process of a liquid, gaseous, or solid fuel
 - Combustion process can be dedicated combustor or integrated with an existing furnace process
 - Increases combustion efficiency of industrial furnaces by providing a forced blast of clean hot air while simultaneously producing power
 - Provides Clean and Efficient Combustion of Solid Fuels for Village Power & Waste Heat Recovery from trash or bio-waste Incinerators
 - Clean exhaust meets 21st Century environmental requirements
 - Ideal for alternative fuels: CNG, propane, hydrogen, methanol, ethanol, bio-waste (solid, liquid or gas) etc
- `40% Shaft efficiency/ `36% Electrical Efficiency + Potential CHP

2) Proe HRPG® Heat Recovery Power Generator:

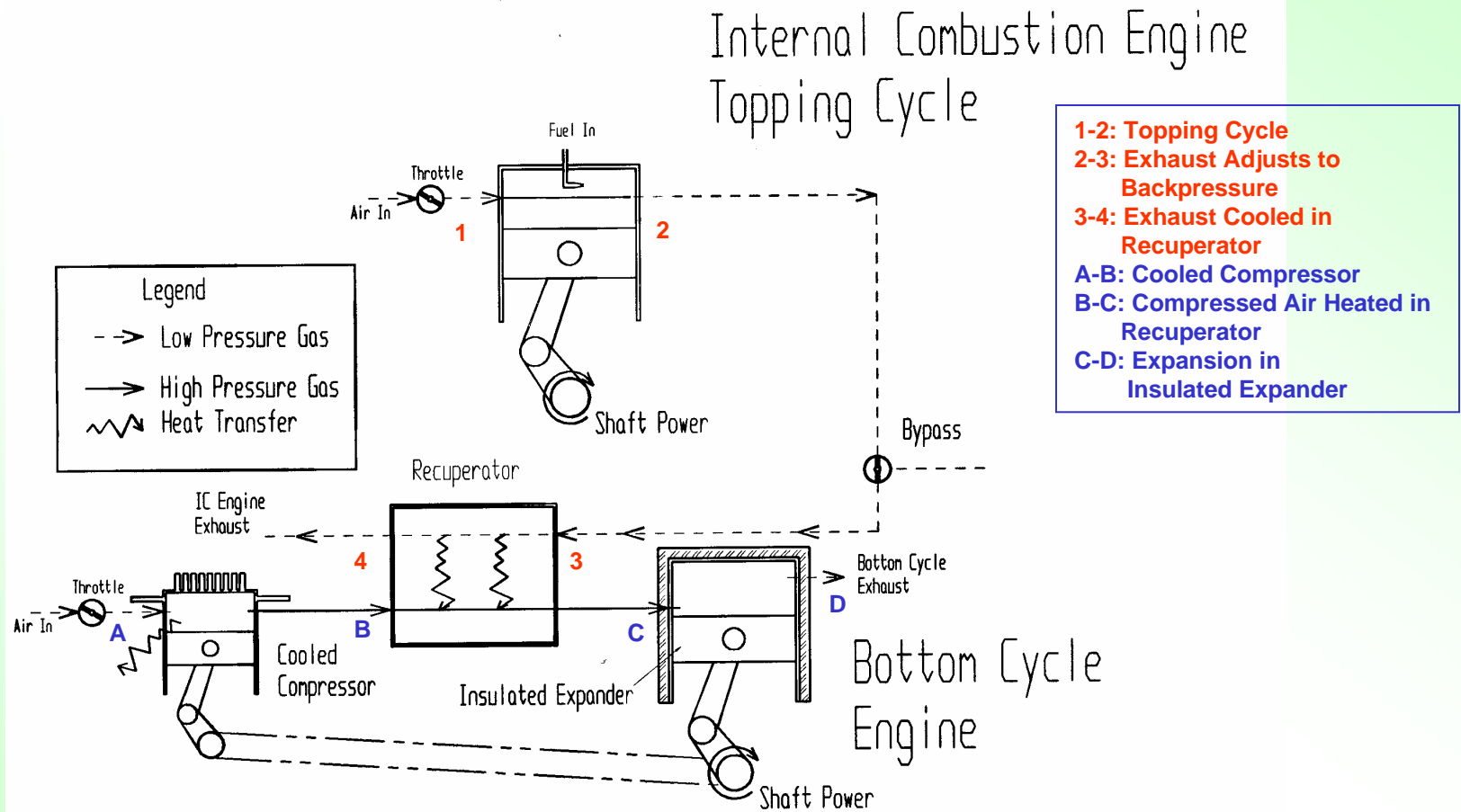
- Purpose: Recover the maximum amount of mechanical energy from the exhaust of an existing top cycle engine (gas turbine, internal combustion etc)
 - “Bolt-on” means for increasing fuel efficiency of existing engines by 15-20%
 - Clean hot air exhaust can be used for direct CHP



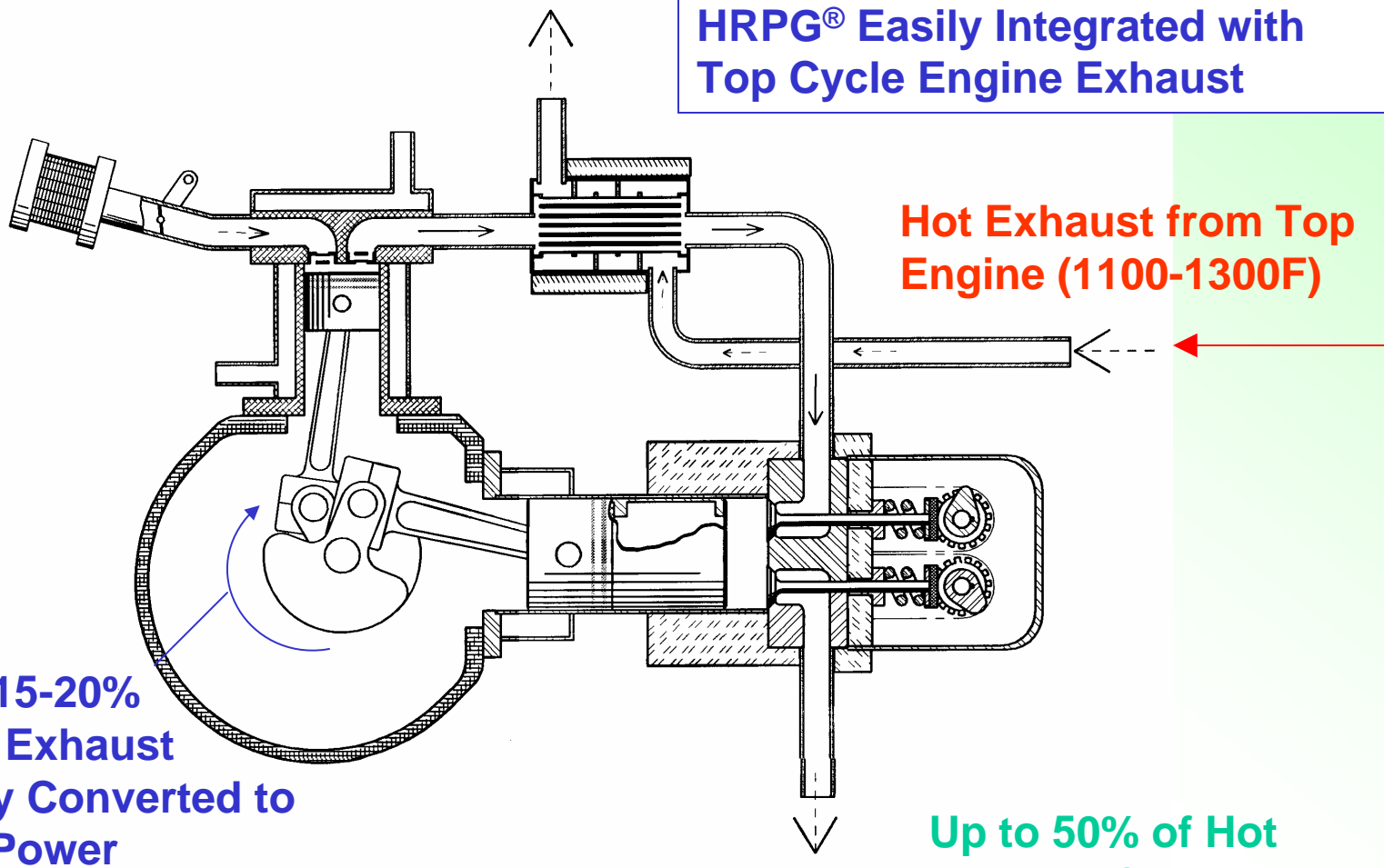
Objectives of HRPG[®] Bottom Cycle

- Utilize high temperature exhaust from existing reciprocating engine, turbine engine or SOFC to:
 1. Generate additional electrical power (primary objective)
 2. Recover heat for CHP (secondary objective)
- Maximum electrical power augmentation requires a bottom cycle that makes the best use of the topping cycle exhaust heat
 1. Topping cycle exhaust temperature reduced as close to ambient as possible
 2. HRPG[®] exhaust temperature is also as low as possible

Combined Cycle Engine with IC Top Cycle and Proe Power HRPG® Bottom Cycle



HRPG® Easily Integrated with Top Cycle Engine Exhaust



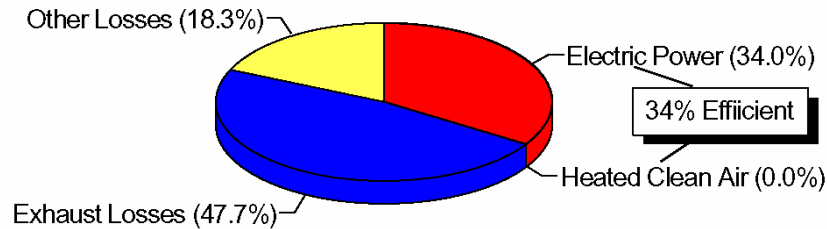
**Up to 15-20%
of Hot Exhaust
Energy Converted to
Shaft Power**

**Up to 50% of Hot
Exhaust Converted
to Warm, Clean Air
for CHP (300-500F)**

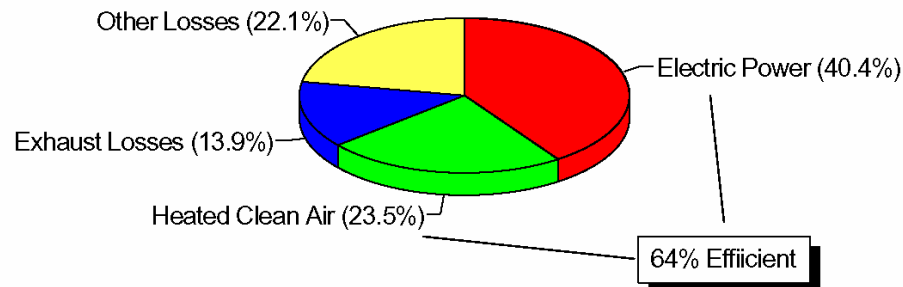


Simple/Effective Route to High Efficiency CHP

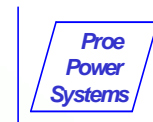
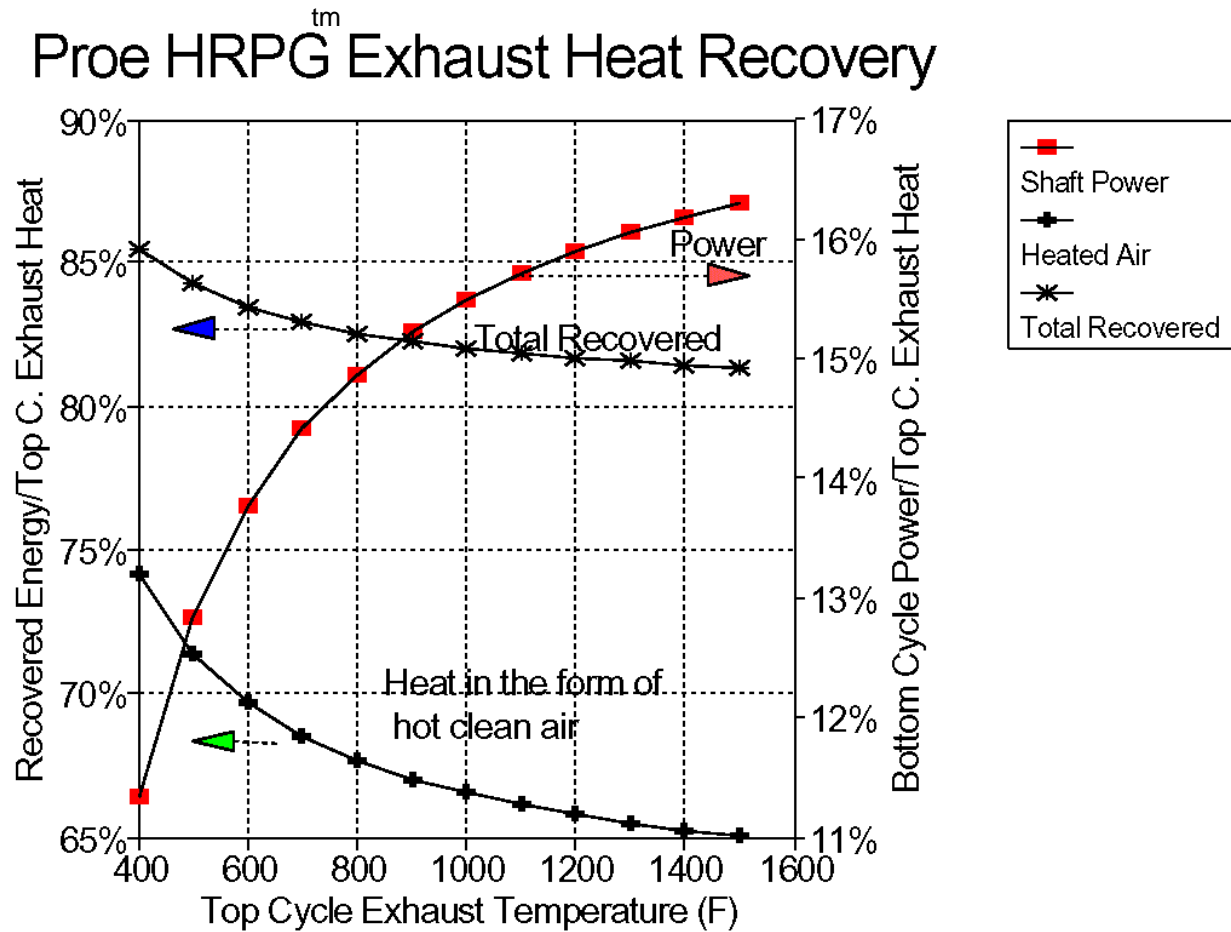
Typical I/C Genset Power Balance No HRPG™



Typical I/C Genset Power Balance With Proe HRPG™

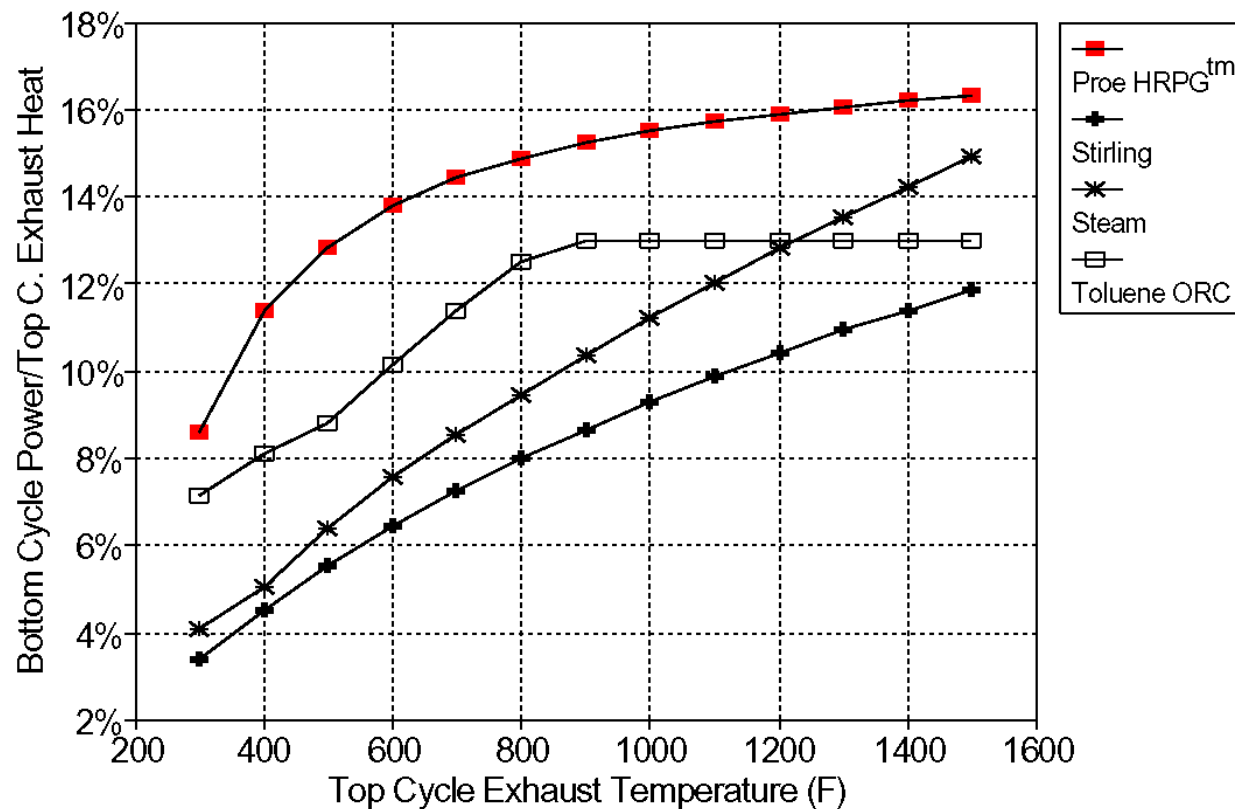


Simple/Effective Route to High Efficiency CHP



The Simplest & Most Effective Bottom Cycle Available

Bottom Cycle Comparison



Proe HRPG[®] Desktop Demo

Hot Exhaust from Top Cycle

Cold Exhaust from Top Cycle

Proe 90[™]
Recuperator

Water Cooled
Compressor

Expander

Warm Air Exhaust for
CHP

Shaft Power

