

Wieland-Werke AG

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Section D – Media

Part 1: Fuel gas and protective gas

The following delivery specifications of Wieland-Werke AG form part of the contract.
Any deviating specifications are to be agreed upon between the supplier/contractor and Wieland, and documented.

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The following have to be taken into account:

German Ordinance on Industrial Safety and Health (*Betriebssicherheitsverordnung*, BetrSichV),
"Technische Regeln" (accepted codes of good engineering practice, with worksheets), DVGW, VDE, VDI.
In addition, the Wieland works standards for electrical, hydraulic and pneumatic equipment, pipe insulation and pipe marking apply.

It is the supplier's task and responsibility to procure any required special permits or apply for individual tests to be carried out on gas equipment and burners.

1. Specifications for the media used

➤ Fuel gas at the point of consumption:

Plant	Vöhringen	Ulm	Langenberg	Villingen
Altitude of site	495 m above sea level	475 m above sea level	80 m above sea level	704 m above sea level
	Natural gas / air 52/48 %vol	Natural gas H in acc. with DVGW 260	Natural gas H in acc. with DVGW 260	Natural gas H in acc. with DVGW 260
Nominal calorific value in kWh/Nm ³	Hs (Ho) = 5.8 Hi (Hu) = 5.2	Hs (Ho) = 11.06 Hi (Hu) = 9.98	Hs (Ho) = 11.8 Hi (Hu) = 10.6	Hs (Ho) = 11.1 Hi (Hu) = 10.0
Network pressure mbar	p = 80 ± 10%	p = 100 - 10%	p = 100 ± 15%	p = 70 ± 5%

(Hs (Ho) = upper calorific value Hi (Hu) = lower calorific value)

At the **Vöhringen plant**, the systems are operated with a natural gas / air mixture.

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➤ **Protective and forming gases / technical gases**

Vöhringen plant	Ulm plant	Langenberg plant	Villingen plant
➤ Protective gas			
HNx PN10	No thermal protective gas	No thermal protective gas	No thermal protective gas
95% N ₂ , 5% H ₂ / operating pressure 60 mbar			
From exo gas generator with CO/CO ₂ cleaning			
➤ Hydrogen PN25			
Purity/quality 5.0 (99.999%) Max. 16 bar	Purity/quality 3.0 (99.9%) Max. 16 bar	Purity/quality 3.0 (99.9%) Max. 16 bar	Purity/quality 3.0 (99.9%) Max. 16 bar
Operating pressure Rolled products approx. 8 bar Extruded products approx. 8 bar	Operating pressure 8 bar	Operating pressure 6-14 bar	Operating pressure 5.0-7.0 bar
➤ Nitrogen PN16			
➤ Emergency nitrogen PN25			
Purity/quality 5.0 (99.999%)	Purity/quality 5.0 (99.999%)	Purity/quality 5.0 (99.999%)	Purity/quality 5.0 (99.999%)
Operating pressure Rolled products approx. 10 bar Extruded products approx. 5 bar Copper tubes approx. 5 bar and/or approx. 10 bar N ₂ emergency network approx. 18 bar	Operating pressure 12 bar	Operating pressure 6-14 bar	Operating pressure 4-10 bar
➤ Forming gas PN16			
95% N ₂ , 5% H ₂ , Operating pressure 5 bar	95% N ₂ , 5% H ₂ , 6 bar	98% N ₂ , 2% H ₂ , Max. 16 bar Max. H ₂ content 4.5% or individual composition	97% N ₂ , 3% H ₂ , 5 bar Max. H ₂ content 4.5% or individual composition
or individual composition			

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Natural gas / air <100 mbar Natural gas <4 bar _g Forming gas >5%H ₂	Steel tube, galvanised DIN 2440 or DIN EN 10255, DIN 1629 sheet 2 Steel tube black DIN 2448 or DIN EN 10220	PN10 PN10	Pure graphite seal with perforated steel insert and inner eyelet for flange gaskets, for threaded fitting washers without inner eyelet, made of 1.4571, with DVGW approval (Wieland stock items group M173-18)
Liquid gas Butane/propane	Steel tube DIN 2448 or DIN EN 10220, 1.0305 (St 35.8) with 3.1.B material certification DIN 50049 or DIN EN 10204 (no threaded fittings allowed!)	PN40	Spiral wound gasket with inner and outer ring, graphite layer in acc. with DIN, Fire Safe in acc. with TÜV certification (Wieland stock items group M173-09)
Hydrogen Max. 16 bar _g T min: -253 °C	Bare copper, DIN 1786 or DIN EN 1057 brazed with silver solder (high temperature resistant) possibly stainless steel DIN 2462 or DIN EN ISO 1127, 1.4571 welded subject to consultation	PN25	Pure graphite seal with perforated steel insert and inner eyelet made of 1.4571 with DVGW approval (Wieland stock items group M173-18)

Technical gases

Gaseous Protective gas <100 mbar	Steel tubes galvanised DIN 2440 or DIN EN 10255, DIN 1629 sheet 2	PN10	Hard fibre gasket, anti-stick coating, permissible continuous use range: -50 to +250°C, but to be used only up to 100 °C! (Wieland stock items group M173-04)
Gaseous Nitrogen max. 18 bar _g Forming gas max. 16 bar _g Oxygen Hydrogen Argon	Bare copper, DIN 1786 or DIN EN 1057 brazed with silver solder (high temperature resistant)	PN25 PN16	Hard fibre gasket, anti-stick coating, permissible continuous use range: -50 to +250°C, but to be used only up to 100 °C! (Wieland stock items group M173-04)
Cryogenic liquefied Nitrogen, -196 °C, 18 bar _g Oxygen, -183 °C, 18 bar _g Hydrogen, -252 °C, 12 bar _g Argon, -186 °C, 18 bar _g	Stainless steel DIN 2462 or DIN EN ISO 1127, 1.4571 welded or Bare copper, DIN 1786 or DIN EN 1057 brazed with silver solder (high temperature resistant)	PN25	Pure PTFE, without reinforcement 1.5 mm thick, with reinforcement 2.5 mm thick (Wieland stock items group M173-16) or Pure graphite seal with perforated steel insert and inner eyelet made of 1.4571 with DVGW approval (Wieland stock items group M173-18)

3. Device selection and makes

Original type and make designations must be visible (see Section C – Mechanics, Part 5: Thermoprocessing equipment, Section 4, Device selection and makes).

a) Gas applications

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(Listed suppliers are to be preferred. Alternative suppliers subject to consultation.)

Gas safety shutoff valves	<u>Medenus</u> , Fiorentini, Honeywell Gas Technologies
Gas solenoid valves	<u>Honeywell Kromschröder</u> , Uni-Geräte, Bürkert
Gas pressure regulators <500 mbar	Honeywell Kromschröder
Gas pressure regulators >500 mbar	<u>Medenus</u> , Fiorentini, Honeywell Gas Technologies
Oxygen partial pressure measurement	Metrotec
Leak testing device	Honeywell Kromschröder
Electrical temperature, mixture, furnace chamber pressure regulators and transducers	<u>Siemens</u> , ABB
Gas filters	<u>Medenus</u> , Honeywell Kromschröder, Honeywell Gas Technologies
Gas and air pressure switches	Honeywell Kromschröder, DUNGS
Pilot burners and ignition transformers	Honeywell Kromschröder
Ignition and monitoring equipment	Honeywell Kromschröder (Type subject to consultation)
Actuators for control/proportional valves and flaps	Siemens, Honeywell Kromschröder, Aris, A&R, EL-O-Matic
Mechanical balanced pressure regulators	Honeywell Kromschröder, Siemens
Gas analysis	ABB, Vaisalla
Vacuum pumps and vacuum devices	Leybold, Busch, Edwards
Absolute pressure switch	Leybold
Rotary piston meters	Itron, RMG
Thermocouples – only class 1, testable type	B&B, Reckmann, Heraeus, Günther, Löbach
Main burners	Honeywell Kromschröder, WS, Bloom, Wiedemann
Rotameter flowmeters	<u>Kirchner & Tochter</u> , Krohne
Gas monitoring / gas warning device	Subject to consultation
Gas mixers	<u>L+T Gasetechnik</u> , Witt, Thermco
Fans	Meierling
Shutoff flaps	Jasta, Crane series VIA, Ebro
Ball valves	Armaturen Böhmer

Shutoff valves for laying pipes

Plant gas network, natural gas	➤	Butterfly valve, stainless steel disc, lug type, GGG40, EPDM seal
	➤	Gate valve, short length, soft sealing with DVGW approval for gas, make Erhard or Wika up to DN200
	➤	Butterfly valve make Erhard type ROCO or Wika Gas version for DN200 and up, inside enamelled, EKB fusion bonded epoxy coating, soft sealing
	➤	Gas ball valve body brass, body brass chrome-plated PTFE seal, with approval for gas (only up to DN50)
Liquid gas Liquefied under pressure		Fire Safe ball valve in acc. with BSI 5146, body cast steel with PTFE seal, make Argus – type EKI 71, Böhmer, von Schefen, with 3.1 B material certification

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Liquid gas Gaseous >1 bar	Ball valve make Flowserve, type Argus with PTFE seal, body DIN GS-C25, ball 1.4027 with 2.2 material certification
Nitrogen Gaseous	<ul style="list-style-type: none">➤ Ball valve make ELGAS (Linde) Ms58, ball MS58 chrome-plated, PTFE seal, with 2.2 material certification, <u>PN25</u>➤ Ball valve (for large diameters), cast steel body with PTFE seal and 2.2 material certification
Hydrogen Gaseous	as for nitrogen, but approved for H ₂ , <u>PN25</u>