



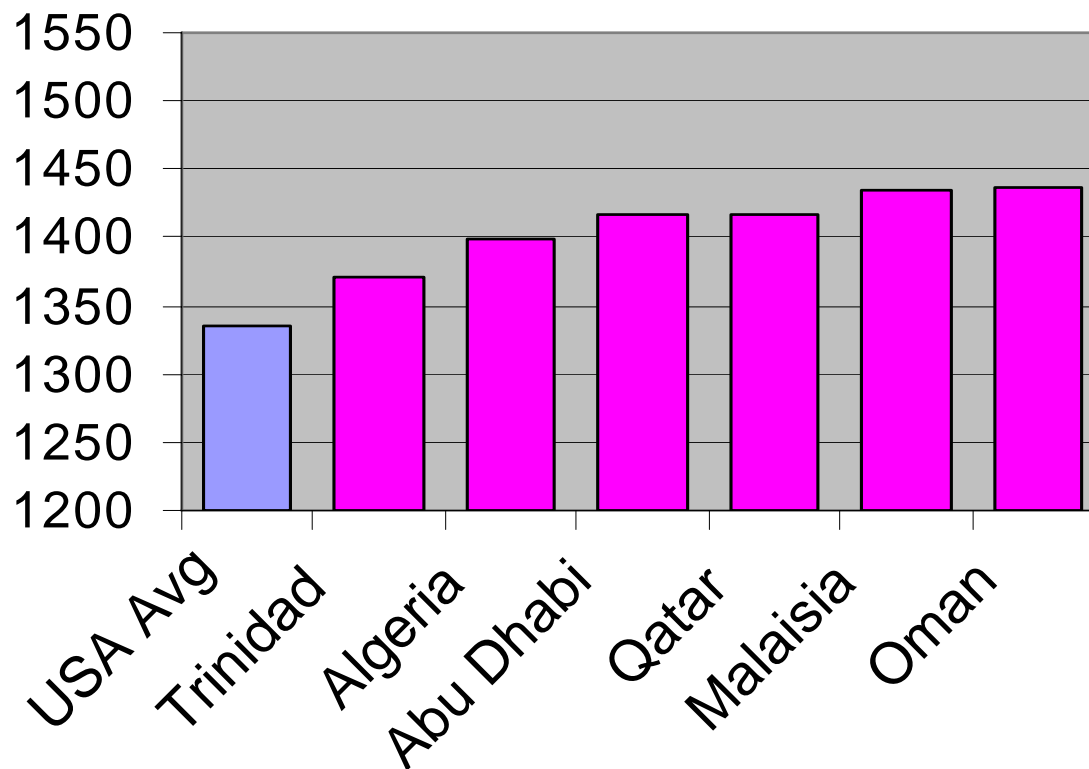
TDM Plant – Wide Wobbe Project





What is Wobbe?

- Wobbe is an Index for the measurement of fuel gases such as LNG
- Wobbe Index is used to compare the heat energy of different LNG gases





What is Wobbe?

Typical Composition of LNG Imports by Country

	Methane (C1)%	Ethane (C2)%	Propane (C3)%	Butane (C4+)%	Nitrogen (N2)%	Wobbe number
Algeria	87.6	9.0	2.2	0.6	0.6	1409
Australia	89.3	7.1	2.5	1.0	0.1	1418
Malaysia	89.8	5.2	3.3	1.4	0.3	1417
Nigeria	91.6	4.6	2.4	1.3	0.1	1410
Oman	87.7	7.5	3.0	1.6	0.2	1429
Qatar	89.9	6.0	2.2	1.5	0.4	1411
Trinidad & Tobago	96.9	2.7	0.3	0.1	0	1364

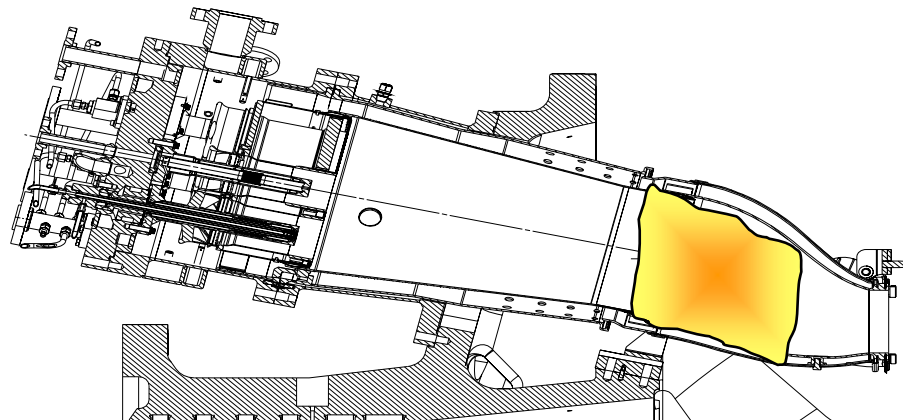
LNG composition varies with origin and processing



What is Wide Wobbe?

Fuel property changes outside traditional gas Wobbe range may drive:

- Dynamic increases ... combustion reliability
- Emission excursions ... non-compliance
- Greater tuning requirements ... higher operating cost
- **Wide Wobbe is a GE Controls Program for the Gas Turbines (GT).**
- **Controls GT combustion within a “Wide” Wobbe range.**





Why Wide Wobble?



- Costa Azul LNG coming on line Spring 2008.
- The TDM Plant will become a major user of LNG.
- Fuel Flexibility required at that time.



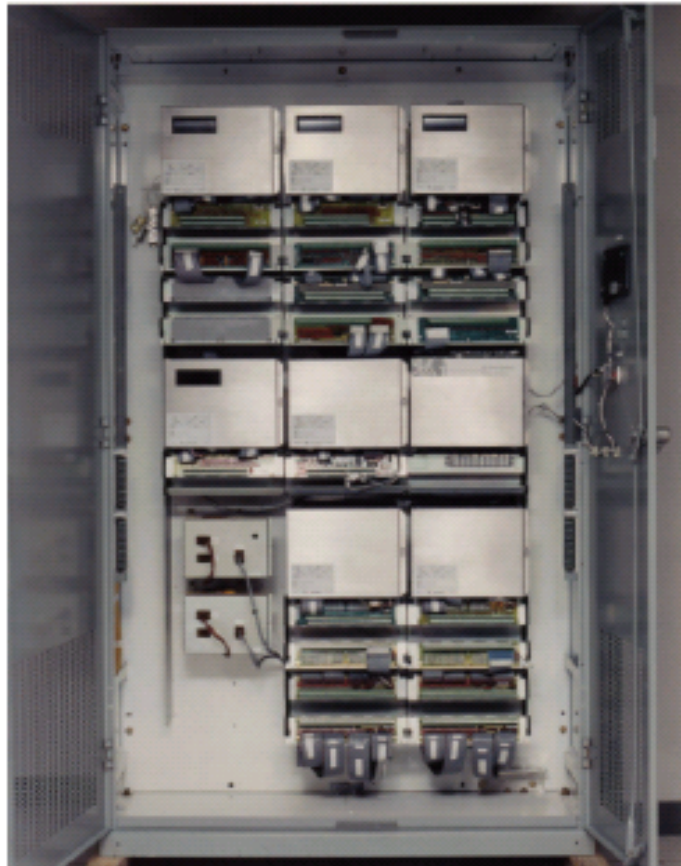
Installation of Wide Wobbe

- **Upgrade of GT Controls Processor from Mark V to Mark Ve (Enhanced) – Completed November 2007.**
 - Like upgrading from an Apple II to a Pentium Core 2
- **Downloading of Wide Wobbe software – January 2008.**
- **Combustion and emissions testing – January 2008.**
- **Training – Completed October 2007**
- **Mark Ve Upgrade and Wide Wobbe software will provide:**
 - **Greater Market Flexibility – Various LNGs or Natural Gas**
 - **Automatic combustion tuning.**
 - **Future GE software downloads.**
 - **Better combustion monitoring and diagnostics.**
 - **Expandable Input/Output**
- **Total Cost: Call GE for Quote**

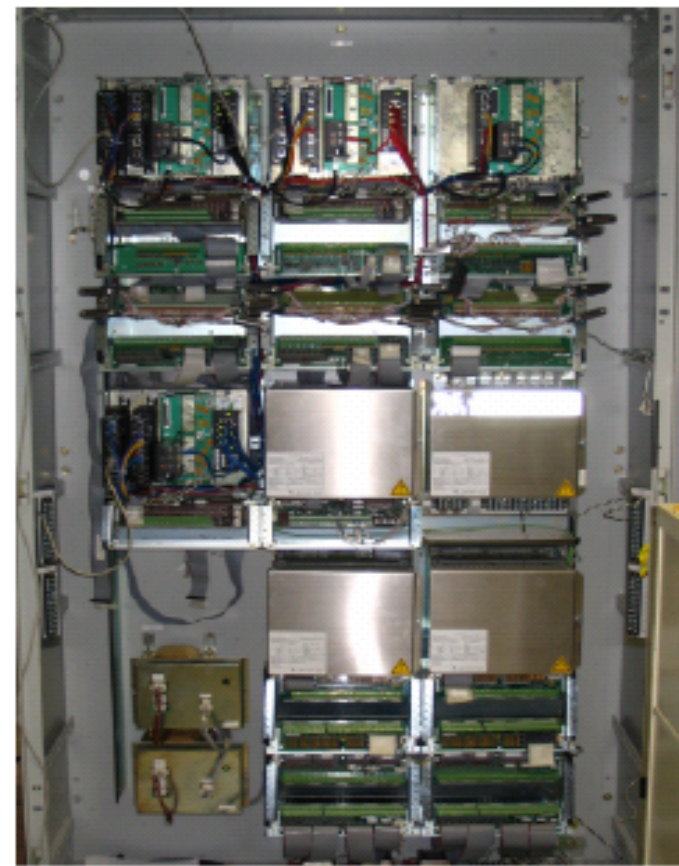


Installation of Wide Wobbe

Mark V



Mark Ve

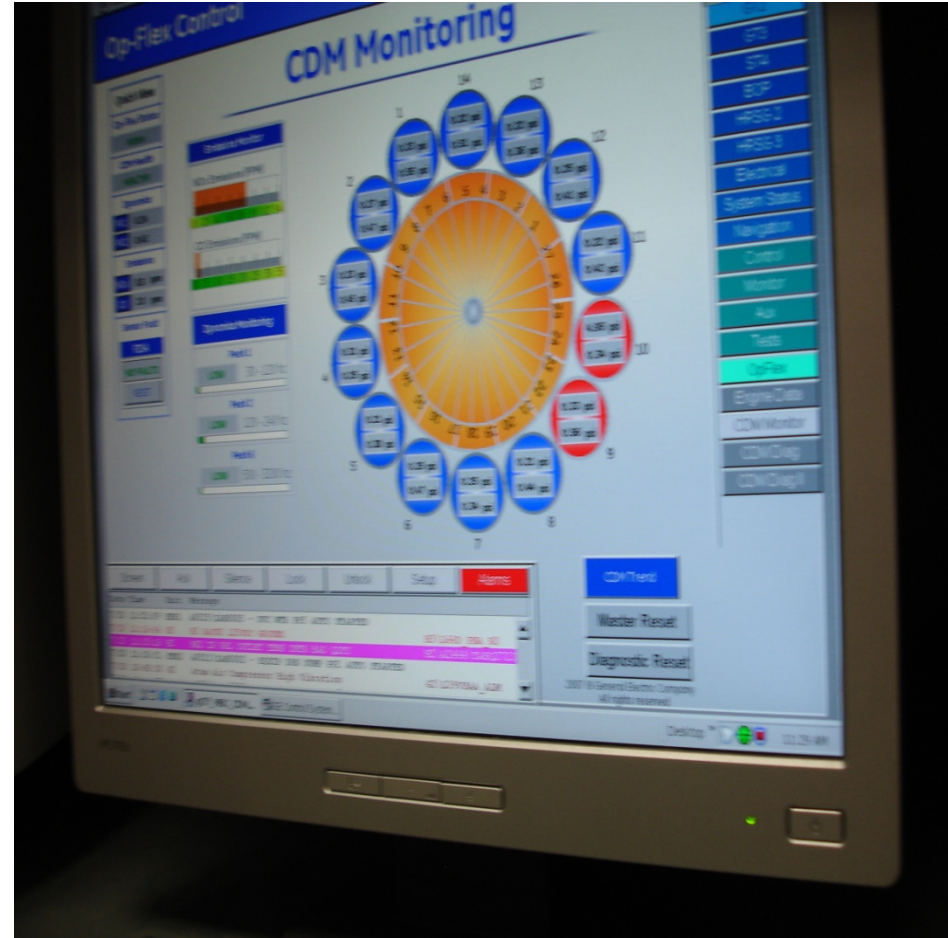




Installation of Wide Wobbe



Wide Wobbe Field Hardware



Wide Wobbe – Combustion Monitoring



TDM Plant - Wide Wobbe Project

Questions or Comments??