



Klaus Zanker
Flow Measurement Specialist

Education:

B.S. Engineering
London University
London, England

Experience:

Flow Measurement Specialist, The Letton-Hall Group – March 2006 to Present.

- Providing flow measurement consulting services including: meter station assessment, measurement standards/practices development, technology evaluation, system balance analysis, project management and training program development.

Principle Flow Measurement Engineer, Daniel Industries, Houston, Texas – September 1992 to March 2006.

- Contributed to flow measurement development work. Represented Daniel on standards bodies to promote the acceptance of new technology. Interacted with industry groups to encourage cooperative research. Presented the results of work at many international conferences.
- Participated in the development of the following products:
 - Senior Sonic[®] Ultrasonic Gas Flow Meter
 - MEGRA[®] Multiphase (Oil/Gas/Water) Flow Meter
 - Profiler[®] An isolating flow conditioner

Senior Development Engineer, Schlumberger Limited, Houston, Texas – August 1986 to September 1992

- Led a team that designed surface sensors used for measurements while drilling, to complement the much more expensive down-hole measurements.
- Developed kick detection systems for use with oil and water based mud.

Other Experience:

- ***Vice President, Engineering, Agar Corporation, Houston, Texas, 1980-1986***
- ***Head of Fluid Dynamics, Sarasota Automation (formerly Agar Instrumentation), UK, 1975-1980***
- ***Research Engineer, Israel Water Commission, 1972-1975***
- ***Manager of Flow Products, Kent Instruments, United Kingdom, 1968-1972***
- ***Assistant Director, British Hydromechanics Research Association, United Kingdom, 1966-1968***

- **Research Engineer, Standards Institute of Israel, Israel 1965-1966**
- **Research Engineer, British Hydromechanics Research Association, United Kingdom, 1957-1965**

Patents: 16 issued US patents and 4 issued UK patents

Representative Publications:

EROSION IN A VENTURI METER WITH LAMINAR AND TURBULENT FLOW AND LOW REYNOLDS NUMBER DISCHARGE COEFFICIENT MEASUREMENTS. NSFMW, 2007 (with G. Stobie, R. Hart & S. Svedeman)

THE CALIBRATION, PROVING AND VALIDATION OF ULTRASONIC FLOW METERS. ISFFM, 2006

DIFFERENT METER TUBE REQUIREMENTS FOR ORIFICE PLATES AND ULTRASONIC METERS. Flomeko, 2005

A POWERFUL NEW DIAGNOSTIC TOOL FOR TRANSIT TIME ULTRASONIC METERS. NSFMW, 2004 (with Bill Freund, Jr.)

EFFECTS OF FLOW CONDITIONING ON LIQUID MEASUREMENT. ISHM, 2004

THE EFFECTS OF UPSTREAM RECESSES ON THE DISCHARGE COEFFICIENT OF FLANGE TAPPED ORIFICE METERS. AGA, 2004 (with Dale Goodson)

DIAGNOSTIC ABILITY OF THE DANIEL FOUR-PATH ULTRASONIC FLOW METER. S E Asia HFMW, March 2003

OPERATION OF ULTRASONIC FLOW METERS UNDER CONDITIONS DIFFERENT THAN THEIR CALIBRATION. NSFMW, 2002 (with Dale Goodson & Jim Hall)

THE INFLUENCE OF SPEED OF SOUND CHANGES ON ULTRASONIC FLOW METER CALIBRATIONS. ISFFM, 2002 (with Dale Goodson & Jim Hall)

FLOW TESTING AN ULTRASONIC METER OUTSIDE ITS PERFORMANCE ENVELOPE. NSFMW, 2001 (with Gordon Stobie)

QUALIFICATION OF A FLOW CONDITIONING DEVICE ACCORDING TO THE NEW API 14.3 PROCEDURE. Flomeko, June 2000 (with Dale Goodson)

INSTALLATION EFFECTS ON SINGLE- AND MULTI-PATH ULTRASONIC METERS. Flomeko, June 2000

THE EFFECTS OF REYNOLDS NUMBER, WALL ROUGHNESS, AND PROFILE ASYMMETRY ON SINGLE- AND MULTI- PATH ULTRASONIC METERS. NSFMW, 1999

NOISE REDUCTION IN ULTRASONIC GAS FLOW MEASUREMENT. ISFFM, 1999 (with Kevin Warner)