

Problem:

Inefficiencies and high utility costs associated with year-round operation of steam & electric boilers for domestic hot water in schools.

Solution:

Take main (steam) boiler off line during spring and summer. Install a Raypak gas fired boiler for domestic hot water during warmer months for better efficiency year-round.

Project:

Water Heater Upgrade & Replacement

Location:

**NC & SC
Public Schools**

Products Utilized:

- Raypak Raytherm Atmospheric Water Heaters

RAYPAK GAS FIRED BOILERS CONTINUE TO PERFORM AT NC & SC SCHOOLS

Over 30 years ago, the first Raypak gas fired boiler was installed in a NC school. Initially, a single application was responsible for vaulting Raypak gas fired boilers to a new level of acceptance among commercial and institutional end-users in North and South Carolina. Since then, the same basic application and new applications have been responsible for thousands of installations in the two states.

It all started in Forsyth County, NC. A maintenance supervisor for Forsyth county schools began talking with a local hydronic HVAC rep about an inefficiency problem he was experiencing in many of his schools. The problem involved operating large steam fired boilers year-round for domestic hot water. Like many schools, colleges, and hospitals at the time, most Forsyth county schools relied on large steam fired boilers for both heat and domestic hot water. This meant a tremendous amount of wasted energy during the warmer months when the large boilers were only

needed for domestic hot water. The maintenance supervisor wanted to find a more efficient way to provide domestic hot water during the spring and summer.

An Application is Born

Ray McGalliard, a former sales representative for Heat Transfer Sales of the Carolinas (HTS), began thinking about a system that would save his customer money. Clearly, this meant finding a way to heat domestic hot water during the warmer months without using the main boiler. McGalliard determined that Raypak could provide a cost effective solution.

The system HTS proposed involved only minor piping additions, a small circulating pump, and a few isolation valves. Water would circulate between the Raypak and an existing storage tank. (See Figure 1) The boiler would heat the water directly, using the tank for storage, but not the tank tube bundle

or an external heat exchanger. Because the Raypak is instantaneous and is a low volume boiler, heat loss is kept to a minimum. Even if the tank had to be replaced, Raypak would keep costs to a minimum, because with a properly sized boiler, a very small storage tank can meet a relatively high demand. (continued)



This Raypak boiler has provided trouble-free operation for 14 years at Latham Elementary School in Winston Salem, NC



CASE STUDY

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Since 1971, HTS has been setting the standard for hydronic HVAC and engineered plumbing suppliers. HTS offers the HVAC experience and professionalism of degreed sales associates. Engineering graduates staff every sales office, helping you evaluate system requirements and select the best equipment for your job.

HTS is ready to assist you with your boiler & water heater needs. This includes hot water, steam, and thermal oil boilers. These are available for both indoor and outdoor applications utilizing most standard fuels. In addition, we can provide the other components of your system. From boiler stack to storage tanks to high efficiency boilers, we can help!

HTS stocks a number of *Raypak* water heaters & boilers along with replacement / repair parts in our Greensboro warehouse.



Forsyth County schools found that the compact boiler provided an ideal fit wherever natural gas was available. (When natural gas wasn't an option, LP gas fired Raypaks were installed.) After all, it was small, reasonably priced, and highly efficient. In fact most schools found that they could operate the Raypak year-round for domestic water and still save money.

Today, Raypak boilers and water heaters are still operating in Forsyth County schools and continue to save energy dollars for the owner. In addition to saving money on utilities, the Raypak boilers are easy to maintain and require very few parts for upkeep. According to Brad Burgess of Winston-Salem/Forsyth County Schools, the Raypak boilers are very easy to maintain and states that "Our own maintenance personnel can work on the Raypak boilers so that we don't have to make costly service calls." This is not the case with some of the other boilers in their school system.

Schools in Spartanburg SC have also seen the benefits of using Raypak gas fired water heaters & boilers. Charles Gainey, Director of Maintenance and Operations for Spartanburg County Schools has been using Raypaks for school renovations since 1986. Like Forsyth County, many of the schools in his district relied on steam boilers for heat and domestic water. In some cases an electric boiler came on line during the summer just to free up the steam boiler during the warmer months. According to Gainey, there was still substantial energy waste, which is why they turned to



Raypak uses standard bronze headers for domestic hot water boilers. Failure to provide a non-ferrous waterway will result in oxidation and lead to costly heat exchanger replacement.

Raypak. He conservatively estimates that the schools which previously used electric for domestic water are seeing a 30% savings in energy cost using Raypak. Gainey also liked the fact that the boiler provided instantaneous hot water. The compact size and readily available parts and service helped sell him, too.

Today, Gainey states that "Through the years, we have installed a number of Raypak water heating systems and we have been very pleased with the service that they have provided."

Consequently, the same reasons that make Raypak so good in schools, has made it ideal in hundreds of colleges, nursing homes, hotels, and commercial buildings throughout North and South Carolina.

"Our own maintenance personnel can work on the Raypak boilers so that we don't have to make costly service calls."

TECH TOPIC: SIMPLE RETROFIT SAVES ENERGY FOR DOMESTIC HOT WATER HEATING

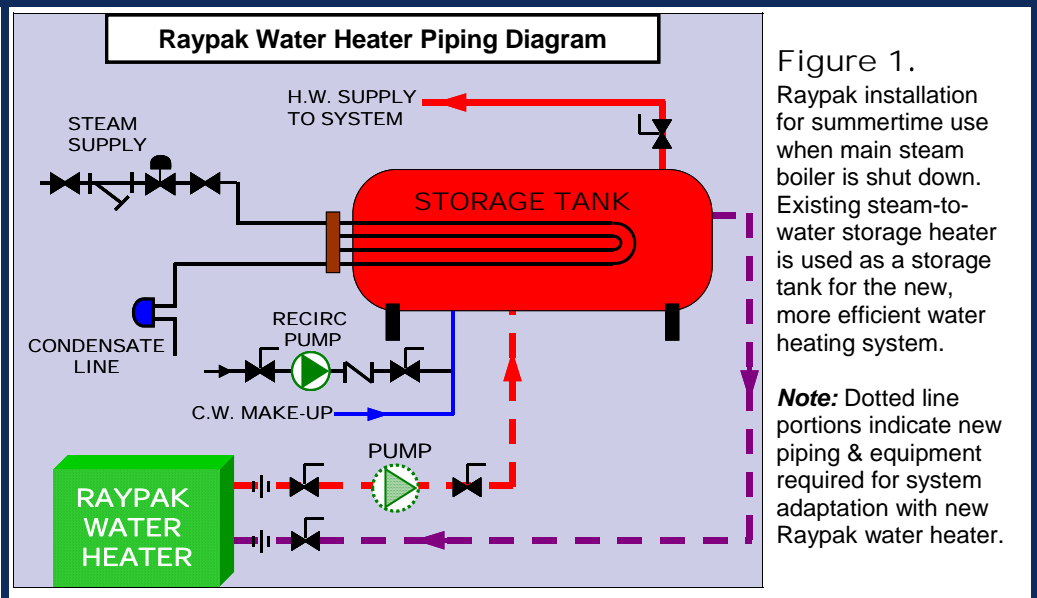


Figure 1. Raypak installation for summertime use when main steam boiler is shut down. Existing steam-to-water storage heater is used as a storage tank for the new, more efficient water heating system.

Note: Dotted line portions indicate new piping & equipment required for system adaptation with new Raypak water heater.