

# Flow



# Leakage



CS INSTRUMENTS (PTY) LTD

## Energy and Cost Saving in Compressed Air Systems

Accurate Determination Of Current  
Leakage Rate  
Leakage Detection





## Leakages – the number one contributor to inefficient compressed air operations.

### Some facts about leakages in compressed air systems:

- Compressed air systems are never 100% air tight
- Leaks will become more and bigger over time
- Companies with leak reduction programs implemented in their maintenance schedule can reduce leakage rates to 5-10%
- Companies without leak reduction procedures implemented in their maintenance schedule experience leakage rates of 30-60%, sometimes even greater
- Well maintained compressed air systems should be checked for leakages at least 3-4 times per year.

#### Example:

**A leakage rate of 25% on a 110 kW compressed air system which operates 8400 hours a year will cost the company in excess of R 200,000 a year on electricity costs only (@ R 0.9 per kWh).**

Annual Energy Costs Caused By Leakages						
Hole Diameter	Air Loss at		Energy Loss at		Cost at	
mm	6bar (L/sec)	12bar (L/sec)	6bar (kWh)	12bar (kWh)	6bar (Rand)	12bar (Rand)
1	1.2	1.8	0.3	1	R2,268.00	R7,560.00
3	11.1	20.8	3.1	12.7	R23,436.00	R96,012.00
5	30.9	58.5	8.3	33.7	R62,748.00	R254,772.00
10	123.8	235.2	33	132	R249,480.00	R997,920.00
(Source:www.drukluft.effizient.de; kW x R0.90 x 8.400 hours / anum)						

#### Solution:

In order to determine the leakage rate accurately it is vital to perform a compressed air flow test from the compressor house into the plant during a none production event, e.g. during a shutdown period, over night or over a weekend period. Usually 30minutes is sufficient to accurately determine the leakage rate of the compressed air system.

After the leakage rate is determined, a leak detector is used in order to find and mark leakages on the distribution network which will then be fixed as soon as possible.

A flow test can be carried out again afterwards in order to determine the leakage and cost reduction achieved.

On bigger compressed air systems it is advisable to monitor important parameters like air flow, pressures and dew points on a continuous basis in order to pick up trends and be able to counter occurring problems and leakages much sooner.

**CS Instruments (Pty) Ltd has the perfect measuring technology at hand and can assist in countering the biggest energy waster in compressed air systems - the leakages!**

## DS 400 Flow station for compressed air and gases



Description	Order No.
Flow measurement DS 400 for installation into existing pipelines consisting of: Chart recorder DS 400 and flow sensor VA 500 in basic version, Standard (92,7 m/s), sensor length 220 mm	0601 4006
<b>Options for DS 400</b>	
Option: Integrated data logger for 100 million measured values	Z500 4002
Option: Integrated Ethernet and RS 485 interface	Z500 4004
Option: 2 additional sensor inputs for analogue sensors (pressure sensors, temperature sensors etc.)	Z500 4001
Option: Integrated webserver	Z500 4005
<b>Options for flow sensor VA 500</b>	
Max. version (185 m/s)	Z695 5003
HighSpeed version (224 m/s)	Z695 5002
Option 1 % Accuracy of m.v. $\pm 0,3$ % of f.s.	Z695 5005
Sensor length 120 mm	ZSL 0120
Sensor length 160 mm	ZSL 0160
Sensor length 300 mm	ZSL 0300
Sensor length 400 mm	ZSL 0400
<b>Further accessories</b>	
CS Soft Basic - data evaluation in graphic and table form - reading out of measured data via USB or Ethernet	0554 7040
<b>Calibration</b>	
5 point precision calibration including ISO certificate	3200 0001

## Leak detector LD 400 Highly sensitive leak detector



Description	Order No.
<b>Set LD 400</b> consisting of:	<b>0601 0104</b>
LD 400 Leak detector	0560 0104
Transport case	0554 0106
Sound-proof headset	0554 0104
Focus tube with focus tip	0530 0104
Battery charger	0554 0009
Acoustic trumpet	0530 0109
<b>Accessory, not included in the set:</b>	
Ultrasonic tone generator	0554 0103

## Set for portable flow measurement

m<sup>3</sup>/h



1



2



4

1 PI 500 portable measuring instrument with integrated data logger, incl. power supply	0560 0511
2 Flow meter VA 500 Max. Version (185 m/s) sensor length 220mm, incl. 5 m cable to portable instruments	0695 1124
3 Connection cable for VA/FA Series on mobile instruments, ODU / M12, 5 m	0553 1503
4 CS Soft Basic - data evaluation in graphic and table form - reading out of the measured data via USB	0554 7040
5 Transportation case	0554 6510



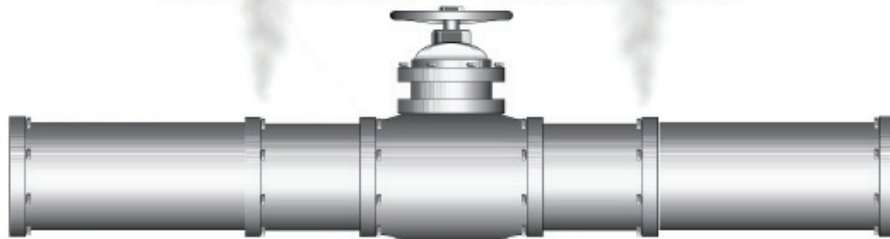
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**20% = 20%**  
LEAKAGE RATE ENERGY COST



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