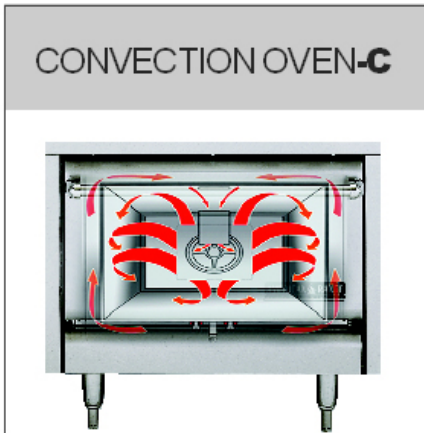


**AMERICAN  RANGE**

# INNOVECTION CONVECTION TECHNOLOGY

**Commercial Heritage- Commercial Grade- Innovative Technology**

Over the past 15 years American Range has earned its workhorse pedigree in the world’s most demanding kitchens. In that time, innovative technology and robust engineering have advanced every aspect of our cooking equipment. Building on American Range’s thoroughbred commercial heritage, we proudly introduce for your review, new ‘green’ technology for the in professional commercial kitchen; Innovection™ Convection Technology.



**Standard Convection Oven**

A standard convection oven consists of a single convection motor centrally positioned on the back panel of the oven cavity and a sealed oven can. The oven burner heats the sealed oven can, which radiates heat into the oven cavity. Air is pushed/ moved by the convection motor within the oven can. A thermostat regulates the oven cavity temperature. Some conventional convection systems include a ‘snorkel’ (pictured) wherein warm air is vented directly towards the convection motor.



**Innovection™ Convection Oven**

Innovection™ Convection Oven Technology combines draft dependent cooking (standard oven) and turbulent air flow convection cooking. The Innovection™ technology utilizes a low speed convection motor, centrally positioned on the back panel of the oven cavity, to draw and circulate hot air from the oven burner, vented through our patented baffled oven interior. The technology ensures an even, turbulent heat distribution pattern, essential to baking and roasting. A thermostat regulates the oven cavity temperature.

**Benefits of Innovection™ versus Standard Convection:**

**Faster Pre-Heat Times Compared to Standard Convection**

The average pre-heat times for the Innovection™ Convection Oven are 7.75 minutes and 11.5 minutes to 350°F and 450°F respectively. Standard Convection averages 12.3 minutes and 17.5 minutes to 350°F and 450°F respectively.

## Less Gas Consumption Compared to Standard Convection

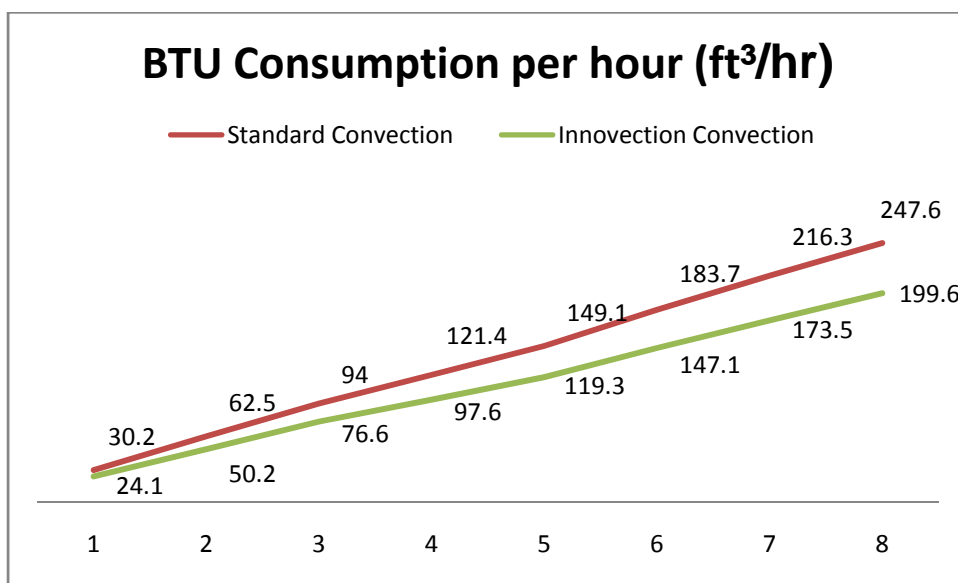
With its baffled oven interior the Innovection™ Convection Oven is not relying on radiant heat to warm the oven cavity. Rather draft heat from the oven burner is instantaneously vented into the oven cavity. Less gas is needed to maintain the desired oven temperature compared to std. convection.

With standard convection, the oven cavity must be continually re-thermalized the oven can in order to radiate heat. The thermostat is constantly activating the oven burner to produce enough heat to maintain the desired oven temperature. Therein more gas is needed to maintain the desired oven temperature compared to Innovection™.

The graph below details lab tests performed at American Range. The control range was an American Range model AR-6-C (standard convection oven range) and test (sample) range was the American Range model AR-6-NV (Innovection™ convection oven range). We measured BTU consumption (BTU/ft<sup>3</sup>/hr) over an 8-hour period.

### Test Settings:

- Oven temperature setting 400°F
- Oven door remained closed throughout the test period
- Ambient temperature in test lab: 76°F +/-3°F
- Relative Humidity: ~30%



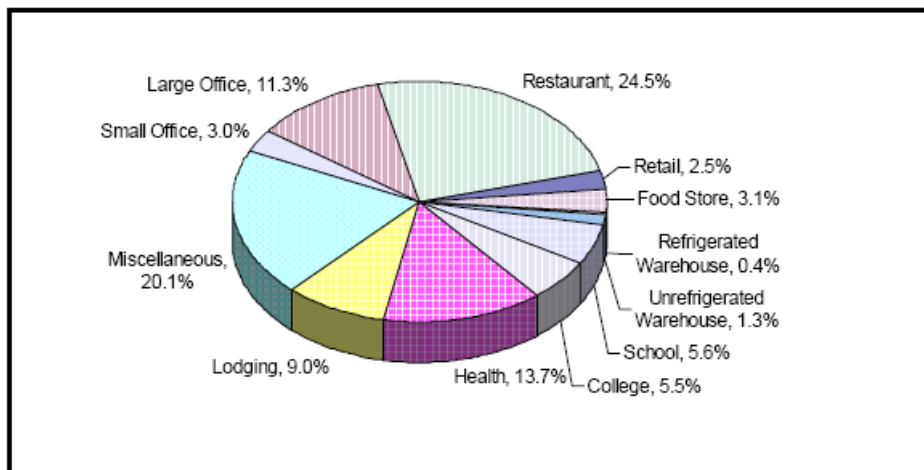
The test revealed that the Innovection™ convection oven utilized 19.6% less gas over an 8-hour test period.

With escalating gas prices pinching restaurant gross margins, the Innovection™ convection technology provides a valve alternative with enhanced performance.

The following graph is from Pacific Gas and Electric's [California Commercial End-Use Survey, Executive Summary, 2006](#) wherein natural gas usage was broken down by commercial building type. Total commercial floor stock utilized in the survey was estimated to be over 4.9 billion square feet. Natural

gas consumption was roughly 1,279 million therms (Mtherms) per year. Restaurants accounted for 24.5% of total natural gas consumption in 2006.

### Natural Gas Usage by building type



The following data details natural gas intensities by building type and end use.

### Natural Gas Energy Intensities (kBtu/ft<sup>2</sup> per yr) by Building Type and End Use

Building Type	Total	Heat	Cool	WH	Cook	Misc.	Proc.
All Commercial	26.00	9.50	0.40	8.30	5.90	0.50	1.50
Small Office	10.50	8.60	0.00	1.70	0.10	0.00	0.10
Large Office	21.90	17.20	0.50	2.60	0.20	0.10	1.20
Restaurant	210.00	7.70	0.00	48.60	153.30	0.00	0.30
Retail	4.60	3.00	0.00	0.80	0.50	0.30	0.00
Food Store	27.60	9.50	0.00	7.70	10.30	0.00	0.10
Refrigerated Warehouse	5.60	0.80	0.00	0.80	1.20	0.00	2.80
Unrefrigerated Warehouse	3.10	2.70	0.00	0.30	0.00	0.00	0.00
School	16.00	10.00	0.10	4.70	1.10	0.00	0.10
College	34.20	19.80	3.50	8.40	1.70	0.90	0.00
Health	75.50	32.70	1.60	31.40	3.40	1.40	5.10
Lodging	42.40	7.30	0.10	29.00	4.40	1.40	0.30
Miscellaneous	23.30	7.00	0.40	9.30	1.00	1.00	4.60
All Offices	17.90	14.20	0.40	2.30	0.20	0.10	0.80
All Warehouses	3.40	2.40	0.00	0.40	0.20	0.00	0.40

According to the PG&E executive summary, cooking within restaurants accounted for 73% of their total natural gas consumption during 2006.

The American Range convection oven burner accounts for 13.5% of total BTU per standard six-burner range (American Range's models AR-6-C and AR-6-NV (six-burners with convection-C or Innovection™-NV) have the same BTU totals, 222,000). Based upon the PG&E data, by utilizing Innovection™ convection, the end user would save approximately 2.7% in gas consumption annually<sup>1</sup>. 4.14 kBtu/ft<sup>3</sup> per year.

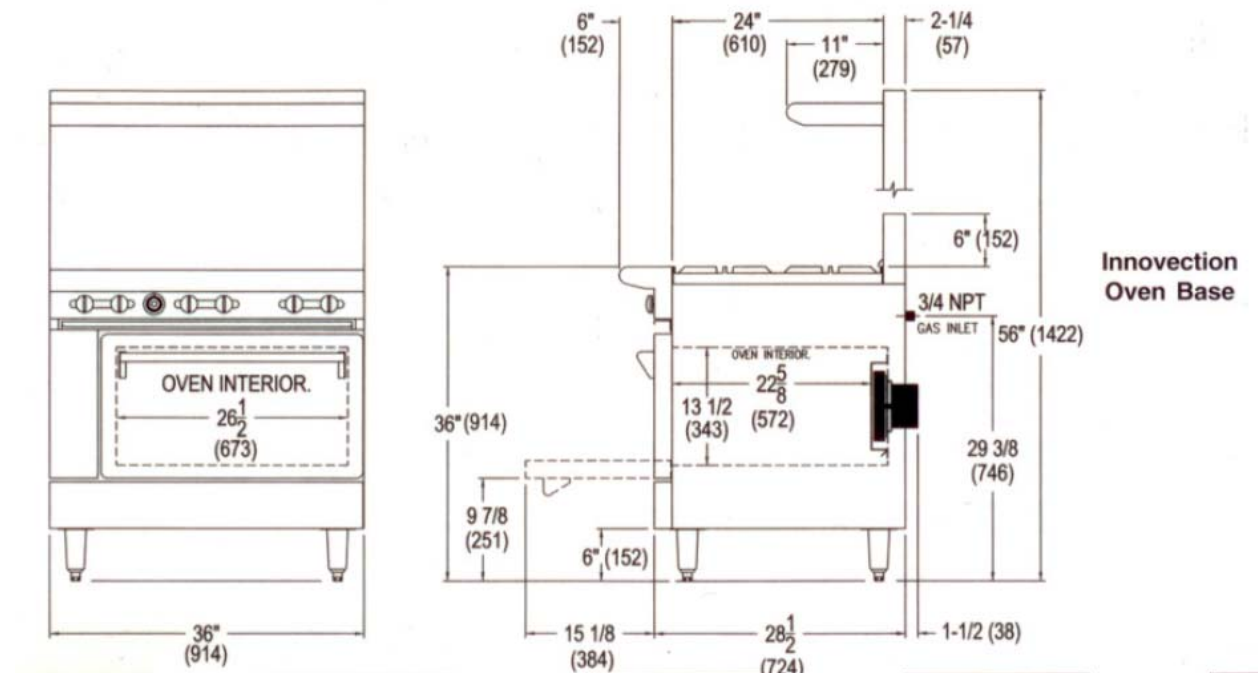
<sup>1</sup> - Savings assumes AR-6-NV (222,000 BTU) is running 8-hours with all range top burner running on high. Saving will be great in the event less range top burners are operating and the oven cavity is continually running.

### Less Electrical Consumption Compared to Standard Convection

The Innovection™ low speed convection motor is a 0.34 AMP motor wherein the Standard Convection motor utilized within our –C models is a 2.9 AMP motor.

### Enhanced Clearance compared to Standard Convection

The Innovection™ low speed convection motor extends 1.5" from the back of the range, whereas standard convection motors extends 6" from the back of the range. The enhanced design is idea for small metro-city kitchens where space is limited and at a premium.



### Performance

Our testing revealed no difference in baking or roasting performance compared to standard convection.

Test media:

- 6 batches of cooking (2 racks per oven cavity)
- 6 batches of muffins (2 racks per oven cavity)
- 20 potatoes (2 racks, 10 potatoes per rack)
- 2 roasts

**Innovection™ Models**

AR-4-NV: 24" 4-burner with Innovection™ oven (part of American Range's Space Saver product offering)

AR-6-NV: 36" 6-burner with Innovection™ oven

-NV: Innovection™ oven available in 48", 60" and 72" range configurations

**Certification Date: August 22, 2007 (see attached certification)**

**References:**

**ALBERT M. TO'O., CGE.** Principal, Consultant Engineer Certified Gas Engineer

Design & Product Development, Appliance Testing & Certification, Engineering Services  
416 San Luis Rey Rd, Arcadia, CA 91007 Telephone: (626) 318-2920 Fax: (626) 821-9100

**JARIO SANCHEZ.** Principal, Design Engineer,

VEA Design/Consulting Inc.

2441 W. Chain Ave. Anaheim Ca 92804 Telephone: (714) 236-9205 Fax: (714) 229-5871