

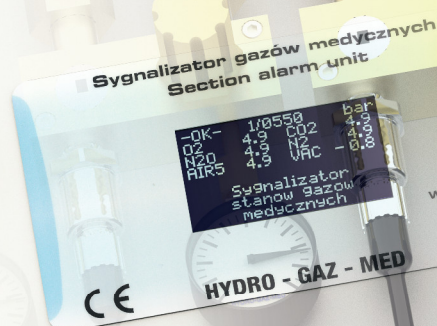
HYDRO-GAZ-MED

POLISH MANUFACTURER OF MEDICAL EQUIPMENT

Established in 1971



Product catalog



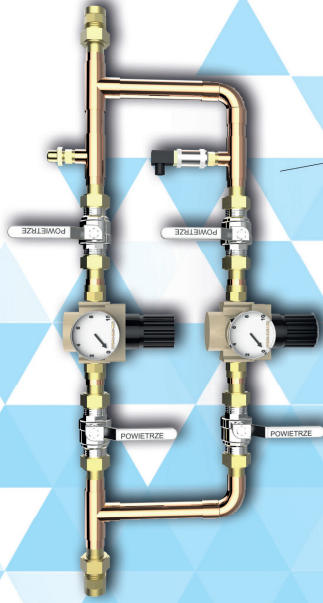
European
Funds
Smart Growth



European Union
European Regional
Development Fund



OUR PRODUCTS IN HOSPITAL...



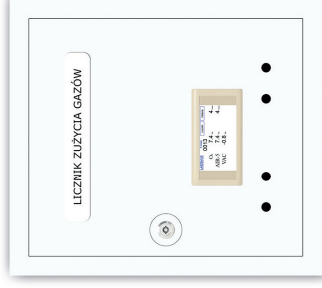
Reduction set
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Gas analyzer
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Remote alarm units
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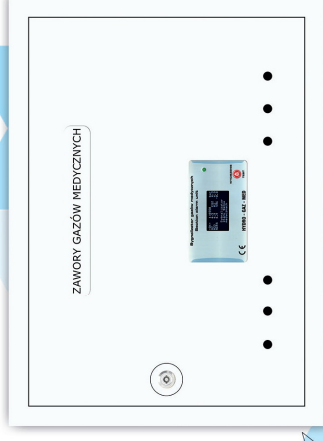


Flow monitor
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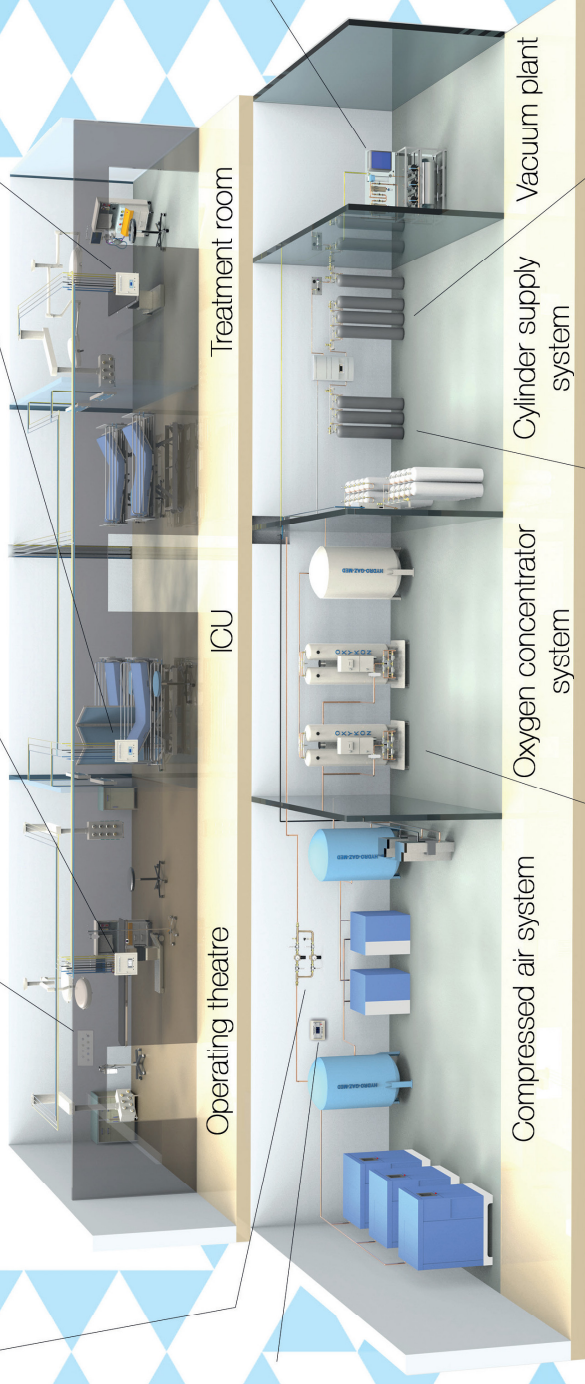


Gas outlets
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Gas outlet panel "SPG"
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Operating theatre

ICU

Treatment room

Compressed air system

Oxygen concentrator system

Cylinder supply system

Vacuum plant

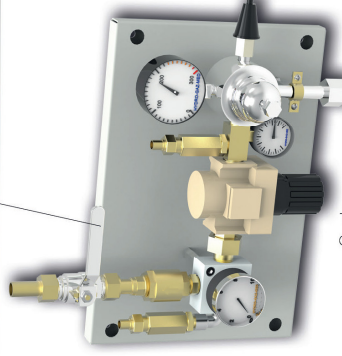
Vacuum plant "HGM VAC"
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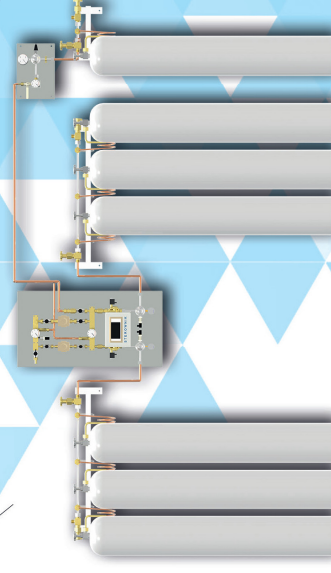
Central alarm unit
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OXYKON®
oxygen concentrator
p. 1



2-stage
reserve panel
p. 6



Switchover system for cylinder supply "PNEUMAT"
p. 2

About us

Our company has been dealing with medical gas pipeline systems since 1971, for over 14 years we have been producing medical gas pipeline systems components. For many years we have been consumer of products of other producers. This allowed us to gain lot of experiences either good and bad. At the moment as a producer we have done our best to improve and remove all the problems we have encountered. During all these years we wanted to offer you the best possible, so we ALWAYS use the highest quality materials, that is why we cooperate with well known producers like FRITZ STEPHAN Medizintechnik GmbH, GREGGERSEN Gasetechnik GmbH, OXYMAT A/S.

In the field of medical gas pipeline systems we modernize existing systems or we can design, build, test and commission a new one.

Here is a short history of our company:

- ▶ since 2003 we are installing oxygen concentrator systems in hospitals in Poland (we were first to do this)
- ▶ since 2006 we are producing our own valve boxes, to this day we sold over 600 units;
- ▶ since 2008 we are producing our own oxygen concentrator system, to this day almost 30 systems installed;
- ▶ since 2011 we are producing our own PNEUMAT switchover system for high pressure cylinder supply systems, to this day almost 100 systems sold;
- ▶ since 2013 we started to offer gas consumption measurement in our valve boxes;
- ▶ since 2014 we offer our own high-end central monitoring system for medical gas system;
- ▶ since 2015 we are producing small vacuum plant for small hospitals & clinics;
- ▶ along with above we are also producing under plaster and on wall panels with sets of gas outlets.

In this catalog we want to present you the best we have to offer. Our products have been checked and tested in many ways by our demanding clients and meet the strict requirements of TÜV Nord Notified Body.

We execute medical gas pipeline systems according to the newest european medical standards and MD-D/93/42



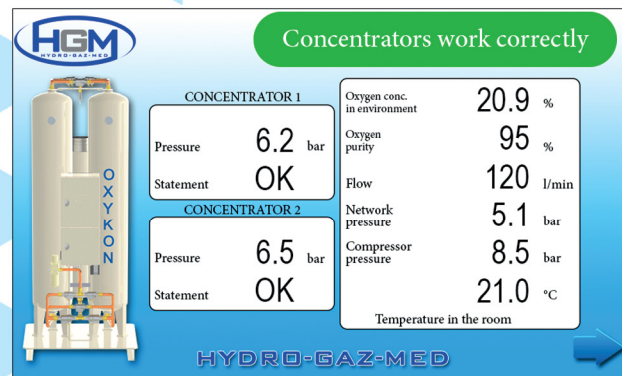
Oxygen concentrators for medical gas pipeline system

OXYKON® oxygen concentrator delivers "medical oxygen 93" by filtering compressed air and separating oxygen from other air components (including chemical weapons) to achieve up to 96% oxygen concentration. Because oxygen concentrator needs compressed air to deliver oxygen it allows to use the surplus compressed air as a medical air. This allows to eliminate extra costs of installing separate compressed air system. To minimize installation costs even more it can use compressed air from an existing compressed air system in hospital to deliver oxygen. Taking such solution at the planning stage of investment it allows to save extra costs. At the end it can save up to 80% of oxygen therapy costs.

We are the first in Poland who have developed and implemented this system in Health Care Facilities. This economic system guarantees self-sufficiency and optimally uses available area.



OXYKON® DUO concentrator



Oxygen supply system controller

- ▶ concentrators pressure monitoring
- ▶ the status of concentrators
- ▶ oxygen purity monitoring by means of paramagnetic sensor
- ▶ oxygen concentration in environment monitoring
- ▶ flow monitoring
- ▶ room temperature monitoring
- ▶ oxygen outlet pressure monitoring
- ▶ compressor pressure monitoring
- ▶ integration with SMS notification system

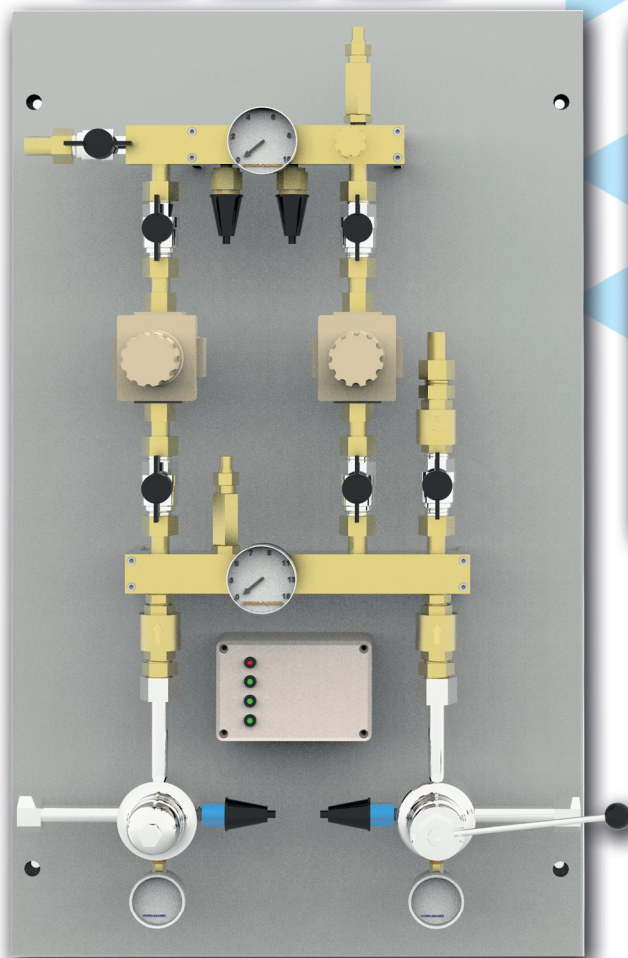
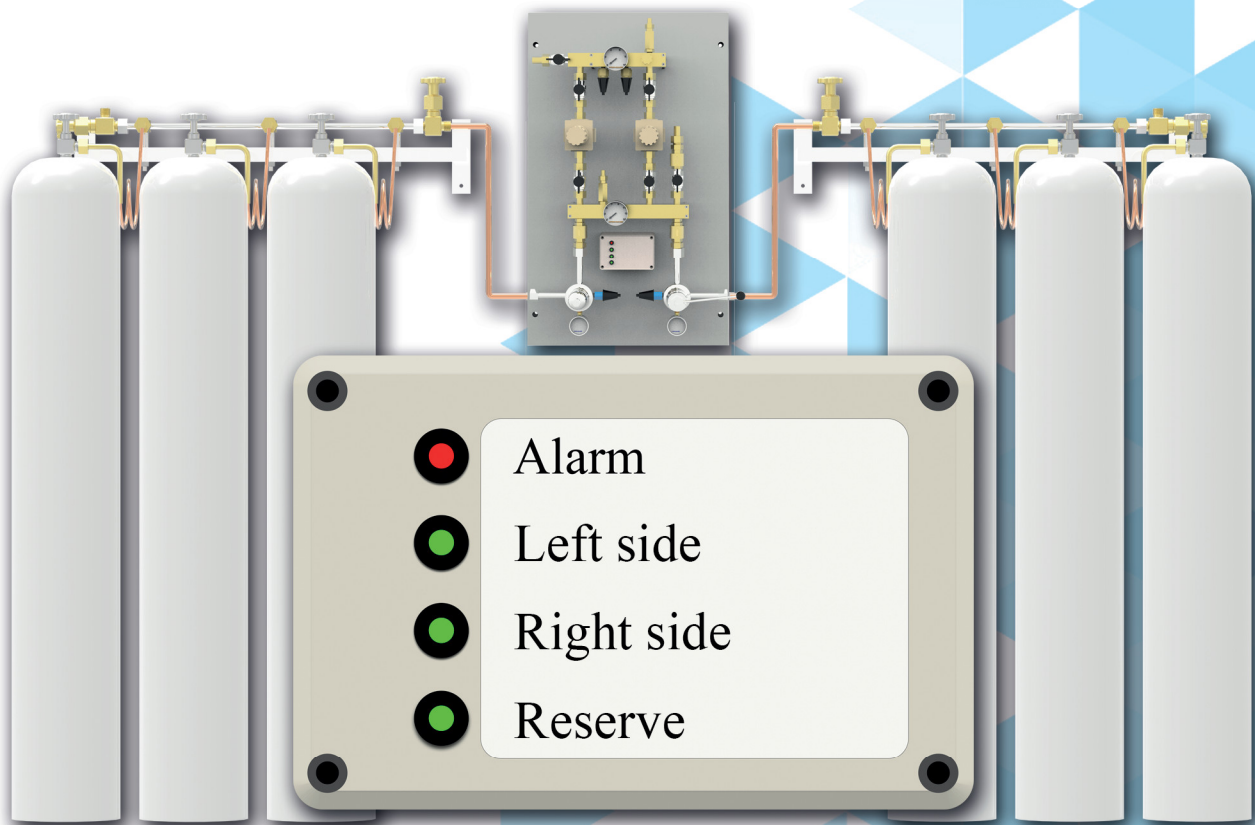


OXYKON® modular concentrator

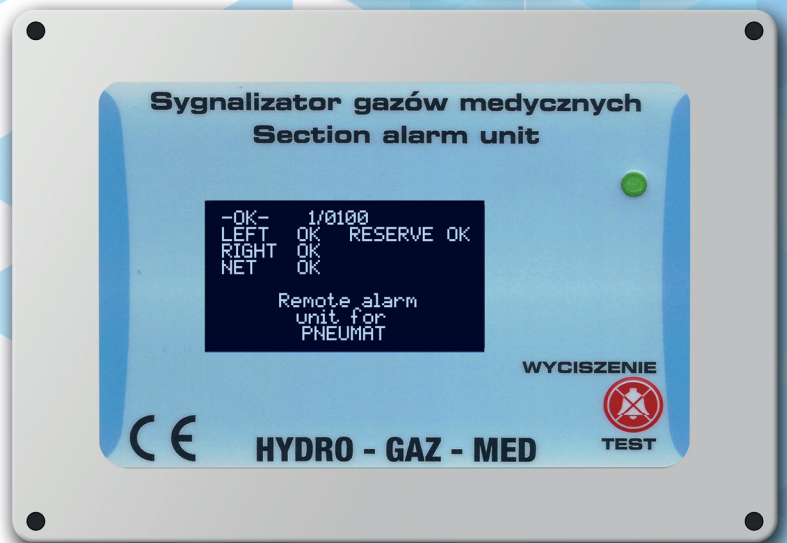
Oxygen concentrator modules work selectively – producing oxygen to meet actual demand, thereby power consumption is reduced to minimum. Also usage of compressed air is optimized according to oxygen demand. Thanks to modular construction it is not possible that there will be no oxygen in hospital. In case of failure the amount of delivered oxygen will decrease but concentration level will remain unchanged.

Switchover system for cylinder supply "PNEUMAT I"

PNEUMAT I as 2 cylinder banks supply system



Dimensions
400x700x150
(WxHxD)

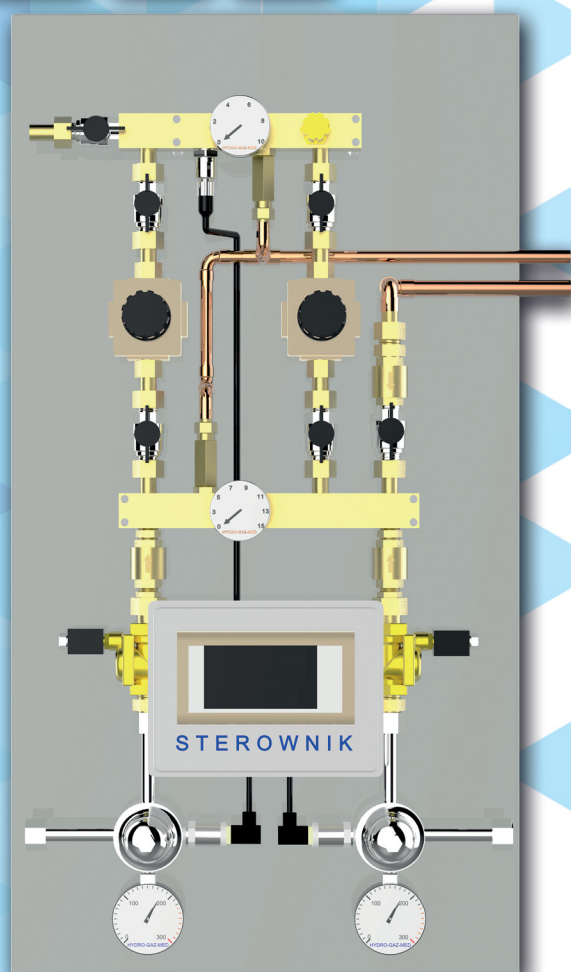
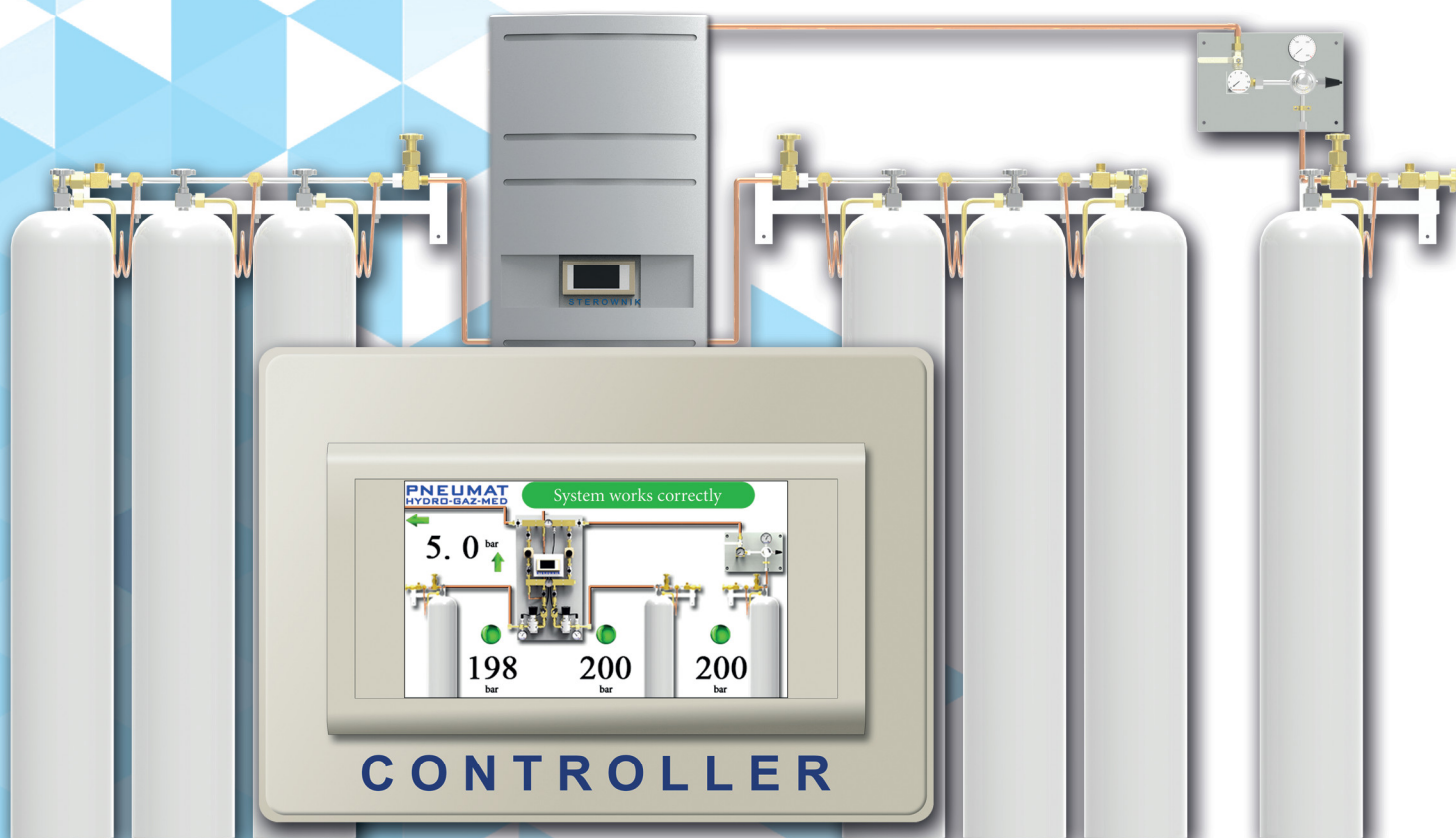


Remote alarm unit

Capacity: max. 30 m³/h
 Inlet pressure: 200 bar (2900 psi)
 Outlet pressure: 4-6 bar (58-87 psi)
 Automatic change-over (pneumatically)
 Connection to BMS and MODBUS RTU
 Working modes:
 ▶ 2 cylinder banks
 ▶ 2 cylinder banks + 1 reserve bank
 ▶ Concentrator + 2 cylinder banks
 ▶ Tank with liquid gas + 2 cylinder banks
 ▶ Air compressor + 2 cylinder banks
 Class IIb medical device.

Switchover system for cylinder supply "PNEUMAT II"

PNEUMAT II as 2 cylinder banks + reserve bank supply system



Dimensions
450x800x200
(WxHxD)

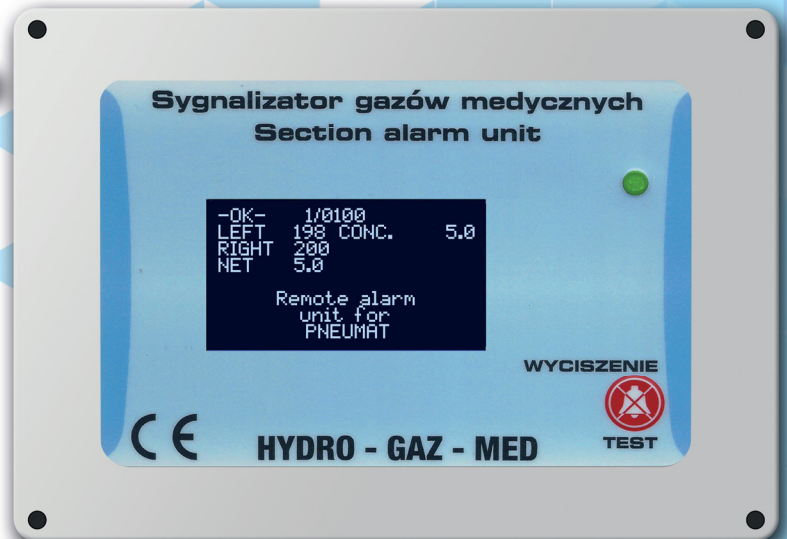
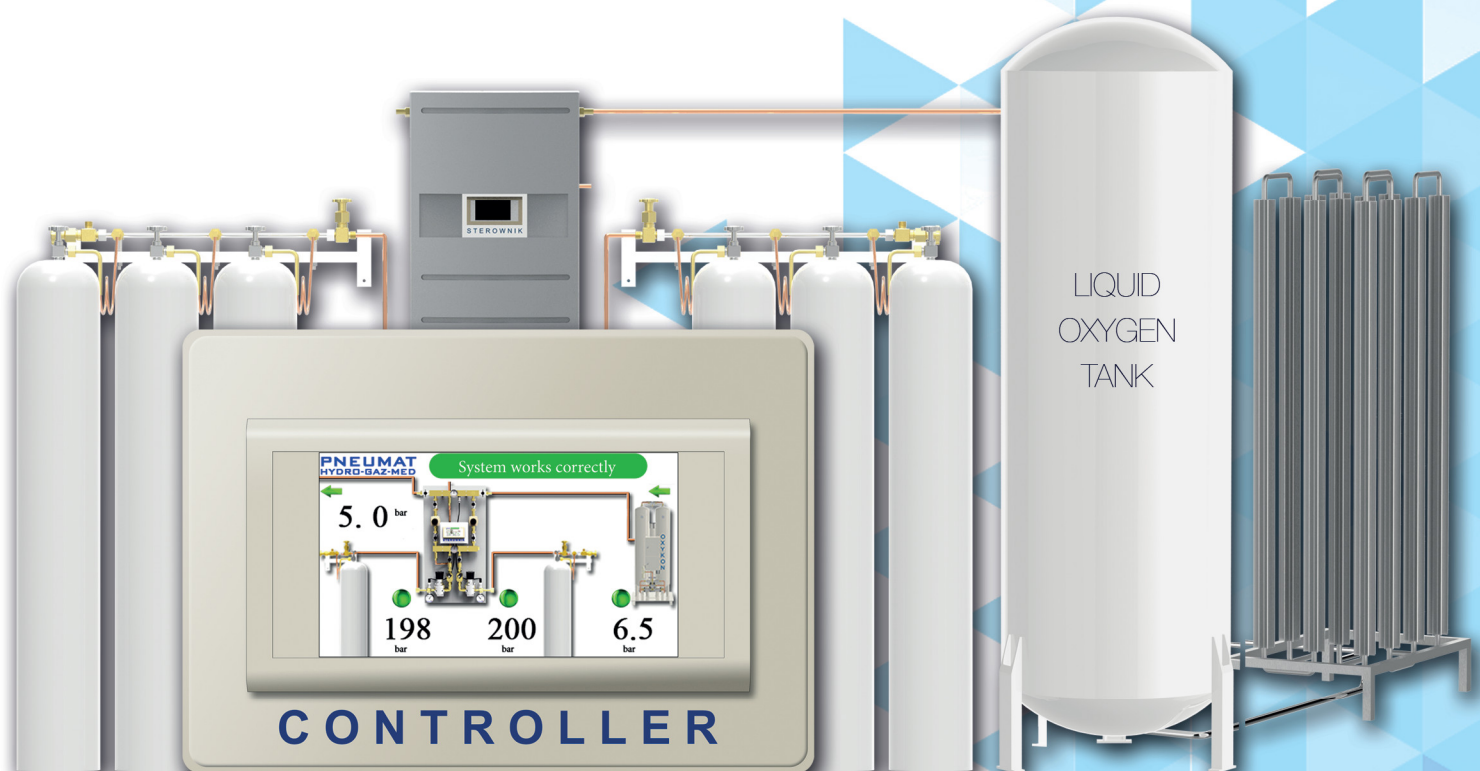


Remote alarm unit

Capacity: max. 50 m³/h
 Inlet pressure: 200 bar (2900 psi)
 Outlet pressure: 4-6 bar (58-87 psi)
 Automatic change-over (electronically)
 Connection to BMS and MODBUS RTU
 Working modes:
 ▶ 2 cylinder banks
 ▶ 2 cylinder banks + 1 reserve bank
 ▶ Concentrator + 2 cylinder banks
 ▶ Tank with liquid gas + 2 cylinder banks
 ▶ Air compressor + 2 cylinder banks
 Class IIb medical device.

Switchover system for cylinder supply "PNEUMAT III"

PNEUMAT III as tank with liquid oxygen + 2 cylinder banks supply system



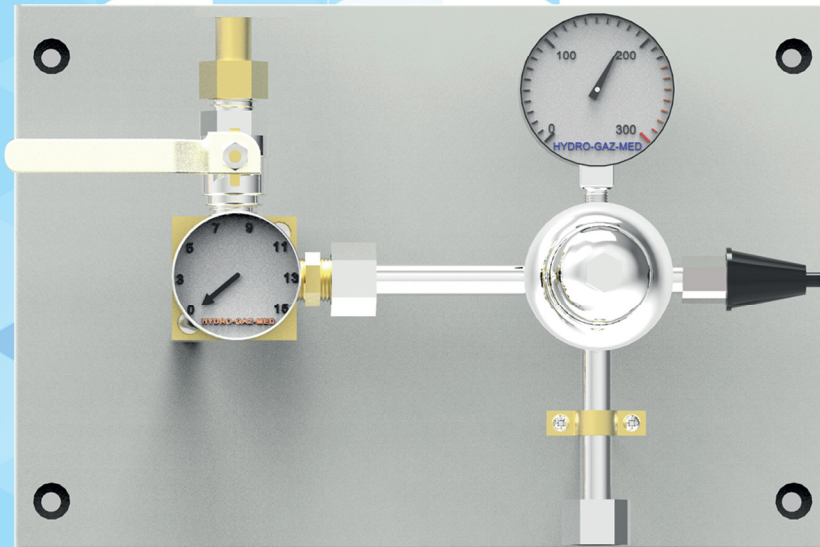
Remote alarm unit

Capacity: 200 m³/h
 Inlet pressure: 200 bar (2900 psi)
 Outlet pressure: 4-6 bar (58-87 psi)
 Automatic change-over (electronically)
 Connection to BMS and MODBUS RTU
 Working modes:
 ▶ 2 cylinder banks
 ▶ 2 cylinder banks + 1 reserve bank
 ▶ Concentrator + 2 cylinder banks
 ▶ Tank with liquid gas + 2 cylinder banks
 ▶ Air compressor + 2 cylinder banks
 Class IIb medical device.

Dimensions
 400x850x150
 (WxHxD)

1-stage reserve supply panel "PNEUMAT"

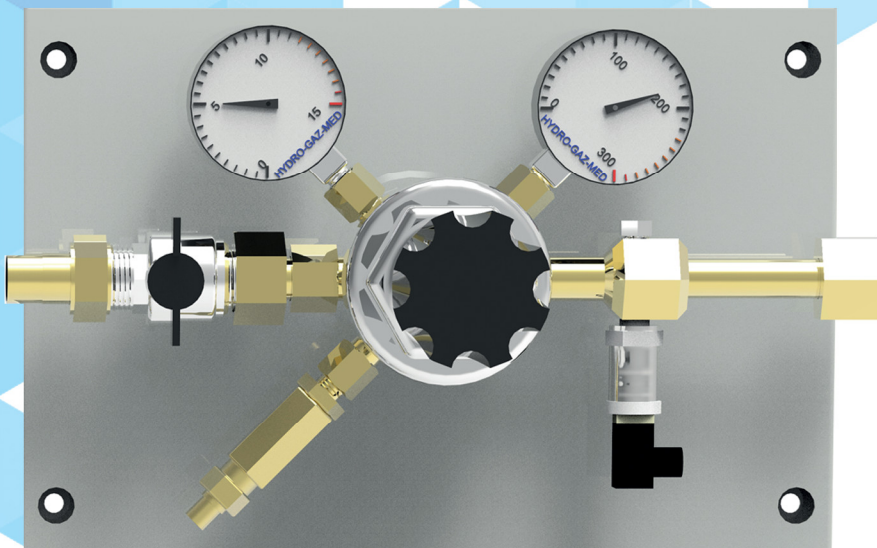
Reserve supply panel PNEUMAT 50



Reserve supply for switchover system
Capacity: 50 m³/h
Inlet pressure: 200 bar (2900 psi)
Outlet pressure: 7 bar (101 psi)

Dimmensions
350x280x150
(WxHxD)

Reserve supply panel PNEUMAT 200



Reserve supply for switchover system
Capacity: 200 m³/h
Inlet pressure: 200 bar (2900 psi)
Outlet pressure: 7 bar (101 psi)

Dimmensions
350x280x150
(WxHxD)

2-stage reducer panel for high pressure cylinder supply



Function

To reduce high pressure from cylinders to the level required by user in medical pipeline system. Main purpose is to work as a reserve source for medical gases.

Technical data:

2-stage pressure reduction, high pressure analog sensor or contact switch, shut-off valve, safety valve.

Efficiency:

Flow:	50 m ³ /h
Inlet pressure:	max. 200 bar (2900 psi)
Outlet pressure:	5 bar (72 psi)

Connections:

inlet:	G ½"
outlet:	copper pipe 15 mm

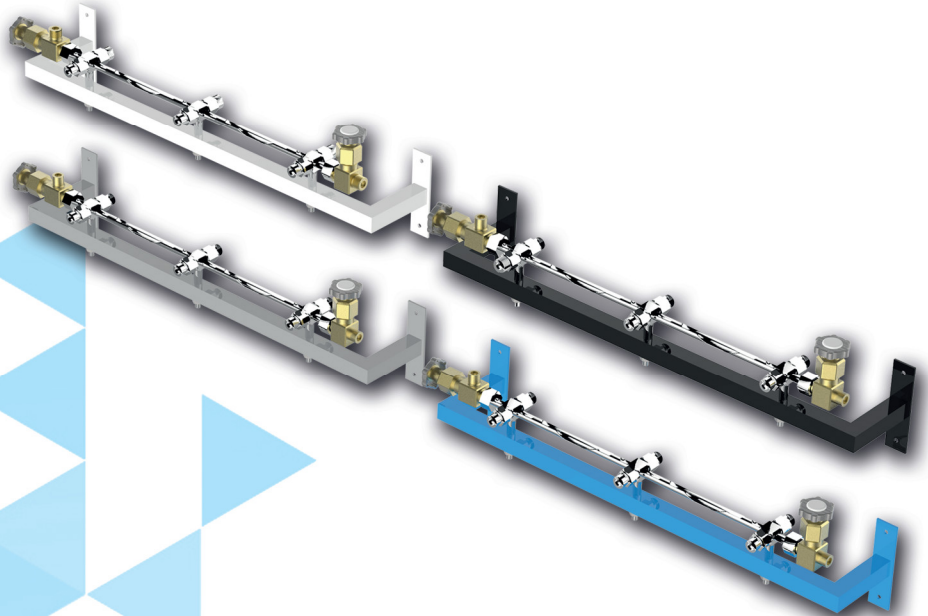
Medium:

oxygen, nitrous oxide, carbon dioxide, air, nitrogen, argon

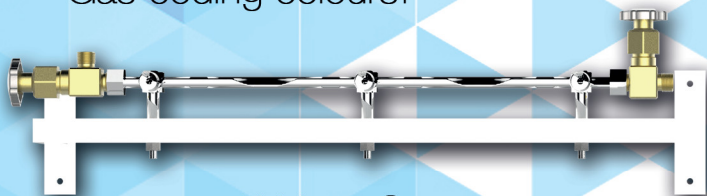
High pressure manifold system

Technical data:

- ▶ up to 10 cylinders in single manifold
- ▶ shut off valve
- ▶ exhaust valve
- ▶ non-return valves for each cylinder
- ▶ gas specific connections



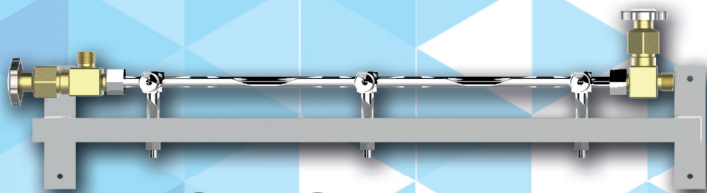
Gas coding colours:



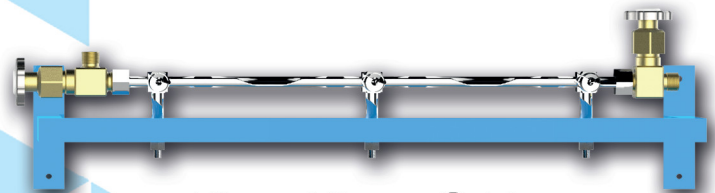
White - Oxygen



Black - Compressed air

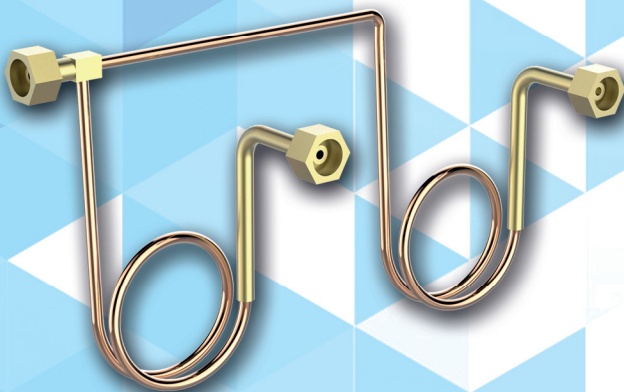


Grey - Carbon Dioxide



Blue - Nitrous Oxide

Manifolds delivered along with headers.



2 cylinder header



One cylinder header

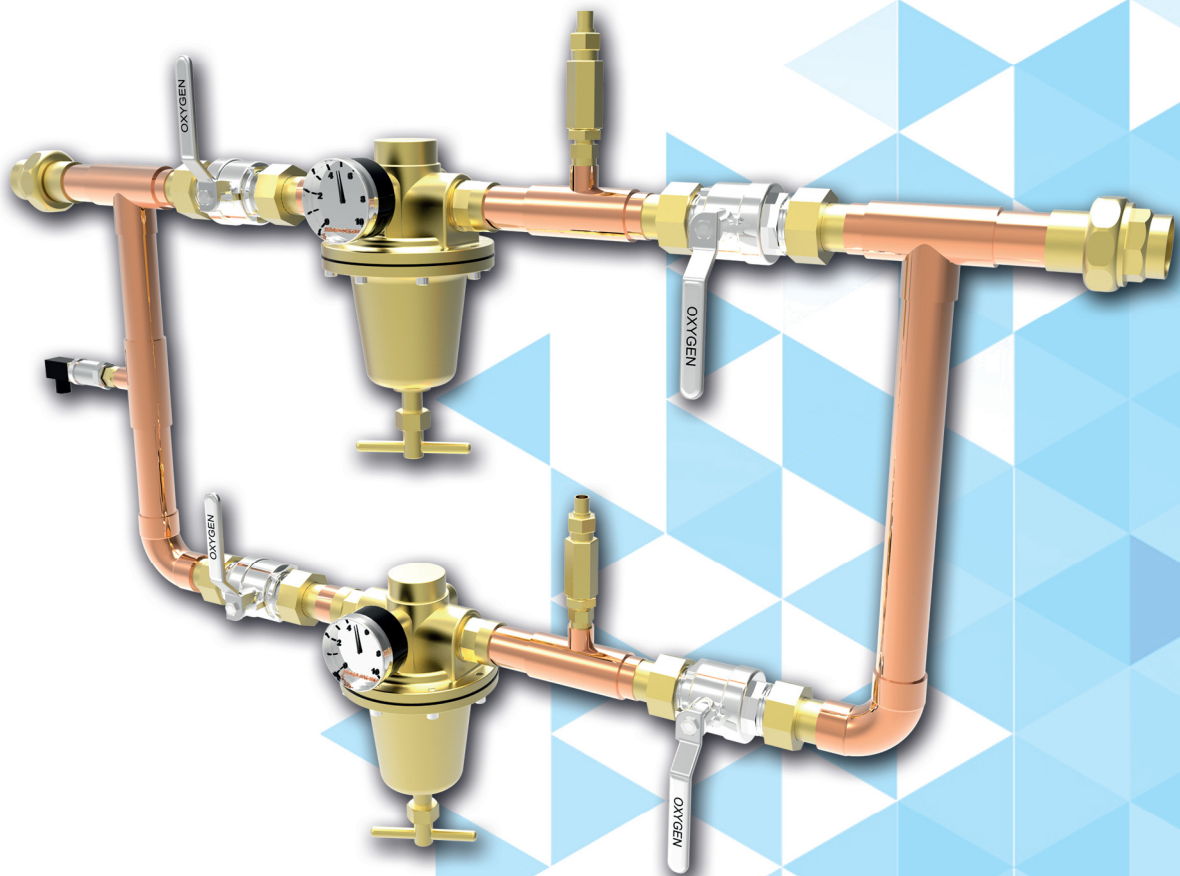
Technical data:

- ▶ maximum inlet pressure 200 bar (2900 psi)
- ▶ easily adjustable pigtail shape
- ▶ inlet/outlet connections according to gas coding standards

Technical data:

- ▶ maximum inlet pressure 200 bar (2900 psi)
- ▶ length ~80cm
- ▶ inlet/outlet connections according to gas coding standards

Reducing sets for liquid oxygen tank



Function

To reduce pressure of liquid oxygen from tank to a level required by user.

Technical data:

- ▶ 2 parallel pressure reducers;
- ▶ brass ball valves with chrome body and stainless steel ball;
- ▶ 2 safety valves;
- ▶ pressure analog sensor;

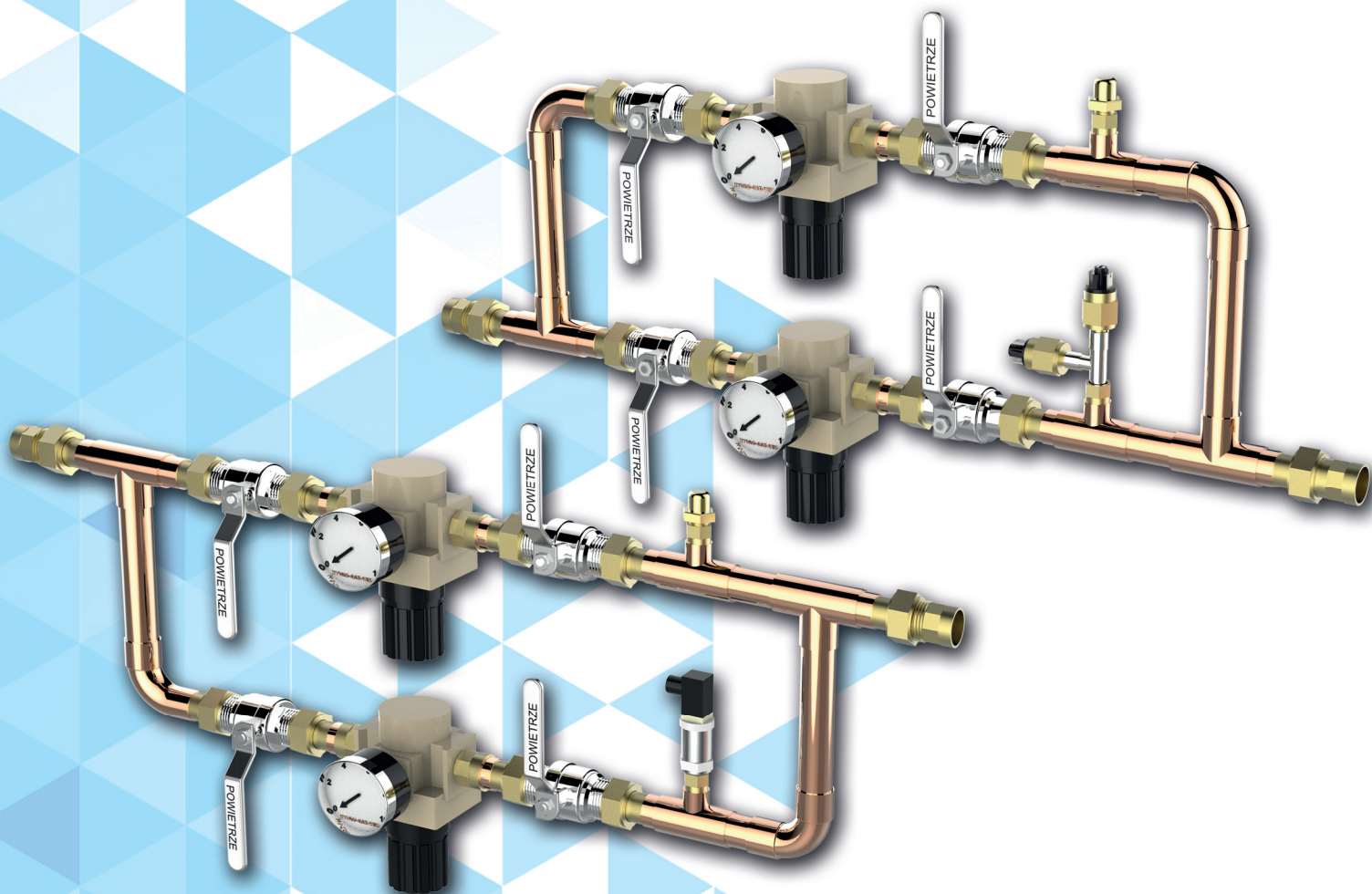
Capacity:

- ▶ max inlet pressure 25 bar (362 psi);
- ▶ outlet pressure 1-10 bar (14-140 psi);
- ▶ max flow (28mm pipe) 200m³;
- ▶ ambient temperature -20°C do +40°C;
- ▶ safety valve to 11 bar (154 psi).

Connections:

- ▶ copper pipe size 28 mm;

Reducing sets for compressed medical gases



Function

To reduce pressure of compressed medical gases to a level required by user.

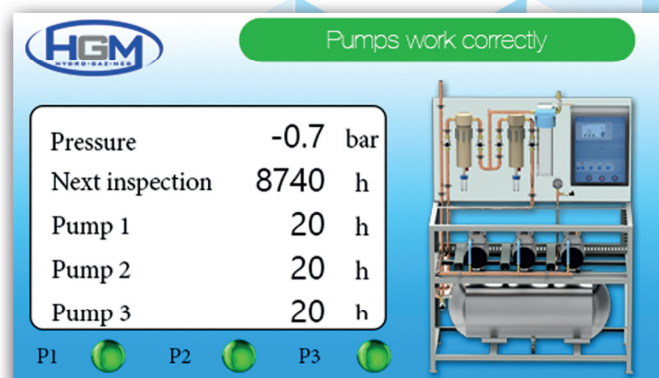
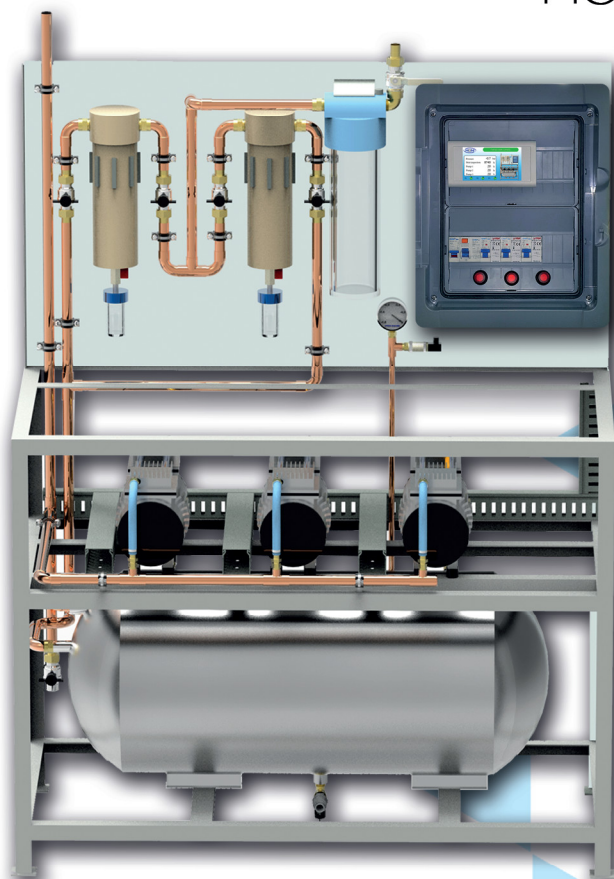
Technical data:

- ▶ 2 parallel pressure reducers;
- ▶ brass ball valves with chrome body and stainless steel ball;
- ▶ pressure sensor or 2 pressure switches;
- ▶ max inlet pressure 16 bar (232 psi);
- ▶ outlet pressure 1-10 bar (14-145 psi);
- ▶ max flow 50m³ or 200m³
- ▶ ambient temperature -20°C do +40°C;
- ▶ safety valve to 7 bar (101 psi) or 11 bar (159 psi);
- ▶ standard outlet pressure 5 (72 psi) and 8 bar (116 psi), others on demand.

Connections:

- ▶ copper pipe size 15 or 22 mm;

Compact vacuum plant "HGM VAC"



EQUIPMENT

- ▶ Vacuum pump 3 pcs
- ▶ Bacteria filter 2 pcs
- ▶ Secretion collecting unit 1 piece
- ▶ Electronic control 1 piece
- ▶ Vacuum tank 110 L
- ▶ Connection to BMS and MODBUS RTU

WORKING CONDITIONS

- ▶ ambient temperature: 5-35 °C
- ▶ atmospheric pressure : 900-1050 hPa
- ▶ relative humidity : 20-90 %

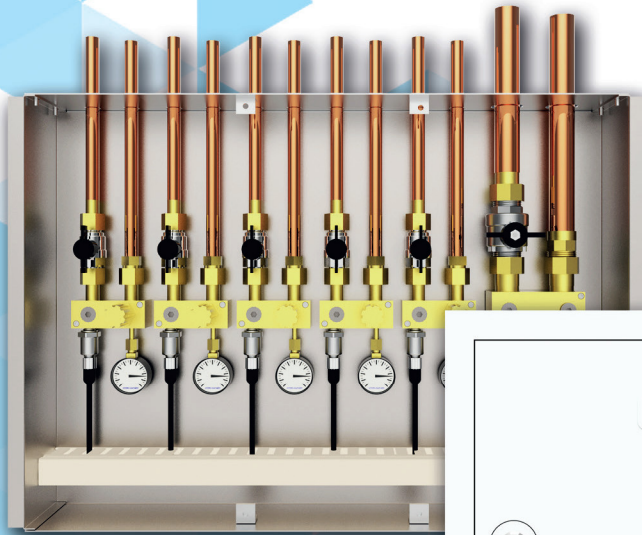
PURPOSE

- ▶ Supports up to 10 vacuum outlets
- ▶ Operating room
- ▶ Postoperative room
- ▶ 2 beds ICU

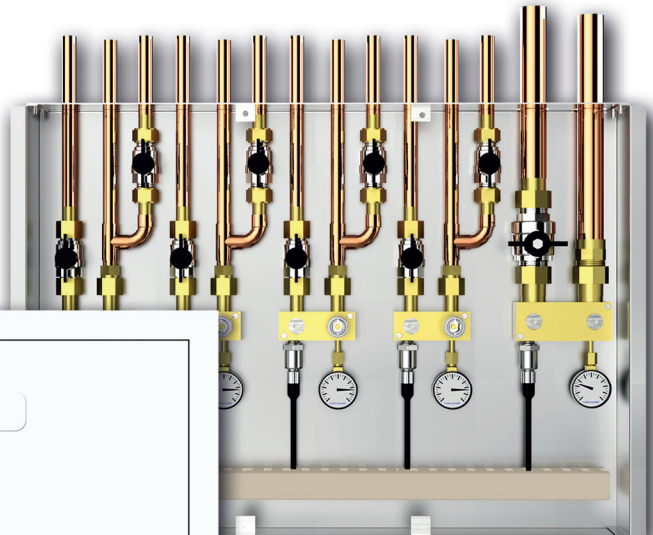
TECHNICAL DATA:

Parameter	Value
Capacity at atmospheric pressure 1024 hPa (m³/h)	18 m³/h
Capacity at -0,5 bar (m³/h)	6 m³/h
Tank volume (L)	110
Pump type	3x HMGV-1
Motor power (kW)	0,75
Noise level (dB)	62
Inlet port, copper pipe (mm)	22
Exhaust, copper pipe (mm)	22
Weight (kg)	~130
Max vacuum (relative pressure)	-0,7 bar (-10 psi)
Power supply	3x2,5 mm², 230V, 12A
Dimension (mm)	1500x1300x500

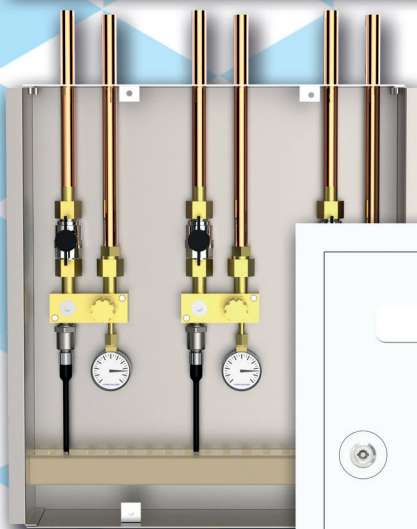
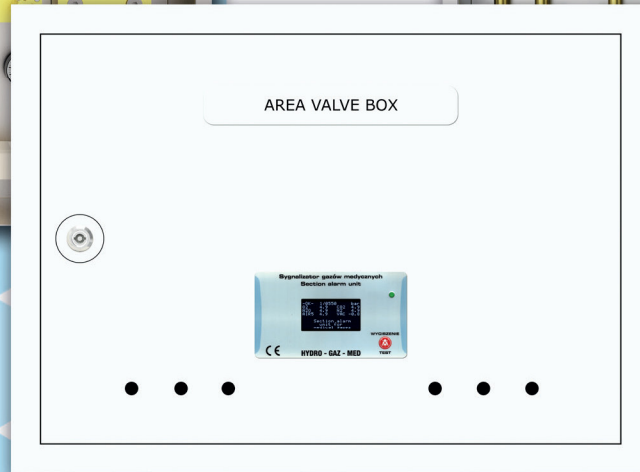
Area valve boxes "SZI"



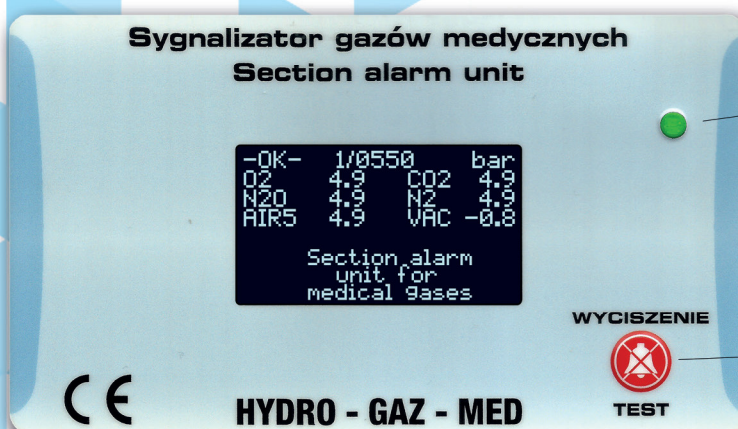
SZI-6



SZI-5-OP
for Operating theatres



SZI-3



Section alarm unit

LED indicator:
● OK state
● alarm

Test / mute button

Area valve boxes "SZI"

Main function of valve box is to shut-off and to monitor pressure of medical gases and vacuum in wards, operating theatres, intensive care units.

Basic parameters :

- ▶ from 1 up to 6 gases in one box
- ▶ shut-off valves for each gas and vacuum
- ▶ shut-off valves for ceiling pendants (SZI-OP version)
- ▶ pressure sensors for each medium
- ▶ gauge for each gas
- ▶ physical separation
- ▶ drainage
- ▶ emergency supply point type NIST/DIN/AGA
- ▶ alarm unit with LCD display
- ▶ max pipe diameter for vacuum is 28 mm
- ▶ connection to BMS and MODBUS RTU

Technical data:

Housing made from zinc plated steel, standard color for cover is RAL 9010, equipped in emergency opening, emergency supply point, sensors, ball valves, inlet / outlet from top, from 1 up to 6 gases in single housing.

Pressure:	compressed gases	0 - 10 bar (145 psi)
	vacuum	0 - -0,9 bar (-13 psi)
Alarms:	compressed gases 5 bar	▶ low pressure 4 bar (58 psi)
		▶ high pressure 6 bar (87 psi)
	compressed gases 8 bar	▶ low pressure 6,5 bar (94 psi)
		▶ high pressure 9,5 bar (137 psi)
	vacuum	▶ pressure -0,4 bar (-5.8 psi)

Class IIb medical device.

Available valve boxes:

TYPE	Weight	Dimensions (LxWxH)
SZI-1	5,5kg	350x90x460
SZI-2	6,1kg	350x90x460
SZI-3	7,3kg	350x90x460
SZI-4	10,5kg	350x90x460
SZI-5	14,2kg	560x90x480
SZI-6	15,4kg	560x90x480

Area valve service unit

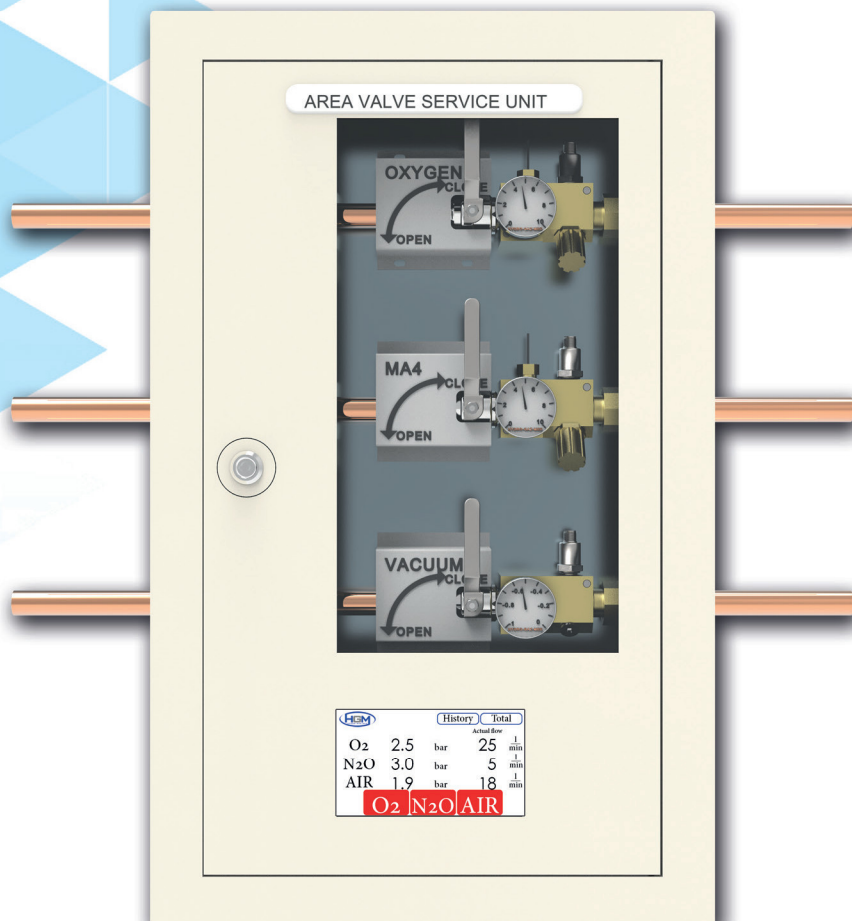


Technical data:

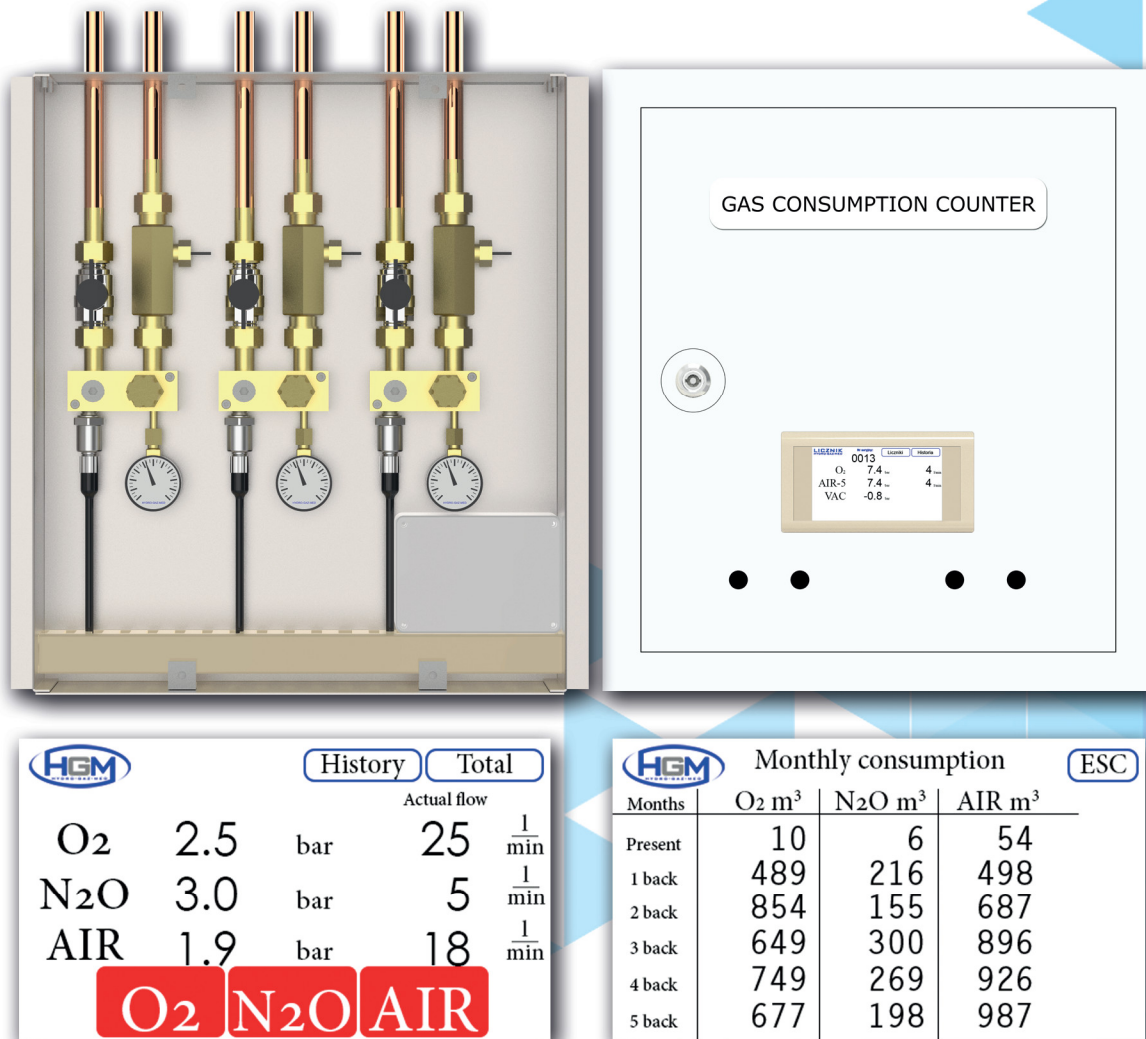
- ▶ HTM 02-01 compliant
- ▶ pressure sensors for each medium
- ▶ shut-off valve with lock for each medium
- ▶ emergency NIST connectors either side of the valve
- ▶ gauge for each medium
- ▶ physical separation
- ▶ front panel open/close detection
- ▶ alarm unit with 7" LCD touch screen
- ▶ connection to BMS and MODBUS RTU

Working pressure:

- ▶ medical gases: 0-10 bar (0-145 psi)
- ▶ vacuum: 0- -0.9 bar (0- -13 psi)



Area valve box with flow meter "SZI-P"



History					Total
Actual flow					
O ₂	2.5	bar	25	$\frac{1}{\text{min}}$	
N ₂ O	3.0	bar	5	$\frac{1}{\text{min}}$	
AIR	1.9	bar	18	$\frac{1}{\text{min}}$	

O₂ N₂O AIR

Monthly consumption				ESC
Months	O ₂ m ³	N ₂ O m ³	AIR m ³	
Present	10	6	54	
1 back	489	216	498	
2 back	854	155	687	
3 back	649	300	896	
4 back	749	269	926	
5 back	677	198	987	

Function

Designed to monitor pressure and flow rate of medical gases. It can sum total usage of gas from the first start up, also has history for last 6 months and every month is displayed separately.

Technical data:

Type:	SZI-P
Working pressure:	compressed gases 0 - 8 bar (0-116 psi)
Dimensions:	350x460x90 (WxHxD)
Power supply:	12V DC, 0.5A
Connection to BMS and MODBUS RTU	

Standard measuring ranges:

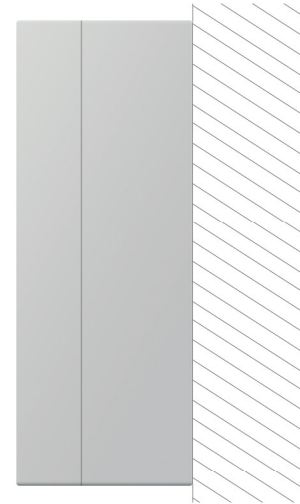
1. 0-100 l/min
2. 0-200 l/min
3. 0-500 l/min
4. Other upon request

Class IIb medical device.

Remote alarm units for medical gases compatible with HGM devices



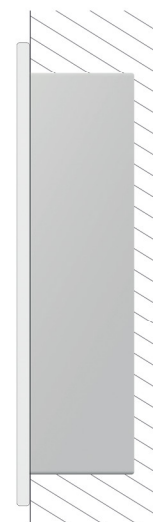
On-plaster alarm unit



Dimensions (WxHxD)
171x121x55 (mm)



Under-plaster alarm unit



Dimensions (WxHxD)
171x121x45 (mm)

Function:

Reads from the master alarm unit all shared informations about medical gases. It shows exact copy of screen of master unit which is connected to. It has visual and audio alarm as same as alarm unit mounted in valve box. ALL devices are connected with use of FTP cables and RJ-45 plugs.

SYSTEM ADVANTAGES:

- limitless possibilities of expansion
- safe electrical supply - 12V DC
- power supply can be delivered to only one device and the whole network will be supplied
- one commonly available plug system RJ-45
- means to connect whole monitoring system to multiple central alarm units and/or PC and/or laptop
- compatible with 3rd party valve boxes with pressure switches or pressure sensors

Central alarm unit "S9"



Central alarm unit allows to remote monitoring multiple devices at the same time. It shows conditions, alarm states from every device within the "HGM network" connected via BMS, via MODBUS RTU or via LAN/WIFI module. Records gas consumption or pressure values as graph.

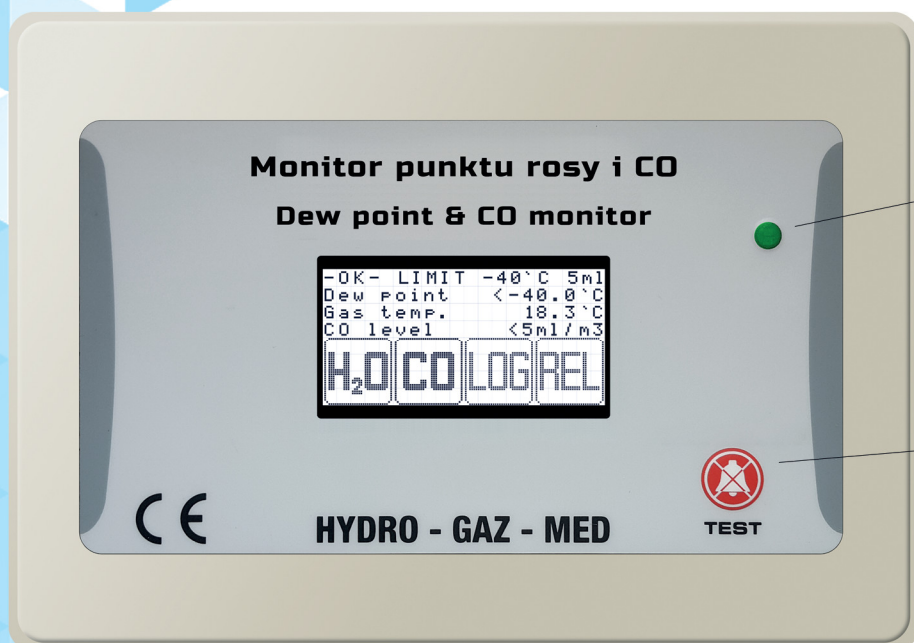
Each central alarm unit is programmed individually for our clients, depending on their needs and the network configuration.

UI is very user-friendly and intuitive to use on 7" LCD HQ touch display.

ALL devices are connected with use of FTP cables and RJ-45 plugs.

Each alarm system can be equipped with SMS module, which allows to receive text message with alerts directly on mobile phone right after alarm appears. Our SMS module can send messages up to 3 different numbers at the same time.

Dew point and carbon monoxide monitor for compressed air systems



LED indicator

● OK state

● alarm

Mute / test button

Function

To continuously monitor dew point, temperature and carbon monoxide level in compressed air. Built-in potential free relay and LOG module, that records events up to 10 days back.

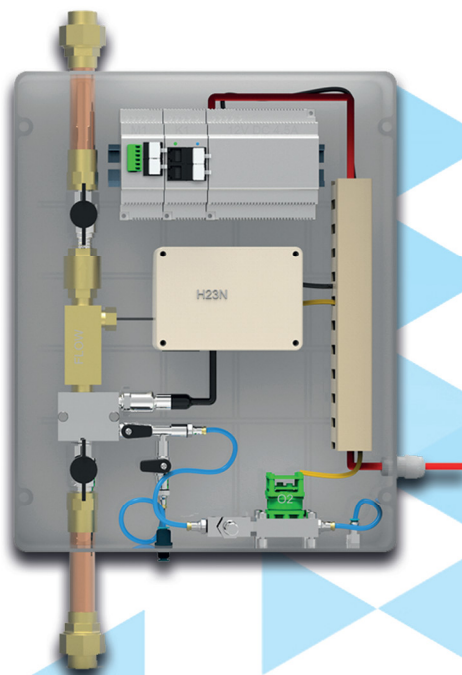
Connection to BMS and MODBUS RTU.

TECHNICAL DATA:

Standard		HGM	
Input		Measurement of dew point temperature in compressed air and content of CO	SHT75, IT8, IQ5
Output		Digital	Relay(HF49F) max 30V 3A DC / 48V 3A AC
		MODBUS (optional)	9600 BAUD, 8 bits, 2 stop bits without parity control
		LOG module (optional)	Last 250 entries, recording every 1 hour all alarms and confirmations
Measuring range		Ambient temperature	5°C - 50°C
		Dew point temperature	<-40°C - info. OK
		Content of CO	< 5 ml/m³ - info. OK
AIR inlet pressure		Max 16 bar	
AIR inlet		6 mm (selflocking)	
Connections		Transmission	RJ-45 or STL-1550/4-3.5
		I/O	STI -1550/4-3.5 / MC-1.5/2-5.08
Power supply		230V AC	
Current		~25 mA	max 200mA
Housing		PET	
Working temperature		5-50°C	
Storing temperature		-20-60°C	
Dimensions		Width	200 mm
		Height	150 mm
Weight		Depth	80 mm
		~1.2 kg	

Gas monitoring

Oxygen monitor



Features:

- ▶ flow rate: 0-300 l/min
- ▶ accuracy: +/- 5%
- ▶ pressure: 0-10 bar
- ▶ oxygen content: 0-100% with means of paramagnetic oxygen sensor accuracy 0.1%
- ▶ 2 potential free contacts (NO/NC to be set)
- ▶ MODBUS RTU
- ▶ SMS notification system
- ▶ power supply: 230V, 50Hz

Purpose of this device is to continuously monitor parameters of medical oxygen according to EN ISO 7396-1:2016, European Pharmacopeia and HTM 02-01. This device helps to control the quality of oxygen delivered to patients.

Gas analyzer



Features:

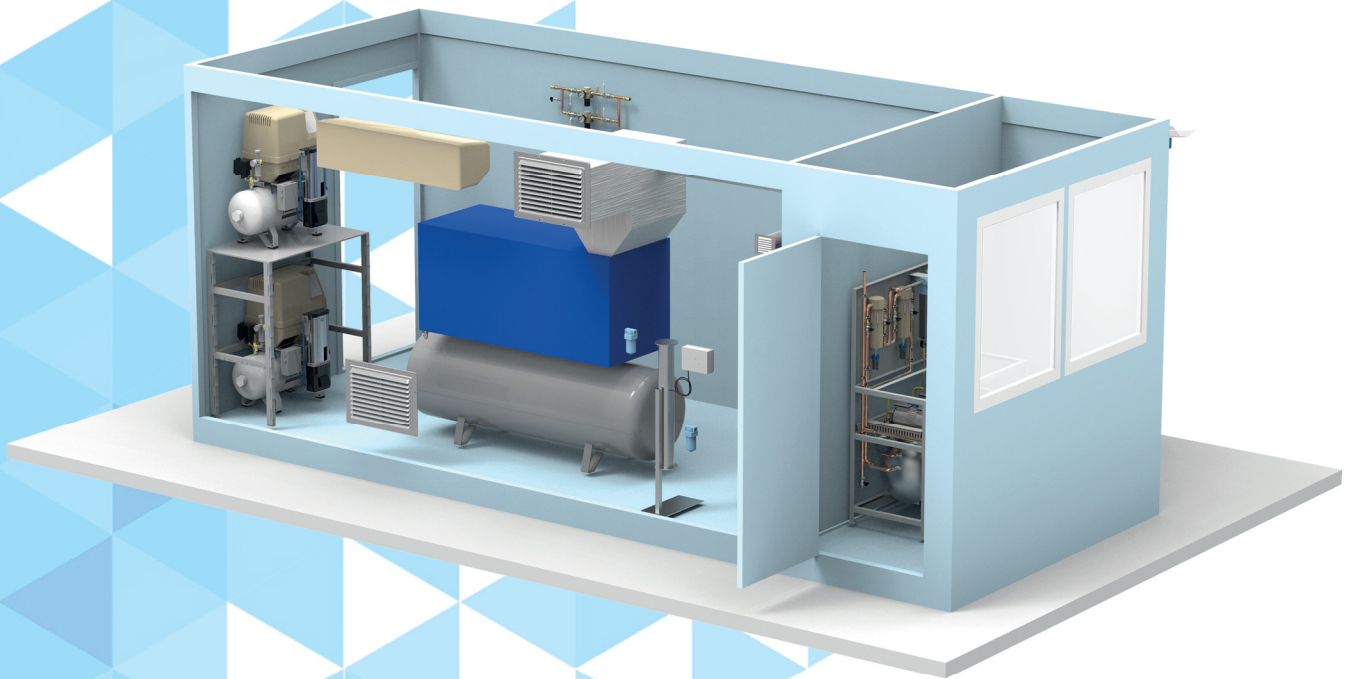
- ▶ required gas flow 10 lpm
- ▶ MODBUS RTU
- ▶ paramagnetic oxygen sensor,
- ▶ Infrared CO₂ sensor,
- ▶ Dew point sensor
- ▶ SO₂, NO_x, CO sensor
- ▶ MODBUS RTU module for BMS
- ▶ medium: medical oxygen and medical compressed air
- ▶ power supply: 230V, 50Hz

Purpose of this device is to continuously monitor parameters of medical compressed air and medical oxygen according to EN ISO 7396-1:2016, European Pharmacopeia, US Pharmacopeia and HTM 02-01.

Medical containers

In our rich offer, we have also turnkey solutions for stationary and mobile medical containers. We provide comprehensive services in the field of medical gas supply equipment for containers.

Every container is made to individual order and meets requirements of ISO 13485 and HTM 02 01.



Medical gas outlet



System
AGA
SS 875 24 30



System
DIN 13260-2



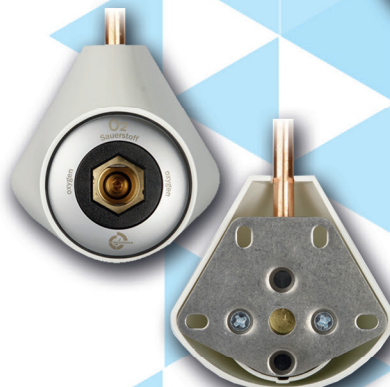
System
NF S 90-116



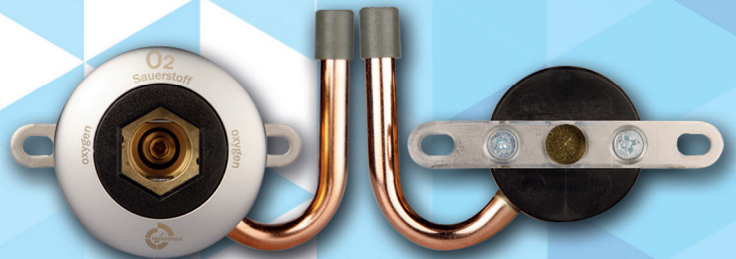
System
BS 5682



Under-plaster



On-plaster



Gas outlet for bed-head units



For ceiling pendants
with hose connection



For compressed air driven surgical tools
AIRMOTOR



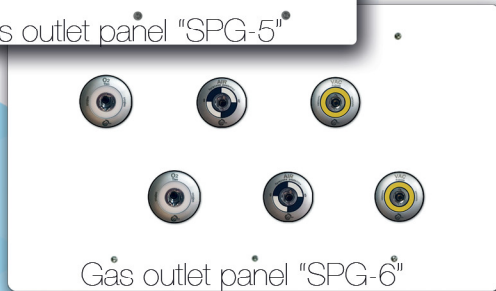
For AGSS, Venturi type



Gas outlet panel "SPG"



Gas outlet panel "SPG-5"



Gas outlet panel "SPG-6"



Gas outlet panel "SPG-7"



Gas outlet panel "SPG-9"

Gas outlet panels
(under plaster version)



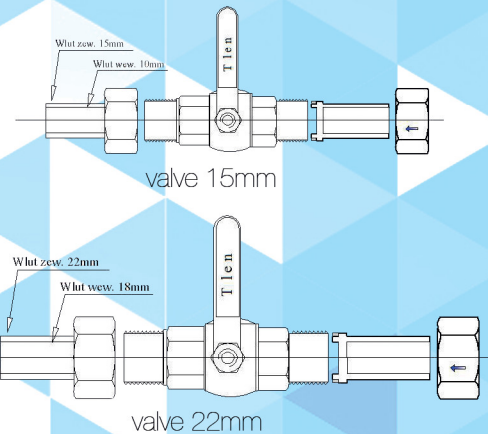
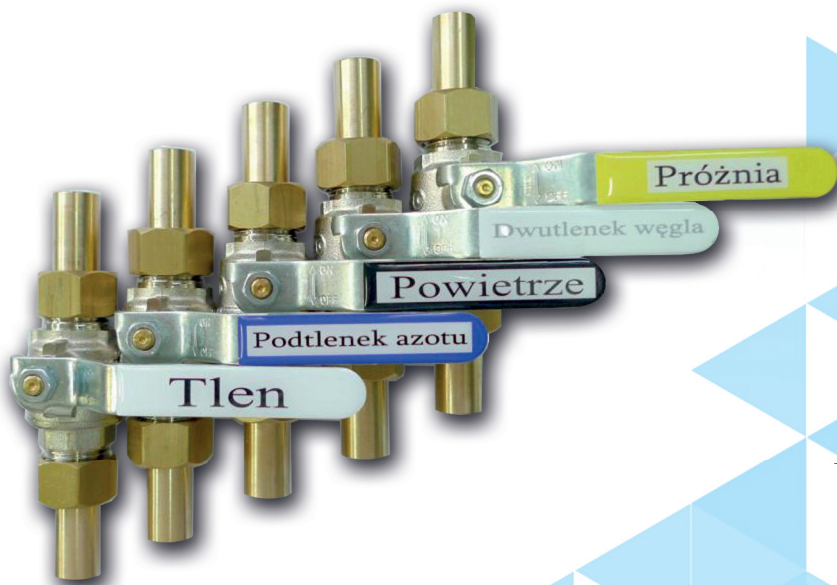
Gas outlet panel (on-plaster version)

Medical gas outlets mounted in panel for under plaster installation are used to acquire medical gases and vacuum. Panel can be equipped with any number of gas outlets either with or without anesthetic gas scavenging system or ARMOTOR.

Gas outlets can be in AGA SS 875 24 30, DIN 13260-2, NF S 90-116 and BS 5682 connection standard.

In our products we use gas outlets produced by renowned company GREGGERSEN GASETECHNIK.

Ball valves for medical compressed gases



Function

Ball valves are used to shut-off parts of medical pipeline gas system. They allow to divide it to smaller parts, which simplifies, e.g.: maintenance works, repairs, extensions and periodic tests.

Ball valves types:

- ▶ Source shut-off valve;
- ▶ Raiser valve;
- ▶ Section shut-off valve;
- ▶ Maintenance valve;
- ▶ Service valve;
- ▶ Drainage valve.

Construction

Valve is made of brass housing, inside is a stainless steel ball which opens and closes by rotating the valve handle by 90-degrees. Valves have 2 external threads, equipped in soldering union connection with teflon seals.

Ball valves are **maintenance free**.

Each valve is labeled with gas name.

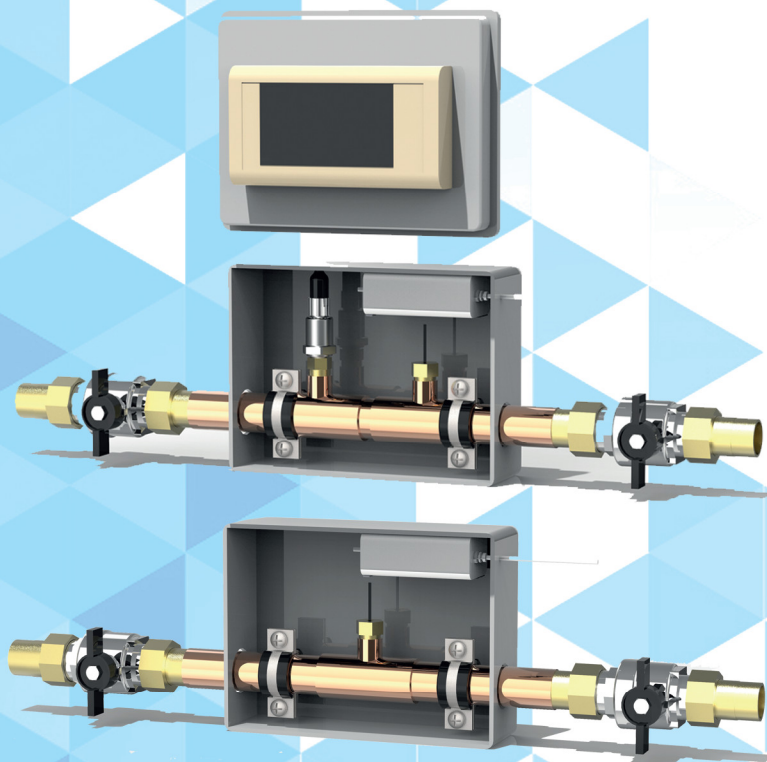
Max working pressure is 20 bar.

Available sizes for pipes:

15 mm, 18 mm, 22 mm, 28 mm, 35 mm, 42 mm, 54 mm.

Miscellaneous

Flow and pressure monitor



Features:

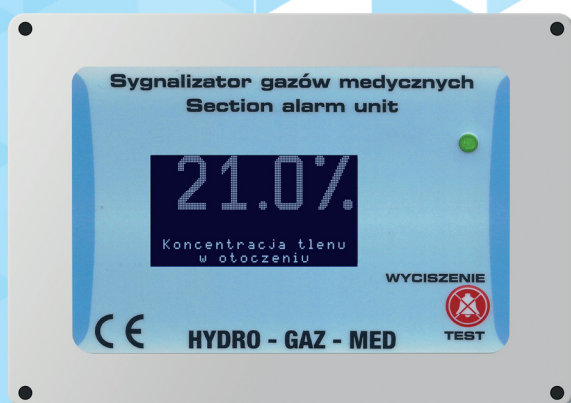
- ▶ measuring range 0-300 l/min
accuracy: +/- 5%
- ▶ pressure: 0-10 bar
- ▶ MODBUS RTU
- ▶ power supply: 230V, 50Hz
- ▶ medium: compressed medical gases

Device that measures pressure in MGPS and/or consumption of gas in hospital, certain section, ward or room.

Can be installed at any place within medical gas pipeline system.

It has a history of total consumption and last 6 months.

Oxygen content in the environment



Features:

- ▶ oxygen content measuring
electrochemical oxygen sensor
measuring range: <18% - >23%
MODBUS RTU
power supply: 230V, 50Hz

Electrochemical oxygen sensor is installed in cylinder supply room in order to detect oxygen leak. Alarm unit can be installed at any place within 150m. Also it is possible to connect more alarm units in different places to one sensor.

Sample projects



Maintenance and emergency node



Oxygen concentrator system in container



Compressed air treatment



Oxygen concentrator system



Medical air plant

Sample projects



Container with self-lifting system



Oxygen concentrator and cylinder filling system in container



Oxygen concentrator system



Medical air system in container



Oxygen modular concentrators system



Quality Management System EN ISO 13485

All our products comply with EN-ISO 7396-1

HTM 02 01

CE
2274



Third edition



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