

PERFORMANCE.
ENDURANCE. EXCELLENCE.

KANTHAL® FLOW HEATERS



KANTHAL® FLOW HEATERS

KEY FEATURES

- High outlet temperatures (1100°C)
- Excellent outlet temperature accuracy ($\pm 1^\circ\text{C}/\text{F}$)
- Power density comparable with gas burners
- Internal thermocouple for secure over temperature protection and controls
- Wide flow rate range: 20–200% of nominal flow rate
- Pulsating flow can be tolerated by the heater
- Well-matched original accessories like control cabinets, blowers and custom tubing with insulation solutions available
- Small in feature size
- Custom designs upon request

APPLICATIONS

- Furnace processes and heating of process gases
- Test benches
- Pre-Heating of equipment in metal cast houses
- Local heat treatment

INDUSTRIES

- Local heat treatment
- Aluminium (primary and secondary)
- Glass industry
- SOFC
- Packaging
- R&D

GLASS INDUSTRY



LOCAL HEAT TREATMENT



SELECT YOUR FLOW HEATER

POWER REQUIREMENT

Heating power demand

$$P = \dot{m} \cdot c_p \cdot \Delta T = \rho_s \cdot \dot{V}_s \cdot c_p \cdot (T_{out} - T_{in})$$

Power	P	kW
Mass flow rate	\dot{m}	kg/s
Standard* gas density	ρ_s	kg/m ³
Standard* volume flow rate	\dot{V}_s	m ³ /h
Specific heat capacity	c_p	kJ/(kg K)
Temperature difference	ΔT	K
Outlet temperature	T_{out}	K
Inlet temperature	T_{in}	K

*Standard condition at 1.013 barabs, 0°C

A power safety in the range of 10 to 20% on the theoretical required power is recommended. Piping and thermal insulation downstream of the Kanthal Flow Heater may cause higher heat losses that need to be added to the power requirement. Applications with power higher than 60 kW require customized or parallel usage of standard Flow Heaters. The recommended solution is mostly the parallel usage of multiple Flow Heater for optimal lifetime and availability of spare parts.

STANDARD KANTHAL® FLOW HEATER SERIES

SCOPE OF SUPPLY

The standard Flow Heater series are equipped with


- Type S thermocouple for temperature control and overheating protection of the heating element.
- High performance insulation.
- Mounting bracket.
- 2.5 m power cable (heat resistant silicone).

Standard pipe dimensions of the KFH outlet allow welding with state of the art high temperature resistant stainless-steel pipes (310 or similar). On request the outlet can be supplied with different types of high temperature connections (for example flanges).

KANTHAL® FLOW HEATERS STANDARD SERIES

SPECIFICATIONS

GENERAL

Model	KFH2-03-230 KFH2-11-400 KFH2-20-400 KFH2-30-400 KFH2-40-400 KFH2-60-400
Directive	Low Voltage Directive 2014/35/EU
 European Community	DIN EN 60519-1 DIN EN-60335-1
Usage ambient temperature	0...40 °C 32...104 °F



Kanthal® Flow heater 40 kW

PERFORMANCE CURVES

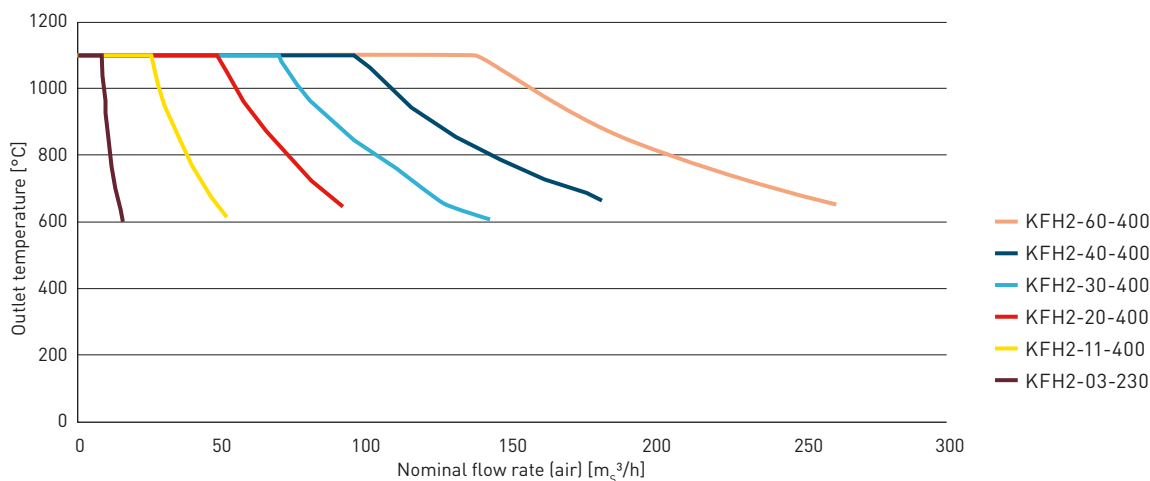


Figure 1: Outlet temperature (with air).

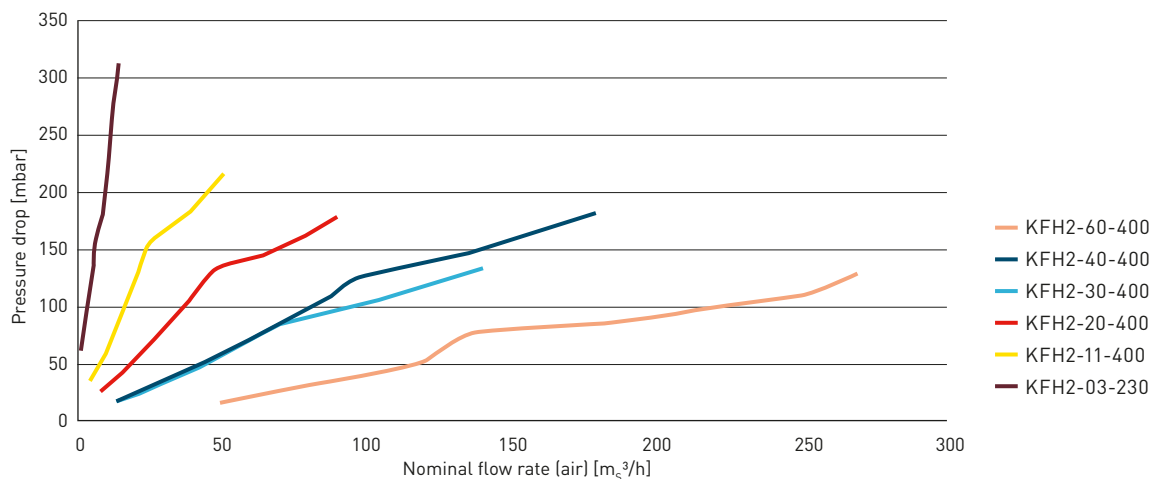
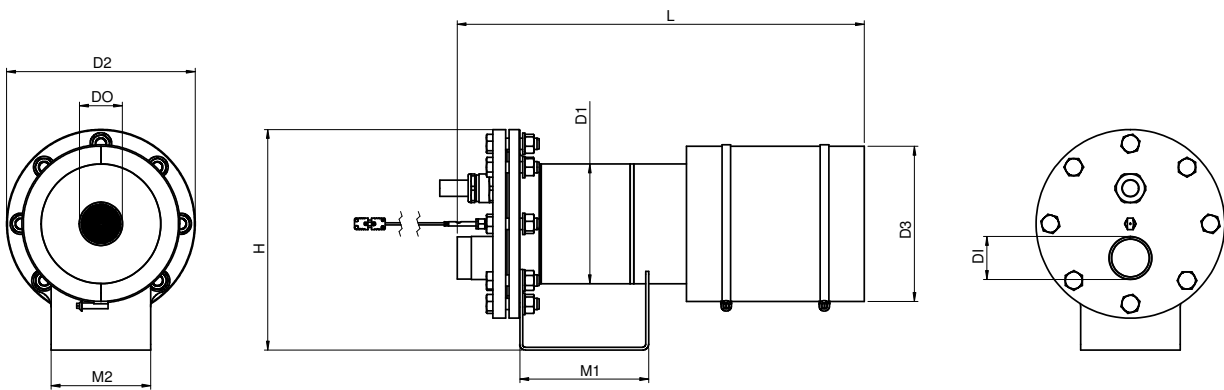


Figure 2: Pressure drop (with air).

HEAT & FLOW DETAILS (AIR)

PRODUCT CODE	MAX. OUTLET TEMPERATURE		MAX. INLET TEMPERATURE		NOMINAL FLOW RATE		MINIMUM FLOW RATE		MAXIMUM FLOW RATE		PRESSURE DROP AT NOM. FLOW RATE		MAX. OPERATING PRESSURE	
	$T_{out,max}$		$T_{in,max}$		$\dot{V}_{s,nom}$	\dot{m}_{nom}	$\dot{V}_{s,min}$	\dot{m}_{min}	$\dot{V}_{s,max}$	\dot{m}_{max}	Δp_N		p_{max}	
	°C	°F	°C	°F	m_s^3/h	kg/h	m_s^3/h	kg/h	m_s^3/h	kg/h	mbar	psi	bar _{abs}	psi _{abs}
KFH2-03-230	1100	2012	50	122	8	9.6	1.6	1.9	16	19.2	170	2.5	1.5	22
KFH2-11-400	1100	2012	50	122	25	30	5	6	50	60	155	2.3	1.5	22
KFH2-20-400	1100	2012	50	122	45	54	9	10.8	90	108	130	1.9	1.5	22
KFH2-30-400	1100	2012	50	122	68	81	13.6	16.3	136	163	82	1.2	1.5	22
KFH2-40-400	1100	2012	50	122	90	108	18	21.6	180	216	125	1.8	1.5	22
KFH2-60-400	1100	2012	50	122	135	162	27	32.4	270	324	78	1.13	1.5	22



ELECTRICAL & MECHANICAL DETAILS

PRODUCT CODE	POWER		VOLTAGE	DIMENSIONS WEIGHT								INLET CONNECTION		OUTLET CONNECTION		
	P	U		L	H	D1	D2	D3	M1	M2	M3	M	DI	DI	DO	DO
	kW	V	Phase	mm	mm	mm	mm	mm	mm	mm	mm	kg	mm	inch	mm	inch
KFH2-03-230	3.5	230	1 ~	498	170	60.3	140	110	102	70	50	8	12	0.47	26.7	¾
KFH2-11-400	11	400	3 Y	519	221	88.9	190	139	151	100	75	15	26.7	R¾	33.7	1
KFH2-20-400	20	400	3 Δ	490	264	114.3	210	164	136	140	100	19	42.4	R1¼	48.3	1½
KFH2-30-400	30	400	3 Δ	595	289	139.7	240	190	175	140	100	31.5	48.3	R1½	48.3	1½
KFH2-40-400	40	400	3 Δ	562	310	168.3	265	218	181	140	100	36	60.3	R2	60.3	2
KFH2-60-400	60	400	3 Δ	642	362	219.1	320	269	212	230	125	65	88.9	R3	88.9	3

ACCESSORIES AND SERVICES

Empower your Flow Heater with well-matched original accessories.

CONTROL CABINET

Kanthal® Control Cabinets are designed and optimized for operation of the standard Flow Heater series and assure maximum heater performance and optimal life-time. Standard Control Cabinets are made for easy to use operation. Besides from that custom solutions can be offered like PLC compatibility and standard automation protocols.



ELECTRICAL & MECHANICAL DETAILS

PRODUCT CODE	COMPATIBLE TO	DIMENSIONS			WEIGHT m kg	ELECTRICAL SUPPLY		
		L mm	W mm	H mm		U V	I A	
CC-KFH2-03-230-CE	KFH2-03-230	500	300	500	25	230	1L + N	16
CC-KFH2-11-400-CE	KFH2-11-400	600	350	600	45	400	3L + N	16
CC-KFH2-20-400-CE	KFH2-20-400	600	350	600	45	400	3L + N	29
CC-KFH2-30-400-CE	KFH2-30-400	600	350	600	50	400	3L + N	44
CC-KFH2-40-400-CE	KFH2-40-400	600	350	600	50	400	3L + N	58
CC-KFH2-60-400-CE	KFH2-60-400	760	360	600	55	400	3L + N	87

BLOWER

Kanthal® Blowers are equipped with flow rate control (variable frequency drive) and with air filter to ensure safe and long-life operation of the Flow Heater.



ELECTRICAL & MECHANICAL DETAILS

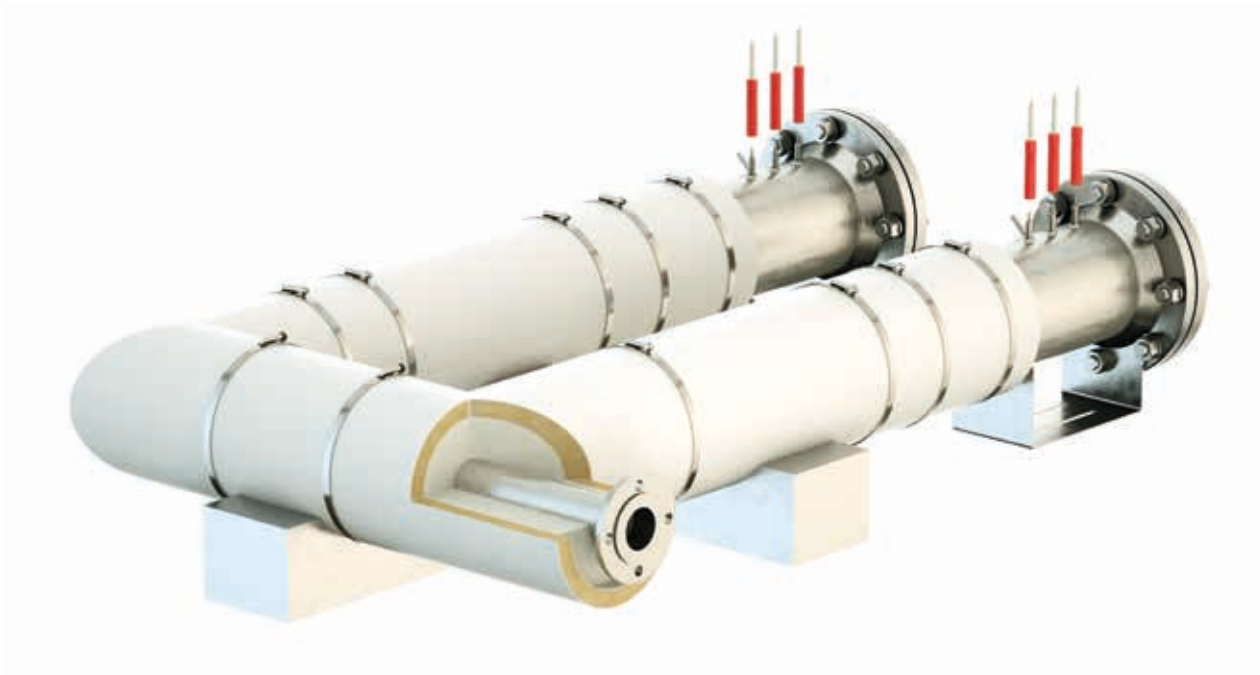
PRODUCT CODE	COMPATIBLE TO	DIMENSIONS			WEIGHT m kg	ELECTRICAL SUPPLY		
		L mm	W mm	H mm		U V	I A	
SCB-KFH2-03-230	KFH2-03-230	353	150	270	8	230	1L+N	6
SCB-KFH2-11-400	KFH2-11-400	424	264	380	32	400	3L	16
SCB-KFH2-20-400	KFH2-20-400	424	264	380	32	400	3L	16
SCB-KFH2-30-400	KFH2-30-400	428	306	407	34	400	3L	16
SCB-KFH2-40-400	KFH2-40-400	428	306	407	34	400	3L	16
SCB-KFH2-60-400	KFH2-60-400	493	370	456	50	400	3L	16

PIPING AND THERMAL INSULATION SOLUTION

High temperature piping and proper high-performance insulation completes the Kanthal scope of supply. The temperature is maintained as much as possible to drive your process where it's needed. Piping and thermal insulation solutions can be offered ranging from DN20, ¾" (OD 26.7 mm) to DN150, 6" (OD 168 mm) as well as flanges, elbow pieces and junctions.

TEST SERVICES

You require a process development or -optimization? Working closely with you, our engineers backed up by one of the R&D's leading facilities, will help you identify your needs and create products that optimize your process or product. Many of our products, now industry standards, are the result of a close collaboration between our customer and our R&D engineers.



KANTHAL®

