

Flow Measurement at High Temperatures

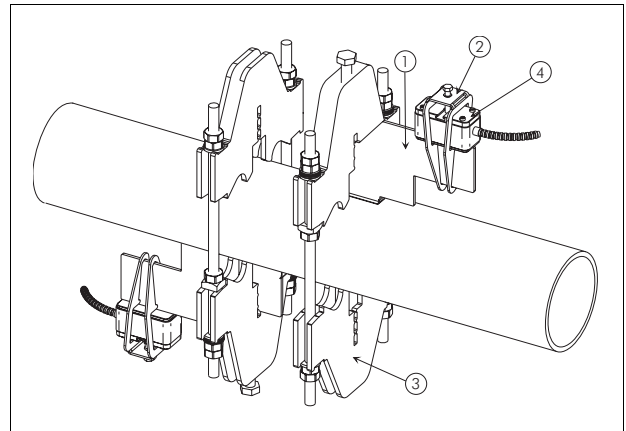
The WaveInjector® is a special transducer mounting fixture for clamp-on ultrasonic flow measurement. It allows continuous measurement with the standard FLEXIM transducers at temperatures as high as 752°F, even in an explosive atmosphere. Since the transducers are clamp-on, no cutting of the pipe is necessary for installation and the measurement can be added to an existing installation without process interruption.

A typical application of the WaveInjector is explosion-proof flow measurement in the chemical industry at process temperatures over 250°F. Volumetric flow measurement of heat transfer oil is another frequent application.

A WaveInjector is composed of the WaveInjector coupling plate (1), the transducers clamping fixtures (2), a pipe mounting clamp (3), together with an acoustic coupling foil (4). The metallic coupling plate between the transducer (4) and the pipe provides nearly loss-free ultrasonic coupling. At the same time, its cooling effect maintains a temperature gradient between the surface of the pipe and the coupling surface of the transducer. This guarantees that the maximum permissible transducer temperature is never exceeded.



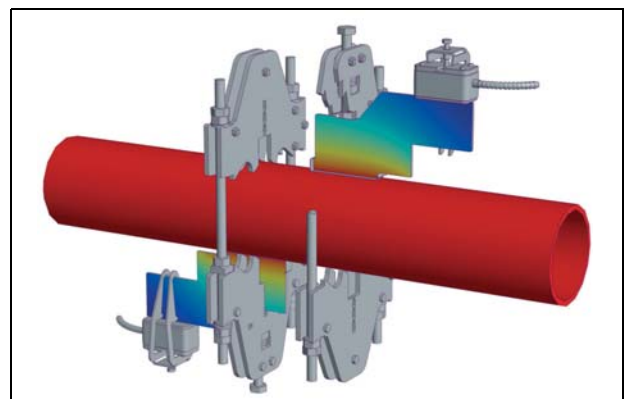
WaveInjector® WI-400



The different parts of the WaveInjector

Features

- Ultrasonic flow measurement at high temperatures (up to 752°F) with standard clamp-on transducers
- Flexible mounting system allows mounting on pipes of different diameters
- Permanent and reliable coupling of the transducers to the pipe
- Fine tuning of the transducer distance is possible while instrument is working
- Problem-free retrofitting on existing installations
- Excellent acoustic efficiency
- Flow measurement in explosive atmospheres now possible up to 752°F



Temperature profile of the WaveInjector® WI-400

Technical Data

WaveInjector® Type WI-200

For the transducers:	M4N7 Ex, Q4N7 Ex, CDM1#52, CDQ1#52
Temperature range:	32°F to 392°F
Diameter range:	1.57 in to 14.96 in
Mounting:	WI200 pipe clamp

WaveInjector® Type WI-400

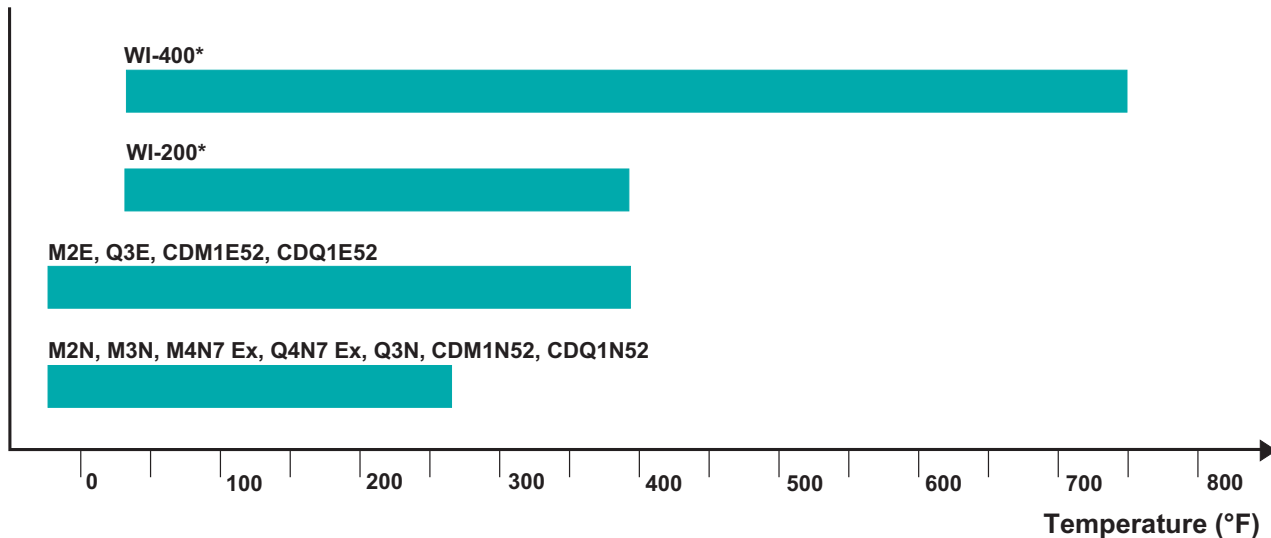
For the transducers:	CDM1, CDQ1, all M and Q transducers except M5 and Q5
Temperature range:	32°F to 752°F
Diameter range:	1.57 mm to 39.37 in
Dimensions with transducers:	(7.48 x 5.12 x 1.57) in
Material:	Coupling plate: stainless steel 1.4301 / 304 Pipe clamp: stainless steel 1.4301 / 304 (except for WI400S: galvanized steel)
Coupling:	Metal foil
Mounting:	WI400 pipe clamp

WI Pipe Clamp

Pipe outer diameter:	WI-400S, WI200L: 1.57 in to 5.12 in
	WI-400Q, WI200L: 3.15 in to 9.05 in
	WI-400M, WI200L: 3.15 in to 4.96 in
	WI-400L: 13.78 in to 39.37 in (fixation with chains)
	>39.37 in consult FLEXIM

Important: The upgrade of a FLUXUS with a WaveInjector® can only take place at the factory.

Temperature Range



* You will find in the table above which transducers can be used with which type of WaveInjector®.



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