Fuel oils

Characteristics of different fuels

Fuel			extra light	light	medium	heavy	Bunker C
Density at 15° C	min.	kg/dm³	0.82	0.82	0.82	0.82	0.90
	max.	kg/dm³	0.86	0.95	0.96	0.99	1.01
Specific volume at average density		l/kg	1.19	1.12	1.12	1.11	1.08
Viscosity at 20° C		mPa.s	8	14	50	420	4200
40° C		mPa.s	3	5	16	60	380
100° C		mPa.s	–	–	3	10	35
Energy value		kWh/kg	11.8	10.6	11.4	11.2	11.0

Indicative values on power for burners and engines

Burners

Burner			**Fuel oil meter**	
Power	Flow rate heating fuel EL		Flow rate	Size
up to kW	kg/h	l/h	Q_{min}...Qn l/h	DN
500	42	50	1... 50	4
1 300	113	135	4 ...135	8
4 000	336	400	10 ... 400	15
10 000	840	1 000	30 ... 1 000	20
20 000	1 680	2 000	75 ... 2 000	25
60 000	5 040	6 000	225 ... 6 000	40
200 000	16 800	20 000	750 ... 20 000	50

Formula for consumption in litres/hour:

$$\frac{\text{Burner power in kW}}{\text{Energy value of fuel in kWh/kg x density in kg/dm}^3}$$

Example:

$$\frac{\text{600 kW}}{\text{11.8 kWh/kg x 0.82 kg/dm}^3} = \text{62 l/h}$$

Engines

Engine			**Fuel oil meter** [1]	
Power up to	Diesel fuel consumption		Flow rate	Size
approx. PS	ca. kW	l/h	Qmin...Qn l/h	DN
250	184	50	1... 50	4
680	500	135	4 ... 135	8
2 000	1 470	400	10 ... 400	15
5 000	3 680	1 000	30 ... 1 000	20
10 000	7 360	2 000	75 ... 2 000	25
30 000	22 000	6 000	225 ... 6 000	40
100 000	73 600	20 000	750 ... 20 000	50

1) For differential measurement the flow meter has to be selected according to the pump flow rate and the flow in the return pipe.

Formula:

1 HP = 0.736 kW
1 kW = 1.36 HP

1 kg Diesel at 0.84 kg/dm3 = 1.19 l

Rule of thumb:

approx. 190 g/kWh correspond to 0.226 l/kWh
approx. 140 g/HP correspond to 0.167 l/HP/h