

GT Pro

- Developed by Thermoflow, Inc.
- Primary use: **Detailed** design of industrial gas turbine applications with/without HRSG and/or combined cycle
- Does not provide baseline comparison (e.g., existing utility system)
- Data libraries: Gas turbines only
- CHP applications: Process steam
- Analysis duration/time step: between 8 and 40 years; annual
- Economic analyses: cash flow, payback, NPV, IRR
- Cost: \$7,000 (<http://www.thermoflow.com/>)
- Demo version available on CD

Input to GT Pro Is Through On-Screen Windows

The screenshot displays the 'GT PRO 10.3.2 DEMONSTRATION' software interface. The main window is titled 'HRSG Main Inputs' and is part of a larger application with tabs for 'Thermodynamic Design Assumptions', 'Hardware Design', 'Radiant Boiler', 'Miscellaneous', and 'Equipment Options'. The 'Equipment Options' tab is currently active.

The interface is divided into several sections for inputting data:

- Duct Burner Fuel:** A dropdown menu is set to 'Gas turbine fuel'. There are buttons for 'Modify fuel' and 'DB Emissions'.
- Duct Burner:** A dropdown menu is set to 'Included, specify exit temperature'. Below it are input fields for 'Exit temperature' (0 °F) and 'Dilution air as percent of exhaust flow' (0 %).
- Additional Duct Burner (HPB2 burner):** A dropdown menu is set to 'Not in plant'.
- Min stack temperature for warning:** An input field is set to 200 °F.
- Steam Generation Dictated By:** Radio buttons for 'Pinch' and 'Mass flow', with 'Mass flow' selected.
- Gas Flow Direction:** Radio buttons for 'Horizontal' and 'Vertical', with 'Horizontal' selected.
- Diagram:** A schematic of a Heat Recovery Steam Generator (HRSG) is shown. It features three pressure levels: LP (Low Pressure, blue circle), IP (Intermediate Pressure, blue circle), and HP (High Pressure, purple circle). A red arrow points upwards from the top left, and another red arrow points upwards from the bottom right. A line labeled 'to DA' points to the LP section. Below the diagram are input fields for 'Pinch' (15 °F for LP, 36 °F for IP, 36 °F for HP), 'Approach subcooling' (10 °F for IP, 10 °F for HP), and 'Blowdown percentage' (0 % for LP, 1 % for IP, 1 % for HP). A dropdown menu is set to 'No blowdown recovery'.
- Draft Losses:** On the right side, there are input fields for 'Total GT exhaust draft loss' (10 in H2O) and 'HRSG-only draft loss' (8 in H2O).
- Fresh-air dilution and Exhaust bypass:** Input fields for 'Fresh-air dilution' (0 %) and 'Exhaust bypass' (0 %).

The bottom of the screen shows a Windows taskbar with the 'start' button and several open applications: 'Eudora - [In]', 'Microsoft Excel - ...', 'software2.ppt', '2 Internet Expl...', and 'GT PRO 10.3.2 D...'. The system clock shows '4:20 PM'.

GT Pro Provides Detailed Text and Graphical Output Through On-screen Windows and Printed Reports

GT PRO 10.3.2 DEMONSTRATION - c:\Tf\low7\MYFILES\GTPRO.GTP

File View Edit Options Navigator Window Excel Link Help

HP Water Path | IP Water Path | RH Water Path | LP Water Path | Feedwater Path | DH Circuit | Pumps
Main | Cycle Flow Schematic | HRSG Temperature Profile | ST Expansion Path | ST Group Data | Cooling System Schematic | Cooling System T-Q Diagram

New Session

- Start Design
- Plant Criteria
- GT Selection
- GT Inputs
- ST-HRSG
- HRSG Inputs
- Water Circuits
- HRSG Layout
- Cooling System
- ST Inputs
- Other PEACE
- Economics

Compute

- Text Output
- Graphics Output**
- PEACE Output
- Multiple Runs
- Off Design

Demonstration

Gross Power 58010 kW
 Net Power 56381 kW
 Aux. & Losses 1628.3 kW
 Gross Heat Rate 7085 BTU/kWh
 Net Heat Rate 7289 BTU/kWh
 Gross Electric Eff. 48.17 %
 Net Electric Eff. 46.81 %
 Fuel LHV Input 410970 kBTU/h
 Fuel HHV Input 456017 kBTU/h
 Net Process Heat 0 kBTU/h

Ambient 14.7 P
 59 T
 60% RH

19785 kW
 1100 p 850 T 38.08 M
 Stop Valve
 150 p 447.1 T 7.739 M
 1 p 101.7 T 45.73 M
 to HRSG

14.7 p 246 T 306.7 M
 LP 17.19 p 220 T 0.9652 M
 LPB 317.6 T 305.5 T
 IP 159.1 p 363.1 T 7.739 M
 IPB 485.4 T 399.1 T
 HP 1167 p 563.7 T 38.08 M
 HPB 896.4 T 599.7 T
 15.06 p 1005.4 T 306.7 M
 GE 6541B @ 100% load 38224 kW
 CH4 5.305 M 410970 kBTU/h LHV
 14.55 p 59 T 301.4 M

p [psia] T [°F] M [lb/s]

start | Eudora - [In] | Microsoft Excel - ... | software2.ppt | 2 Internet Expl... | GT PRO 10.3.2 D... | 4:23 PM

GT Pro Output

- ***Voluminous*** text and graphic output to screen or printer
- Output includes:
 - design and operation parameters
 - heat and mass balances
 - project economics
 - preliminary engineering details