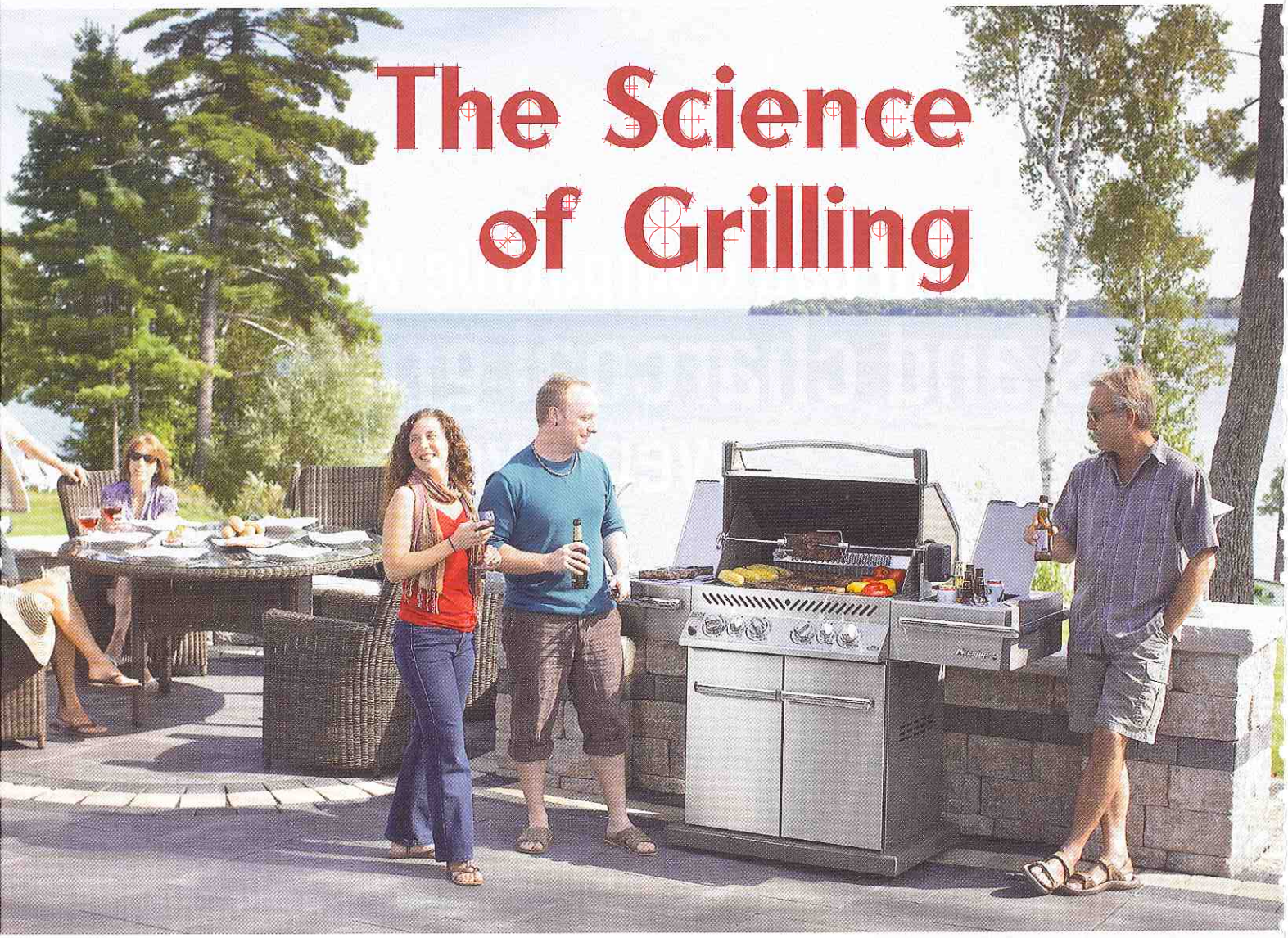
By Lisa Readie Mayer

The Science of Grilling



Infrared grilling may be the best thing since, well, regular gas or charcoal grilling.

Many people believe barbecuing is an art form, but when it comes to infrared grilling, there's actually a lot of science behind it.

Infrared energy is radiant energy, like the glowing red energy produced in a charcoal or wood fire. While grills with traditional gas burners heat the air to help cook food, infrared energy directly penetrates food, causing the molecules to vibrate and creating heat within the food.

Infrared offers a few key benefits. First and foremost, its high heat – cooking temperatures can reach 1,000 degrees and higher – produces a delicious steakhouse-style, crusty sear. Another plus is that infrared grills cook twice as fast as traditional grills, saving both time and fuel. And perhaps most important, infrared energy passes through food without damaging or disturbing the layer of water molecules that line the surface of the meat, so juices are "locked in."

In fact, studies show that when food is measured and weighed before and after grilling, infrared-cooked items are 30 percent larger and heavier thanks to moisture retention. On a traditional grill, the hot air created disturbs this moisture boundary, allowing moisture to escape and food to dry out.

Pro500 infrared grill from Napoleon Appliances.

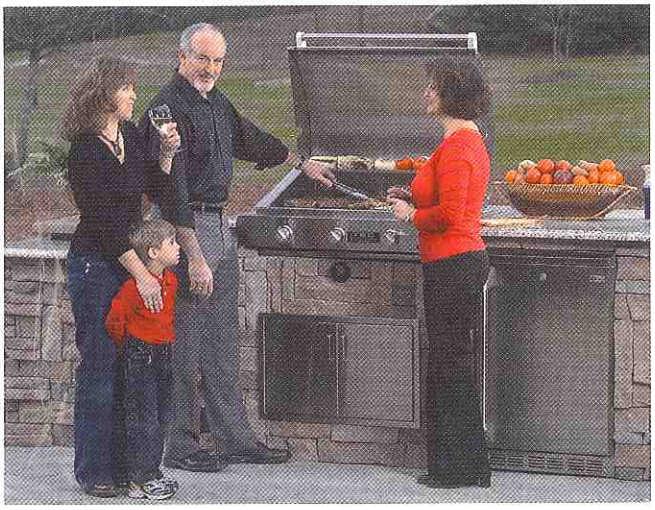
"It's proven scientifically that infrared is the best way to grill meat," says Rachael Best, president of Thermal Engineering Corporation (TEC). "If anyone tells you it's hype, they've never experienced it."

Indeed many more people have now experienced the infrared difference since the initial patent on Bill Best's residential infrared grill expired just over a decade ago. Since then, many other grill manufacturers have embraced the technology masterminded by the founder of TEC, greatly increasing the profile of infrared grilling. In addition to specialty manufacturers such as Twin Eagles, R.H. Peterson and Napoleon, mass market manufacturers such as CharBroil are incorporating infrared capability on some of its grills.

"Awareness is soaring like you wouldn't believe," Rachael Best points out.

She argues that having infrared available in Big Box stores has helped the high end of the market, as well. "When people see an infrared grill in the mass merchants, they wonder what it is and go home and research the topic on the Internet and learn about the benefits. When they learn more about it, some of those people will want to trade up to a more premium grill available at specialty stores," she explains. "People who buy infrared are people who are interested in high tech products like Apple computers and iPhones."

As all techies know, today's "cutting edge" technology has a way of becoming "old news" quickly. In fact, Bill Best has already developed the next generation of infrared grills, incorporating a metal or glass emitter plate over a conventional burner to achieve even greater infrared cooking efficiency. "The original grills cooked with 35 percent infrared energy and 65 percent hot air," Rachael Best notes. "But the new models use 100 percent infrared energy and completely block the hot air. Hot air is a drying medium, like a clothes dryer."



TEC's Sterling G3000.

According to Rachael Best, the new, patented technology is less expensive because it requires only standard gas burners, not costly ceramic burners, which tend to be fragile and susceptible to insect and moisture damage. In addition, while models with original infrared technology cannot be set much lower than 650 degrees, TEC's newer infrared grills offer very low turn-down capability.

Model R50SC012 from Saber Grill.

The company is launching new models this year – all made in the USA – featuring current infrared technology, but with lower price points. The reintroduction of its two-burner Patio Grill priced around $2,199, once TEC's best-selling grill, is expected to be met with much enthusiasm from dealers and consumers.

TEC has licensed its new technology to CharBroil and, recently, to Illinois Tool Works, a leading restaurant equipment manufacturer of Vulcan, Hobart and Wolf brands. The partnership has led to the introduction of the V-TEC commercial infrared grill. "The big draw to restaurants is energy efficiency," explains Rachael Best. "In a restaurant, the grill is one of the most energy-consuming appliances. This unit will produce better results and save money." The company is working on getting its infrared grills into restaurants, cooking schools, pizza chains and other food-service establishments.

"In the early years, infrared grills were mostly sold by word of mouth, consumer to consumer, chef to chef," notes Rachael Best. "But now, because we have partnered with companies that have the ability to spread the word about the benefits of infrared cooking, we are seeing tremendous growth and awareness of the concept as a result."

There is yet another unexpected upside to infrared grills: Some believe they are at least partially responsible for the increase in year-round grilling. Experts explain that, because infrared energy is not impacted by cold, snow or rain, cooking temperatures are maintained, making infrared grills ideal for cooking outdoors even when conditions are not ideal. And the fact that they preheat and cook faster than traditional grills (thereby requiring less time outdoors in the elements), may also help motivate people to plan grilled menus in the off season.

No stranger to harsh winters, Canadian-based Napoleon Appliance Corporation has invested heavily in infrared technology and now offers an extensive line-up of infrared grills. Ted Scott of Napoleon says, "Infrared grilling is more convenient (in winter), with easy start-up from electronic ignition. Charcoal grilling may have that desired smoky taste, but you don't want to be stuck outside lighting a charcoal grill in the dead of winter. Our products are high quality, and with proper maintenance will withstand winter environments. The infrared technology is what