Electrical energy consumption for one production line KDR700

KDR700	Voltage	Fuse	Power	Apparent Power
Main Unit	3/400V	3/1000 A	530 kW	662 kVA
Production-winding device	3/400V	3/16 A	4 kW	5 kVA
Milling and Cooling station	3/400V	3/25 A	16 kW	20 kVA
Dismantling station	3/400V	3/25 A	16 kW	20 kVA
Pipe finishing station	3/400V	3/25 A	16 kW	20 kVA

Equipment (example)	Voltage	Fuse	Power	Apparent Power
Corrugator for core tube	3/400V	3/6 A	3.2 kW	4 kVA
Extruder for Corrugator	3/400V	3/270 A	162 kW	203 kVA
Recycling machine	3/400V	3/64 A	42 kW	54 kVA
- Main granulator	3/400V	3x37A	22KW	
- Conveyor belt	3/400V	3x0,3A	0,18KW	
- Second granulator	3/400V	3x31A	18,5KW	
- Exhaust fan	3/400V	3x1,8A	1,1KW	
Manhole fabrication station	3/400V	3/32 A	10 kW	13 kVA

Customer supply line:	**3/400V**	**800,2 kW**	**1000 kVA**

Effective used power is about 60% of the installed power (1000 kVA).

Additional energy supply:
Chiller-Systems, Compressor for Pressure Air, Manhole fabrication hand tools, Raw-material supply, Lights, Sockets, Cranes, Offices, etc.

Water Consumption

Chillers (cooling systems) for different Krah machines

Required cooling capacity:

Calculation: Q = m x T x c x 1,163

KDR 700:

Inlet temperature: 20 °C Outlet temperature: 24°C ΔT = 4 °C

m = 15600 l/h

Q = 15600 x 4 x 1 x 1,163

Q = 72.570 W = 73 kW

Pressure: 2-3 bar

Corrugator core tube:

Inlet temperature: 10 ° C Outlet temperature: 18°C ΔT = 8 °C

m = 3000 l/h (corrugator) + 1500 l/h (extruder) = 4500 l/h

Q = 4500 x 8 x 1 x 1,163

Q = 41.868 W = 42 kW

Pressure: 2-3 bar

Gas Consumption for one production line

	Calculation Factors	One line 3 shifts
Max. consumption **propane gas** [kg/h]	4 Injectors A 7.5 kg	***30***
Max. consumption **town gas** [kg/h]	11,3 kWh/kg	***34***
Max. consumption **propane gas** [l/h]	0,4998 kg/l	**60**
Max. consumption **town gas** [m³/h]	0,7 kg/m³	**49**
Max. heating power [kW]	12,87 kWh/kg	**386**
Consumption **propane gas** / year [kg/a]		**30.000**
Consumption **propane gas** / year [l/a]	0,4998 kg/l	**60.024**
Consumption **town gas** / year [kg/a]	11,3 kWh/kg	**34.168**
Consumption **town gas** / year [m³/a]	0,7 kg/m³	**48.812**

Consumption propane gas (one line):	App. 0,068 liters / kg manufactured pipe App. 0.034 kg propane / kg manufactured pipe
Consumption town gas (one line):	App. 0,038 kg town gas / kg manufactured pipe App. 0,055 m³ town gas / kg manufactured pipe

Gas Consumption for two production lines

	Calculation Factors	2. lines - 3 shifts
Max. consumption **propane gas** [kg/h]	4 Injectors A 7.5 kg	***60***
Max. consumption **town gas** [kg/h]	11,3 kWh/kg	***68***
Max. consumption **propane gas** [l/h]	0,4998 kg/l	**120**
Max. consumption **town gas** [m³/h]	0,7 kg/m³	***96***
Max. heating power [kW]	12,87 kWh/kg	**772**
Consumption **propane gas** / year [kg/a]		**60.000**
Consumption **propane gas** / year [l/a]	0,4998 kg/l	**120.048**
Consumption **town gas** / year [kg/a]	11,3 kWh/kg	***68.336***
Consumption **town gas** / year [m³/a]	0,7 kg/m³	***97.624***

Consumption propane gas (one line):	App. 0,068 liters / kg manufactured pipe App. 0.034 kg propane / kg manufactured pipe
Consumption town gas (one line):	App. 0,038 kg town gas / kg manufactured pipe App. 0,055 m³ town gas / kg manufactured pipe

Air Consumption

	consumption	pressure
KDR 700	140 Nl/min	4-8 bar
Corrugator for core tube	2000 Nl/min	7 bar
Welding spiral production machine	300 Nl/min	6 bar
Customer supply line:	**2440 Nl/min**	**7-8 bar**

The compressed air supply must meet the following specifications for an air quality as per ISO 8573/1:

Impurities	Class 3
• Particle size	5 µm
• Particle density	5 mg/m³
Oil content	Class 2
• Quantity	0.1 mg/m³
Pressure dew point	Class 4
• Dew point	+ 3 °C
Residual water content	6 g/Nm³ at 100 % relative humidity