

CRYOQUIP INC.



**Presentation to the
LNG Interagency Working Group
Hercules, CA
March 15, 2007**



CRYOQUIP

Since 1961 our capabilities have spanned the entire spectrum of Cryogenic equipment manufacture

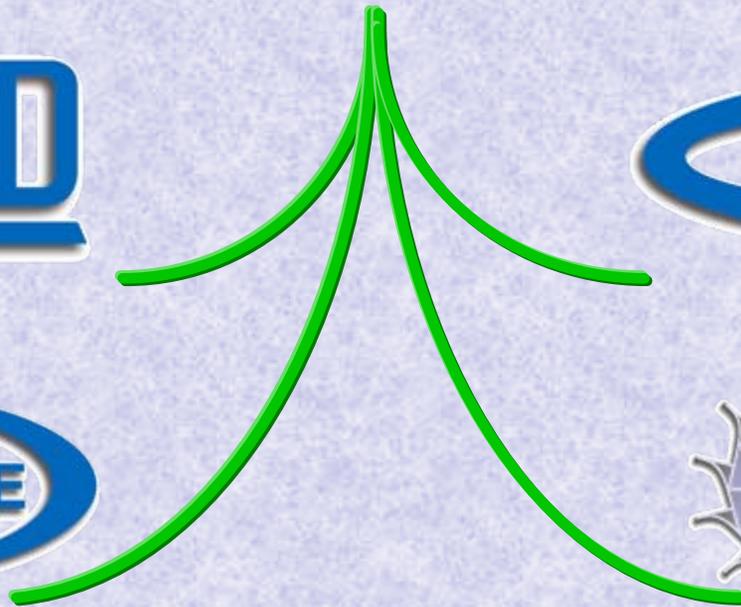
- Cryoquip is a California based company with headquarters, engineering offices and manufacturing in Murrieta.
- Cryoquip specializes in the production, storage, and vaporization of cryogenic liquids, including LNG and Hydrogen.
- Cryoquip is the world's largest manufacturer of cryogenic vaporizers, heat exchangers, and processing equipment.



Headquarters: Murrieta, CA



**CRYOGENIC
INDUSTRIES**



Manufacturing and Distribution Centers





WHAT DO WE DO

Production - Storage - Handling

Cryogenic Fluids

NITROGEN

OXYGEN

ARGON

LNG

HELIUM

HYDROGEN



Cryogenic vaporizers and heat exchange systems for...

**Industrial
Gases**

**Environmental
Processes**

**Food
Processing**

**Coal
Gasification**

**Aerospace
Test Facilities**

**Semi Conductor
Fabrication**

**Petro-
chemicals**

**Metal
Processing**

**LNG
Applications**

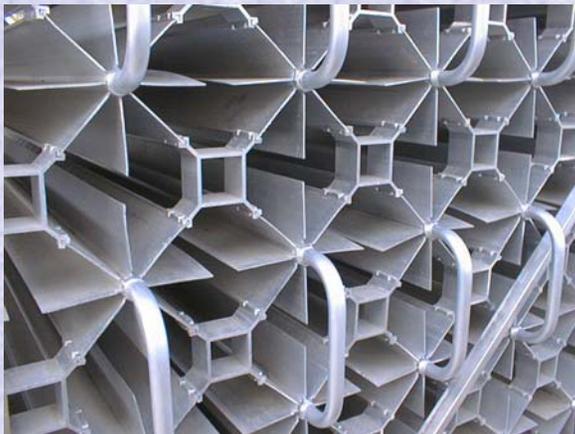
**Chemical Process
Industries**

Typical Industrial Gas System Utilizing Cryogenic Liquid Backup for LCD Fabrication



How does it work?

Frost Formation on vaporizer extrusion during operation. The extended fins of Ambient Air Vaporizers are designed to collect ice during operation



Natural Convection Ambient Air Uniflo[®] Vaporizers



Two units
running
One in
defrost

100% Heat
derived
from
Ambient Air

Operating LNG → CNG



Fan Ambient Vaporizers



High pressure multi-pass forced draft vaporizer provides 100% of heat required for vaporization. Pumping LNG to required CNG pressure (approximately 3600 psi) is more efficient than gas compression and provides faster fill times.

Omnitrans

Bus Terminals

San Bernardino, California

APR 14 2005

HCNG: Hydrogen & Natural Gas Vehicles

*Hydrogen/CNG vehicle
fueling stations*



HCNG technology has demonstrated the capability to meet California's 2007 heavy-duty emissions standard. Using a blend of up to 30 percent hydrogen and 70 percent compressed natural gas, vehicles can be modified to run cleaner without sacrificing power.

AAVs provide 100% of the heat requirements to vaporize both H₂ and LNG.

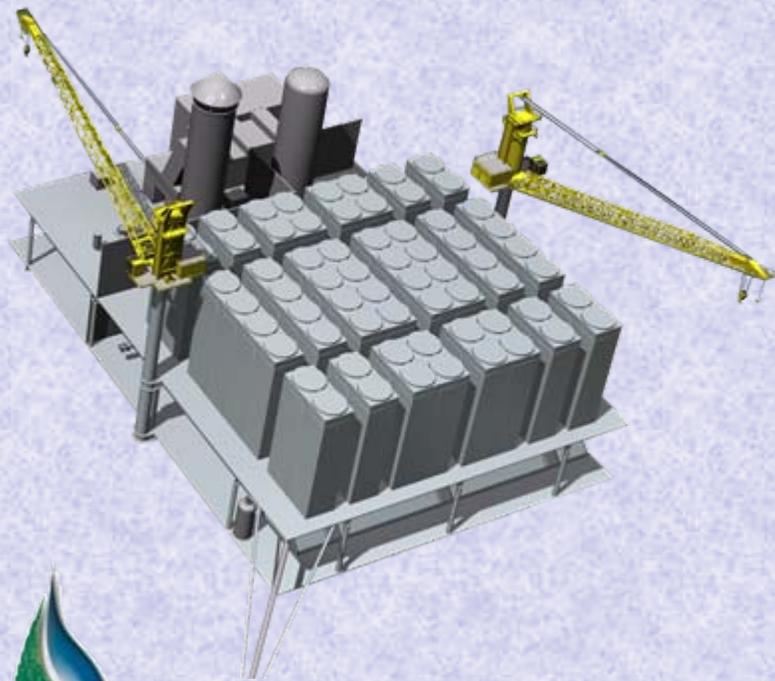


FERC Approved 2006 Pilot Plant

Worlds First Land Based LNG Send-Out Utilizing Ambient Air Vaporizers



AAVs - Advantages of an Offshore Platform



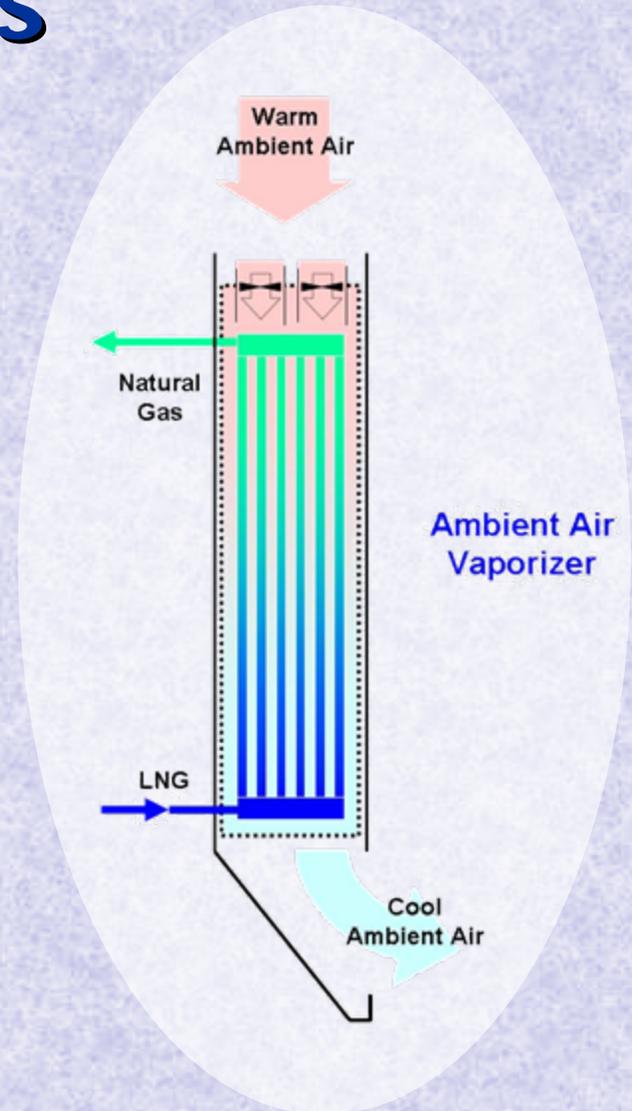
Clearwater Port

- Narrow range of ambient conditions enhances design efficiency
- Elevation above surface provides maximizes disengagement area
- Open deck structure maximizes airflow
- No local obstructions to air movement (buildings, trees, etc.)

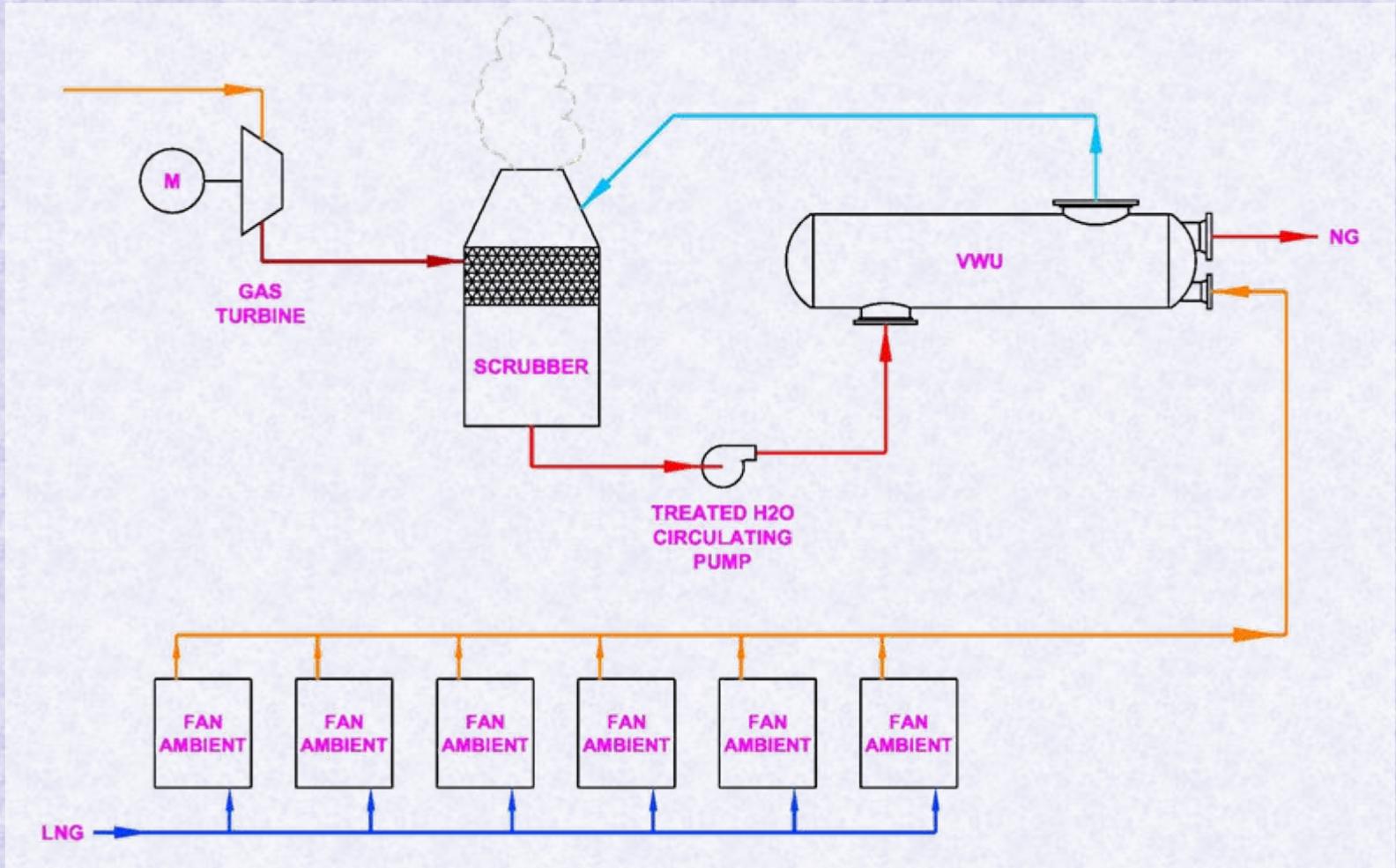
Forced Draft Ambient Air LNG Vaporizers



Uniflo[®] Construction
Single Counter Flow Gas Path



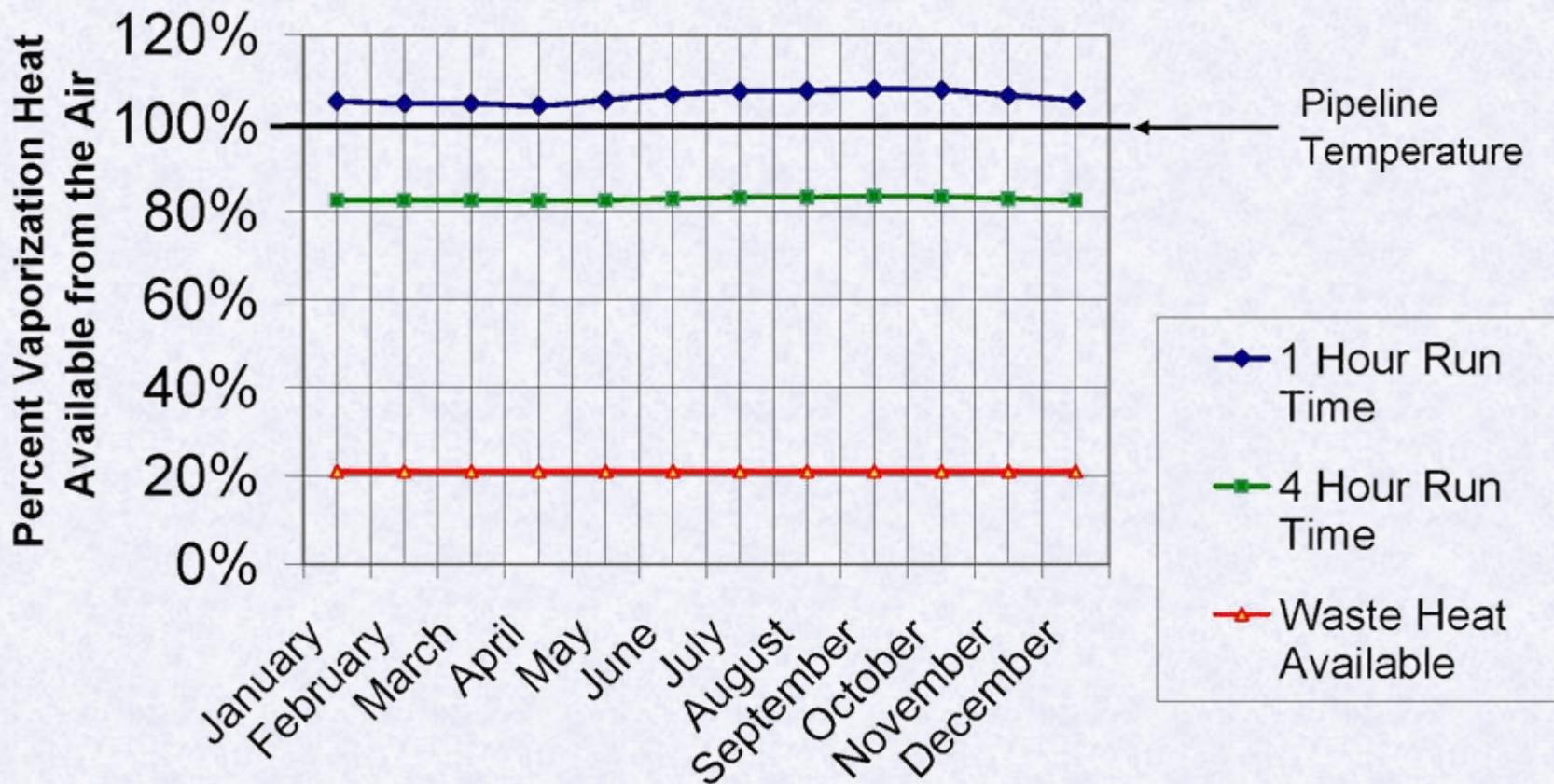
LNG Fan Ambient System with trim heat utilizing waste heat recovery system



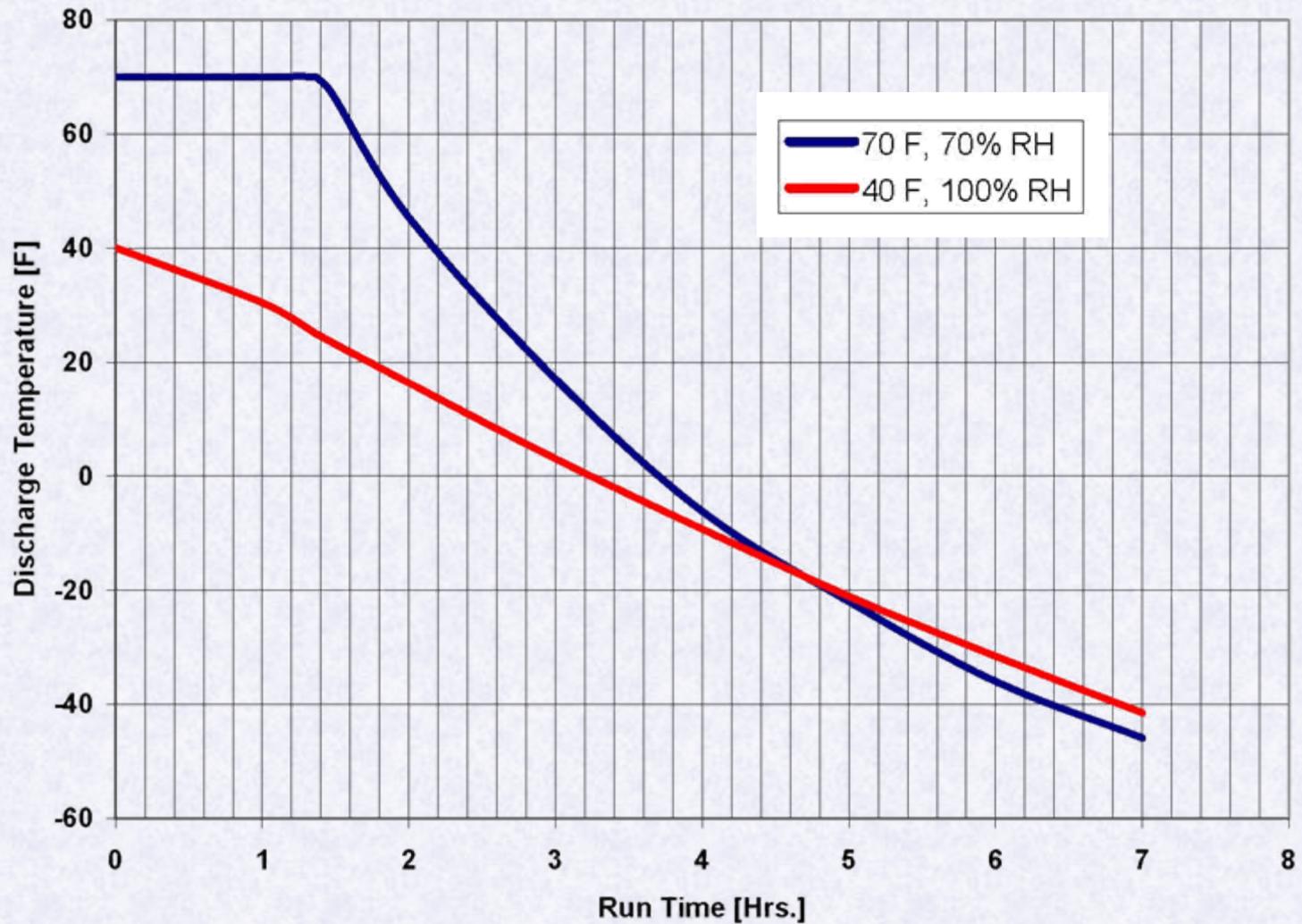


Percent Heat Duty Available from Ambient Air

based on 40°F send out gas temperature



Discharge Gas Temperature versus Run Time



Cryoquip's Fan Ambient Vaporizers Summary

- Cryoquip Fan Ambient Vaporizers provide up to 100% heat required with no combustion of fuel required
- No air emissions associated with warming LNG
- Does not use sea water – no “once through heating”
- Suitable for onshore or offshore installations
- Horsepower requirements comparable to Intermediate Fluid Systems (IFS) and Submerged Combustion Vaporizers (SCV)
- Area requirement comparable to SCV or IFS
- Operating cost savings over fuel gas burning systems
- Can optimize by utilizing waste heat from power generation

