



## Automatic Blowdown Control Systems

These systems optimize surface blowdown by regulating water volume discharged in relation to amount of dissolved solids present. Conductivity, TDS, silica or chlorides concentrations, and/or alkalinity are reliable indicators of salts and other contaminants dissolved in boiler water. A probe provides feedback to a controller driving a modulating blowdown valve. An alternative is proportional control – with the blowdown rate set proportional to the makeup water flow.

## Cycles of Concentration

“Cycles of concentration” refers to the accumulation of impurities in the boiler water. If the boiler water contains 10 times the level of impurities in the makeup water, it is said to have 10 cycles of concentration.

## References

1. “*Consensus Operating Practices for Control of Feedwater/Boiler Water Chemistry in Modern Industrial Boilers,*” published by the ASME, 1994.
2. “*Recommended Rules for the Care and Operation of Heating Boilers,*” Section VI of the ASME Boiler and Pressure Vessel Code, 1995.
3. “*Recommended Guidelines for the Care of Power Boilers,*” Section VII of the ASME Boiler and Pressure Vessel Code, 1995.

Adapted from an Energy TIPS fact sheet that was originally published by the Industrial Energy Extension Service of Georgia Tech.

## Resources

U.S. Department of Energy—DOE’s software, the *Steam System Assessment Tool and Steam System Scoping Tool*, can help you evaluate and identify steam system improvements. In addition, refer to *Improving Steam System Performance: A Sourcebook for Industry* for more information on steam system efficiency opportunities.

Visit the Advanced Manufacturing Office website at [manufacturing.energy.gov](http://manufacturing.energy.gov) to access these and many other industrial efficiency resources and information on training.

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy

The Advanced Manufacturing Office (AMO) works with diverse partners to develop and deploy technologies and best practices that will help U.S. manufacturers continually improve their energy performance and succeed in global markets. AMO’s Better Plants program works with U.S. corporations through a CEO-endorsed pledge to improve energy efficiency. AMO’s tools, training, resources, and recognition programs can help build energy management capacity within the industrial sector and supply chains. Use these resources to comply with requirements of the ISO 50001 standard and the Superior Energy Performance program.

With our partners, AMO leverages additional federal, state, utility, and local resources to help manufacturers save energy, reduce climate and environmental impacts, enhance workforce development, and improve national energy security and competitiveness throughout the supply chain.

Advanced Manufacturing Office  
Energy Efficiency and Renewable Energy  
U.S. Department of Energy  
Washington, DC 20585-0121  
[manufacturing.energy.gov](http://manufacturing.energy.gov)