

CLEAN ENERGY



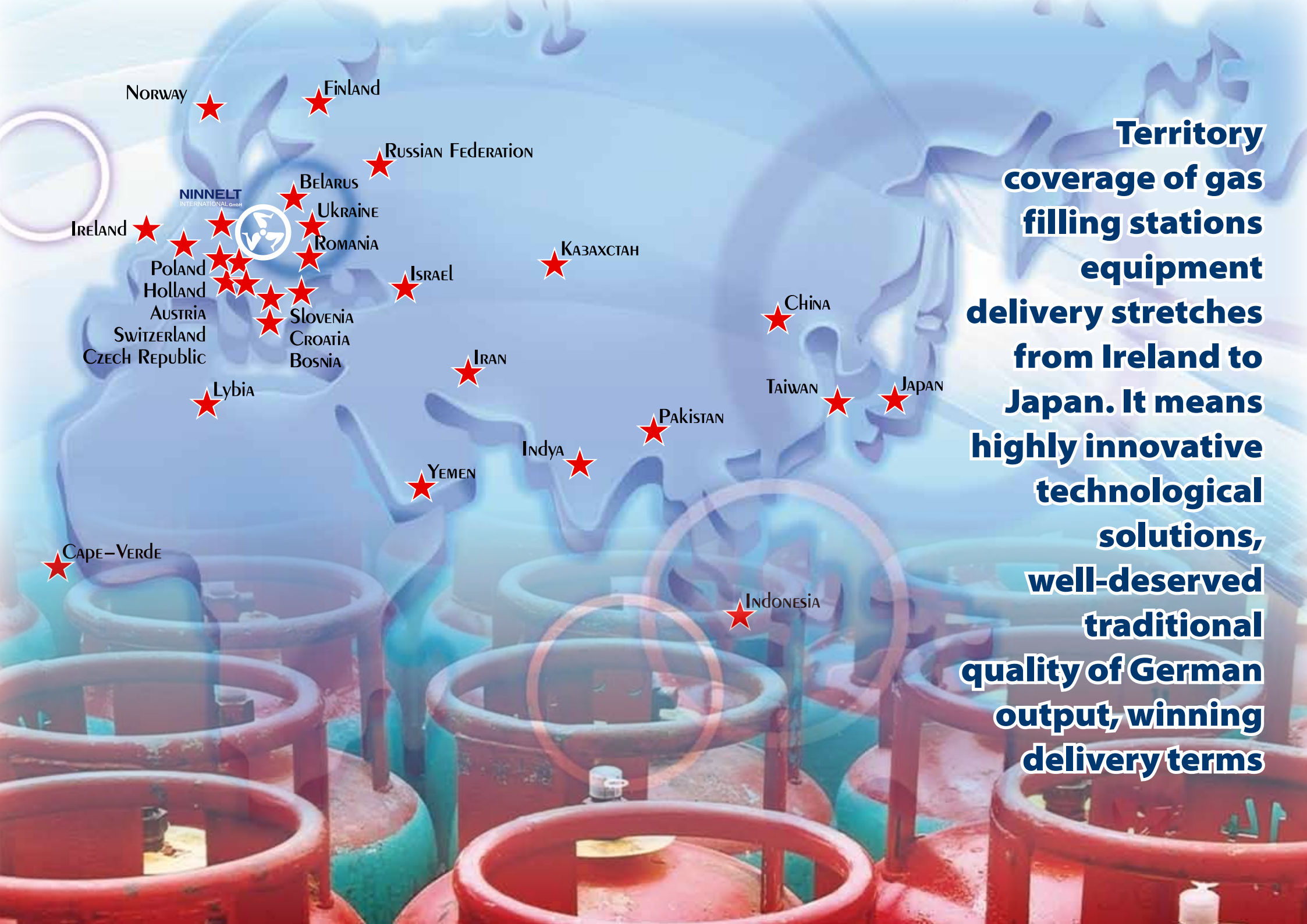
NINNELT
INTERNATIONAL GmbH



Since about forty years Flussiggas Anlagen GmbH (Salzgitter) is an established manufacturer and supplier of complete filling stations for liquefied gases, such as propane/butane, ammonia, carbon dioxide, chlorine, refrigerating agents and others

FAS filling stations are manufactured since several decades and are in constant use. Our activity area amounts from Scandinavia to the Pacific Ocean. We have learned your needs and work hard to develop the latest technical solutions for you. Especially in the last 5 years we have presented with a very effective, newly formed team a number of technical innovations on the LPG market.

To the new novelties belong FAS filling equipment with electronic wireless data transmission, re-designed conveyor systems, safety equipment. We design and build facilities that will meet all customer requirements. You can be sure that everything what is necessary for you to be successful in your business, can be realized by us. Also, the filling stations abroad are made in consideration of the relevant legislation. We want to emphasize that the development and production take place exclusively in Germany.



Territory coverage of gas filling stations equipment delivery stretches from Ireland to Japan. It means highly innovative technological solutions, well-deserved traditional quality of German output, winning delivery terms

- NORWAY
- FINLAND
- RUSSIAN FEDERATION
- BELARUS
- UKRAINE
- ROMANIA
- KAZAKHSTAN
- CHINA
- JAPAN
- TAIWAN
- INDONESIA
- INDIA
- PAKISTAN
- YEMEN
- IRAN
- ISRAEL
- IRELAND
- POLAND
- HOLLAND
- AUSTRIA
- SWITZERLAND
- CZECH REPUBLIC
- SLOVENIA
- CROATIA
- BOSNIA
- LYBIA
- CAPE-VERDE

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COMPACT UNIT

Compact Units are designated as FAS products which fulfill several tasks and mounted on one frame. It works as one unit with different tasks. In a compact filling station as a protective cabinet are inserted a filling device and a evacuation rack with a hand pump in a closed cabinet.

Overfilled or leaky gas cylinders can be emptied into another cylinder, or gas tank. Here are the different combinations of filling equipment, filling connections and evacuation units available, depending on customer requirements. This structure can also be extended still, e. g. with a pump, tanks, decanting equipment.



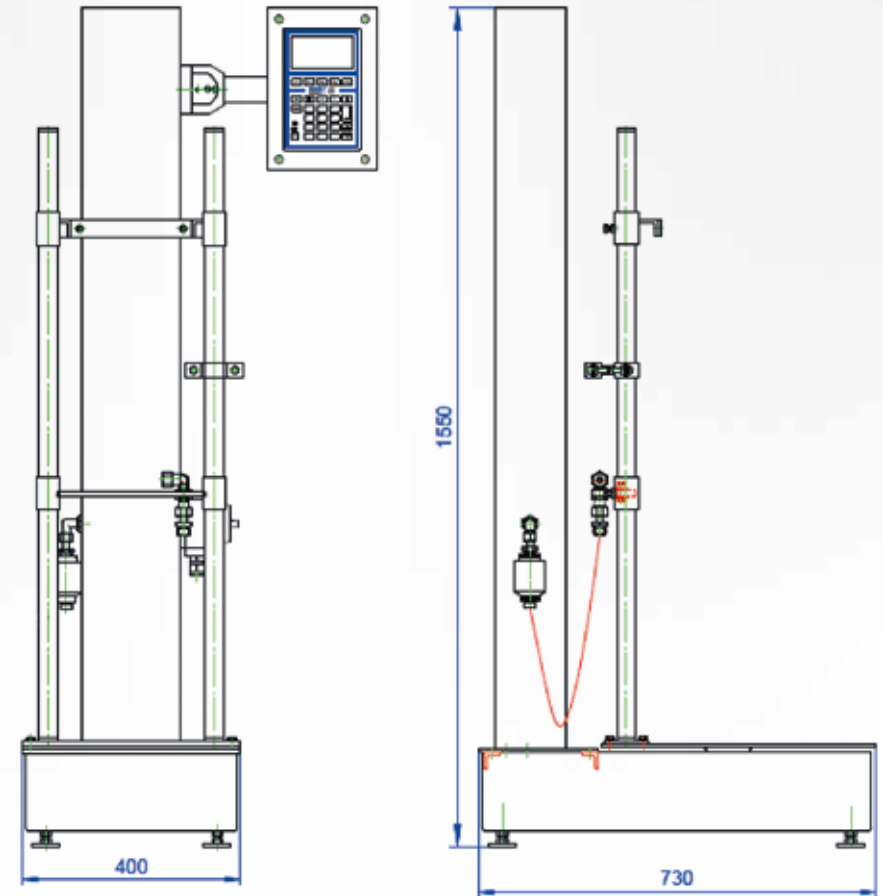
WAER 100 EX/E

MODERN ELECTRONIC FILLING DEVICE

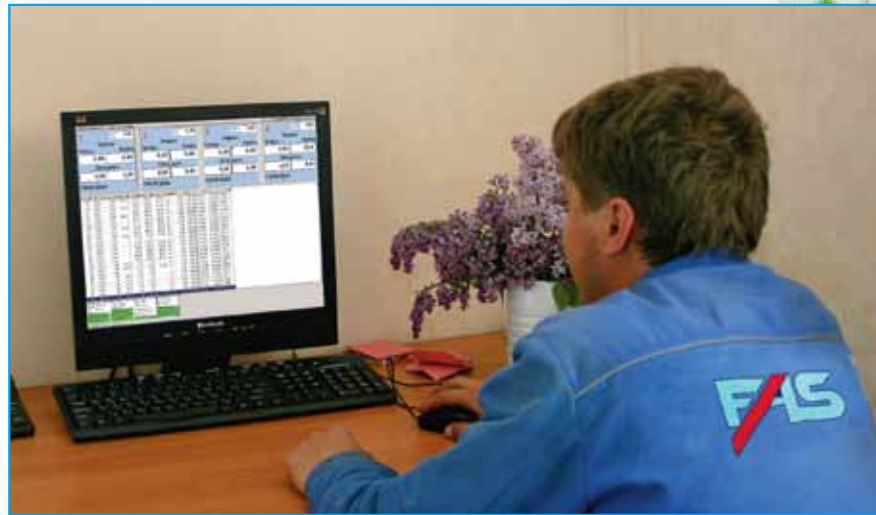
With our filling equipment all types of gas cylinders can be filled. For the different cylinder valves, a number of filling connections are available. We differ in filling devices the mechanical and the electronic type series.

The shutdown of liquid gas supply reaching of the adjusted weight can be done by electronic filling equipment type WAER 100 ex/e in two ways. By the mechanical filling heads no additional power source is needed. The filling device is ready for use immediately after installation and connecting the liquid gas pipeline. In type WAER with pneumatic filling heads an additional compressed air supply is necessary.

Calibratable electronic filling devices are operated over a digital indicator. This indicator is a proprietary development of Ninnelt/FAS and is equipped with a module for wireless data transmission. Our check scales are equipped with this digital indicator too. The filling devices are equipped with an extensive range of accessories to the respective requirements.



SOFTWARE FOR THE DATA EVALUATION OF THE FILLING PROCESS



This software is designed for the following issues:

- *management of cylinder filling process*
- *documentation of the filling process*
- *event-list maintenance*
- *reports generation*

Structure and appointment of components

The software consists of the following elements:

- *Technological software installed and operating on the terminal. It is intended for automatic and safe refilling process of household cylinders.*
- *The software for reports generation is installed in an operator's room and being operated on a computer running under OS Windows®.*
- *It is intended to generate reports on the results of the staff work at filling of industrial and household cylinders.*

Итоги за предыдущие смены

Смена №	Смена отбита	Смена принята	Итого за смену, кг
240	23.03.2012 08:00:00	23.03.2012 20:00:00	128.70
240	23.03.2012 20:00:00	24.03.2012 07:55:40	157.30
240	24.03.2012 07:55:40	24.03.2012 19:30:00	268.30
240	24.03.2012 19:30:00	25.03.2012 07:30:00	144.70
240	25.03.2012 07:30:00	25.03.2012 20:00:00	151.40
250	25.03.2012 20:00:00	26.03.2012 07:30:00	146.80

Итоги по август

Участ №	Количество, шт	Среднее, кг	Итого, кг
1	3	5.05	15.15
2	3	2.00	6.00
3	5	1.50	7.50
4	4	1.20	4.80

Выбор периода времени

С: 23 марта 2012 г. 00:00 до: 26 марта 2012 г. 00:00

Среднечасовой отчет

Протокол операций

№	Дата операции	Время, мин	Смена	Назначение, кг	Действ. кг	Среднее, кг	Назначение, кг	Действ. кг	Назначение, кг	Действ. кг	Среднее, кг	Среднечасовой отчет
1	200	28.03.2012 11:15:20	3	Наливка	2.00	4.00	0.00	2.00	2.00	0.00	00:00:38	
	201	28.03.2012 11:18:36	3	Наливка	5.00	5.00	0.00	5.00	5.00	0.00	00:01:03	
	202	28.03.2012 11:18:45	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:02:08	
	203	28.03.2012 11:19:23	4	Взвешивание	21.20	22.00	0.00	21.20	21.20	0.00	00:00:28	ИТ Петров
	204	28.03.2012 11:32:04	4	Взвешивание	21.20	22.00	1.00	20.20	21.20	0.00	00:00:28	ИТ Петров
	205	28.03.2012 11:43:20	3	Наливка	5.00	5.00	0.50	4.50	5.00	0.00	00:02:12	
	206	28.03.2012 11:45:23	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:01:01	
	207	28.03.2012 11:52:08	3	Взвешивание	21.20	22.00	1.00	19.20	21.20	0.00	00:00:42	ООО Уралгаз
	208	28.03.2012 11:53:39	3	Наливка	2.00	4.00	0.00	2.00	2.00	0.00	00:00:33	
	209	28.03.2012 12:00:03	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:00:17	
	210	28.03.2012 12:00:42	3	Наливка	5.00	5.00	0.75	4.25	5.00	0.00	00:00:58	

Количество баллонов: 19 Итого за смену: 10,85 кг Итого по августу: 22,73 кг Итого в день по: 23,46 кг

Выбор периода времени

С: 23 марта 2012 г. 00:00 до: 26 марта 2012 г. 00:00

Среднечасовой отчет

Протокол операций

№	Дата операции	Время, мин	Смена	Назначение, кг	Действ. кг	Среднее, кг	Назначение, кг	Действ. кг	Назначение, кг	Действ. кг	Среднее, кг	Среднечасовой отчет
1	200	28.03.2012 11:15:20	3	Наливка	2.00	4.00	0.00	2.00	2.00	0.00	00:00:38	
2	201	28.03.2012 11:18:36	3	Наливка	5.00	5.00	0.00	5.00	5.00	0.00	00:01:03	
3	202	28.03.2012 11:18:45	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:02:08	
4	203	28.03.2012 11:19:23	4	Взвешивание	21.20	22.00	0.00	21.20	21.20	0.00	00:00:28	ИТ Петров
5	204	28.03.2012 11:32:04	4	Взвешивание	21.20	22.00	1.00	20.20	21.20	0.00	00:00:28	ИТ Петров
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7	206	28.03.2012 11:45:23	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:01:01	
8	207	28.03.2012 11:52:08	3	Взвешивание	21.20	22.00	1.00	19.20	21.20	0.00	00:00:42	ООО Уралгаз
9	208	28.03.2012 11:53:39	3	Наливка	2.00	4.00	0.00	2.00	2.00	0.00	00:00:33	
10	209	28.03.2012 12:00:03	3	Наливка	11.40	14.00	0.00	11.40	11.40	0.00	00:00:17	
11	210	28.03.2012 12:00:42	3	Наливка	5.00	5.00	0.75	4.25	5.00	0.00	00:00:58	

Итого за смену: 10,85 кг Итого по августу: 22,73 кг

INLINE FILLING STATIONS

Universal filling stations with/without driven chain conveyors are designed for an average filling performance. Depending on the size of the bottles are mounted up to 2-6 filling scales in a row. Such stations are designed so that the filling equipment can be operated by only one person.

Bottles conveyance to the filling device and further transport to the test and control units is automatic.

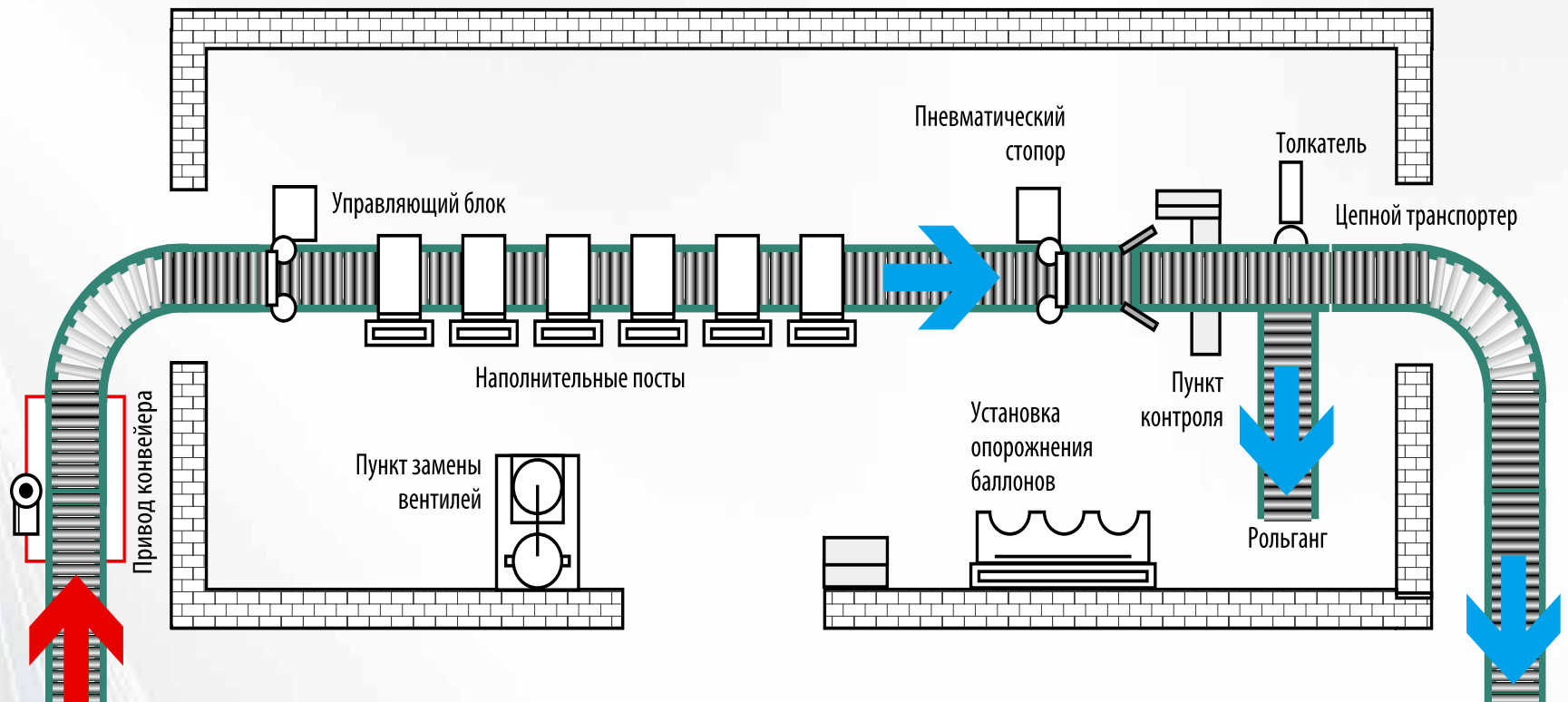
The chain conveyor rails, drive and turn-over stations are sunk in the ground for the filling of big bottles. For small bottles the stations are installed on the ground and the chain conveyor rails are suspended.

The complete filling and test sequence is optimized by means of a pneumatically controlled equipment. The installation of all filling devices listed in our program is available in an inline filling station with an additional mounting of a lift bridge.



INLINE FILLING STATIONS

Performance
up to 250 bottles/hour



CAROUSEL FILLING STATIONS

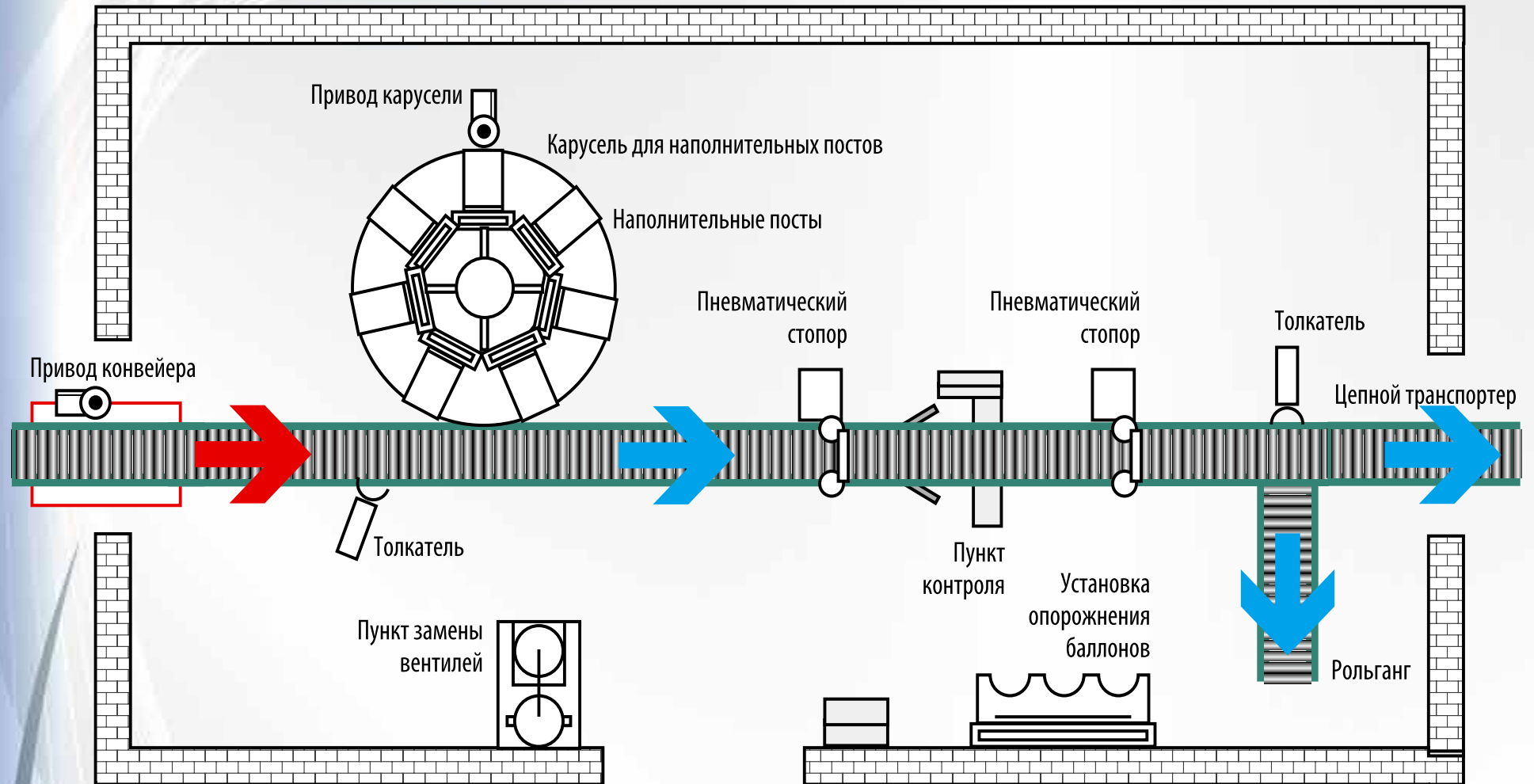
**Performance
up to 1800 bottles/hour**



- Closed-circuit platform allows installation up to 36 electronic filling scales
- Automatic bottle transport system through chain conveyor with individual setting of the filling process
- Performance up to 1800 bottles/hour
- Continuously variable adjustment of the rotational speed allows adaptation to the bottle size to be filled
- Maximum filling capacity at minimum personnel requirement
- Automatic introduction and ejection of the bottles
- Optional integration of check weighing leak testing machine, washing machine, shrink machine and other components directly into the chain conveyor
- The size of the carousel filling station is dependent on the required filling performance per hour
- Average filling capacity for a bottle — 1 kg in 4 seconds



MODERN SOLUTIONS FOR AUTOMATIC FILLING OF LIQUEFIED GASES



ACCESSORIES



LEAK TESTING UNITS

The Leak Testing Unit checks the tightness of the cylinder valve after filling. A visual water check of the total cylinder through an immersion bath is also possible.

The tightness of the cylinder valve can be examined visually or electronically. During visual inspection a Plexiglas bell is placed over the cylinder valve. With opening of the valve, water flows into the bell. If bubbles are formed the leaky cylinder valve must be replaced. Through raising the checking bell the water flows off over the cylinder. By the manual electronic check the testing bell is placed manually over the cylinder valve.

The air in the testing bell after the actuation of a key is extracted and the gas concentration in the air flow is detected by a gas sensor. If the gas concentration is too high you will see a visual signal.

With an automatic electronic leak testing there is no personnel required. The gas cylinders to be tested — suitable for different bottle heights — are transported by the chain conveyor to the device. Here the cylinder is centered and the testing bell moves automatically onto the cylinder valve, the gas measurement is initiated.

Leaky bottles are pushed by means of a pneumatic cylinder onto a roller conveyor. The control is pneumatic and mounted in a switch-gear cabinet.



EVACUATION UNITS



With an Evacuation Unit faulty filled or leaky gas cylinders can be emptied in a simple manner. The discharged medium is pumped into a storage tank.

The evacuation unit consists of a sturdy steel frame, which for one or more cylinders is designed. In this frame, the gas cylinders are manually inserted upside down.

Heavy big bottles can be placed on a tilting device which is placed at ground level, and the rotation occurs via a hand wheel or gear motor.

The unit can be equipped for different gas cylinder valves with appropriate discharge connections. The evacuation of several gas cylinders can be performed simultaneously. Are the gas cylinders emptied, the discharge process is terminated by means of an automatic switch off system. Alternatively, upon reaching a minimum pressure, which can be read on the manometer, shutdown can be made manually.



SHRINKING MACHINES

To avoid the fraudulent use of the filled gas cylinders, we have developed a device which seal a shrink sleeve on the cylinder valve. The cylinder valve is sealed directly after filling with plastic shrink sleeves. Each shrink sleeve is placed manually onto the cylinder valve.

When the automatic shrinking machines type AS, the bottle is positioned by means of a centering device and the correct position of the bottle during the shrinkage process is on hold. Centering is also suitable for different bottle heights.

Here goes the shrinking bell automatically onto the cylinder valve and the hot escaping air shrinks the sleeve. After the shrinkage is the automatic bottle changeover. The control is pneumatic and mounted in a switchgear cabinet.

With the manual shrinking devices type MS, the shrinking bell is placed manually onto the cylinder valve. These devices can be combined with a check weighing and leak testing on one workplace.



PUMP-AND-COUNTING UNIT



This unit is assembled in a metal cabinet and supplied with all necessary technological equipment: stop, safety and test fixtures. The use of mass / volume flow with the Coriolis sensor enables you to record both the mass (kg) and in volume (liter) units. Connection of the unit is performed by sockets M60x4 (left-hand thread) DN50. To avoid overpressure in the system there is a safety valve (set at 25 bar).

Parametres	
Capacity, dm/min	220
Inlet	connection M60×4 D50
Outlet	
Engine power, kWt	5,0
Differential pressure (max), bar	10
Dimensions, mm	1200×1400×500
Weight, kg	350



Coriolis (mass) flow meters provide the most accurate real time measurements. Possibility of measurement of several variables, in combination with a rack to aggressive environment frame, and high measurement range yields a cost-effective facility, providing high measurement accuracy over a long time.

Features of Coriolis flowmeters:

- *The absence of moving parts*
- *Long-term stability*
- *A wide range of measurements*
- *The absence of specific requirements for the flow profile*
- *Insensitivity to changes in thermodynamic properties of gas*



STAND-ALONE AND BACKUP POWER SUPPLIES

Gas generators of FAS-OZP series are fulfilled in a closed sound and vibration absorbing housing and supplied with an automatic device of emergency shutdown in case of power interruption. This generators are equipped with electronic control of output voltage, providing high stability of the generated current.

Generator controller displays on the LCD display the following information: total operating time, the current setting

(frequency, voltage, current); warning about a critical battery charge level, overheating the engine, low oil pressure. At the switchboard there are connecting terminals, voltage and current regulators, emergency switch, and "Start/Stop" switch.

The generators are available in one-and three-phase versions, and multi-fuel version. The generators are fulfilled with electronic fuel supply system, automatically regulating the composition of the mixture depending on the load.

The distribution of generated power capacity with the implementation of a joint mode, or distributed generation. Multi-aggregate generating systems provide a number of technical, operational and economic benefits, which are fully implemented realized by their control units-controllers

Multi-aggregate generating systems control units-controller



Key features:

- Intelligent switching system to different modes (stand-alone single, isolated parallel, parallel with the network of one or more units, etc.)
- Working in the "hot" standby
- Limitation of peak loads

Parameters	Generator model								
	FAS-10-OZP1	FAS-10-OZP3	FAS-15-OZP1	FAS-15-OZP3	FAS-19-OZP1	FAS-19-OZP3	FAS-24-OZP3	FAS-33-OZP3	FAS-38-OZP3
Katalogue FAS no	96208	962080	962090	96209	962100	96210	96211	96212	96213
Capacity, kWt (LPG/methane)	11/10	11/10	15/14	15/14	19/18	19/18	24/23	33/33	38/38
Voltage and frequency	230/50	400/50	230/50	400/50	230/50	400/50	400/50	400/50	400/50
Current, A	50	20	65	27	78	32	42	60	69
Power factor, cos φ	1	0,8	1	0,8	1	0,8			
Phase number	1	3	1	3	1	3	3	3	3
Engine model	462Q (F8A)		465Q (F10A)		474Q (G13)		475Q (G15)	2RZ	495Q (3RZ)
Useful capacity, cm ³	797		997		1310		1497	2438	2693
Engine speed, min ⁻¹	3000								
Compression ratio	8.5:1		8.8:1		9.5:1		10.0:1	9.5:1	9.5:1
Power stroke, mm	62×66		65×78		74×76		75×76	95×86	95×95
Ignition	Electronic								
Cooling	Water								
Oil capacity, dm	3,5		10		10		10	15	15
Fuel type	Methane/LPG								
Pressure fuel supply, кПа	1,0...2,7 (methane)/2,0...3,5 (LPG)								
Fuel consumption at full load, m ³ /h (methane) / kg/h (LPG)	4,6/3,9		5,7/5,0		6,9/6,3		8,8/8,1	12,6/11,0	13,5/11,6
Generator type	synchronous, rotating field, brushless								
Poles number	2								
Dimensions, mm	1310×790×950		1310×720×950		1310×790×950		1310×790×950	1720×900×1080	
Weight, kg	345		345		370		375	560	660
Noise level, dB	54		54		56		56	60	60
Electrical protection	IP22								