

## Classroom Training Aids

### Training for Energy Conservation

In a survey of plant engineers, plant managers and key maintenance engineers, 89% said that there will be a greater need for training in the years ahead. One of the primary areas of training will be in the arena of steam system maintenance because of the great potential to save energy and money.

Since building its first steam trap in 1911, Armstrong has been committed to sharing information and technical knowledge on steam energy conservation. Armstrong not only shares this information with its Representatives, but for years it has conducted seminars for its customers. Seminars have been conducted in our facilities as well as in customers' plants.

To extend its training program further, Armstrong assists many companies in developing their own in-house training activities. This guide is published to inform these trainers of the educational resources available from Armstrong. Many of the training aids are available at no charge. Other resource materials are available at a nominal charge. These items are marked with a dollar sign (\$). For prices, contact Armstrong's Marketing Department.

Armstrong offers an extensive list of handbooks, catalogs and bulletins covering a wide range of topics. Some of these publications provide valuable resource material for classroom instruction.

Armstrong also provides many other training aids to help trainers conduct programs on various aspects of steam system operation and maintenance. Following are some of the materials for planning and implementing an effective steam system maintenance program.

**Line Card 320 with Catalog CD-ROM:** Line Card 320 includes a CD-ROM of Armstrong's catalog, Solution Source for Steam, Air and Hot Water Systems. The CD also features "Steam Conservation Guidelines for Condensate Drainage," which is recognized as one of the most authoritative discussions on steam, steam traps and steam energy conservation available today.

**Sectional Models:** Being able to see inside steam traps has been effective in helping people who work with traps to understand how they operate. Armstrong offers more than a dozen different sectional models of its steam traps and related products. Also available are glass traps, which allow students to view the operation of various steam trap types. \$

**Videotapes:** While Armstrong has more than a dozen different videotapes available, three have been found most useful in training situations.

- **Let's Talk Steam Traps/Update** is a two-part, 32-minute videotape that discusses the operating principles of mechanical, thermostatic and thermodynamic steam traps. Designed to be used in conjunction with the Conservation Guidelines section of this catalog, the tape discusses 10 steam system operating conditions that must be considered in evaluating steam trap performance. \$
- **Guidelines for Steam System Efficiency** is a 15-minute educational program covering basic considerations in the design, piping and trapping of steam systems. Topics covered in the tape include correct sizing and installation of steam supply and condensate return lines, steam velocities in the system, the use of air vents, vacuum breakers and safety drains, and much more. This videotape stresses how low energy, maintenance and operational costs in your system can be achieved by proper design, installation and maintenance. \$
- **Guidelines for the Prevention of Water Hammer** is a 16-minute videotape explaining three types of conditions that cause water hammer. The damaging effects of water hammer to steam system components also are described. Recommendations are made in the videotape on the proper trapping and piping to reduce the potential for water hammer. The results of reducing or eliminating water hammer are a safer work environment, lower maintenance costs and reduced system downtime. \$

**Steam-A-ware™ Sizing and Selection Software:** Proper sizing and specifying of steam traps, pressure reducing valves and water heaters is critical in order to save energy and extend equipment life. For users, this has continued to be a confusing and complex process. Now the easy-to-use Armstrong Steam-A-ware software program for sizing and selecting steam traps, pressure reducing valves and water heaters can be downloaded from Armstrong's Web site, [armstronginternational.com](http://armstronginternational.com).

# Reference Guide to Armstrong's Training Aids

## Training for the Trainer

Armstrong recognizes the need to train the people who will be teaching others about the value of steam. In-house trainers are encouraged to avail themselves of the resources offered by Armstrong to make training programs effective and productive.

**Seminars:** One of the most effective means for trainers to learn about steam energy conservation is to attend and participate in Armstrong's steam energy seminars. Thousands of people have participated in these seminars, held monthly at Armstrong's demonstration laboratories in Three Rivers, Michigan; Liege, Belgium; and Beijing, China. These multi-media seminars provide practical experience for trainers, engineers, maintenance personnel and energy managers.

### Representatives

In-house trainers are encouraged to call their Armstrong Representatives as a valuable resource in planning and implementing programs. The Representative can serve as a catalyst in moving your program forward, and virtually all the training aids outlined in this bulletin are available through your Armstrong Representative.

Often, training items may be borrowed from your Representative. He or she may be called on for advice and counsel and may serve as an authoritative resource speaker for your employees.

### Continuing Education Aids

"Knowledge not shared is energy wasted®" is a philosophy of Armstrong, and the company is dedicated to the premise of sharing knowledge on a continuing basis. Furthermore, knowledge not applied is knowledge wasted. For example, a person may learn the techniques of testing steam traps in a classroom setting, but if it is not applied, the skill is quickly lost. Following are some training aids involving hands-on experience that are useful on a day-to-day basis.

**Reprints: Sharpen Trap Testing Skills to Save Maintenance Hours and Conserve Energy** is a reprint from **POWER** Magazine. It was authored by Armstrong's technical staff, including engineers and research staff members. It stresses the importance of individual training and plenty of practical experience. The article also includes a copy of the steam trap testing flow chart.

**Flow Chart:** The flow chart poster can help guide a person through logical steps of diagnosing a trap's performance. It lists a number of conditions to look for and identifies steam system conditions that impact on troubleshooting steam traps, regardless of the type. \$

**Bulletin No. 310: Steam Trap Testing Guide for Energy Conservation** is a small, shirt-pocket guide loaded with tips for effectively testing all types of steam traps. This step-by-step testing guide gives helpful hints on how to test traps by the sound method.

**Bulletin No. 301: Service Guide** is a 36-page handbook and fits easily into a pocket for on-the-job reference relating to inverted bucket steam traps. It contains valuable information ranging from installing traps to inspecting/testing, troubleshooting and a wide range of other helpful tips.