

Executive Summary

Legacy Clothes Dryer

1. Gas Quality and LNG Research Study Objectives

This research study was designed to assess how residential and small commercial/industrial end-use equipment responded to changes in gas quality and to determine if Southern California Gas Company (SCG) needs to modify its current Gas Quality Standards (Rule 30).

Two main tests were conducted to evaluate how the appliance will react to the different test gases when (a) tuned to the rated input while using Base Gas (low heating value and low Wobbe Number) and (b) tuned to the rated input using Gas 8 (medium heating value and medium Wobbe Number). The major objectives of the study during these two tests were as follows:

- Evaluate the selected unit to determine any issues relating to equipment safety and performance. Equipment safety includes changes in carbon monoxide (CO) levels, flame lifting, flashback and yellow tipping. Equipment performance includes ignition, combustion and output stability.
- Collect NO_x emissions data during testing.

2. Selection Criteria

This type of legacy clothes dryer was selected to be tested because of the following factors:

- To investigate concerns by industry experts, related to induced combustion systems with rich gases.
- There are a large number of these types of units in the Southern California Gas Company territory and they have a long life expectancy.
- Safety concerns related to flue gas if they are not vented properly.
- Gas dryers are the appliances most frequently associated with fires within residences.

3. Test Results and Findings

The clothes dryer was tested over a wide range of operating conditions and gas compositions according to developed test protocols¹. Results obtained from all tests conducted revealed that:

- There were no operational, ignition, flame stability, flame lifting, flashback, yellow tipping or safety problems with the different gases or during transitioning.
- None of the temperatures monitored had critical changes.
- NO_x emissions increased with the richer gases (Highest with Gas 3), as did combustion chamber temperature.
- Tuning the unit with Gas 8 did not create any significant safety, emissions, performance or operational changes.

4. Equipment Specifications

- **Description:** Legacy Clothes Dryer
- **Burner:** Induce Combustion System
- **Input rate:** 22,000 Btu/hr
- **Type of fuel:** Natural Gas
- **Required gas supply pressure:** 4.5 - 10.5 in. w.c.

¹ Testing protocols used in this program were derived from industry standards and regulatory test procedures. Note, however, that based on the needs of this program and the operating and design characteristics of equipment tested, adherence to the industry and regulatory testing standards was not literal. The reader is cautioned that no inference can nor should be drawn as regards certification of these devices to the industry or regulatory requirements as a result of this program.