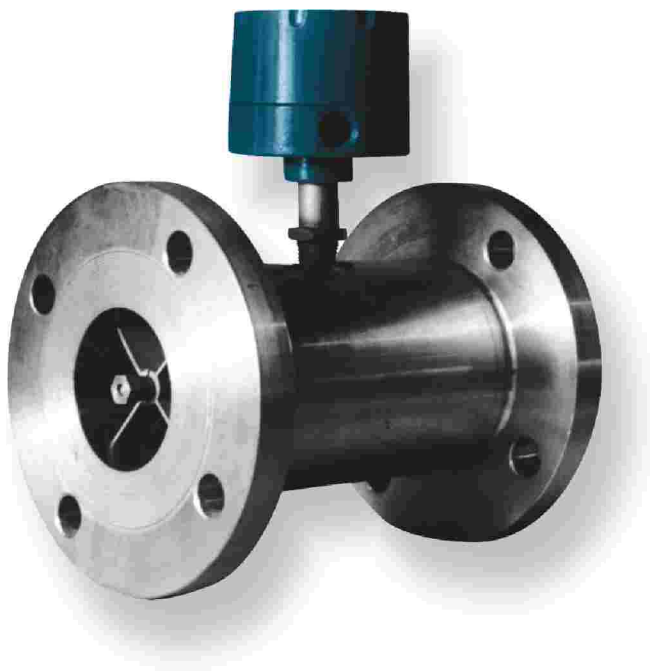




Turbine Flowmeters for Liquids



ODIN is a leading manufacturer of flowmeters and fittings in Argentina

It has a wide experience in the chemical, food and oil markets

It designs, manufactures and controls all fittings under strict procedures

It calibrates every meter individually and has its error curve delivered

It keeps a continuous inventory and stock of parts

It provides free pre and post sale services and guarantees its entire line of products

Made in Argentina



Made in Argentina

All Pass On-line Turbines

There are three basic models:

IQL - 1000: They are applicable for measuring clean liquids typical of the chemical industry. They feature an axial rotor which turns on bearings.

CP - 1100: Their purpose is to measure small liquid flows. They have a tangential rotor design.

P - 1200/1300/1400: Their operation is based on an axial rotor which turns on tungsten carbon bushings. They are suitable for compatible liquids.

Applications

Turbines are very accurate and reliable flowmeters that measure non viscous liquids and gases in multiple applications required by the chemical, food and oil industries.

Water, fuels, foodstuffs, solvents, saline solutions, alkalis and acids are measured successfully with liquid turbines.

Insert Turbines

We manufacture three models, all of them having a tangential rotor:

T - 3300: They have a welding nipple and a threaded nut to facilitate insertion and removal.

T - 3310: They are ideal for hot - tap type applications where they can be removed and reinserted without causing the line to stop.

T - 3300 - B: Their flanged nipple makes them the cheapest option.

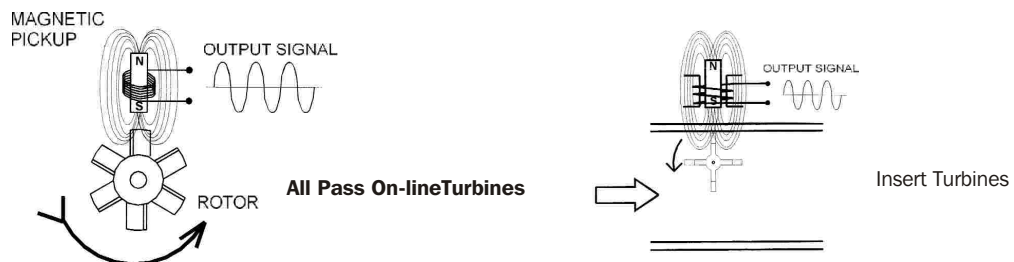
Applications

They are appropriate for measurement in large ducts with minimum investment and a reasonable accuracy.

Their most common application is in water ducts either raw, irrigation or drinking water. They perform smoothly with dirty liquids having particles in suspension, even when they have to be mounted on the upper surface of ducts.

Working Principle

The rotor revolution, which is caused by the passage of fluid, cuts off the lines of force of a magnetic field which, when detecting a variation in intensity, induces an electric sinusoidal-shaped voltage in the sensor coil that is received by the electronic unit as pulses.



The number of pulses per unit of time (called frequency) increases as flow does; that is, proportionally. The constant coefficient of such proportion is called "K FACTOR".

$$K = \frac{\text{PULSES}}{\text{VOLUME}} = \frac{[\text{PULSES}]}{\text{dm}^3}$$

This factor is verified in the calibration test stand and printed on every turbine. It is

obtained by dividing the electrical pulses generated by the rotor (N) when a measured volume (V) circulates through the turbine. When the K factor of a flowmeter is found, we can learn what volume and what flow a specific number of pulses may represent, because:

$$V(\text{VOLUME}) = N/K \text{ (dm}^3\text{)} \qquad Q \text{ (Flow)} = \frac{N/\text{sec.}}{K} = \frac{[\text{dm}^3]}{\text{sec.}}$$

In insert turbines, K factor may be expressed as:

$$K = \frac{K_i}{A_c \cdot F_p}$$

Ehere:

K_i = insert coefficient

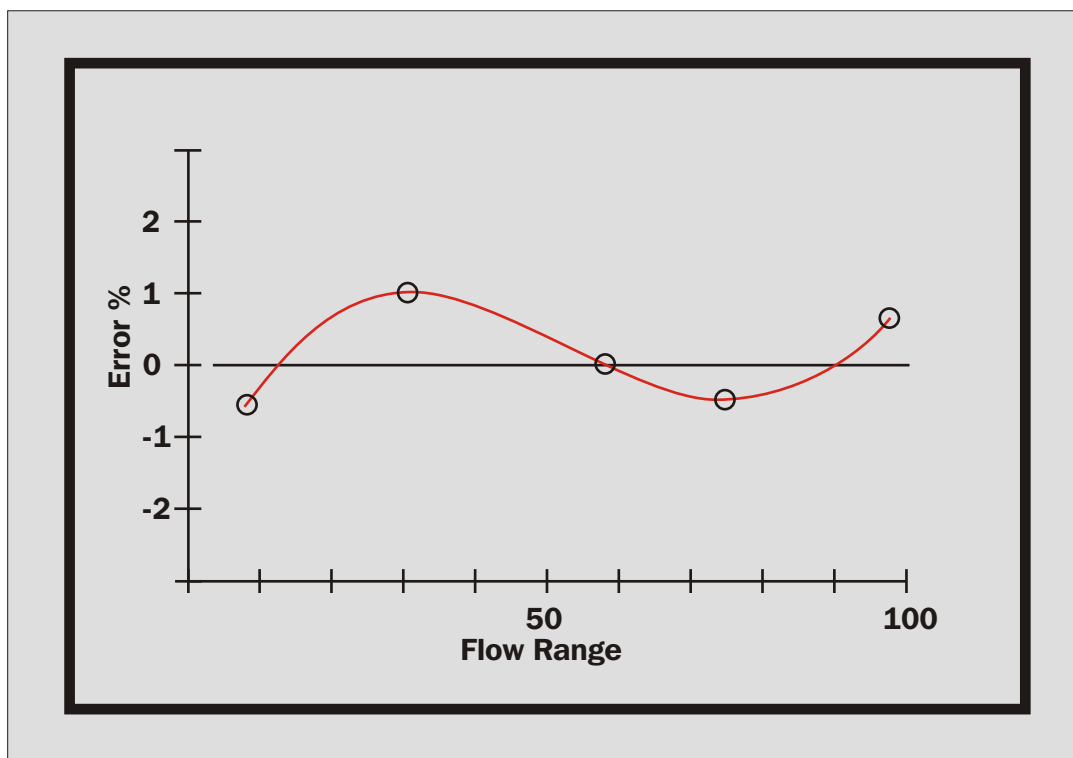
A_c = Duct area (dm²)

F_p = Passage coefficient (it takes into account the obstruction generated by the turbine into the duct).





This K_i is always carved on the body of the insert turbine and should be considered as a unique value for any duct size. K_i unit is the following:

$$K_i = \frac{\text{Pulses}}{\text{dm}}$$



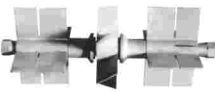

This characteristic allows our clients to move a turbine from one duct to another by entering the corresponding K value into the electronic reading unit, then calculating the new duct size according to data from the Pipe Table provided with our Equipment Handbook, and finally modifying the insert depth (please, contact us for depths, they may vary on models). ODIN S.A. determines the K factor value of all flowmeters, makes a calibration curve with K maximum errors within the flow range and delivers this error curve together with the equipment.



Insert Turbines

																					
MODEL	T - 3300	T - 3310	T - 3300 B																		
FLUID	LIQUIDS		LIQUIDS																		
OPERATING CONDITIONS	MAX. PRESSURE: 300 BAR MAX TEMPERATURE: 120° C		MAX. PRESSURE: 100 BAR MAX TEMPERATURE: 120° C																		
MAXIMUM ERRORS WITHIN RANGE	PRECISION: ± 0.5 % FE ACCURACY: ± 1 % FE		PRECISION: ± 0.5% FE ACCURACY: ± 1 %FE																		
MATERIALS IN CONTACT WITH THE FLUID	BODY SS 316 ROTOR SS17.4 PH BRUSHINGS PTFE OTHERS SS 316		BODY SS 316 ROTOR SS17.4 PH BRUSHINGS PTFE OTHERS SS 316																		
FLOW TABLES	Flow equivalent to Speed: 0.5 - 5M/S		Flow equivalent to Speed: 0.5 - 5M/S																		
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	For more information, see technical sheet EPT EPT 03-02-01 y EPT 03-01-02		For more information, see technical sheet EPT 03-03-02																		
MAIN APPLICATION	LARGE FLOWS WIDE RANGE	REMOVAL UNDER LOAD	WIDE RANGE INTERNAL PARTS																		
INTERNAL PARTS KIT																					
COMPATIBLE ELECTRONIC UNIT	TAB - 5500 TI - 6002 P - 6003		TAB - 5500 TI - 6002 P - 6003																		

On-Line Turbines for Liquids

																																																	
MODEL	IQL - 1000	CP - 1100																																															
FLUID	LIQUIDS	LIQUIDS																																															
OPERATING CONDITIONS	MAX. PRESSURE: 30 BAR MAX. TEMP.: 120°C	MAX. PRESSURE: 300 BAR MAX. TEMP: 120° C																																															
MAXIMUM ERRORS WITHIN RANGE	PRECISION: ± 0.25 % ACCURACY: ± 0.5 %	PRECISIÓN: ± 1 % ACCURACY: ± 2 % (w/linealizer)																																															
MATERIALS IN CONTACT WITH THE FLUID	BODY SS 316 ROTOR SS17.4.PH BEARINGS SS440C OTHER SS 316	BODY SS 316 ROTOR SS17.4 PH BEARINGS SS 440 C OTHER SS 316																																															
FLOW TABLES	<table border="1"> <thead> <tr> <th colspan="3">IQL - 1000</th> </tr> <tr> <th>MODEL</th> <th>Ø N</th> <th>MCH</th> </tr> </thead> <tbody> <tr> <td>1001</td> <td rowspan="2">1/2"</td> <td>0.06 - 0.6</td> </tr> <tr> <td>1002</td> <td>0.12 - 1.2</td> </tr> <tr> <td>1003</td> <td rowspan="2">3/4"</td> <td>0.18 - 1.8</td> </tr> <tr> <td>1004</td> <td>0.3 - 3</td> </tr> <tr> <td>1005</td> <td rowspan="2">1"</td> <td>0.6 - 6</td> </tr> <tr> <td>1006</td> <td>1.2 - 12</td> </tr> <tr> <td>1007</td> <td>1</td> <td>1.8 - 18</td> </tr> <tr> <td>1008</td> <td>1/2"</td> <td>3 - 30</td> </tr> <tr> <td>1009</td> <td rowspan="2">2"</td> <td>3 - 30</td> </tr> <tr> <td>1010</td> <td>6 - 60</td> </tr> </tbody> </table>	IQL - 1000			MODEL	Ø N	MCH	1001	1/2"	0.06 - 0.6	1002	0.12 - 1.2	1003	3/4"	0.18 - 1.8	1004	0.3 - 3	1005	1"	0.6 - 6	1006	1.2 - 12	1007	1	1.8 - 18	1008	1/2"	3 - 30	1009	2"	3 - 30	1010	6 - 60	<table border="1"> <thead> <tr> <th colspan="3">CP - 1100</th> </tr> <tr> <th>MODEL</th> <th>Ø N</th> <th>LPM</th> </tr> </thead> <tbody> <tr> <td>1001</td> <td rowspan="4">1/2"</td> <td>0.3 - 1.5</td> </tr> <tr> <td>1002</td> <td>1 - 5</td> </tr> <tr> <td>1003</td> <td>1.4 - 7</td> </tr> <tr> <td>1004</td> <td>2 - 10</td> </tr> </tbody> </table>	CP - 1100			MODEL	Ø N	LPM	1001	1/2"	0.3 - 1.5	1002	1 - 5	1003	1.4 - 7	1004	2 - 10
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MAIN APPLICATION	MICRO FLOWS IN PROCESS INDUSTRIES	WATER INJECTION IN THE OIL INDUSTRY																																															
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COMPATIBLE ELECTRONIC UNIT	TAB - 5500 TI - 6002 P - 6003	TAB - 5500 TI - 6002 P - 6003																																															

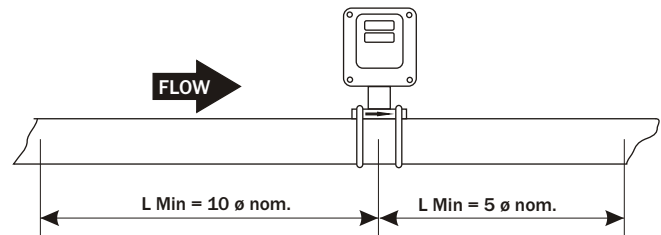
On-Line Turbines for Liquids



MODEL	P- 1200	P- 1300	P - 1400 - W							
FLUID	LIQUIDS		LIQUIDS							
OPERATING CONDITIONS	MAX. PRESSURE: 30 BAR MAX. TEMP.: 120°C		MAX. PRESSURE: 300 BAR MAX. TEMP: 120° C							
MAXIMUM ERRORS WITHIN RANGE	PRECISION: ± 0.25% ACCURACY: ± 0.5 %		PRECISIÓN: ±0.1 % ACCURACY: ±0.5%							
MATERIALS IN CONTACT WITH THE FLUID	BODY SS 316 ROTOR SS17.4PH BEARINGS CARB. TUNGS. OTHER SS 316		BODY SS 316 ROTOR SS17.4 PH BEARINGS CARB. TUNGS. OTHER SS 316							
FLOW TABLES			P - 1200	P - 1300	P - 1400 - W					
	MOD.	Ø N	LPM	LPM	MOD.	CONEX.	METER SIZE	FLOW RANGE		
	0	1/2"		1.2 - 12	1400 A	FOR FLANGE ANSI B 16.5 RF Ø 2"	2" x 1"	1,2-12	28-288	
	00	1"		3 - 30	1400 B		2" x 1 1/2"	4-40	96-960	
	1A	1"	5 - 50	8 - 60	1400 C		WN Sch 80	2" X 2"	6-60	144-1440
	1B	1"	10 - 100	10 - 100						
	1C	1"	20 - 200	20 - 200						
	2	1 1/2"	60 - 600	60 - 600						
			MCH	MCH						
	3	2"	6 - 60	6 - 60						
4	3"	15 - 150	For more info. See technical sheet EPT 02-04-02 y 02-05-02							
5	4"	30 - 300								
6	6"	60 - 600								
7	8"	100 - 1000								
MAIN APPLICATION	WATER INJECTION IN THE OIL INDUSTRY		WATER INJECTION IN THE OIL INDUSTRY							
INTERNAL PARTS KIT										
COMPATIBLE ELECTRONIC UNIT	TAB - 5500 TI - 6002 P - 6003		TAB - 5500 TI - 6002 P - 6003							

Mounting

The laying lengths pre and post meter must be the same nominal diameter as the turbine chosen, and minimum lengths suggested must be adhered to.



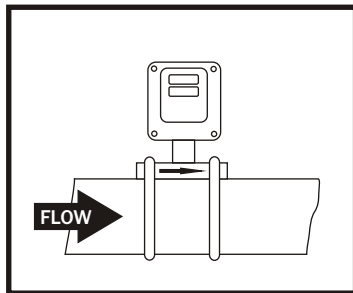
Electronic Units: Mounting Alternatives

ODIN S.A. has developed electronic reading units to satisfy the most varied customer needs.

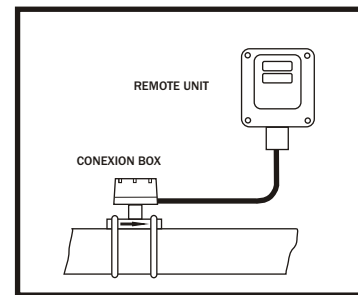
TAB - 5500

TAB - 5500 series is an efficient and practical solution which, due to its own lithium battery feeding, does not require an electrical wiring. It has two large displays. Mounting can be local or remote.

Mounting can be local or remote.





Local Mounting





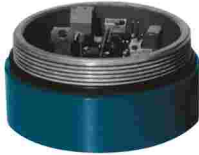





Remote Mounting

They are used to measure liquids in any kind of turbine. Flow values are shown on one of its displays and accumulated volume on the other. TAB-5503 may be reset and it has two accumulators, one for partial values and the other for accumulative values.

Electronic Units

Plastic Case Alternative		Metal Case Alternative	
			
TAB - 5500	TAB - 5501	TAB - 5502	TAB - 5503
TOTALIZER. INSTANTANEOUS. LITHIUM BATTERY FEED. FIVE-YEAR LIFE.	TOTALIZER. INSTANTANEOUS. 4 - 20 mA OUTPUT EXTERNAL FEED.	TOTALIZER. INSTANTANEOUS. SCALED PULSES. EXTERNAL FEED.	TOTALIZER. INSTANTANEOUS. RESET DEVICE. LITHIUM BATTERY FEED.

Electronic Units

<p>TI - 6002</p>	<p>P - 6003</p>	<p>AP - 130</p>	<p>P - 1300</p>
			
<p>TOTALIZER AND INSTANTANEOUS FEED AT 12/24 Vcc ADJUSTABLE OUTPUT AT 4 - 20 mA</p> <ul style="list-style-type: none"> - SELECTABLE UNITS: Lts, m³, Sec, Min, hour. - 8-DIGIT VOLUME INDICATION - 6-DIGIT FLOW INDICATION. - SUITABLE FOR USE WITH LIQUID AND GAS TURBINES. 	<p>PREDETERMINATOR WITH TOTALIZER.</p> <p>EXTERNAL FEED. 12/24 Vcc.</p> <ul style="list-style-type: none"> - SIMULTANEOUS VALUE INDICATION. - PREDETERMINED AND TOTALIZER. - SELECTABLE UNITS. - ADECUADO PARA OPERACIONES EN BATCH. - ALARMA Y REPOSICIONAMIENTO AUTOMÁTICO DEL VOLUMEN PREDETERMINADO. 	<p>AMPLIFICADOR Y CONFORMADOR DE PULSOS.</p> <ul style="list-style-type: none"> - ALLOWS TO TRANSMIT TURBINE PULSES 300 METERS OR FARTHER. 	<p>CONVERTER OF TURBINE PULSES AT 4 - 20 mA.</p> <ul style="list-style-type: none"> - ADJUSTABLE BY PRESET.
<p>ID - M5003</p>	<p>B - 301 - 22/11</p>	<p>CONEXION BOX</p>	<p>SENSOR</p>
			
<p>PROGRAMABLE ALARM. DIGITAL INDICADOR AND DRY CONTACT OUTPUT TO RELAY. FEED 220 Vca.</p> <ul style="list-style-type: none"> - FRONT FOR MOUNTING BOARD 96 x 96 x 99 Cm. - DIGITAL INDICATION TO 3- & 4- DIGIT BRIGHT LEDS. - ADJUSTABLE ALARMS BETWEEN 0 & 100%. 	<p>FEED SOURCE 110/220 Vac at 12/24 Vcc - 50/60Hz.</p>	<p>CONNECTION BOX WITH TERMINALS TO CONNECT THE TURBINE TO THE ELECTRONIC UNIT.</p>	<p>MAGNETIC SENSOR TO GENERATE PULSES IN ON-LINE TURBINES .</p>



Calle 35 entre 122 y 123 - 1925 Ensenada
 Provincia de Buenos Aires - Argentina
 Tel. (054) 221 422-7751
 Telefax. (054) 221 422-7671
 e-mail: info@odinsa.com.ar
www.odinsa.com.ar

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