

Automatic Tank Gauging System



- American Magnetostrictive Technology
- Controller with software designed for China
- IP68 Submersible Rating

AMETEK Partners with RTI Management Groups on Tank Gauging System for China Market

System Combines Proven Sensor Technology for China Market

CLAWSON, MI – AMETEK Automation and Process Technologies, a world leader in level measurement instruments, has established a strategic Business Partnership with RTI Management Group to develop a new Automatic Tank Gauging (ATG) System.

The new ATG system combines the field-proven reliability of AMETEK's Series 7100M PetroStik™ patented level sensor technology with AMETEK and RTI patented RTL series consoles. The result is a unique continuous tank level gauge with user-friendly controls configured specifically for the Chinese retail gasoline station market. In addition to superior performance, the RTI ATG system is competitively priced with other high-resolution leak protection systems.

For more information on the Patriot ATG System, contact:

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Michael Geis
Director of Business Development
AMETEK Sensor Technology



PROFILE

AMETEK, Inc.

AMETEK is a leading global manufacturer of electronic instruments and electronic motors. The company has 8,000 employees with sales revenue over \$1.2 billion. About 30% of AMETEK's products are sold out of the United States. The company has 50 manufacturing plants all around the world. AMETEK has been listed in the NYSE since 1930 (Ticker: AME).

AMETEK's electronic instrument group has been developing and manufacturing the PATRIOT brand magnetostrictive liquid level probes for 15 years. The PATRIOT magnetostrictive probes are used by 11 liquid level gauge controller manufacturers all around the world, taking 20% of the worldwide market.

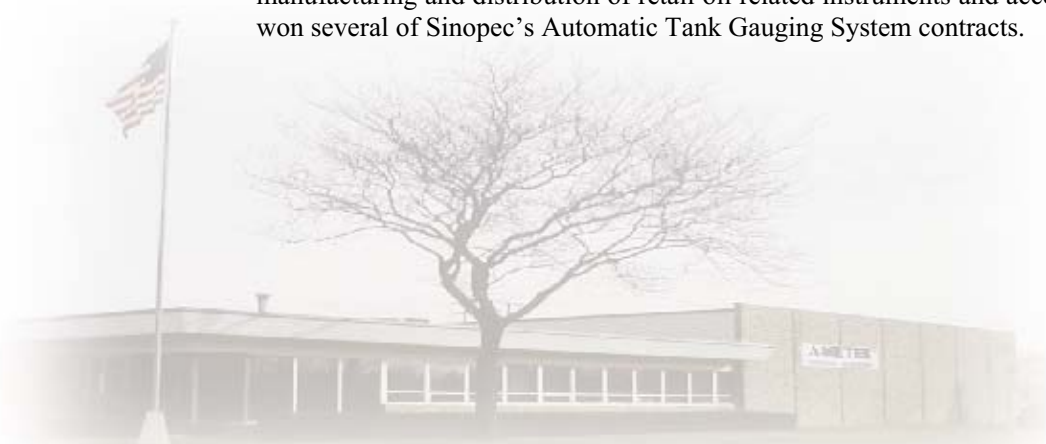
In addition, AMETEK Automation & Process Technologies manufactures a wide range of position sensors including rotary cam limit switches, programmable limit switches, linear position sensors and rotary encoders; programmable controller bus cards including ultra-high speed programmable limit switches and electronic encoders for linear and rotary inputs; stamping press automation including shut height monitors; specialty products including cable and hose carrier systems. Point level sensor products including conductivity sensors, conductivity relays and magnetic probes; continuous level sensors including magnetostrictive probes for tank gauging and leak monitoring.



PARTNERSHIP

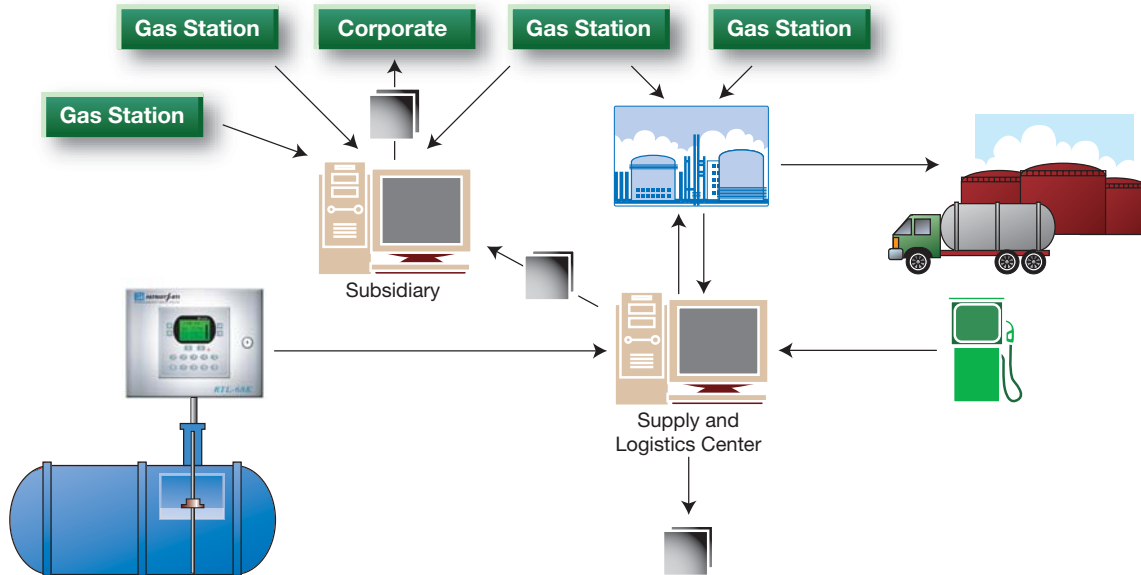
AMETEK has teamed up with RTI Management Group as our master distributor in China.

Since its inception, RTI has participated in a series of power plant projects in China. The largest order was over \$10 million dollars. Since 1997, the company started to expand its market into the petroleum and petrochemical industry, specializing in manufacturing and distribution of retail oil related instruments and accessories. It has won several of Sinopec's Automatic Tank Gauging System contracts.





Integrated Gas Station Management System

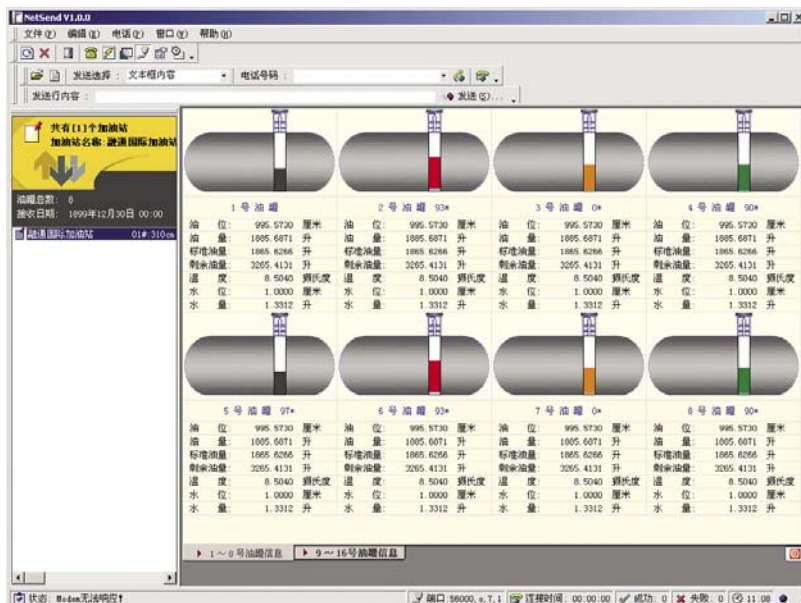


PATRIOT RTS Remote Management Software

RTS.NET management software works under the WINDOWS® operating system. It gathers supply, sales and storage data of gas stations through telephone lines or intranets.

The major functions of the software are as follows:

- Analyzes the collected data and generates reports
- Real-time measurement and management of individual gas station's oil level, water level, temperature, inventory and more.



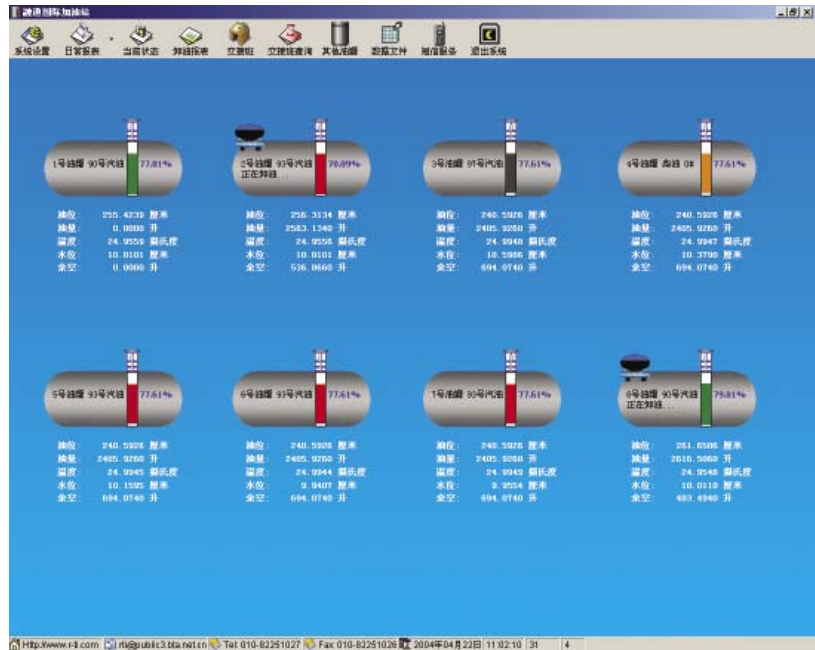
Gas Station Supply-Sales-Storage Management Software



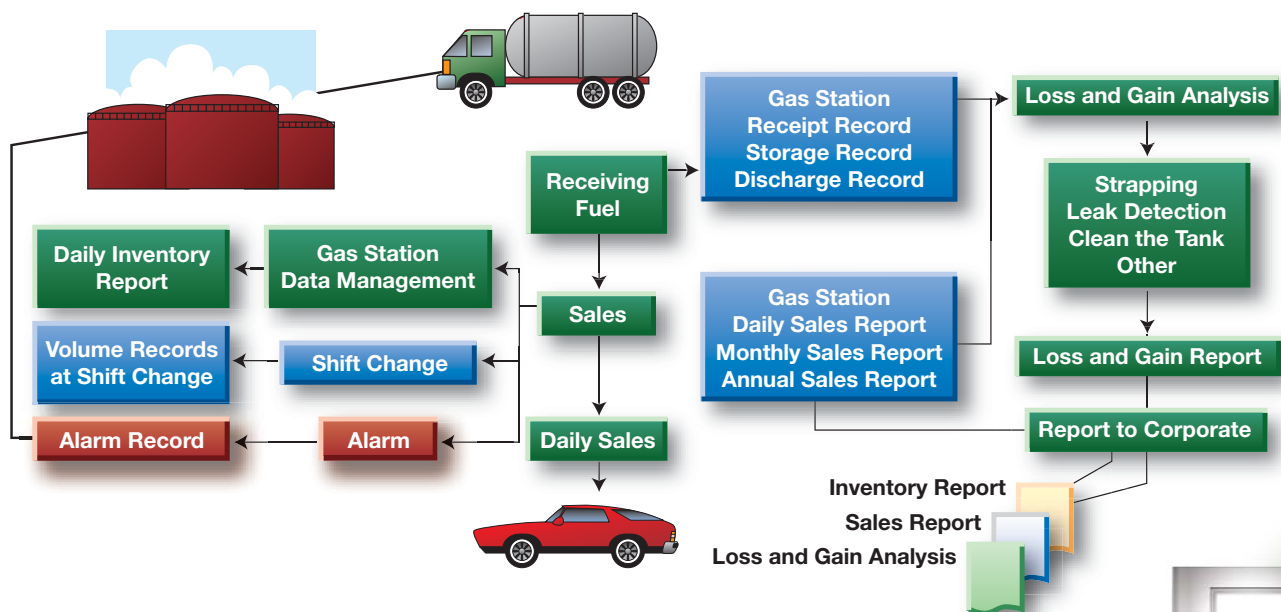
RTS management software works with the RTL controllers under the WINDOWS® operating system, managing the supply, sales and storage data of multiple gas stations.

The key functions of the software are as follows:

- Can be connected with all kinds of RTL controllers, as well as other controllers
- Can display data such as fuel level, water level, temperature, storage level and head space of 8 or 16 tanks
- Automatically collects data and prints reports
- Fuel level and water level alarm function
- Static and dynamic leak detection
- Can transfer data through intranet or internet
- Records alarms



Gas Station Supply-Sales-Storage Process



THEORY

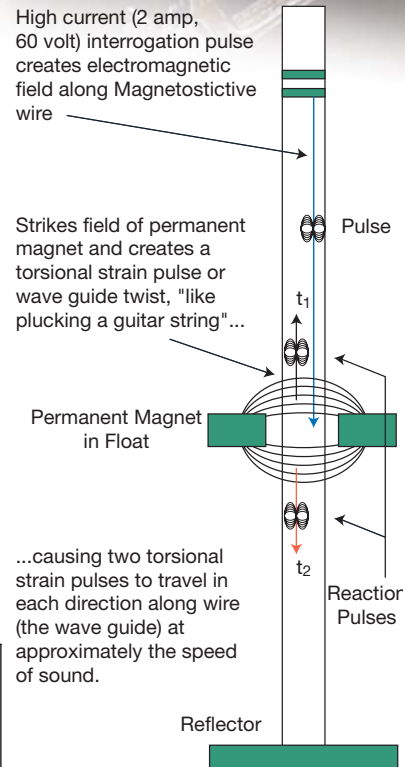
Magnetostrictive Level Gauge

Magnetostrictive level gauges are composed of a float, transducer and conductive tube.

After the transducer is powered up, it sends a current pulse down the magnetostrictive wire. The current pulse creates a magnetic field and the interaction of this magnetic field with magnetic field created by a permanent magnet in a movable float produces a torsional strain pulse on the wire. The strain pulse then travels in both directions from the point of interaction. The strain pulse traveling up the

wire is sensed by a small induction pick-up coil on the electronic circuit board sealed in the sensor tube. The strain pulse traveling down the wire is reflected off the patented bottom reflector. The time difference between sending out the initial pulse and receiving the torsional pulse is converted into the distance between the float magnet and the bottom of the probe (*see illustration*).

Temperature measurement is achieved by placing temperature sensors along the tube.



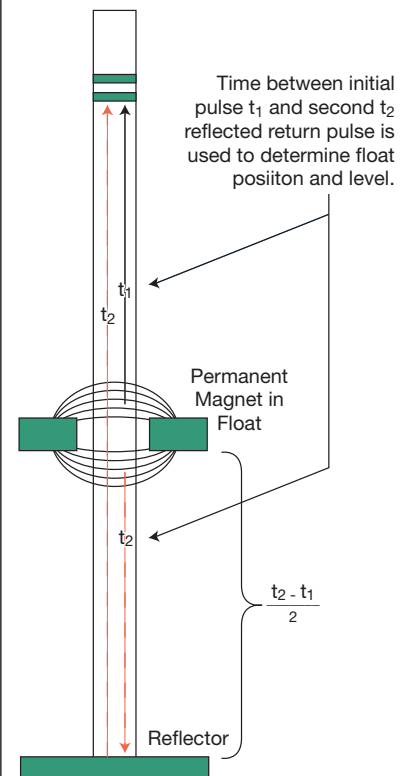
ADVANTAGES

Patriot 7100M Series Magnetostrictive Level Gauge

- Multifunctional – measure oil level, water level and temperature
- Long service life
- Reliable performance – IP68 rated, measures both oil and water
- Easy installation – compact electronics package
- High resolution – oil level: 0.25mm, water level: 1mm, temperature: 0.01 C
- Ideal for harsh environments – 316L or PVDF housing
- Intrinsically safe – UL, ATEX and CEC certified
- Available in various lengths up to 50 feet



AMETEK 7100M Assembly Line



Magnetostrictive Level Gauge Theory

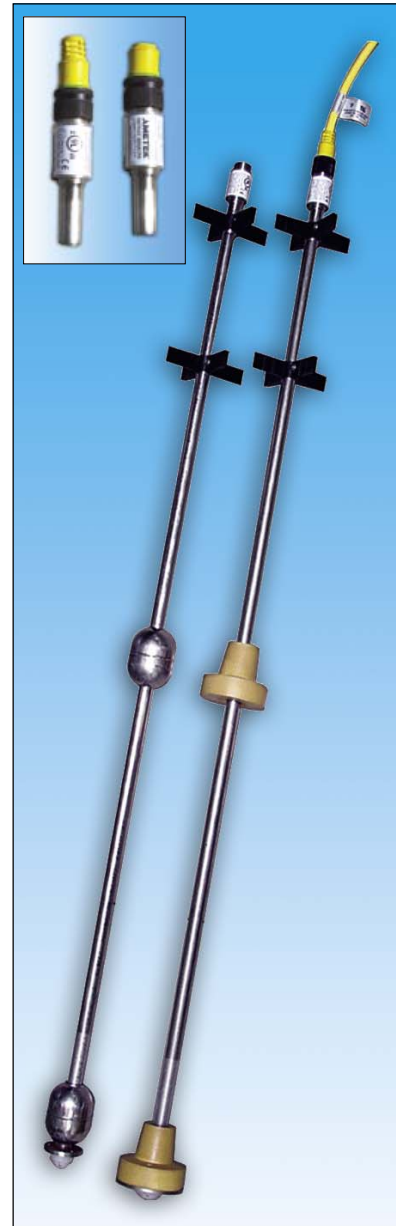
SPECIFICATIONS

Model	7100M-R5/R1	7100V
Process Variables	Fuel Level, Water Level, Temperatures	
Measurement Range	7 m	15 m
Resolution	0.025 mm	0.05mm
Repeatability	0.006mm	0.025 mm
Linearity	0.25mm	0.5 mm
Water Level Accuracy	1 mm	2 mm
Leak Detection (l/hr)	0.378	
Temperature Measurement Resolution	(±) +/- 0.01°C	(±) +/- 0.01°C
Operating Pressure Range	1.03 MPa	
Operating Range	-20°C ~ + 70°C	
Ambient Temperature Range	-40°C ~ + 70°C	
Input Voltage	26VDC ± 10%	
Sensor Output	Pulse Position Modulated, Proprietary Protocol	
Approvals	UL Class I, II, III; Div.1, C, D, E, F, G; ATEX Zone 0, Intrinsically safe	
Environment	IP68; NEMA6	
Probe Material	316 Stainless Steel	PVDF Kynar™
Float Size	3"/4" polyurethane; 2" to 8" SS	
Float Material	Polyurethane, 316SS, PVDF, Nitrophyl	
Applications	Ethanol Gasoline, Gasoline, Diesel, Alcohol Contact factory for chemical compatibility	

Type 7100M	Measurement Length	Total Length
PAT1(2)-022-034	0.56m	0.86m
PAT1(2)-034-046	0.86m	1.17m
PAT1(2)-046-058	1.17m	1.47m
PAT1(2)-058-070	1.47m	1.78m
PAT1(2)-070-082	1.78m	2.08m
PAT1(2)-082-094	2.08m	2.39m
PAT1(2)-094-106	2.39m	2.69m
PAT1(2)-106-118	2.69m	3.00m
PAT1(2)-118-130	3.00m	3.30m
PAT1(2)-130-142	3.30m	3.61m



Level Gauge Floaters



Level Gauge Probes

MODELS

Model	RTL-500	RTL-68K-B	RTL-68K	RTL-760A
# of Tanks	8	8	8	8/16
Accuracy	128 Point	50 Point	50 Point	300 Point
Display	30 x 150 English	N/A	Chinese	Touch Screen
Printer	Optional	-	-	-
Instant Messaging	-	-	Standard	Optional
Relay Output	✓	-	-	✓
Protocol	✓	✓	✓	✓
Temperature Compensation	✓	✓	✓	✓
Static Leak Detection	✓	Optional	✓	✓
Dynamic Leak Detection	Optional	-	Optional	Optional
Sensor	8	-	-	8
Automatic Alarm	✓	-	✓	✓
Power	← 220VAC ± 10% →			
Environment	← Indoor →			



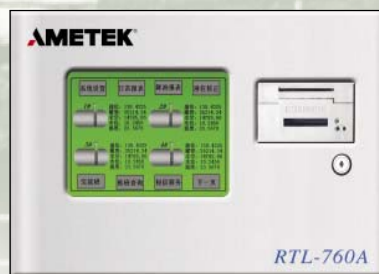
RTL-500



RTL-68K



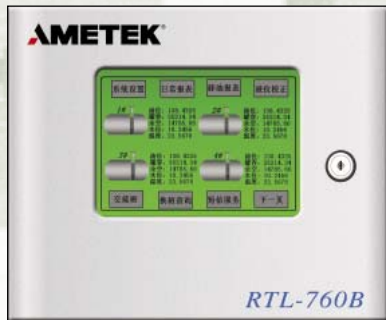
RTL-68KB



RTL-760A

MODELS

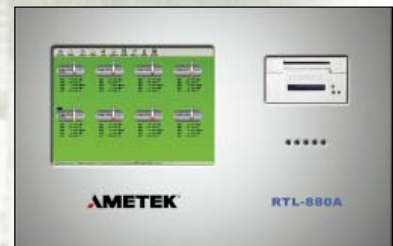
Model	RTL-760B	RTL-800	RTL-880
# of Tanks	8/16	8	8/16
Accuracy	300 Point	300 Point	300 Point
Display	Touch Screen	Color Touch Screen	Color Touch Screen
Printer	–	Standard	–
Instant Messaging	Standard	Standard	Optional
Relay Output	✓	✓	✓
Protocol	✓	✓	✓
Temperature Compensation	✓	✓	✓
Static Leak Detection	✓	✓	✓
Dynamic Leak Detection	Optional	Optional	Optional
Sensor	8	8	8
Automatic Alarm	✓	✓	✓
Power	←————— 220VAC ± 10% —————→		
Environment	←————— Indoor —————→		



RTL-760B



RTL-800B

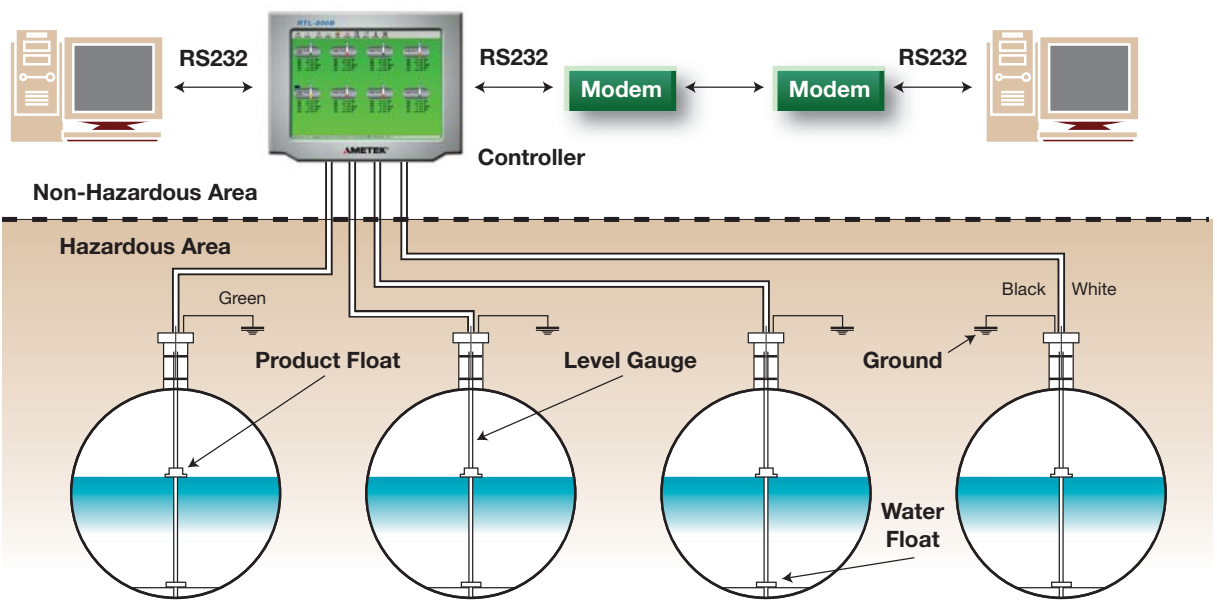


RTL-880A

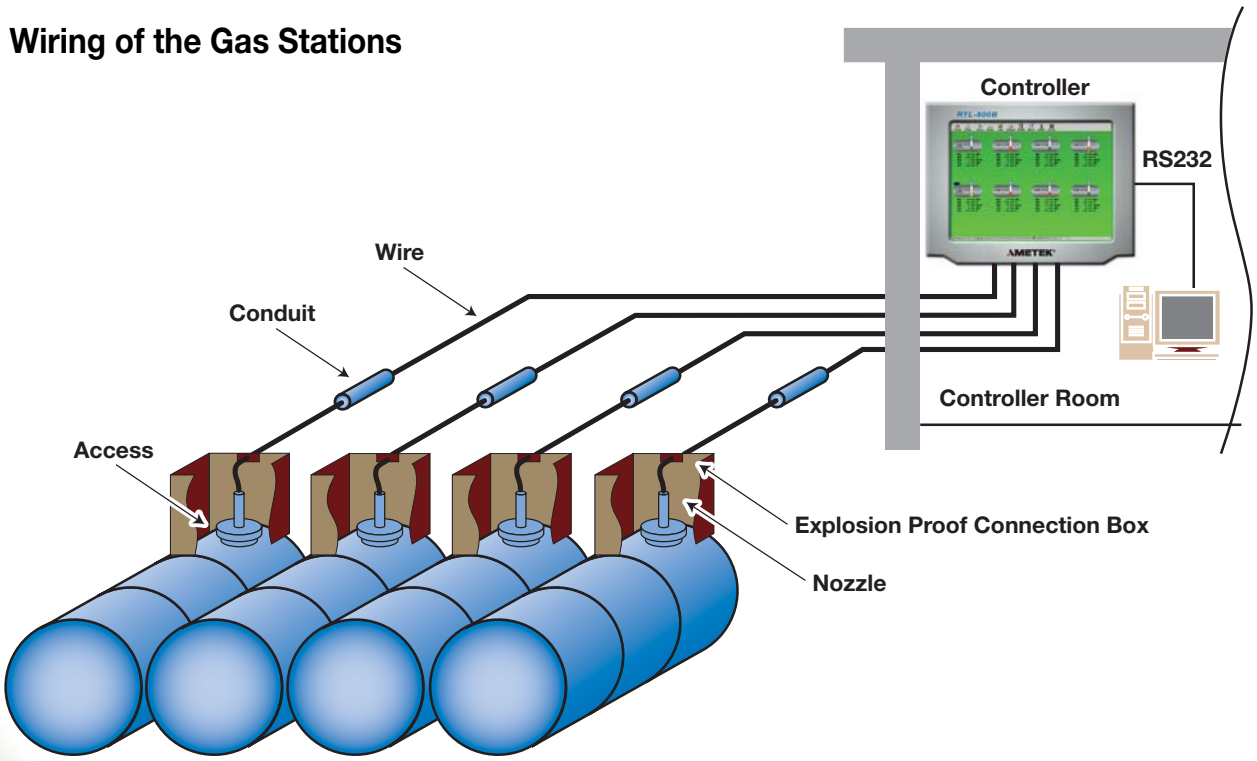


INSTALLATION

Wiring of the System

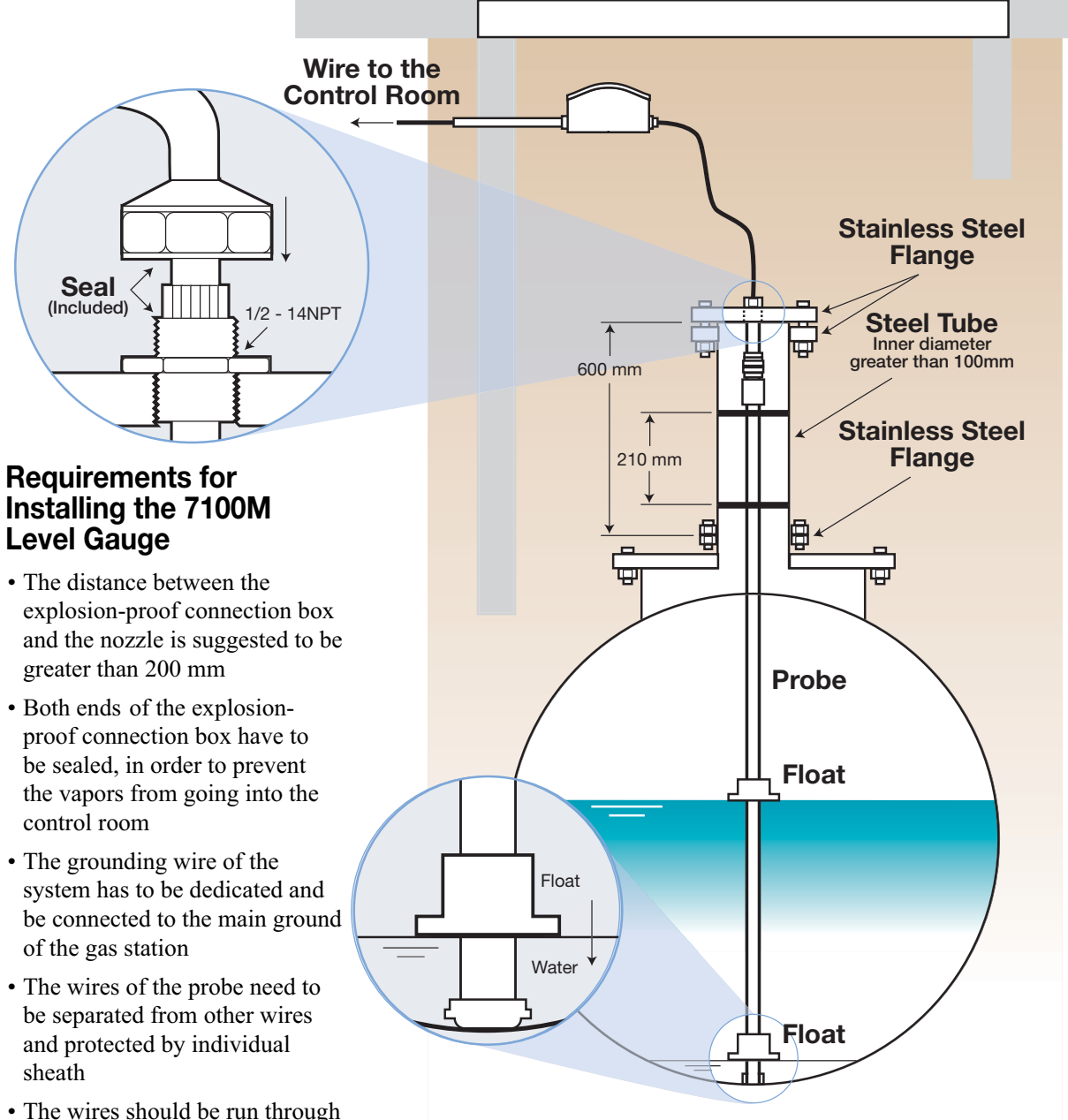


Wiring of the Gas Stations





INSTALLATION



Requirements for Installing the 7100M Level Gauge

- The distance between the explosion-proof connection box and the nozzle is suggested to be greater than 200 mm
- Both ends of the explosion-proof connection box have to be sealed, in order to prevent the vapors from going into the control room
- The grounding wire of the system has to be dedicated and be connected to the main ground of the gas station
- The wires of the probe need to be separated from other wires and protected by individual sheath
- The wires should be run through conduits. Both the conduit and the grounding wire of the probe (the green wire) have to be grounded. The cross-section area of the grounding wire has to be greater than 2mm. The entire system has to be grounded at the same point.

Specifications of the wires are as follows:

- Capacitance: less than 60PF/inch
- Inductance: less than 0.2 uH/inch
- Circumventing: greater than 8 rotations/inch

COMPONENTS

Pressure Vacuum Valve

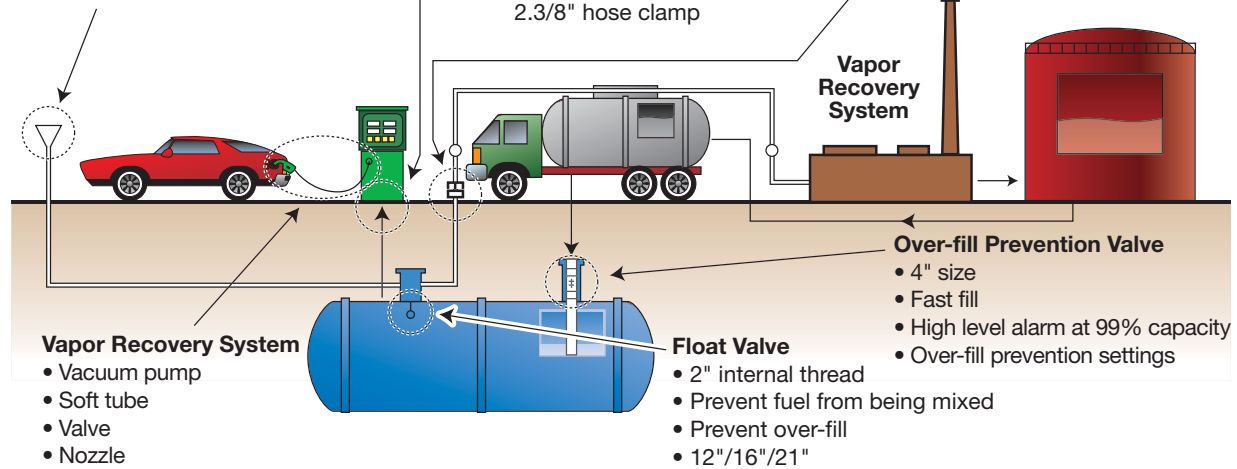
- 2"-3" size
- 8OZ relief pressure / 5OZ relief pressure
- 8000 inch 3/hour
- NPT thread / 0 push fit

Emergency Shut-Down Valve

- 1.5" NPT size
- OUT: internal thread/ external thread/ hose connection
- IN: 2" internal hose / 2.3/8" hose clamp

Vapor Recovery Connection

- One-way valve
- Male/Female trough
- Internal thread



Vapor Recovery System

- Vacuum pump
- Soft tube
- Valve
- Nozzle

Float Valve

- 2" internal thread
- Prevent fuel from being mixed
- Prevent over-fill
- 12"/16"/21"

Over-fill Prevention Valve

- 4" size
- Fast fill
- High level alarm at 99% capacity
- Over-fill prevention settings



Vapor Recovery Pump

The vapor recovery pump is empowered by conveying tape or motor. The mounting of the pump can be adjusted to specific needs of customers.

Vapor Recovery System

Vapor recovery system is composed of nozzle, vacuum pump, oil tube and oil-vapor separating device.



Emergency Shutdown Valve

In the event of a fire or impact, the emergency shutdown valve will engage to prevent spillage.



Nozzle

Advantages:

- Light weight
- Long life
- Large capacity
- Easy to adjust





Over-fill Prevention Valve, Float Valve, Vacuum Pump

The new over-fill prevention valves are mounted on the 4" under ground tanks. The advantages of this valve are: fast speed, small resistance, and high-level alarm at 99% capacity. Compared to similar products, it reduces vibration of the tube.



Flexible Pipe

Lifetime of these pipes is over 20 years



Pump

Manually relief pressure:

To maintain, open the pressure relief tap to bring the pressure to zero. The oil in the pump will flow back into the tank.



Advantages:

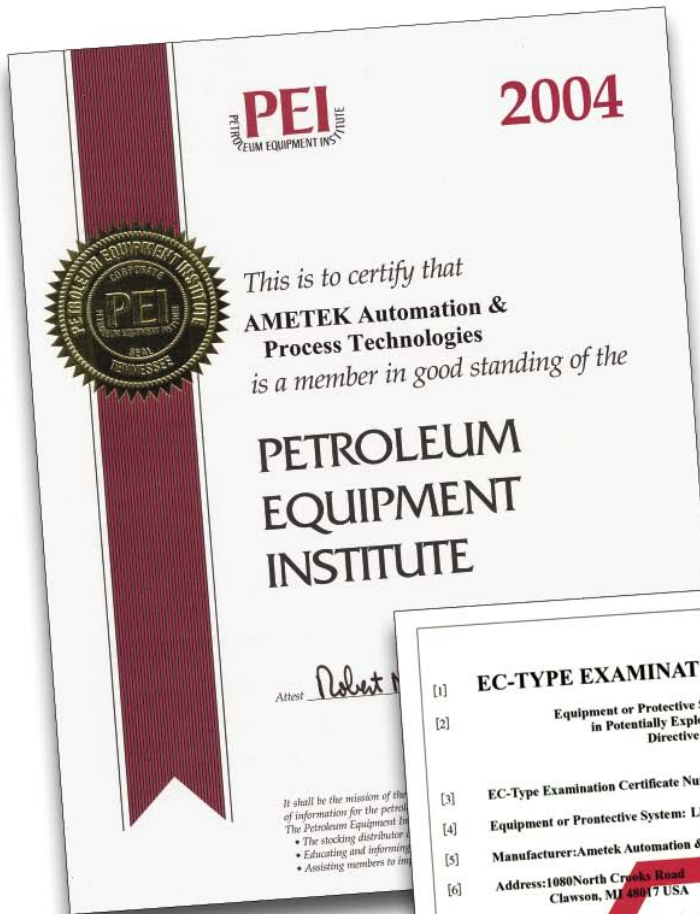
Well lubricated to enhance lifetime.

Compound Fiber Man Way Cover

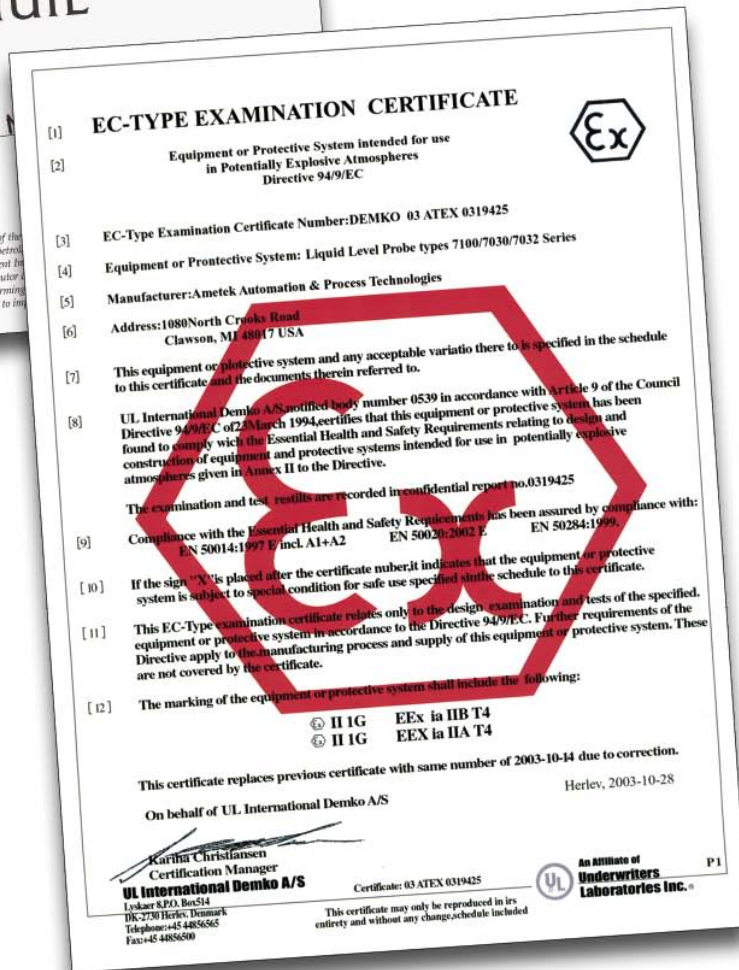
The compound fiber man way cover is very light. The fiber material is tested to be better than the D.O.T.H-20 weighing standard. The light-weight man way cap weighs only 1/3 of similar sized steel cap and consequently makes the process safer. We offer three standards: 30", 36" and 42". The mechanical design does not require people to bend down in order to move the cap.



CERTIFICATES



PEI Certificate



UL Certificate



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AMETEK

December 19, 2003

RE: Housing rating for the Stik Series Liquid Level Probes

To whom it may concern:

The Stik Series Liquid Level Probes maintain an IP68 rating when used with the proper cable. The submersion testing performed to achieve this rating was under 6 feet of water for a 24 hour duration of time. Some of the test requirements for NEMA are slightly different than IP, however, the submersion portion of the testing for 6P is the same as used for our submersion testing (6 feet for 24 hours). Lastly, it is typically understood that an IP68 rating is an equivalent to the NEMA 6P rating.

Regards,

Jack Pattee

Jack Pattee
 Director of Engineering

Gemco • BW Controls • Catrac

IP68 Rated

CEC Certificate


防爆电气产品 CEC
 Electric Products for Explosion-proof

CNACL 防爆合格证

No. 0492

CERTIFICATE OF CONFORMITY

证号
Certificate No. CE022094X

产品名称 Name of Product	安全栅
型号及规格 Type of Product	RTL-100型
防爆标志 Marking	[Ex] II B
技术文件 Technical Documents	Q/BJRT01-2002
图号 Drawing No.	AG000
备注 Note (s)	此安全栅与 RTL 型液位仪配套使用。

经对上述产品图样及技术文件的审查和样品的检验，其符合以下中国现行标准：
 By verifying the drawings and technical documents and checking samples, the product conforms to the standards as following that's used in PRC: now:
 GB3836.1-2000 GB3836.4-2000

发 给: 融通国际集团公司 (RT1)
 Issued to: RT1

本证失效日期: 2007-12-31
 Date of Expire: 2007-12-31

发证日期: 2002-12-31
 Date of Issue: 2002-12-31

中心印章
Center seal

中心主任
Director *徐刚*

石油和化学工业电气产品防爆质量监督检验中心
 Supervision and Test Center of Explosion-proof Quality for Petroleum and Chemical Industry Electric Products

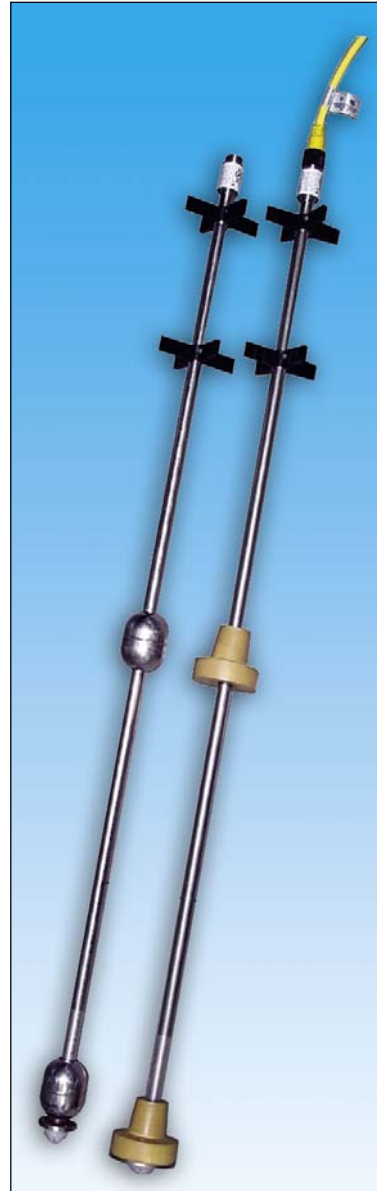
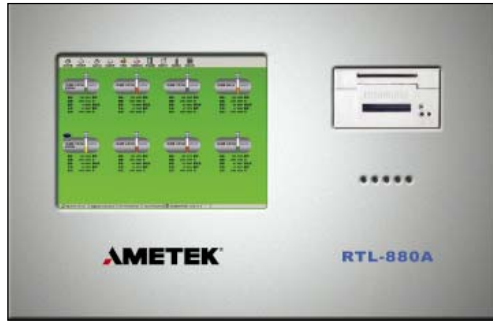
注: 本证仅对与送检样品一致的产品有效。
 Note: This certificate is only valid for the products that are in accord with sample(s) tested and verified.

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