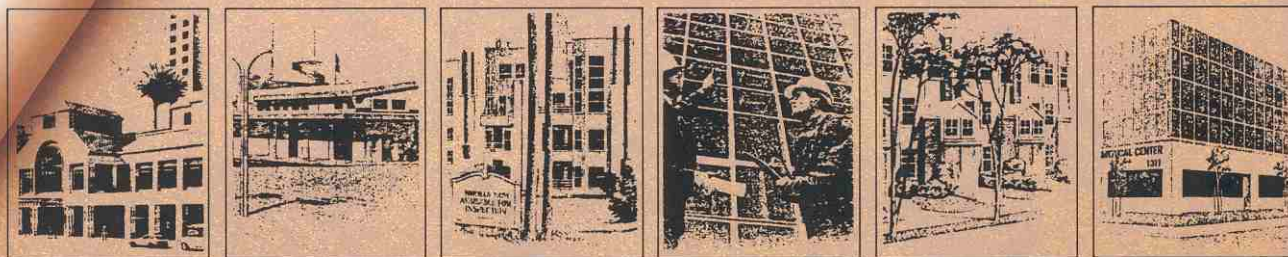
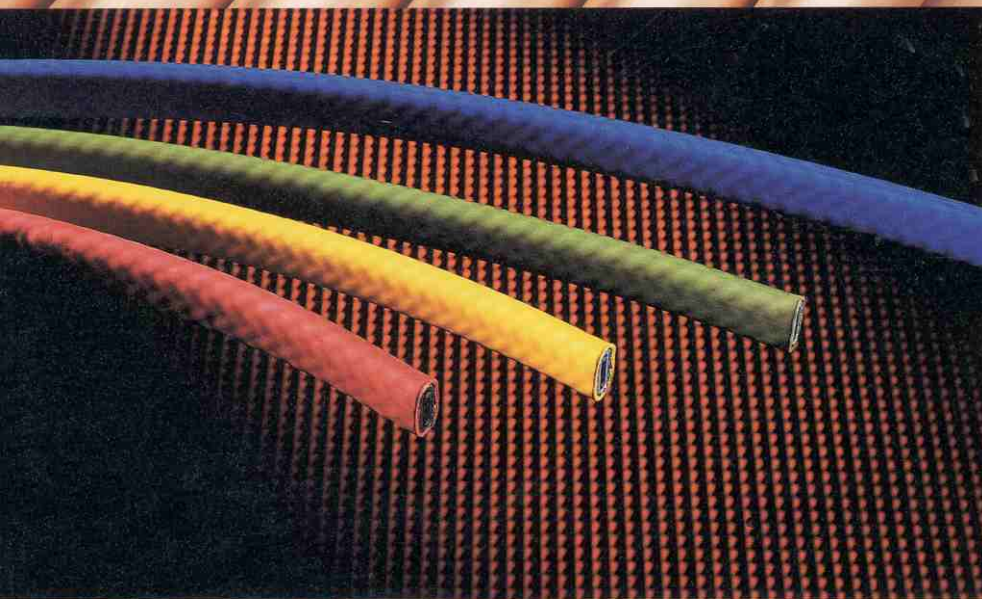


Raychem

The HWAT-Plus™ Domestic
Hot Water Temperature
Maintenance System



Flexible design.
Easy installation.
Dependable operation.

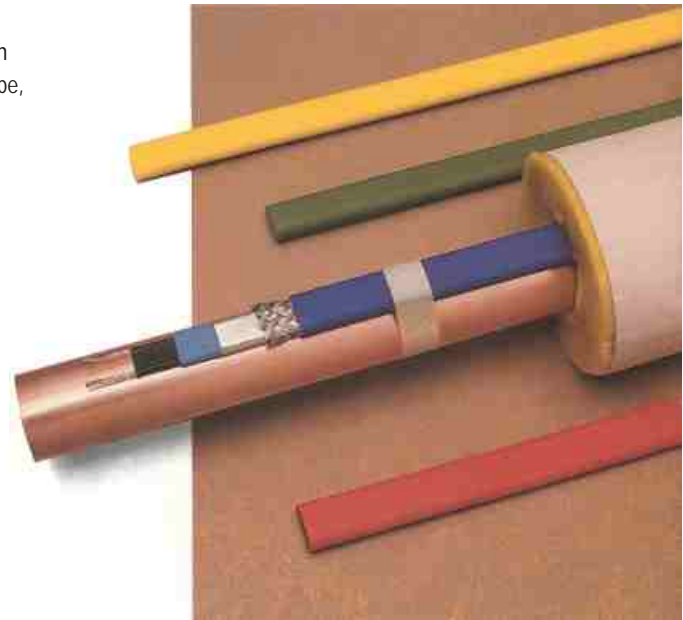
The HWAT-Plus
Temperature
maintenance
system puts
hot water at
every fixture—

quickly, simply
and reliably.

HWAT-Plus systems do that—and more—without the need for recirculation loops in hot water systems. Taped to the supply pipe, HWAT-Plus self-regulating heating cable supplies the heat required to maintain proper water temperature at any point along its length. As a result, there are no delays in obtaining hot water at any fixture in the building, no matter how large or how complex the hot water system may be.

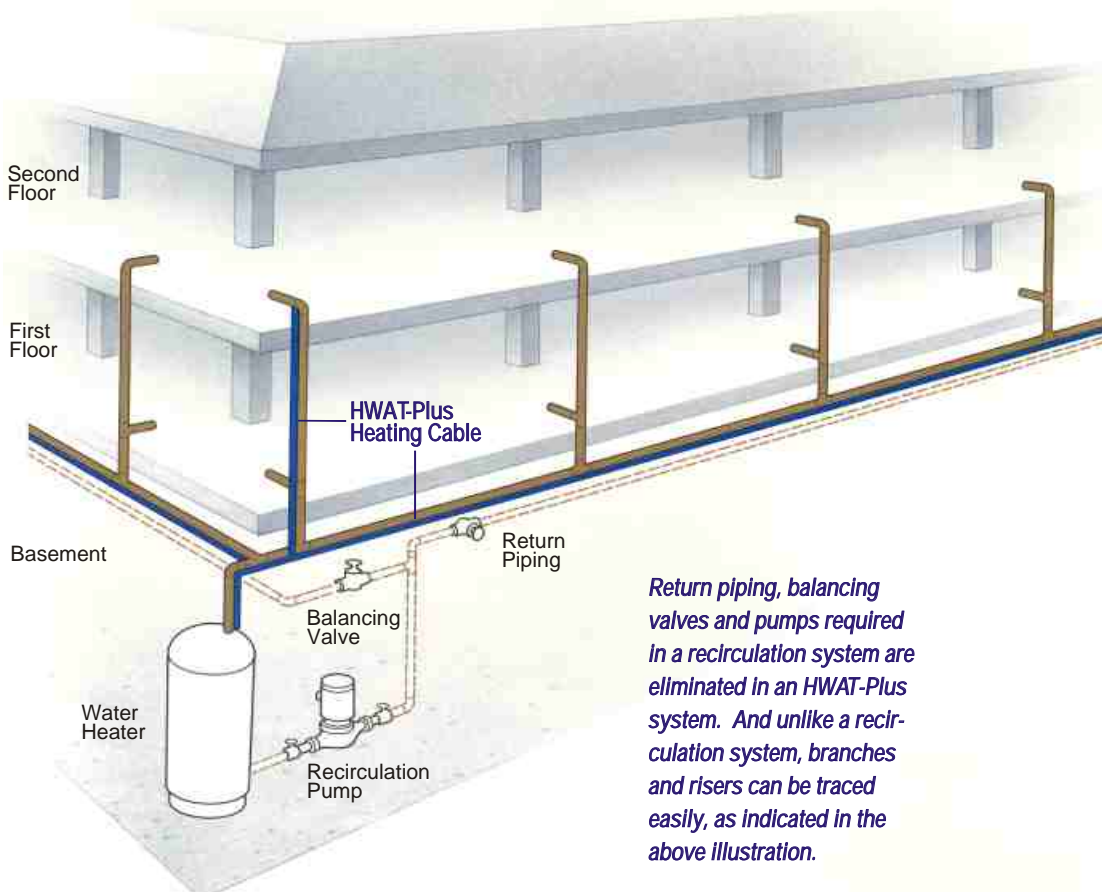
There are numerous other advantages, too, advantages important to architects, to plumbing engineers, and to building owners and managers.

First, since there is no return piping in an HWAT-Plus system, everyone's design options are increased; there is more flexibility in the way a building and its hot water system may be designed. Further, installation of an HWAT-Plus system—at a competitive cost—is fast and easy. Additionally, the HWAT-Plus heating cable can be cut, spliced, and terminated to any length *on-site*. There is no waste, and tees can be incorporated at any point in the system.



Because HWAT-Plus cable employs a radiation-crosslinked conductive polymer as the heating element, the cable's power decreases as the temperature increases. Known as self-regulation, this property allows the heating cable to be overlapped on itself without overheating, and to adjust power output when air or water temperature changes.

HWAT-Plus System
versus Recirculation



Return piping, balancing valves and pumps required in a recirculation system are eliminated in an HWAT-Plus system. And unlike a recirculation system, branches and risers can be traced easily, as indicated in the above illustration.

The HWAT-Plus system has no pumps and valves. It actually has no moving parts at all, eliminating mechanical maintenance. Moreover, the HWAT-Plus system requires less piping. Heat loss is substantially reduced, and less energy is used.

HWAT-Plus technology is fully proven, too—in hospitals, schools, hotels, prisons, apartment buildings, and office complexes around the world. So it can be chosen with full confidence in its performance and long-term reliability.

Typical system and components



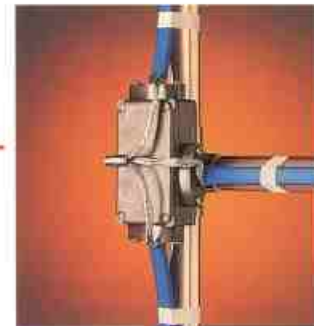
"ELECTRIC TRACED" LABEL



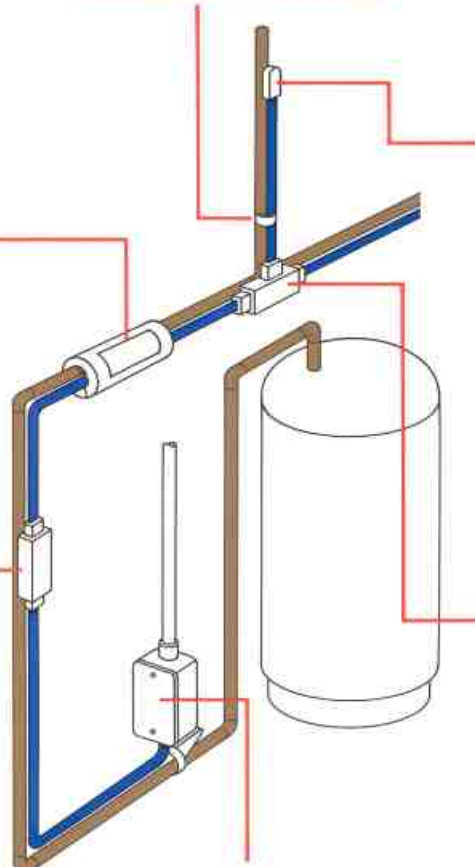
HEATING CABLE END SEAL



HEATING CABLE SPLICE



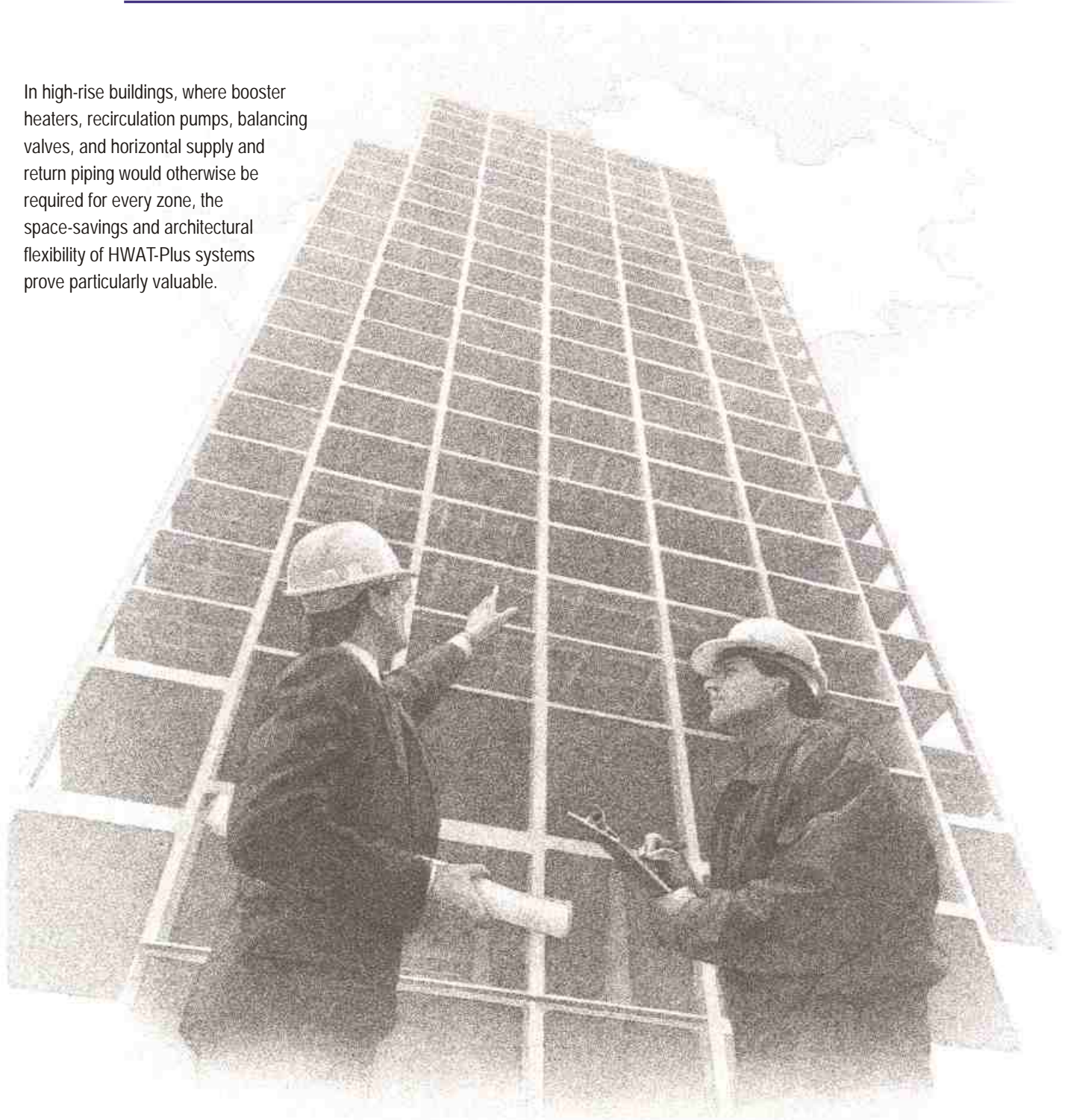
HEATING CABLE TEE



POWER CONNECTION

// Because we needed no horizontal return piping for each pressure zone in this high rise, we saved space on several floors—which pleased both the architect and the client. //

In high-rise buildings, where booster heaters, recirculation pumps, balancing valves, and horizontal supply and return piping would otherwise be required for every zone, the space-savings and architectural flexibility of HWAT-Plus systems prove particularly valuable.



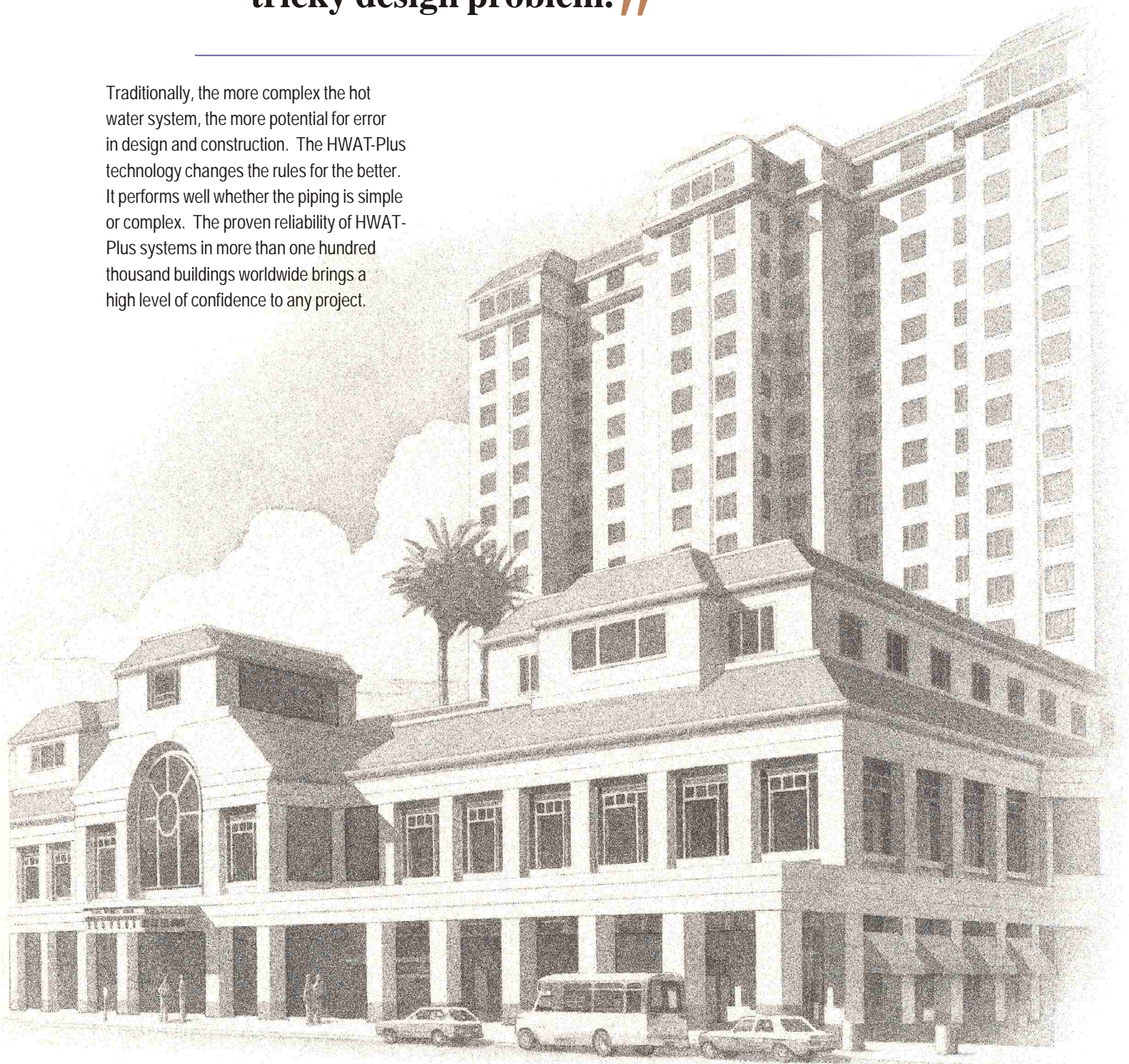


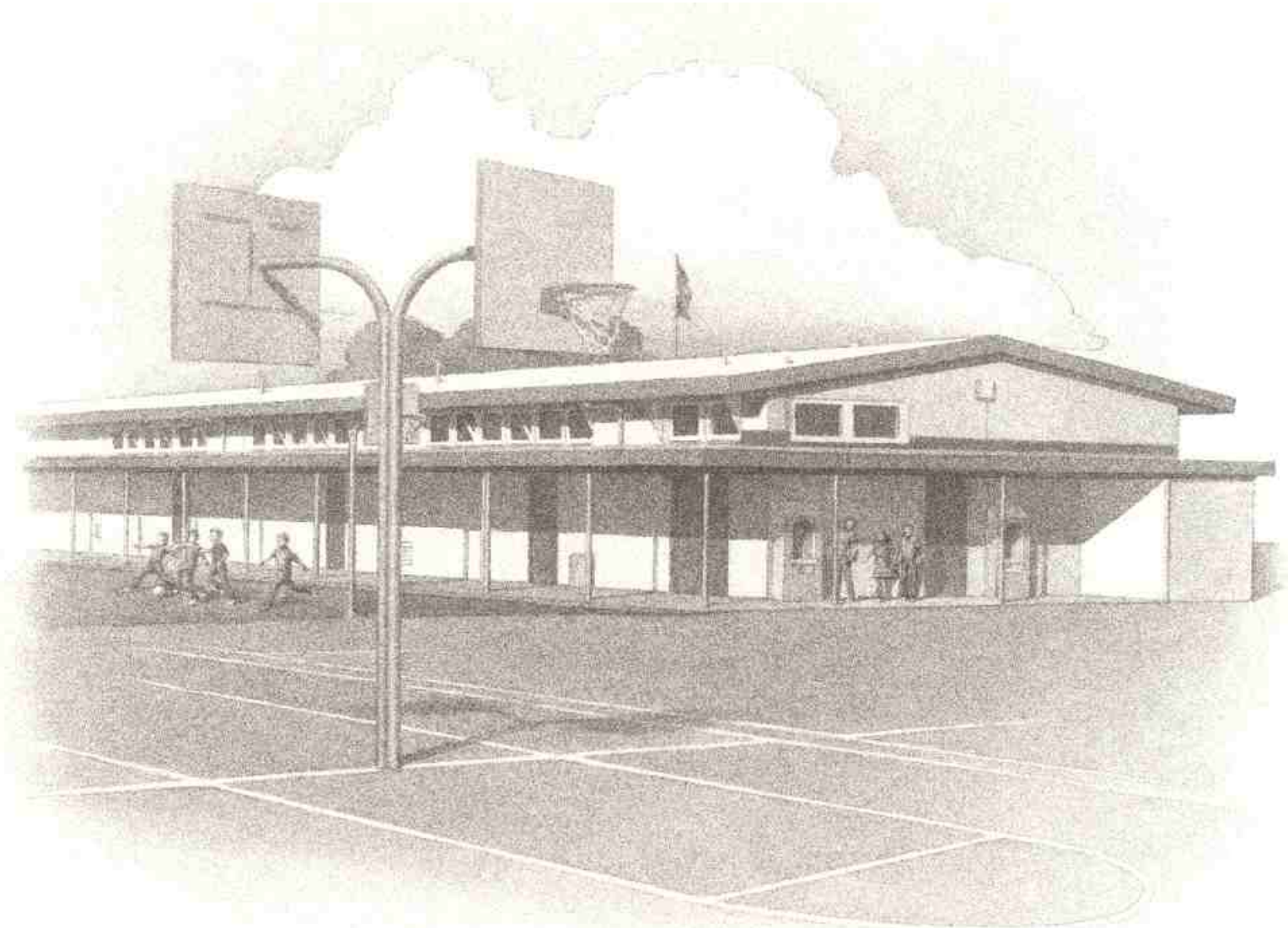
// We had to design the hot water system to enable this fast track project to be occupied in stages. Using the HWAT-Plus system, this was really east to achieve. //

In new buildings, there's yet another HWAT-Plus advantage. The independent operation of each HWAT-Plus heating cable permits occupation of the building while it is under construction. There's no need to wait for completion of the recirculation loop before turning on the system.

// I wasn't confident I could get recirculation working right everywhere in this hotel. This HWAT-Plus system enabled me to solve a tricky design problem. //

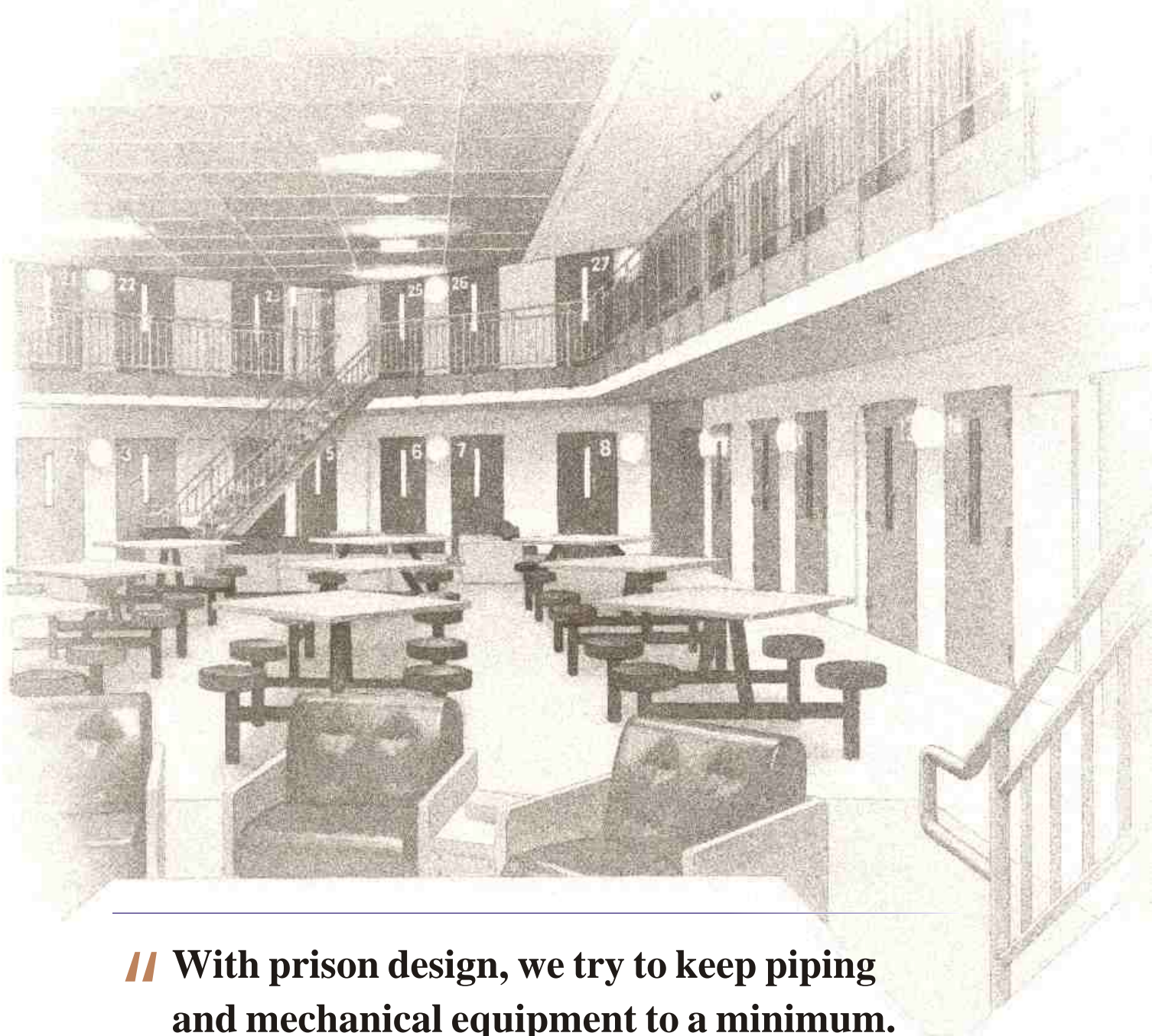
Traditionally, the more complex the hot water system, the more potential for error in design and construction. The HWAT-Plus technology changes the rules for the better. It performs well whether the piping is simple or complex. The proven reliability of HWAT-Plus systems in more than one hundred thousand buildings worldwide brings a high level of confidence to any project.





// The city water supplied to this school is very soft. The return piping quickly deteriorates because of the combination of corrosion, erosion, and high temperature. Until we installed the HWAT-Plus system, the piping had to be replaced every eight years. //

The high temperature and flow velocity through return piping adds an erosive effect to the corrosion caused by high temperatures and soft water. As a result, return piping deteriorates very rapidly in certain water districts. The HWAT-Plus system eliminates the need for return piping, and greatly extends the useful life of a domestic hot water system.



// With prison design, we try to keep piping and mechanical equipment to a minimum. HWAT-Plus systems let us achieve that without sacrifices in system performance. //

An HWAT-Plus system ends the need for return piping, balancing valves, and pumps. This not only reduces space and maintenance requirements, but also helps minimize the number of penetrations through walls and floors—a benefit of special value where security is an important consideration.

// I found that by using the single-pipe HWAT-Plus system instead of a recirculation system in this hospital, it was much easier to make architectural changes, renovations, and additions. //

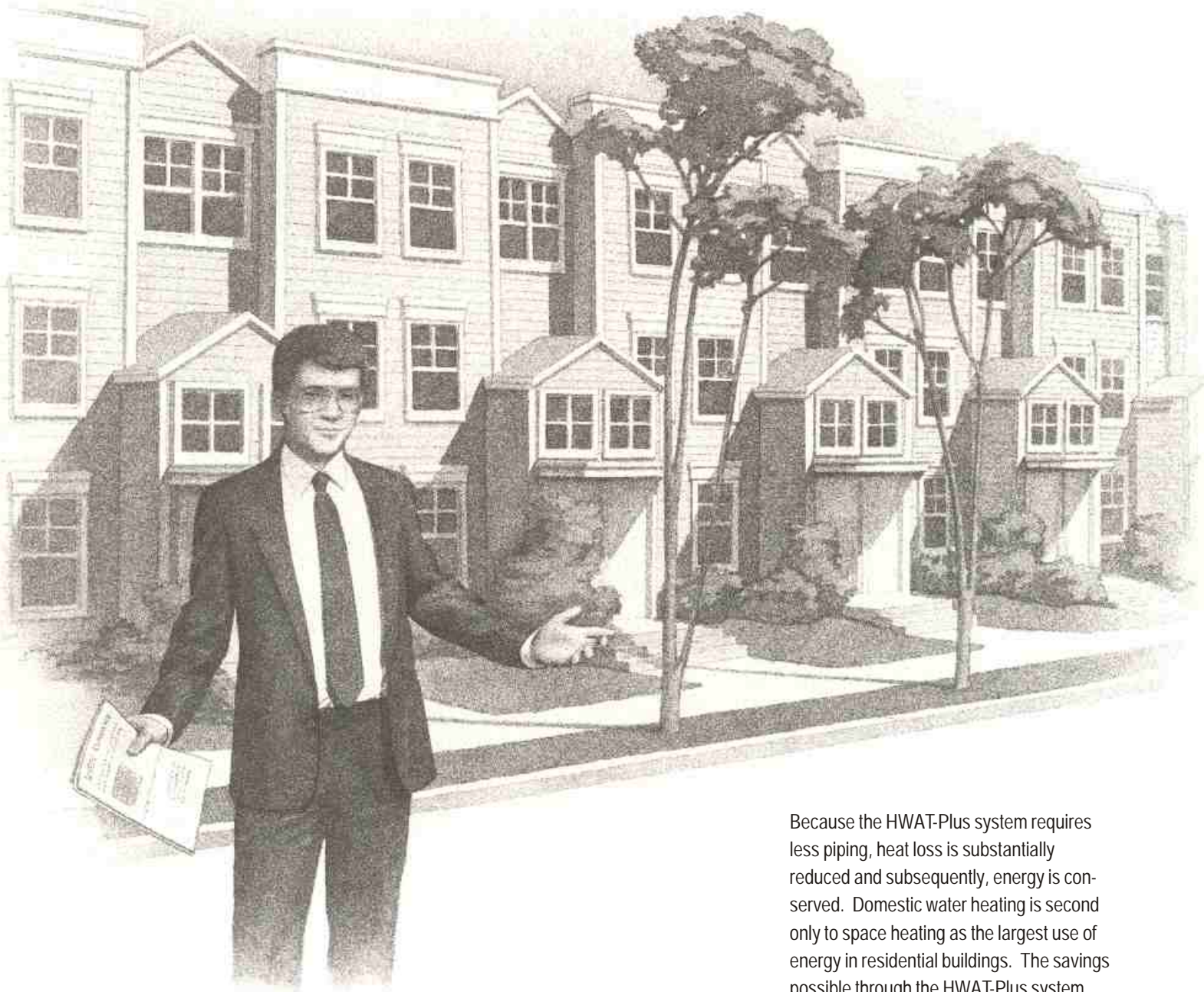
Free of the restrictions imposed by maintaining a balanced system, architects and plumbing engineers enjoy significantly more flexibility not only in initial design, but in subsequent modifications.

Where building expansion is required, the HWAT-Plus system can easily be extended by splicing another length of heating cable to existing cable. If the extension exceeds recommended circuit length, it can be powered separately. Either way, performance of the original system remains unaffected.

An HWAT-Plus system is the best choice for additions even if the existing system is recirculation. Because HWAT-Plus systems used for additions operate independently of the existing system, there's no need to recheck and alter piping, pumps, or balancing valves on the original system.

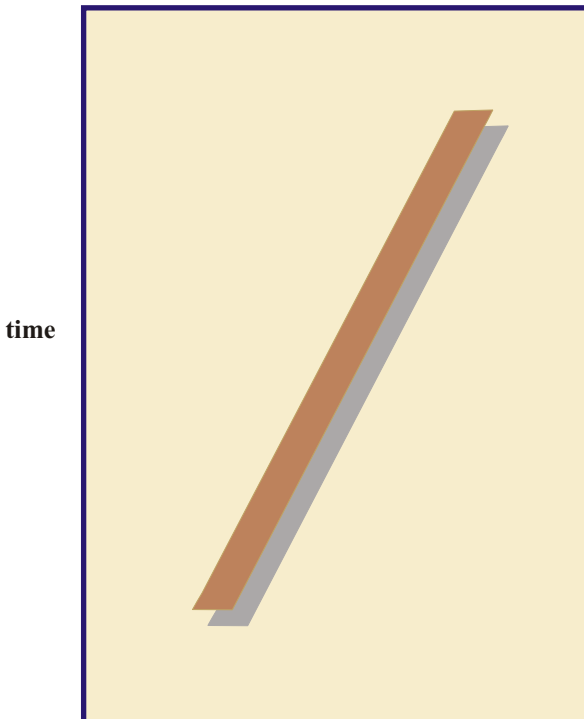


// I really consider the energy savings provided by HWAT-Plus technology a definite plus to my project. //



Because the HWAT-Plus system requires less piping, heat loss is substantially reduced and subsequently, energy is conserved. Domestic water heating is second only to space heating as the largest use of energy in residential buildings. The savings possible through the HWAT-Plus system represent an increasingly important benefit to many building owners and managers.

**HWAT-Plus
technology has
been thoroughly
proven in more
than 100,000
installations
around the world.**



$\frac{1}{\text{temp.}}$

Raychem pioneered accelerated aging tests for predicting the lifetime of conductive polymere heaters. These tests, which are used to generate the Arrhenius graph above, ensure the long-term reliability of HWAT-Plus systems.

There's no guesswork in anticipating HWAT-Plus performance over time. *Used in the field since 1976 and in more than 100,000 buildings worldwide, HWAT-Plus technology has demonstrated a high degree of reliability.* Each system is thoroughly tested for integrity following installation and prior to enclosing the system within wall and ceiling spaces.

HWAT-Plus reliability reflects the experience and resources behind the technology.

The self-regulating heater technology behind HWAT-Plus products was developed by Raychem, a Fortune 500 high technology company, and introduced in 1970. Since then, more than 250 million feet of the self-regulating heating cable has been installed, and it is performing reliably in a wide range of applications.

Raychem has lengthy experience in heating technology, including demanding applications in the chemical and nuclear power industries. Architects, engineers, and building owners can specify and install HWAT-Plus hot water temperature maintenance systems with the highest level of confidence.

**HWAT-Plus systems...
The right choice.**

HWAT-Plus technology assures maximum efficiency in delivering hot water to every fixture. HWAT-Plus systems allow unmatched freedom in architectural and plumbing design—whether for new construction or renovation. They are also cost-competitive, installing quickly and easily, and saving energy by delivering heat only when and where needed. Further, their simplicity and lack of moving parts means that they require little or no maintenance.

Finally, HWAT-Plus systems are fully proven. Backed by Raychem, the leader in self-regulating heater technology, they represent an approach to hot water temperature maintenance that combines measurable advantage with the confidence accompanying a proven product from a proven company.

Raychem

Choose Raychem
for all these reasons.

Engineers, architects,
and contractors around
the world choose Raychem's
heating and leak-sensing
systems for these advantages:



- Quality and reliability
- Advanced technologies
- Product capabilities
- Energy efficiency
- Easy installation
- Lower installed cost
- Lower operating cost
- Design and engineering services
- Worldwide customer support

Raychem

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