

SPECIFICATION OF RAW MATERIALS AND UTILITIES

1. Demineralised water

Parameter	Unit	Value
pH		6.5÷7.5
Silicon as SiO ₂	mg/L	max 0.02
Iron as Fe	mg/l	max 0.01
Conductivity	μS/cm	max 1

2. Hydrogen gas

Parameter	Unit	Value
Hydrogen H ₂	% vol.	min 99.9
Oxygen O ₂	% vol.	max 0.1
Water H ₂ O	-	saturation
Temperature	°C	of the ambient
Pressure	kPa (g)	approx. 2.5

3. Chlorine gas after cooler E141 (primary stream)

Parameter	Unit	Value
Chlorine Cl ₂	% vol.	min 96
Oxygen O ₂	% vol.	max 2.8
Inerts	% vol.	max 1.0
Water H ₂ O	% vol.	max 1.5
Temperature	°C	min 37
Pressure	kPa	approx. 20

4. Cooling water

Parameter	Unit	Value
Supply pressure	MPa (g)	Min. 0.3
		Max. 0.58
Return pressure	MPa (g)	Min. 0.1
		Max. 0.25
Supply temperature / Return temperature	°C	Min 19 / Min 29
		Norm 25 / Norm 35
		Max 27 / Max 37
pH		7.8÷8.4
Calcium hardness	mval/L	1÷20
M-basidity	mval/L	1÷6
Silica	mg/L	max 120
Iron Fe	mg/L	max 2.5
Suspension	mg/L	max 15
Conductivity	µS/cm	max 3,500

5. Low-pressure nitrogen

Parameter	Unit	Value
Pressure	MPa (g)	Min 0.5
		Norm 0.6
		Max 0.68
Temperature	°C	Min -20
		Norm 25÷38
		Max 50
Composition:		
Nitrogen	mol %	Min 99.1
Oxygen	mol %	max 0.1
Dew point in weather conditions	°C	-70

6. Instrument air

Parameter	Unit	Value
Pressure	MPa (g)	min 0.5
		norm 0.6
		max 0.73
Temperature	°C	Min of the ambient
		norm 38
		max 40
Dew point 0 bar g	°C	-40

Parameter	Unit	Value
		Oil-free, dry, dust-free

7. Technical air

Parameter	Unit	Value
Pressure	MPa (g)	min 0.5
		norm 0.6
		max 0.7
Temperature	°C	Min of the ambient
		norm 38
		max 40
Dew point 0 bar (g)	°C	-30
		Oil-free, dry, dust-free

8. Electric energy

Parameter	Value	Notes
Voltage	10KV ±10%	Supply of rectifiers and transformers
Transformers	10/0.69kV or 10/0.4kV motor	
	690V ± 10%	
	230/400V ± 10%	
Frequency	50Hz	
	10 kV	
Emergency power supply	Power generator, Diesel	Emergency power is available 10 s after a power failure
	500V	
Transformer type	> 300kVA	Oil-filled transformer
	300kVA	Dry transformer

9. Electric energy

Parameter		Value	Notes
Engine	Power range	< 315 kW	Insulated
	Voltage	690 V	
	Phase	3 phases	
Engine	Power range	> 315 kW	Insulated
	Voltage	10 kV	
	Phase	3 phases	
Lighting	Voltage	400/230V	Insulated

Parameter		Value	Notes
	Phase	3/1 phase	
Instrumentation DCS	Voltage	230 V	with UPS
	Phase	1 phase	
Instrumentation	Voltage	24 V DC	with DCS
	Phase	1 phase	

10. Eyewash water

Parameter	Unit	Value
pH	-	7.0 ÷ 8.0
tw _{og} (as CaCO ₃)	mg/dm ³	< 450
Fe	mg/dm ³	< 0.10
Mn	mg/dm ³	< 0.05
Cl-	mg/dm ³	30 ÷ 50
N-NH ₄	mg/dm ³	0.15 ÷ 0.40
SO ₄ -2	mg/dm ³	60 ÷ 80
Obscurity	NTU	< 1
Pressure	MPa	0.3 ÷ 0.35 ¹
Temperature	°C	~10 ÷ 15 ²

1– measurement of the pressure in the drinking water pumping station

2– temperature at the outlet of the drinking water pumping station