

***Optimal Flow Measurement:  
Understanding Selection, Application, Installation,  
and Operation of Flowmeters***

***ITA Workshop Proceedings***

Prepared by the **ITA 2002 Workshop Task Force**  
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**Instrumentation Testing Association**

## ***Abstract***

These proceedings contain papers presented for a two-day workshop regarding optimal flow measurement. Chapter 1 provides an introduction to the workshop program, speakers, and facilities.

Chapters 2 through 14 discuss in detail flowmeter selection, fluid flow and installation effects, measurement uncertainty, and flowmeter calibration. 11 different types of flowmeters are studied for use and include:

- Area Velocity;
- Weirs;
- Open Channel;
- Orifice Plates;
- Transit Time;
- Doppler;
- Thermal Mass;
- Venturi;
- Vortex Shedding;
- Magnetic, and
- Pulse Doppler.

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ITA's Workshop Task Force was formed by the ITA Board to originate and produce educational programs for water and wastewater instrumentation to address the needs of ITA's membership. ITA's workshop proceedings are intended to provide supplemental materials of ITA workshop speaker presentations.

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## ***Preface***

The purpose of this publication is to provide supplemental materials to ITA workshop speaker presentations regarding optimal flow measurement devices (flowmeters) for water and wastewater treatment applications. The reader of this report is responsible for determining which parameters are of most importance to their application to select the most suitable flowmeter for their respective needs. It is also emphasized that a complete assessment of the information presented herein requires attendance of ITA's workshop and the presentation of supplemental materials by ITA's Workshop Task Force.

This publication was prepared by the ITA Workshop Task Force under the direction of the ITA Board.

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