

The Cold Facts

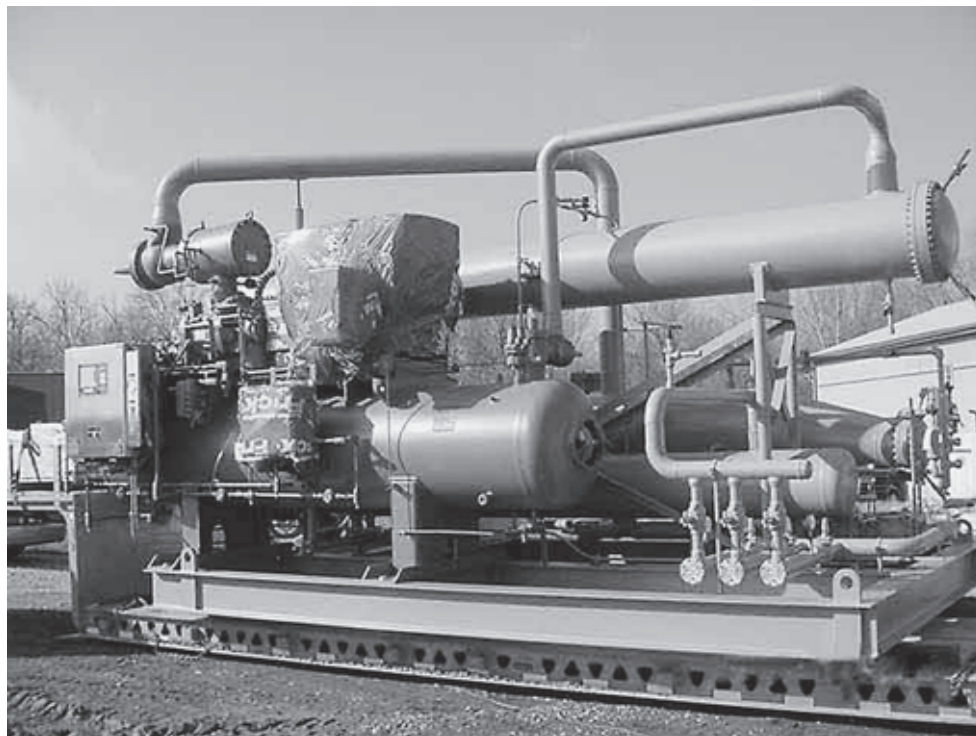
Winter 2003

The Promise of the New Year...

The entire staff of Refrigeration Systems Company hope that you and your loved ones enjoyed a healthy, happy and safe holiday season, and we wish you a safe and prosperous New Year.



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Citgo's RSC custom design chiller system.

Citgo Saves Thousands Per Month With A RSC International Custom Design Chiller System

RSC starts up another custom chiller system, this one designed for Citgo Petroleum. The new package consists of two 50% systems plus a pump skid package. The refrigeration package system employs two oil flood rotary screw type compressors with industrial water-cooled condensers. For cooling purposes, a flooded evaporator with refrigerant R-134a is used to cool the process water stream.

Both package systems, together, provide 770 tons of refrigeration. Each compressor is driven with a chemical plant duty 400 HP motor. The exchangers are designed in accordance with special industrial standards for fouling and corrosion allowance. The control system includes a full-time vibration monitoring system for each compressor. And, because of the location, a hazardous area, the NEMA electrical standard of Class I Group D Division II provided the design criteria. Further, each panel is constructed of stainless steel. The compressor control center includes a modem so the system can be monitored remotely from the RSC Service Department in Columbus, Ohio.

An industrial design heavy-duty pump package with expansion tank is also provided to deliver the chilled water to the plant. The equipment and controls are furnished pre-piped, pre-wired, mounted and fully assembled on a heavy-duty structural steel base. It was delivered ready for process and power connections. Because of the harsh environment, a high-solids epoxy coating was used to coat the package.

With this system, Citgo will save thousands of dollars per month in rental charges and have a system designed to the specific needs for their plant environment. A system such as this has a life expectancy of 25+ years in a plant environment. Due to the moisture-laden Gulf Coast petroleum plant environment, a standard water chiller has a life expectancy of approximately five years and usually requires high maintenance and frequent service.

RSC International specializes in design and packaging refrigeration and gas compressor systems for domestic and overseas locations. We can provide all types of compressors including rotary screw type, reciprocating, centrifugal, vane rotary and liquid ring.

—Vince Orlando
President
RSC International

Part One of a two-part article

Energy Management

What is energy management and how do you understand your electric bill? Interpreting your monthly electric utility bill is more difficult than reading *War and Peace* or figuring out your teenager.

There have always been articles and ads about equipment that purports to save you money through “energy management.” So, what really is “energy management”? Is it smoke and mirrors? Is it just a way of selling you something or is there truth to the fact that you can save energy (and money) through the use of well-designed equipment and a proper control strategy?

RSC is pleased to tell you that energy *can* be saved through the intelligent application of computerized controls. *However*, there are certain things that must be taken into consideration if you are to realize a return on your investment.

Return on your investment (ROI)? This is what it’s all about! You will invest your hard earned money to save money, but you need to see the return on that investment in a reasonable amount of time...or you should have invested your money in something else!

First, you must establish, “What is your idea of a reasonable amount of time?” Most accountants suggest that a ROI of two years is a promising utilization of your funds. Then, saving that same amount repeatedly *every* two years from then on is a bonus. Okay, so how do we do this with refrigeration systems and controls?

First, there is no *universal* energy management strategy or equipment. There are general truths about methods to save energy, but they *must be tailored* to your plant and your operation to be useable and effective. As an example, we could not suggest that you shut off compressors to save energy at a time when you need to be making ice cream. So, let’s analyze the components of a typical electric bill to determine where the opportunities exist.

How do you pay for energy? If you look at your electric bill you will see two categories: KW (kilowatts) and KWH (kilowatt-hours). A KW is the instantaneous value of usage. Think of it as the sum of all the KW used at any one time. Another name for KW is “demand”—the maximum amount of KW you require, or how much you are *demanding* that the utility company has available for you at a point in time. The other item is KWH, which is usage over time (hours). If you have a 100-watt bulb lit for 10 hours, you have used 1 KWH. And if your rate is \$.07/KWH, it has cost you 7 cents to burn the bulb for those 10 hours.

Demand costs are something different. The utility charges you based on the highest KW usage in a 15 or 30-minute period (varies with the utility) for the month. So, if you turned on all of your equipment for 30 minutes on the first day of the month, and then turned *everything off for the rest of the month*, you would still be charged for that *peak* when everything was on. Demand rates vary by utility. If you figure an average of \$25/KW, then a small refrigeration plant with a demand of 400 KW would pay \$10,000 for the month on top of the consumption charge (KWH).

(Stay tuned for Part 2, where we will discuss how to lower demand and consumption at your plant with a customized approach to meet your needs.)

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