

<u>COURSE OVERVIEW IE1116</u> Smart Gas Metering Skids & Advanced Measurement <u>Technologies</u>

CEUS

Course Title

Smart Gas Metering Skids & Advanced Measurement Technologies

Course Date/Venue

Session 1: June 15-19, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE Session 2: November 23-27, 2025/Meeting Plus 9, City Centre Rotana, Doha, Qatar

Course Reference

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description









This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-theart simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Smart Gas Skids Advanced Metering & Measurement Technologies. It covers the importance of accurate gas measurement, gas flow properties, types of gases in the industry and applications in custody transfer and process control; the basic principles of fluid flow, components of gas metering skids and types of gas meters; the gas flow measurement standards, smart metering concepts, ultrasonic flow meters, coriolis flow meters and turbine and rotary meters: and the pressure and temperature compensation, gas chromatography in skid systems, flow computers and data acquisition.

Further, the course will also discuss the skid fabrication and layout design, control panel and SCADA integration; the power supply and electrical design, power supply and electrical design; the smart communication technologies and calibration and validation procedures; the routine operation of gas common troubleshooting meterina skids and scenarios: and the predictive and preventive maintenance, diagnostic tools and remote monitoring and safety in gas metering operations.



IE1116 - Page 1 of 9





During this interactive course, participants will learn the legal requirements for custody transfer, approval of measuring systems, role of third-party verification and penalties for metering inaccuracies; the gross calorific value (GCV) determination, correction factors and calculation methods and invoice generation and audit trails; the ISO 17025 calibration lab requirements, MID compliance and API/AGA reporting requirements; the concept of digital twins for metering skids and AI for anomaly detection, predictive maintenance through ML models and future integration with blockchain for billing; the planning and specification phase and vendor selection; and the technical bid evaluation, installation and commissioning management and risk mitigation and project handover.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on smart gas metering skids and advanced measurement technologies
- Discuss the importance of accurate gas measurement, gas flow properties, types of gases in the industry and applications in custody transfer and process control
- Recognize the basic principles of fluid flow, components of gas metering skids and types of gas meters
- Review gas flow measurement standards, smart metering concepts, ultrasonic flow meters, coriolis flow meters and turbine and rotary meters
- Recognize pressure and temperature compensation, gas chromatography in skid systems, flow computers and data acquisition
- Illustrate skid fabrication and layout design, control panel and SCADA integration, as well as power supply and electrical design, power supply and electrical design
- Discuss smart communication technologies and apply calibration and validation procedures, routine operation of gas metering skids and common troubleshooting scenarios
- Employ predictive and preventive maintenance, diagnostic tools and remote monitoring and safety in gas metering operations
- Explain the legal requirements for custody transfer, approval of measuring systems, role of third-party verification and penalties for metering inaccuracies
- Apply gross calorific value (GCV) determination, correction factors and calculation methods and invoice generation and audit trails
- Identify ISO 17025 calibration lab requirements, MID compliance and API/AGA reporting requirements
- Discuss the concept of digital twins for metering skids and apply AI for anomaly detection, predictive maintenance through ML models and future integration with blockchain for billing
- Describe planning and specification phase and apply vendor selection and technical bid evaluation, installation and commissioning management and risk mitigation and project handover

Exclusive Smart Training Kit - H-STK[®]



B

Participants of this course will receive the exclusive "Haward Smart Training Kit" (H-STK[®]). The H-STK[®] consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

IE1116 - Page 2 of 9





Who Should Attend

This course provides an overview of all significant aspects and considerations of smart gas metering skids and advanced measurement technologies for instrumentation & control engineers, measurement engineers & technicians, process engineers, operations & maintenance personnel, gas transmission & distribution engineers, SCADA & automation engineers, project & engineering managers, regulatory compliance & QA/QC professionals, procurement specialists (technical), consultants & EPC contractors

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's Certificates are accredited by the following international accreditation organizations:

• **BA**

British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



IE1116 - Page 3 of 9





Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. John Vorster, MSc, BTech, is a Senior Instrumentation & Control Engineer with over 25 years of industrial experience within the Oil, Gas, Process, Refinery, Power and Nuclear industries. His wide expertise includes Field Indication Instruments, P&ID & Technical Specification, Test Equipment Calibration, Field Bus & Field Communications, Testing, Calibration & Maintenance of Flow, Level, Pressure & Temperature; Flow Measurement & Custody Measurement,

Flow Computer, Turbine Flowmeters, Ultrasonic Flowmeter, Positive Displacement Flowmeter, Coriolis Flowmeter, Flow Rate Corrections. Pressure Flow Transmitters, Pressure Methods, Flow Nozzles, Orifice Plates, Venturi Tubes, Pitot Tubes, Process Control Design & Plant Modelling, Instrumentation, Automation, Process Control Instrumentation, Analyzer Measurement Systems, Pressure Management, Selection & Sizing of all Instrumentation, **SIL** Criteria, Calibration & Configuration of Installed Instrumentation, PLC & DCS, Bearing Replacement and Control Valves. Further, he is also well-versed in HAZOP, LOPA Studies, Radiation Protection, Hazardous Substances, Hazardous Area Classification, Nuclear Devices Loop Drawings, Loop Calculations, Engineering Drawings, Maintenance. Shutdown Maintenance & Planning, Asset Management, Six Sigma, Energy Management & Measurements, Project Management, Strategic Resource Planning, Budget Preparation, ISO 9001, ISO 14000 and ISO 18000 standards. He is currently the Instrumentation Analyzer & Engineer of Sasolburg wherein he is in-charge of the design and monitoring of the analyzer measurement systems.

During his career life, Mr. Vorster has gained his practical and field experience through his various significant positions and dedication as the **Project Manager**, **Senior Trainer/Instructor**, **Senior Instrumentation Engineer**, **Instrumentation Engineer**, **Green Belt Project Leader**, **Instrumentation Technologist**, **Senior Instrumentation/Electrical Artisan**, **Instrumentation Artisan** and **Apprentice Instrumentation** for numerous international companies including **Sasolburg**, **DOW Chemical Company**, **Safripol** and **Iscor**.

Mr. Vorster has a Master's degree in Engineering Development & Management, as well as a Bachelor's of Technology degree and a National Diploma in Electrical Engineering. Further, he is a Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership & Management (ILM), an Appointed Radiation Protection Officer and a Qualified Instrument Mechanician. Moreover, he is an active member of Project Management Institution (PMI) and South African Institute of Measure and Control (SAIMC) and has delivered numerous courses, workshops, conferences and seminars internationally.



IE1116 - Page 4 of 9





Training Methodology

All our Courses are including Hands-on Practical Sessions using equipment, Stateof-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures 20% Practical Workshops & Work Presentations 30% Hands-on Practical Exercises & Case Studies 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Fee

Dubai	US\$ 5,500 per Delegate + VAT . This rate includes H-STK [®] (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Doha	US\$ 6,000 per Delegate. This rate includes H-STK [®] (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Dav 1

Day I	
0730 – 0800	Registration & Coffee
0800 - 0815	Welcome & Introduction
0815 - 0830	PRE-TEST
0830 - 0930	<i>Introduction to Natural Gas Metering</i> <i>Importance of Accurate Gas Measurement</i> • <i>Overview of Gas Flow Properties</i> • <i>Types of Gases in the Industry</i> • <i>Applications in Custody Transfer and Process</i> <i>Control</i>
0930 - 0945	Break
0945 - 1030	 Basic Principles of Fluid Flow Flow Regimes: Laminar vs. Turbulent • Reynolds Number and Its Significance • Pressure, Temperature, and Density Relations • Compressibility Factors in Gases
1030 - 1130	<i>Components of Gas Metering Skids</i> <i>Piping and Valves</i> • <i>Pressure Regulators and Filters</i> • <i>Flow Conditioners and</i> <i>Strainer Elements</i> • <i>Isolation and Bypass Systems</i>
1130 - 1215	<i>Types of Gas Meters</i> Orifice Plate Meters • Ultrasonic Flow Meters • Turbine Meters • Coriolis and Thermal Mass Flow Meters
1215 – 1230	Break



IE1116 - Page 5 of 9





	Gas Flow Measurement Standards
1230 - 1330	AGA (American Gas Association) Standards • ISO 5167 and ISO 6976 • API
	MPMS Standards • OIML and Other Metrological Guidelines
	Basics of Smart Metering Concepts
1220 1420	Definition of Smart Metering • Key Differences from Conventional Metering •
1330 – 1420	Digital Integration and Remote Monitoring • Benefits in Terms of OPEX and
	Data Availability
	Recap
1420 1420	Using this Course Overview, the Instructor(s) will Brief Participants about the
1420 – 1430	Topics that were Discussed Today and Advise Them of the Topics to be
	Discussed Tomorrow
1430	Lunch & End of Day One

Day 2

0730 – 0830 <i>Ultrasonic Flow Meters</i> <i>Principle of Operation (Transit Time, Doppler)</i> • <i>Inline vs. Clamp-On</i> <i>Accuracy and Calibration Requirements</i> • <i>Diagnostic Capabilities</i> <i>Checks</i>	
Chronic	
O830 - 0930Coriolis Flow Meters0830 - 0930Mass Flow Measurement Principle • Installation Requirements • De Temperature Measurement • Performance in Multiphase Flow	nsity and
0930 – 0945 Break	
0945 – 1100 <i>Turbine & Rotary Meters</i> Design and Operational Principles • Advantages and Limitations • and Rotor Behavior • Maintenance and Lifecycle Cost	Bearings
1100 - 1215Pressure & Temperature Compensation Real Gas Behavior • Integration with RTD and Pressure Transmitters Transmitters (HART, Foundation Fieldbus) • Compensation Algori Implementation	
1215 – 1230 Break	
1230 - 1330Gas Chromatography in Skid Systems Role of GC in Quality Measurement • Composition Analysis fo Content • Integration with Flow Computers • Calibration and Conditioning	
Flow Computers & Data Acquisition1330 – 1420Key Functions of Flow Computers • Connectivity with Sensors and Real-Time Logging and Trending • Protocols: Modbus, Profibus, OPC	
Recap1420 - 1430Using this Course Overview, the Instructor(s) will Brief Participants Topics that were Discussed Today and Advise Them of the Top Discussed Tomorrow	
1430 Lunch & End of Day Two	

Day 3

	Skid Fabrication & Layout Design
0720 0820	Skid Piping Layout and Footprint Optimization • Materials Selection (Piping,
0730 – 0830	Instruments) • Skid Frame and Structural Considerations • Accessibility and
	Maintainability
	Control Panel & SCADA Integration
0830 - 0930	PLC/DCS Integration • Remote Terminal Units (RTU) • Human-Machine
	Interface (HMI) • Alarm and Shutdown Systems
0930 - 0945	Break



IE1116 - Page 6 of 9

IE1116-06-25/Rev.00|26 May 2025

V



	Power Supply & Electrical Design
0945 – 1100	Power Requirements for Instruments • Hazardous Area Classifications
0945 - 1100	(ATEX, IECEx) • Cabling and Junction Box Layouts • UPS and Battery
	Backup Systems
	Smart Communication Technologies
1100 – 1215	IoT and IIoT for Gas Metering • Wireless Communication (NB-IoT,
	LoRaWAN) • Edge Computing in Smart Skids • Cybersecurity Considerations
1215 – 1230	Break
	Calibration & Validation Procedures
1230 – 1330	Factory Acceptance Tests (FAT) • Site Acceptance Tests (SAT) • Meter
	Proving Techniques • Verification Frequency and Traceability
	Case Study: Integrated Smart Metering Skid
1330 – 1420	Process Flow and Block Diagram Review • Discussion of Selected Instruments
	Challenges and Optimization • Q&A and Lessons Learned
	Recap
1420 – 1430	Using this Course Overview, the Instructor(s) will Brief Participants about the
1420 - 1430	Topics that were Discussed Today and Advise Them of the Topics to be
	Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4

Day 4	
0730 - 0830	<i>Routine Operation of Gas Metering Skids</i> <i>Startup and Shutdown Procedures</i> • <i>Reading and Interpreting Flow Data</i> •
	Checking for Abnormal Conditions • Operational Best Practices
	Common Troubleshooting Scenarios
0830 - 0930	Zero Drift and Signal Loss • Pressure Drops and Gas Surges •
	Communication Failures • False Readings or Alarms
0930 - 0945	Break
	Predictive & Preventive Maintenance
0945 – 1100	Scheduled Inspection Routines • Cleaning of Filters and Sensors • Trending
	Meter Performance Data • Preventing Calibration Drift
	Diagnostic Tools & Remote Monitoring
1100 – 1215	Use of Diagnostic Dashboards • Embedded Diagnostics in Smart Meters •
1100 - 1215	Remote Analytics via Cloud Platforms • Predictive Alerts and Asset Health
	Index
1215 - 1230	Break
	Safety in Gas Metering Operations
1230 – 1330	Handling Pressurized Systems • Gas Leak Detection Systems • Fire/Explosion
	Protection Strategies • Emergency Response Protocols
	Hands-On Exercise or Simulation
1330 – 1420	Walkthrough of a Smart Metering SCADA • Live Data Interpretation • Alarm
	Condition Diagnosis • Parameter Configuration Exercise
	Recap
1420 - 1430	Using this Course Overview, the Instructor(s) will Brief Participants about the
	Topics that were Discussed Today and Advise Them of the Topics to be
1 (20	Discussed Tomorrow
1430	Lunch & End of Day Four



IE1116 - Page 7 of 9





Day 5

	Constanting Transform Colling of Matural a reas
0720 0020	Custody Transfer & Legal Metrology
0730 – 0830	Legal Requirements for Custody Transfer • Approval of Measuring Systems •
	Role of Third-Party Verification • Penalties for Metering Inaccuracies
	Energy Billing & Gas Quality Calculations
0830 - 0930	Energy vs. Volume Billing • Gross Calorific Value (GCV) Determination •
0830 - 0930	Correction Factors and Calculation Methods • Invoice Generation and Audit
	Trails
0930 - 0945	Break
	Regulatory Standards & Certification
0945 - 1100	ISO 17025 Calibration Lab Requirements • MID Compliance (EU Measuring
	Instruments Directive) • API/AGA Reporting Requirements • Certifying
	Authorities and Periodic Audits
	Digital Twin & AI in Metering
1100 1015	Concept of Digital Twins for Metering Skids • Use of AI for Anomaly
1100 – 1215	Detection • Predictive Maintenance through ML Models • Future Integration
	with Blockchain for Billing
1215 - 1230	Break
	Project Planning & Execution of Metering Systems
1000 1015	Planning & Specification Phase • Vendor Selection and Technical Bid
1230 – 1345	Evaluation • Installation & Commissioning Management • Risk Mitigation
	and Project Handover
	Course Conclusion
1345 - 1400	Using this Course Overview, the Instructor(s) will Brief Participants about 1
	Topics that were Covered During the Course
1400 - 1415	POST-TEST
1415 - 1430	Presentation of Course Certificates
1430	Lunch & End of Course



IE1116 - Page 8 of 9



Simulators (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art "Gas Ultrasonic Meter Sizing Tool", "Liquid Turbine Meter and Control Valve Sizing Tool", "Liquid Ultrasonic Meter Sizing Tool" and "Orifice Flow Calculator" simulators.

I Daniel Gas USM Sizing Tool	Daniel Liquid Turbine And Valve Sizing Tool	
	File Product Literature Print Help	
Process Specifications	Turbine Meter Selection	Valve Selection
Title/Tag Unit System US Customary Flow Velocity (ft/s) 3 80	Process Conditions	
Gas Composition Gas Composition Amarillo		vity / Density Viscosity
Base Conditions Is pressure gage or absolute?	Project Title / Tag Fluid List Gasoine 0.72	Specific Gravity 💌 1.1 Centistoke
Pressure 0 psi 💌 🕫 Gage Atmospheric Pressure:	Minimum Operating Maximum Units	
Temperature 60 DegF C Absolute 14.73 psi	Flow Rate 200 400 600 Gali	
Process Flow Conditions		
If Max Flowrate has not been provided, set Max rate same as Operating flowrate and use Operating P and T. If Min Flowrate has not been provided, default to 10% of Max/Operating flowrate and use Max/Operating P and T.	Temperature 20 60 100 @ 1	. C.C.
Minimum Operating Maximum Units Flowrate 75,000,000 150,000,000 SCF per day	Pressure 60 100 PSI	×
		-
Temperature 50 120 120 DegF 💌	No. State	
Pressure 500 1100 1100 psi 💌	Meter Selection	
Max/Min Flow Conditions	Turbine C Series 1200	
Maximum Flow occurs at Min Pressure Max Temperature Maximum velocity may occur at the highest or lowest pressure conditions. Proper sizing requires pressure	Meter C Series 1500	
Minimum Flow occurs at Max Pressure Min Temperature and temperature values at the highest and lowest flow, Please relect temperature and pressure at which max and min flowrate occur.		
Flowate SCFD Pressure (psi) Temperature (DegF) Max Flow Condition 150.000.000 500 120		
Operating Flow Condition 150,000,000 1100 120 Min Flow Condition 75,000,000 1100 50	Select a Series 1200 or Series 1500 Turbine Meter.	
Min Flow Condition 75,000,000 1100 50	Select a Selies 1200 of Selies 1300 Future meter.	
Back Next Exit		
<u>Tool Simulator</u>	<u>Valve Sizing Tool</u> S	initiator
Amiel Liquid Ultrasonic Sizing Tool (4-Path)	Daniel Orifice Flow Calculator	
Naniel Liquid Ultrasonic Sizing Tool (4.Path)		
Amiel Liquid Ultrasonic Sizing Tool (4-Path)	Daniel Orifice Flow Calculator File About Measurement Orifice	
Janiel Liquid Ultrasonic Sizing Tool (4-Path) Xiao Constant Consta	Daniel Orifice Flow Calculator File About Specific Stavity	
Aniel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrature Report Help Tocess Condition Project Tale / Tag Piud List Construct Tale / Tale / Tag Piud List Construct Tale / Tale / Tag Piud List Construct Tale / Tale	Daniel Orifice Flow Calculator Fle About Specific Gravity Flowing G User Entered	Base
Vaniel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrasonic Sizing Tool (4-Path) Product Ultrasonic Specific Gravity / Density Project Title / Tog Fluid List Fluid Bassing Maximum Urits	Daniel Orifice Flow Calculator File About Specific Gravity	
aniel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrature Report Help Tocess Conditions Prijed Title / Tog Pluid List Generate 300 (lug/cubic meter 11 [Centritole •	Daniel Orifice Flow Calculator Fle About Specific Gravity Specific Gravity Cuser Entered Density Density Densit	Base
Vaniel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrasonic Sizing Tool (4-Path) Product Ultrasonic Specific Gravity / Density Project Title / Tog Fluid List Fluid Bassing Maximum Urits	Daniel Orifice Flow Calculator File About Specific Gravity Guser Entered Calculated (from density) Operating Guser Entered Operating Guser Entered Operating Guser Entered Guser Enteree	Base Specific Gravity
Aniel Liquid Ultrasonic Sticing Tool (4.9-24th) Product Uterature Report Help Product Uterature Report Help Product Uterature Report Help Product Title / Tag PrideLint Generative 700 Fordubic meter 111 Centratole Flow Rate 200 Generative Maximum Units Flow Rate 200 Gin 100 C 7 6 6 0	Daniel Orifice Flow Calculator File About Specific Gravity Flowing Flowing C User Entered Density Density C Calculated (from density) C Density C Dens	Base Specific Gravity
Antiel Liquid Ultrasonic Sizing Tool (4-Path) Product Uberature Report Help Product Uberature Report Help Product Title / Tag Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole] Prover all 200 [rg/cobic meter] Plud List Descore 000 [rg/cobic meter] 11 [Centintole	Daniel Orifice Flow Calculator Fle About Specific Gravity Gewing Guser Entered Density Density Density C Superheaded (from ASME Table Density C Superheaded C From ASME Table Density C Superheaded C From ASME Table	Base Specific Gravity e b/cubic foot
aniel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrasonic Sizing Tool (Daniel Orifice Flow Calculator Fle About Specific Gravity Geodic Gravity Density Density Density Pipe Fipe Fipe	Base Specific Gravity e b/cubic foot
aniel Liquid Ultrasonic Sizing Tool (4-Path) Product Literature Report Help Troces Conditions Product Literature Report Help Troces Conditions Product Tile / Tag PLaid Lite Segments For Rate 200 Period Report For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Product Tile / Tag Plaid Lite Segments For Rate 200 Period Report For Rate 200 Perio	Daniel Orifice Flow Calculator Fle About Specific Gravity Density Density Density Density Density Density Prove Noninal 2 Inches Pipe Director Density Den	Base Specific Gravity e b/cubic foot
nhiel Liquid Ultrasonic Sizing Tool (4-Path) Product Literature Report Help Cossis Conditions Project Tile / Tag Puid Lit @ 10000000 Project Tile / Tag Puid Lit @ 10000000 Flow Rate 200 400 500 Cubic meter V 11 Central de V Flow Rate 200 400 500 Cubic Meters Per Hour V Temperature 20 66 100 17 % o °C Persure 66 100 1/P a v eter Selection Harrinal ANSI Dass Rations Transducer	Daniel Orifice Flow Calculator Fle About Specific Gravity Density Densi	Base Specific Gravity e b/cubic foot
Antiel Liquid Ultrasonic Sizing Tool (4 Path) Product Ultrature Report Holp Product Ultrature Report Holp Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity / Dentity Viscosity Product Tale / Tag Puid List Gamout Specific Gravity / Dentity /	Daniel Orifice Flow Calculator Fle About Specific Gravity Generating Density De	Base Specific Gravity e b/cubic foot
anlel Liquid Ultrasonic Sizing Tool (4-Path) Podcki Literature Report Help Cosses Conditions Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Unotity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity / Denity / Denity Pogech Tile / Tag Puid Lit Genotic Gravity / Denity	Daniel Orifice Flow Calculator Fle About Specific Gravity Gewing Guser Entered Specific Gravity Density Dens	Base Specific Gravity e [b/cubic foot
Aniel Liquid Ultrasonic Sizing Tool (4-Path) Image: Construction of the path of	Daniel Orifice Flow Calculator Fle About Specific Gravity Specific Gravity Density Density Density Density Density C Superheaded (from density) Density Density C Superheaded C From ASME Table Pipe Nominal [2] Inches Pipe [2057" Sch 40, STD, Sch Dpicons Flow Rate Data Entered Differential Pressure	Base Specific Gravity e b/cubic foot
Aniel Liquid Ultrasonic Sizing Tool (4-Path) Image: Construction of the path of	Daniel Orifice Flow Calculator Fie About Specific Gravity Density Densi	Base Specific Gravity e b/cubic foot
Aniel Liquid Ultrasonic Sizing Tool (4-Path) Image: Construction of the path of	Daniel Orifice Flow Calculator Fle About Specific Gravity Generating Operating Op	Base Specific Gravity e b/cubic foot
Antiel Liquid Ultrasonic Sizing Tool (4-Path) Product Ultrature Report Help Toces Conditions Product Ultrature Report Product Interducer (SOT to 100°C) with NBR oring: Product Interducer (SOT to 100°C) with NBR oring: Product Ultrature Product Product Product Product Interducer (SOT to 100°C) with NBR oring: Product Interducer (SOT to 100°C) w	Daniel Orifice Flow Calculator Fle About Specific Gravity Guese Entered Specific Gravity Guese Entered Specific Gravity Guese Entered Specific Gravity Guese Entered Guese Enteree Guese Entereee Guese Enteree Guese Enteree Guese Enteree	Base Specific Grawly e b/cubic foot 405 er Minute
antel Liquid Ultrasonic Sizing Tool (4-9/ath) Image: Conditions Product Title / Tag Fuid Product Title / Tag Operating Marinia Operating Marinia Operating AMSI Class Fairlog Temperature 00 00 100 IPPa Image: Temperature 00 100 IPPa Imandacer Cators Steel Body and Flange: L45°C to 150°C Itsouksi / PH 20 Namind Line Size Schedule Schedule Marinia Bore ID Meter Linearly Flow Direction	Daniel Orifice Flow Calculator Fle About Specific Gravity Generating Operating Op	Base Specific Gravity e b/cubic foot
Namiel Liquid Ultrassonic Sizing Tool (4-Path) Image: Conditional Specific Branky / Dansky Product Ultrassonic Sizing Tool (4-Path) Image: Conditional Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Flow Rate 200 400 600 Uritis Flow Rate 200 600 100 ° r Temperature 60 100 Ip2-a Image: Cubic Maters Per Hour Persize 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrived 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrived 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrievel 60 100 Ip2-a Image: Cubic Maters Image: Cubic Maters Image: Cubic Maters Retrievel 600 100 Ip2-a Image: Cubic Mater	Daniel Orifice Flow Calculator Fle About Specific Gravity Goving Govi	Base Specific Gravity e bl/cubic foot sr Minute I
Vaniel Liquid Ultrasonic Sizing Tool (4-Path) Image: Construct Development of the product Uleratorie Report Help Product Uleratorie Report Help Product Uleratorie Report Help Project Title / Tag Pixid Litit Prover Title / Tag Pixid Litit Operating Maximum Units Units Flow Rate 20 400 600 100 1/5 Flow Rate 20 400 600 100 1/5 Pressure 60 600 100 IVPa Instructure Viscolit ANSI Class Reside Solection Maximum Viscolity ANSI Class Reside Flow Tarandocer Instructure (StrC to 100°C) with NBR oring Nominal Line Size Schedule 40 5055 Schedule 40 5055 Instructure	Daniel Orifice Flow Calculator Fle About Specific Gravity Guese Entered Specific Gravity Guese Entered Specific Gravity Guese Entered Specific Gravity Guese Entered Guese Enteree Guese Entereee Guese Enteree Guese Enteree Guese Enteree	Base Specific Gravity e bl/cubic foot sr Minute I
Namiel Liquid Ultrassonic Sizing Tool (4-Path) Image: Conditional Specific Branky / Dansky Product Ultrassonic Sizing Tool (4-Path) Image: Conditional Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Protect Title / Tag Flad Specific Branky / Dansky Viscosiky Flow Rate 200 400 600 Uritis Flow Rate 200 600 100 ° r Temperature 60 100 Ip2-a Image: Cubic Maters Per Hour Persize 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrived 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrived 60 100 Ip2-a Image: Cubic Maters Per Hour Image: Cubic Maters Retrievel 60 100 Ip2-a Image: Cubic Maters Image: Cubic Maters Image: Cubic Maters Retrievel 600 100 Ip2-a Image: Cubic Mater	Daniel Orifice Flow Calculator Fle About Specific Gravity Goving Govi	Base Specific Gravity e bl/cubic foot sr Minute I
Antiel Liquid Ultrasonic Sizing Tool (4 4Path) >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Daniel Orifice Flow Calculator Fie About Specific Gravity Density Differential Picture Differential Picture Differential Differential Picture Differential Dufferential Dufferenti	Base Specific Gravity e b/cubic foot 405 • Flow Type • Logad • Steam • Air - Gas • Vity]. Est
aniel Liquid Ultrasonic Sizing Tool (4-Path) Product Literature Report Help Product Literature Report Help Protect Tile / Tog Plaid Lite @ 100000000 Protect Tile / Tog Plaid Lite @ 1000000000 Protect Tile / Tog Plaid Lite @ 1000000000 Protect Tile / Tog Plaid Lite @ 1000000000000000 Protect Tile / Tog Plaid Lite @ 100000000000000000000000000000000000	Daniel Orifice Flow Calculator Fle About Specific Gravity Goving Govi	Base Specific Gravity e b/cubic foot 405 • Flow Type • Logad • Steam • Air - Gas • Vity]. Est

Course Coordinator Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org



IE1116 - Page 9 of 9

