Competence for your compressed air station

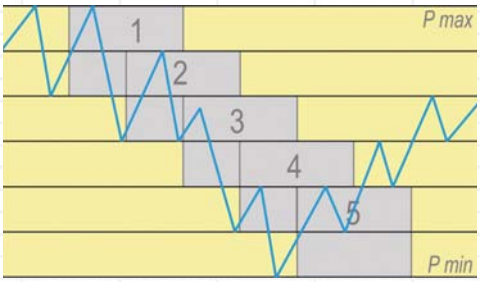
- Automatically optimized
- Self-learning
- Simple installation
- Simple operation

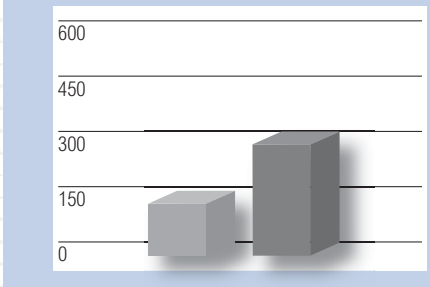
airleader
Compressor management

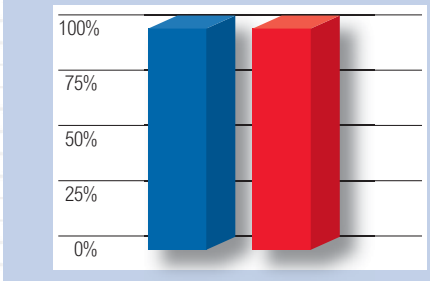
The compressed air stations that have been developed over the years…

The cascade controller…

has its own separate, relatively high pressure differential for every compressor.
As a result, the pressure in the compressed air header is significantly higher than is required. The cascade controller is primarily used for compressors of identical size.

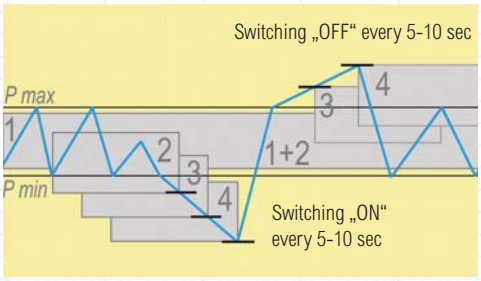


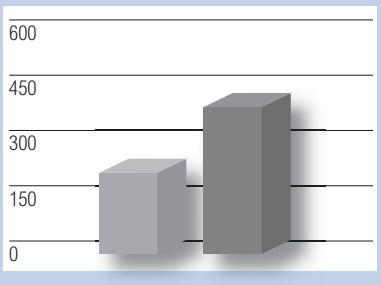




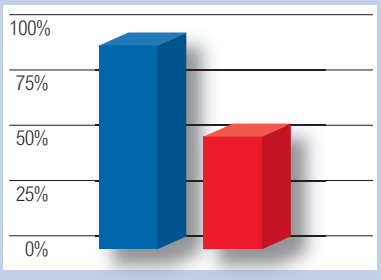
The sequence controller…

combines a tight pressure differential with time-dependent ON and OFF load of the compressors when the given pressure set points are reached. Frequently, more compressors are switched ON and OFF than is required. The sequencer can also be programmed by time intervals.





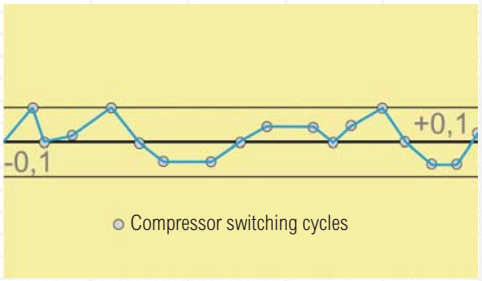
Motor starts/day

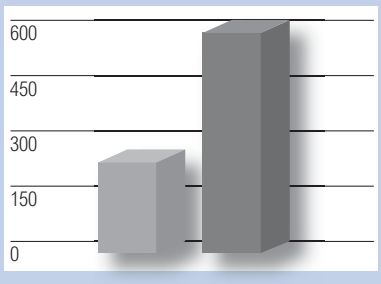


Load kW

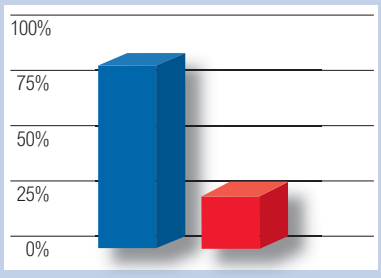
The pressure band controller…

controls compressors based on the required pressure value within a tight pressure band. The classification of compressors as base, medium and peak load compressors, produces rigid sequences which are accessed via programmed time intervals. A change in compressed air consumption is not detected automatically. The tight pressure band leads unnecessary high load/no-load changes and motor starts.



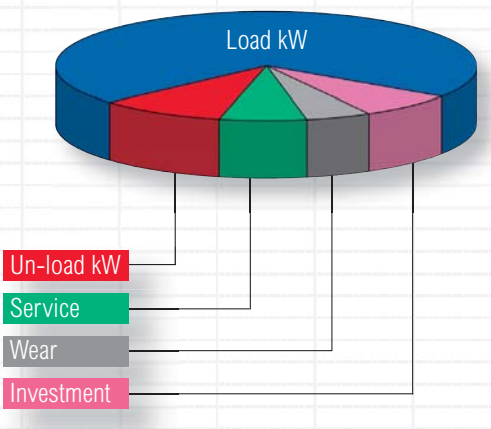


Load cycles/day



Un-load kW

Compressed air costs over 10 years



The compressed air costs over 10 years are made up as follows:

- The capital cost of and equipment
- The running power costs
- Maitenance costs
- Motor and compressor bearing wear
- Valve and regulator damage
- Compressed air leakage

The compressed air station that has developed over the years generally has compressors of different sizes and different ages from different manufacturers.

The pressure level is much higher than is required in production.

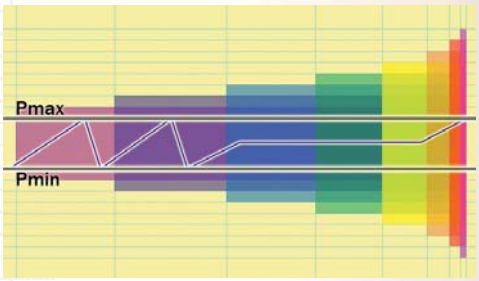
The high pressure spread responds slowly to pressure variations.

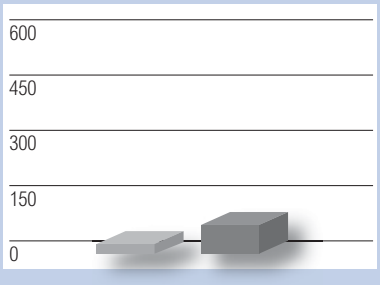
Higher pressure means greater energy costs, increases leakage rates and generates artificial consumption.

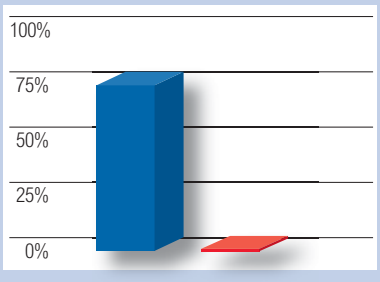
airleader save money instantly thanks to airleader!

Airleader Compressor management

The 8-fold self-learning trend calculation ensures the dynamic adjustment of the compressors to the compressed air consumption. Different sized time slots calculate the compressed air consumption continuously and register changes instantly.







Exceptionally low switching frequency
Airleader starts precisely where others stop. Prolongs the useful life of all the mechanical components of the compressors.

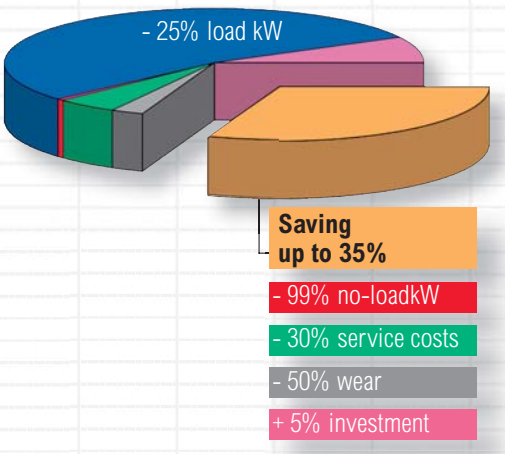
Exceptionally low energy costs
Constant consumption calculation ensures the correct compressor or combination of compressors are running to match compressed air demand at any given time.

airleader is efficient!
Payback of just a few weeks or a few months is not theory.
The smart Top-Manager for up to 16 / 32 compressors, including several speed-controlled versions.

airleader for added value!
The service life of intake valves, compressor airends, protection devices and motors is doubled. Service costs only need to be paid for the actual load times.
The maintenance and repair budget lasts considerably longer.

How you benefit!
As long as **Airleader** controls the compressors automatically to the current compressed air demand, only the actual volume of compressed air is generated.

Possible savings:



25-35% of the load energy is consumed during idle run without producing air.

Frequent starts, stops and load changes due to rigid time and sequence parameters increase wear on the bearings and components as well as maintenance and service costs.

Sequence control and pressure band regulation cut the load costs of the compressors by means of a simple pressure reduction with a common pressure differential for all the compressors.

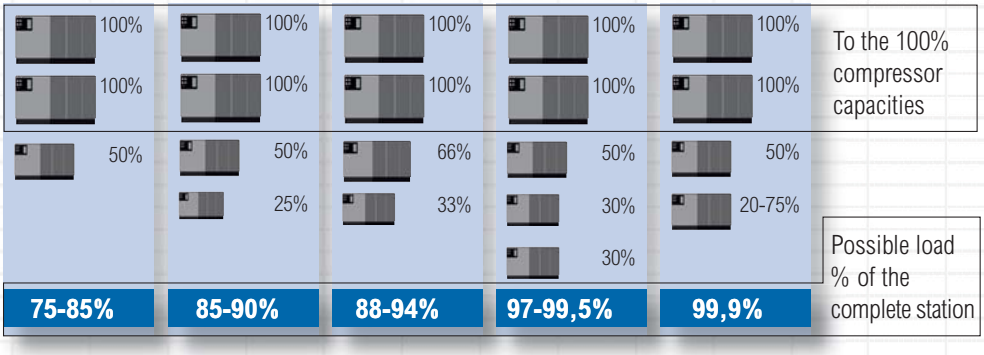
As a result of the time-dependent programming of the compressor sequence, the idle power energy has been decreased slightly. No automatic change to a different profile **if the compressed air consumption changes.**

The result of compressor grouping in conjunction with a lower pressure differential and time-dependent load and unload control leads to significantly higher number of load changes and motor start as well as increased service costs and wear.

The benefit of airleader

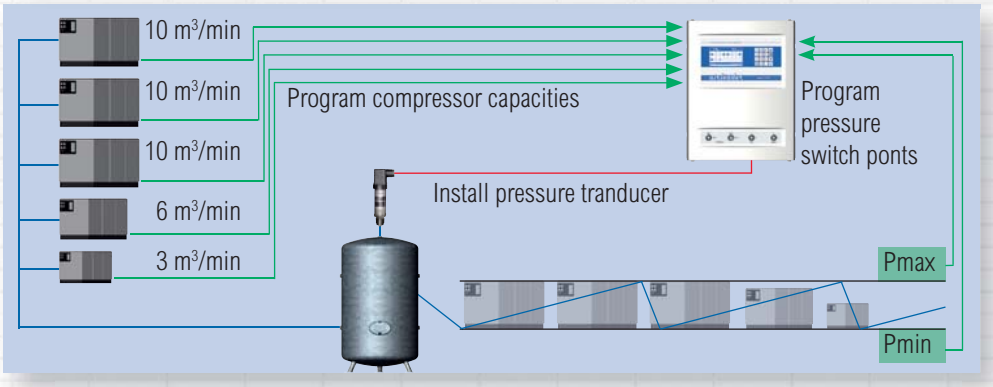
1. Save money instantly…

Which combination save the most unload energy costs?



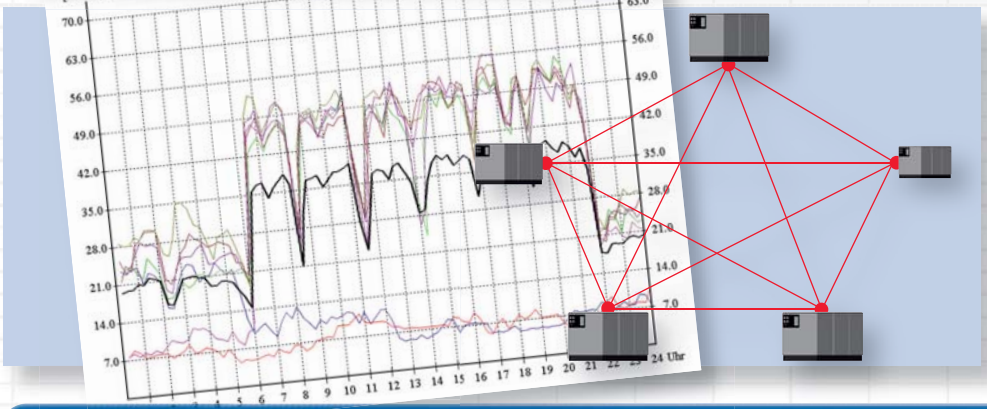
… irrespective of the combination of compressors, **Airleader** gets the best out of every combination as well as reducing operating pressure to a minimum. An improved graduation insures less motor starts and load changes of the compressors.
It is possible to connect up to 2 speed-controlled compressors.
Airleader always ensures the right combination.

2. Simply program the compressor capacities and pressure switch points…



… and **Airleader** will combine compressors of different sizes to form a unit that automatically adjusts itself - in line with the current compressed air consumption - to the production requirements. It ensures that always the most efficient compressor combination generates the compressed air required.

3. Flexible use of compressors…

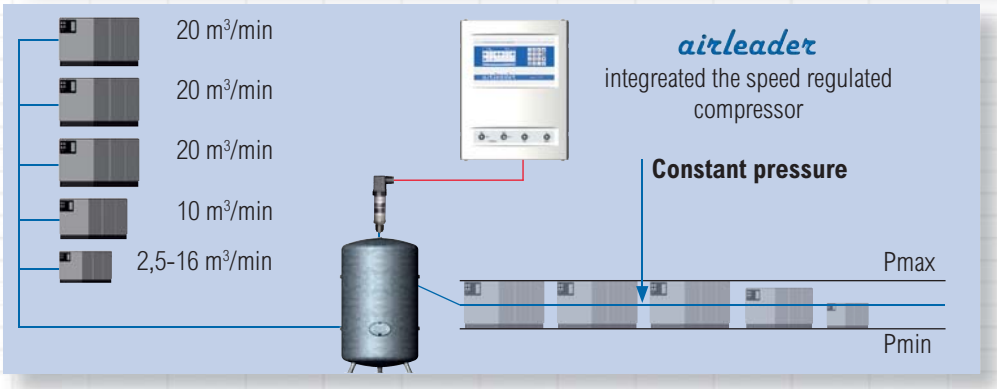


There is no longer a fixed priority or sequence. Your production determines the correct combination of compressors, to ensure the most efficient combination of compressors runs for the actual air consumption. Same size Compressors are allocated the same operating hours.

Every compressor can:
- base load - peak load - or can operate on its own

Energy savings due to:
- Pressure reduction and no-load cost optimization

4. Always connects the right compressors for the speed-controlled compressors

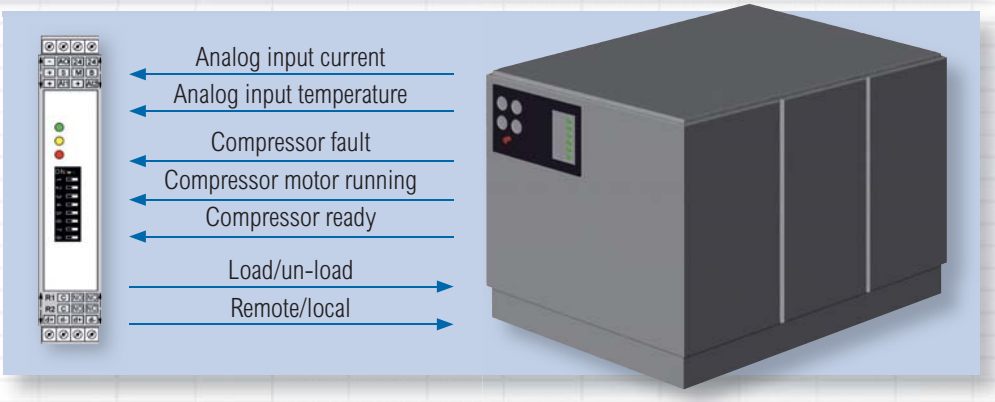


The control strategy automatically ensures that, compressors connect or disconnect step less within the pressure band. An exceptionally low switching frequency protects the compressors and prolongs their service life.
The freely programmable speed range ensures that the speed controlled compressor always remains within the specific optimum range.
This prevents excessive high power consumption due to the compressor running in the wrong speed range.

… plus the integration of all the additional devices

5. Simple installation…

Easy to program – just a few parameters. **Airleader** works out the rest itself. All the compressors and compressed air components (also from different manufacturers) are simply connected via a 2-wire cable.
A universal connection module in each compressed air component connect a wide range of different makes and models via pre-configured analog and digital ports.



6. Driers, filters, steam traps…

… etc. can be connected to the digital inputs of the connection modules.
It is possible to select whether a digital input is used as a fault or operating signal. This allows quick overview of the status within the compressed air station. All these modes are stored for a long time and can be displayed via a browser.

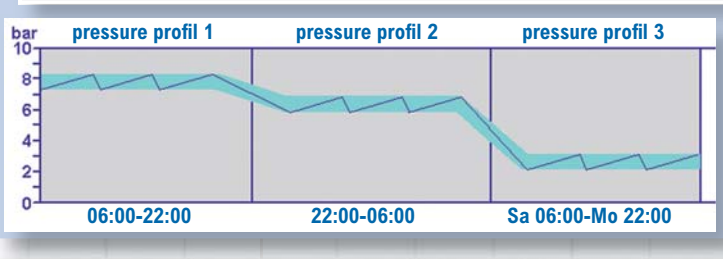
7. Sensors with analog output…

…such as flow, pressure dew point, temperature, ampere, and pressure sensors can be connected for the purpose of monitoring the compressed air system. This can provide compressed air information and volumes of different departments without great effort. A digital output, which is assigned to each analog input (e.g. temperature within the compressor room, humidity of the compressed air, differential pressure at filters) can trigger an alarm if a threshold is exceeded.

8. Real-time timer for different priorities and pressure profiles…

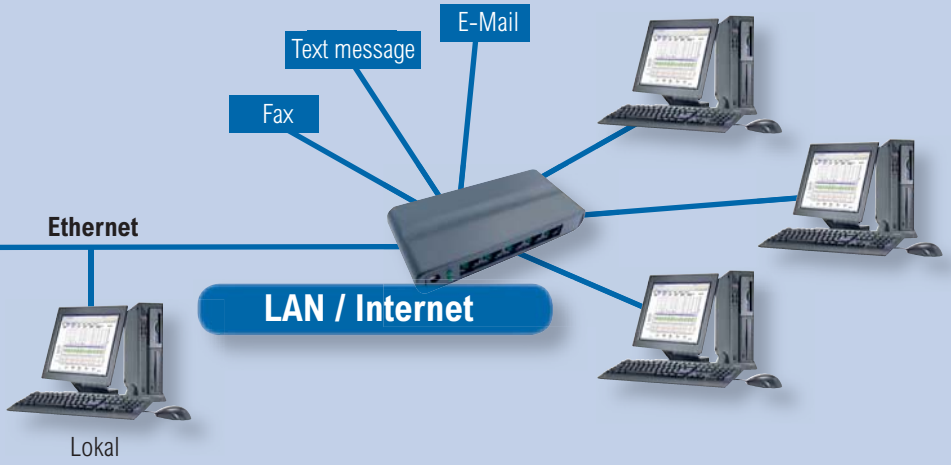
By using the real-time timer additional 3 pressure profiles and 3 priorities can be integrated. If a compressor with heat recovery is connected, it is possible – differently from the automatic optimization – for the compressors to work on a different level depending on the consumption. Digital inputs allow the individual pressure profiles and priorities also to be selected directly. As such, rapid pressure reductions and increases are possible at the same time.

priority profile	priority profile 1	priority profile 2	priority profile 3
1	compressor 1 + 6	compressor 5 + 6 + 4	compressor 3 + 5 + 6
2	compressor 2 + 4 +5	compressor 3 + 2	compressor 4 + 2
3	compressor 3	compressor 1	compressor 1



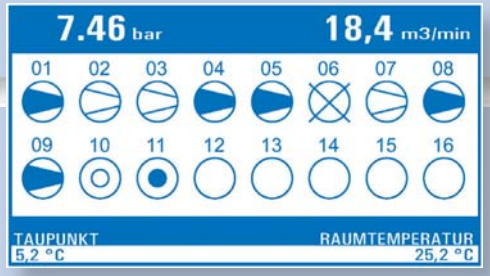
…completely variable and open for everything…

Ethernet



Lokal

All function at a glance



OPC-server
For connections to house control systems,
Professional bus, Modbus, Win-CC etc..

RS 485 bus

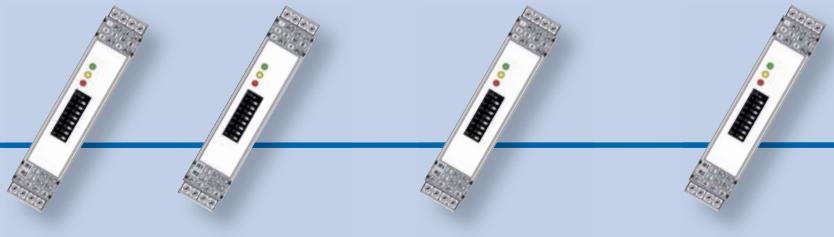
Compressors of all brands and manufacturer.
Up to 32 compressor modules

Pressure, Dewpoint temperature-Flow sensors etc.

Filter and condensate tecnology

Dryer

Control pressure sensor



Up to 64 Analog inputs

Up to 96 Digital inputs

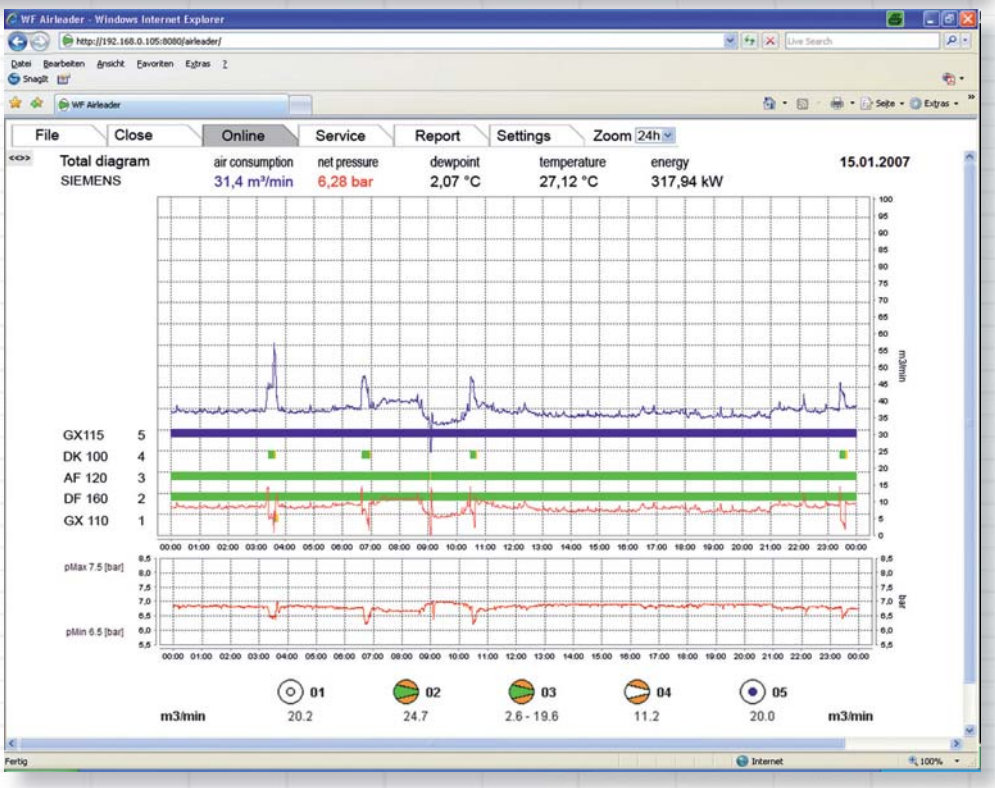
Up to 32 connection modules

… with a first-rate online visual display system!

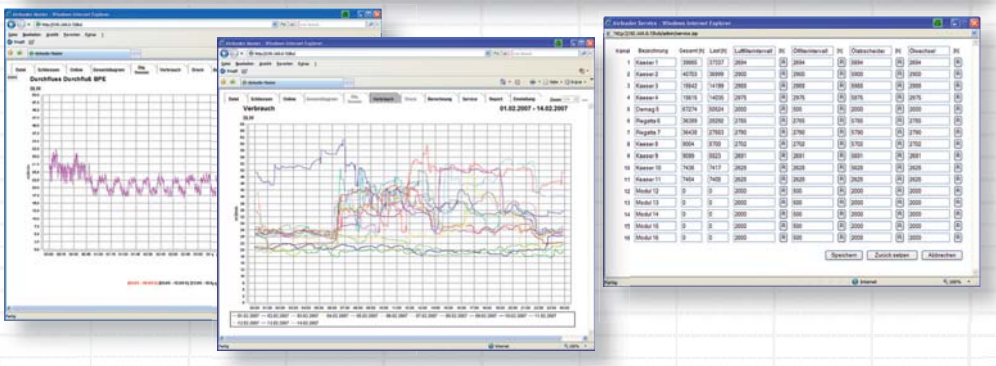
All functions of a glance…

…the online main screen provides an instant overview of the consumption, pressure and compressor status (load, no-load, fault, stand-by / off, flow rate of VSD compressors).

- **Diagramms**
  - **Diagram total with air consumption**
    - *Diagram load*
    - *Diagram motor run*
    - *Diagram ready*
    - *Diagram fault*
    - *Diagram consumption*
  - **Diagram current of compressors**
    - *GX 115*
    - *DK 100*
    - *AF 120*
    - *DF 160*
    - *GX 110*
  - **Diagram of compressor temperature**
    - *GX 115*
    - *DK 100*
    - *AF 120*
    - *DF 160*
    - *GX 110*
  - **Diagram Pressure**
    - *A/1 net pressure*
  - **Diagram Dew point**
    - *A/1 Hall 1*
    - *Station 1*
    - *Station 2*
  - **Diagram temperature**
    - *A/3 Compressor*
    - *Station 2*
    - *Station 4*
  - **Diagram Current**
  - **Diagram energy**
    - *A/4 overload*
  - **Flow diagram**
    - *Diagram of external signals*



Snapshot of all the functions…



COMPRESSOR DATA AND ENERGY CALCULATION

Specific perfomance		7,61347	kW/m³/min						kWh	0,080	€							costs of load		99,64	%		
Specific perfomance		0,12689	kW/m³						P-min	6,5	bar							costs of un-load		0,36	%		
Compressed air costs		0,01015	€/m³						P-max	7,0	bar							Total costs		3590,28	€		
Channel	Compressor	m³/min		Load kW		kW	Load		Unload		average %	switching cycles		compr. air	Total kW			Total costs €		
		min	max	min	max	un-load	h	min	h	min	Load	Motor	Load	m³	Load	un-load	Total	Load	un-load	Total
1	GX 100	4,8	20,6		118,0	34,2	20	58	1	40	92,6	15	15	25915	2474	57	2531	197,93	4,56	202,49
2	DF 160		24,7		145,0	41,3	147	50	0	42	99,5	7	7	219089	21436	29	21465	1714,87	2,31	1717,18
3	AF 120	2,6	19,6	20,3	122,0	4,5	166	54	0	9	100,0	19	19	104877	20362	1	20362	1628,94	0,05	1629,00
4	DK 100		11,2		79,0	26,4	5	39	2	48	66,9	45	48	3797	446	74	520	35,71	5,91	41,62
5	GX 115		20,0		116,0	31,7	0	0	0	0	0,0	0	0	0	0	0	0	0,00	0,00	0,00
											Total	86	89	353678	44718	161	44879	3577,44	12,84	3590,28

Comparison of the whole week – in high resolution - 10x/sec. The data are calculated and presented in diagrams. This permits precision evaluation.

Zoom function extreme – it is possible to zoom all curves down to 1 minute. Short peaks are detected and can be analyzed.

Temperature, pressure dew point, flow current consumption rates, etc ? No problem! It is possible to simply connect various different sensors (4 - 20 mA) and to depict these in high-resolution graphics. Transgressions above thresholds generate messages – upon request in the form of an e-mail, fax or text message.

All analog sensors are displayed clearly arranged in groups. **Weekly and monthly diagrams** are automatically combined and made available for further use.

Diagrams can be clearly selected. Via the selection box all the functions can be displayed together or individual.

Any number of users can access the online visual display system via the web server without any loss in speed.

Online power cost. **Airleader** enables the possibility to see instantly if the energy costs are rising out of control and will notify automatically if this happens.

Energy balance delivered free – Load and no-load time, kWh consumed - m^3 generated, - spec. delivery rate – energy costs in €, motor starts + load changes.

Long-term monitoring is standard. The integral memory has a storage capacity of min. 2 years (for 8 compressors).

Statistics made easy the load/no-load graphic chart illustrates the savings effect. Simply click with the mouse to select the period you require.

And this is what you get with airleader!

The analysis of the energy saving potential alone by deploying **Airleader** is worth considering.
Perform a rough calculation of your energy costs for generating compressed air:

Possible savings:

			Your firm:		Fa. W	Fa. X	Fa. Y	Fa. Z
A	Operating time per annum	Bh/a	=>		2000	4000	6000	8760
B	Installed compressor capacity	kW	=>		100	200	250	500
C	Assumed compressed air index	%	=>		75%	75%	75%	75%
D	Adopted compressed air indicator	kWh/m³	=>		0,135	0,135	0,13	0,12
E	=> Air demand per annum	Mio. m³	= 1)*		1,11	4,44	8,65	27,38
F	Savings potential	%	=>		25%	25%	25%	25%
G	Electricity price	€/kWh	=>		0,075	0,075	0,075	0,075
	Savings in a year:	**€/year**	**= 2)***	**€**	**2.813 €**	**11.250 €**	**21.094 €**	**61.594 €**

1)* = A x B x C / D / 1.000.000 2)* = A x B x C x F x G 7

Only the cost for service and maintenance has to be added.

Why pay too much? The right **Airleader** to suit every need.
Airleader grows with your compressed air station and is flexible!

Specification:

	airleader CN	*airleader* Master Modul
Number of connectable compressor modules	32	16
Number of speed-controlled compressors	2	2
Number of connectable analog modules for sensors and accessories	32	8
Max. number of possible analog inputs	132	52
Display	15" Colour-Touchscreen	LCD-Display 240x128 Pixel
Industrial housing for wall mounting L x W x D mm	600 x 800 x 250	380 x 480 x 130
Memory capacity for detailed state history and statistical data	> 20 years	> 2 years
(in addition to the online visual display also via PC or Internet via a browser)	(20 GByte)	(1 GByte)
Interfaces	4 x RS 485	4 x RS 485
	1 x Ethernet	1 x Ethernet

Your specialist

WF STEUERUNGSTECHNIK GMBH

Zeppelinstr. 7
75446 Wiernsheim
Tel. +49 (0) 7044 / 911 100
Fax +49 (0) 7044 / 57 17
E-Mail: airleader@t-online.de