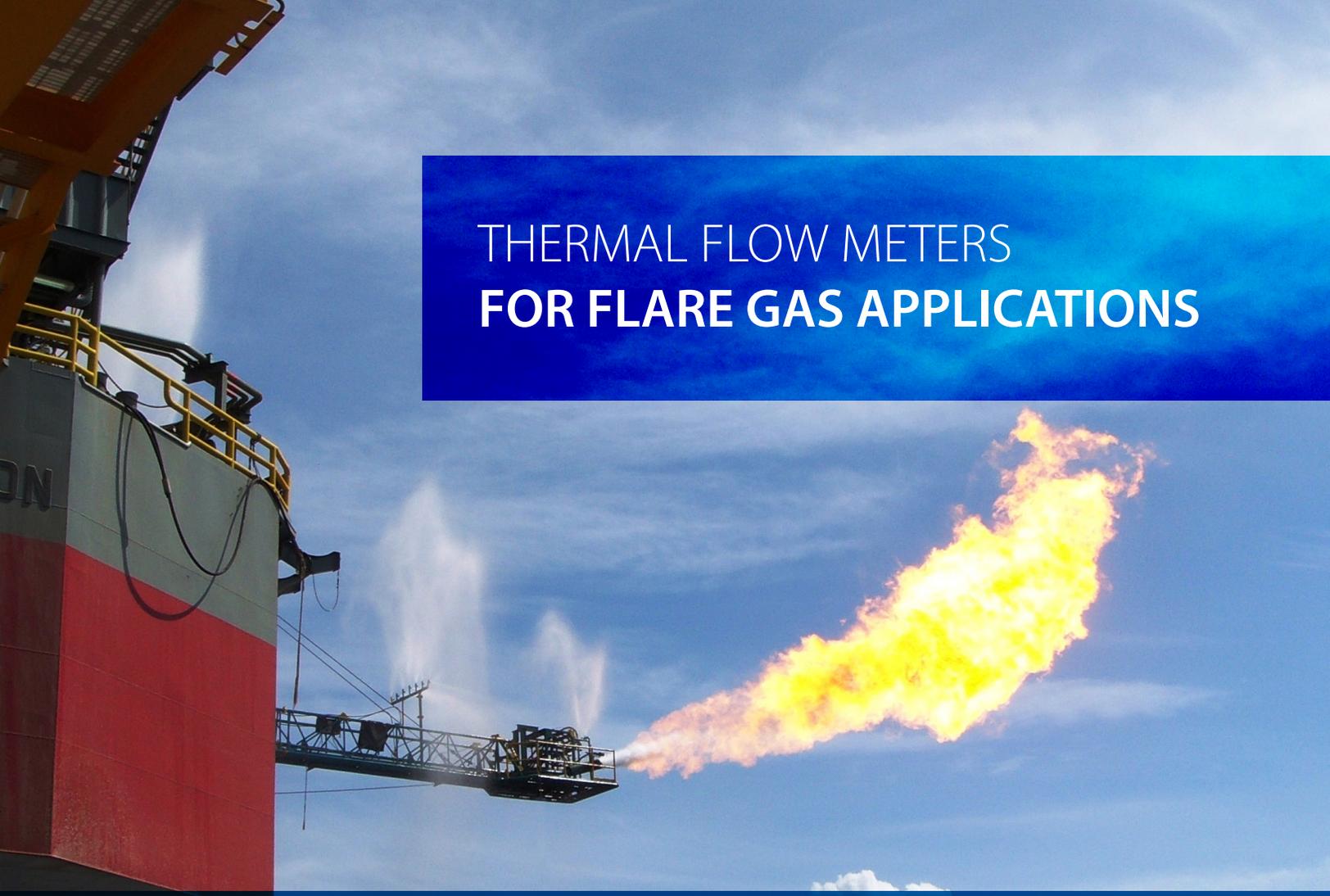


THERMAL FLOW METERS FOR FLARE GAS APPLICATIONS



An efficient, burning flare does not produce visible smoke, while black smoke is a good indicator of incomplete combustion. Emissions that result from incomplete combustion add CO, CO₂, and NO_x to the atmosphere. The Global Gas Flaring Reduction (GGFR) organization estimates 150 billion cubic meters of natural gas are flared annually, adding 400 million tons of CO₂ emissions.

The increasing environmental regulation demands of the last decade have stimulated the need for flow instrumentation that provides accuracy and repeatability on all emission-related applications. Business and site managers demand cost-effective and reliable solutions in order to balance corporate environmental stewardship with fiscal responsibilities.

KURZ
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FLARE GASES

FLOW PROFILE

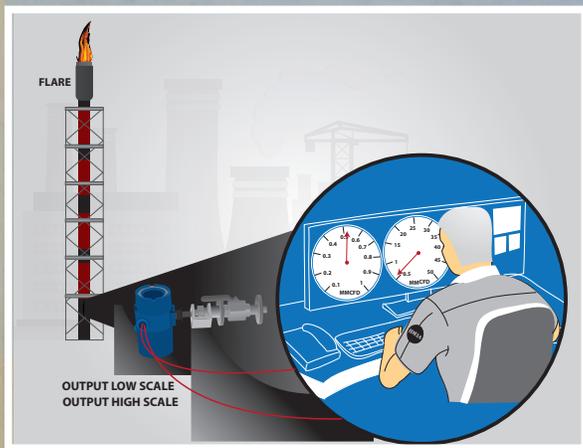
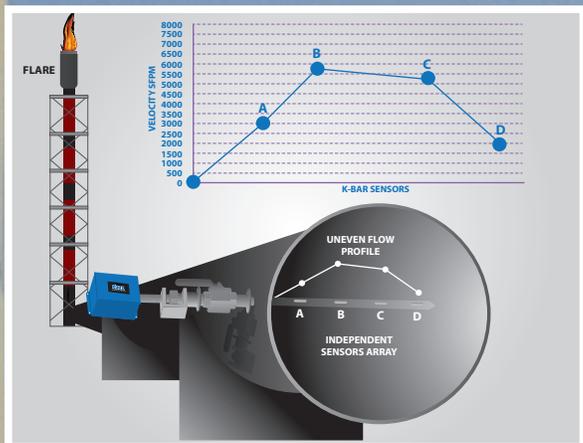
There are several key considerations for effectively monitoring gas flow to the flare. Flow stratification within the pipe can affect reading accuracy based on sensor placement. Upstream blockages and obstructions caused by elbows, curves, valves, or reducers can create flow irregularities (turbulent versus laminar flows) within the pipe. Dirt and particulate buildup in the line can also create flow irregularities and impede flow readings.

Kurz offers multipoint systems capable of handling uneven flow profiles. Each sensor has an independent microprocessor that provides an accurate reading of the flow in the flow stratification. All Kurz flow meter sensor are virtually unaffected by particulates in the flow stream.

LOW-HIGH RANGEABILITY

The instrumentation used in flare applications must support large flow ranges. Some of the highest velocities occur during purging or upsets (up to 600 FPS or 183 SMPS), while daily flaring rates can be extremely low (less than a foot per second). The ability to scale the range is an important feature to reduce the uncertainty caused by insufficient signal resolution.

Kurz single-point and multipoint flow meters support a velocity range from 0 to over 36,000 SFPM (183 SMPS). Models include velocity-dependent correction factors, built-in zero-mid-span drift check, and user-configurable digital filtering.

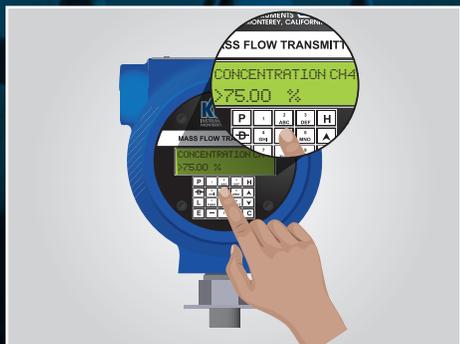


GAS MIX CORRECTION

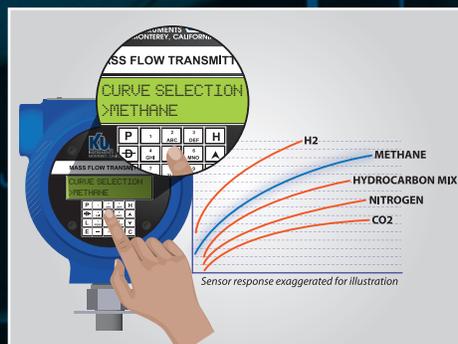
Changing gas compositions are not uncommon in flare applications, especially with the hydrocarbon mix of flare gas from oil wells, which changes from well-to-well and over time.

Kurz flow meters feature the ability to store up to five multiple gas compositions, so that a few simple keystrokes make it possible to change from one preprogrammed gas mixture to another. The ability for on-demand gas percentage corrections allow you to manually change the percentage of gas at the keypad.

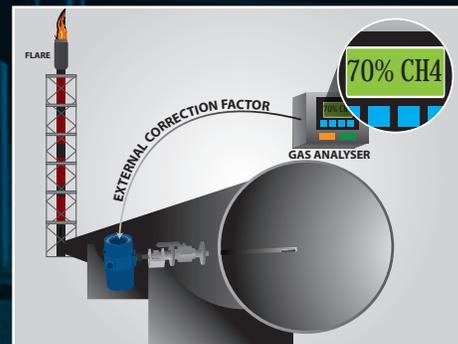
Setting up a flow meter to obtain an external correction factor from an outside source, such as a gas analyzer, further supports the ability to automatically correct the readings for changing gas mixtures.



Gas percentage correction on keypad.



Five curves for multiple gas compositions.



Automatic gas composition correction factor.

WGF TECHNOLOGY

Kurz WGF flow meters are the only thermal flow meters designed to work effectively in the condensing gas applications commonly found in flare line gas flows. Standard thermal flow meters are unable to distinguish liquid droplets from the flow signal, resulting in erroneous high gas flow measurements.

Kurz WGF flow meters remove the errors caused by liquid droplets and provide the correct gas flow measurement. The end result is more predictable gas production, improved system performance, reduced flaring, and accurate emissions reporting to ensure regulatory compliance.

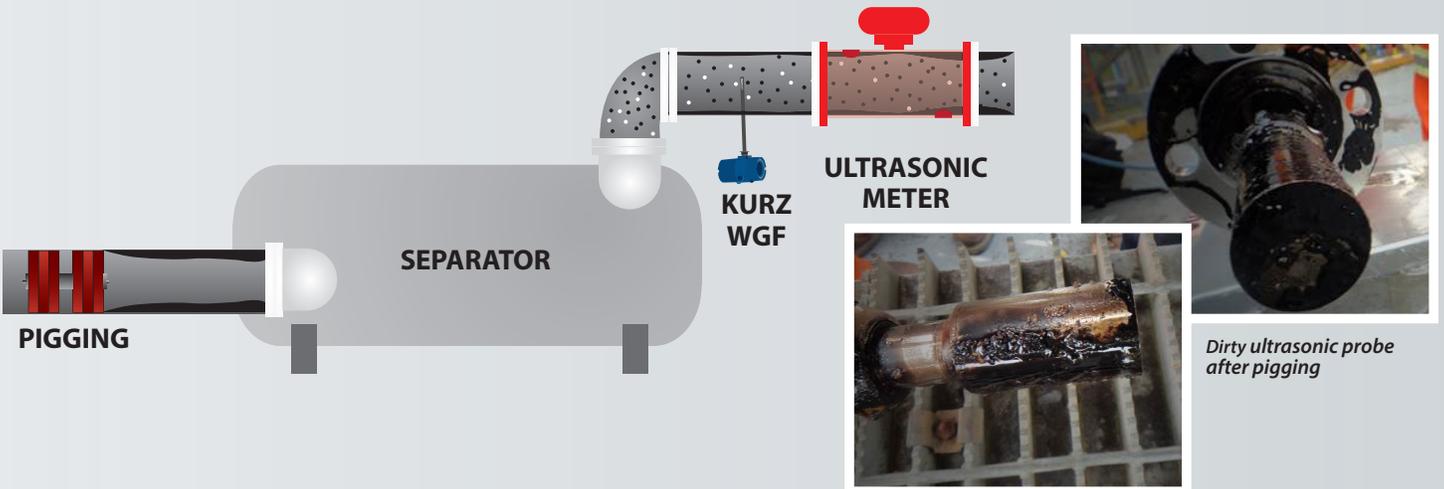


PIPELINES, SEPARATORS & PIGGING

The oil and gas mixture coming through a pipeline includes oil, water, and sludge that must be put through a separator before transferring to the storage tanks or flare. Monitoring the gas flow in the lines after the separator has long been the domain of ultrasonic devices, primarily because ultrasonic is the accepted technology for custody transfer. However, a common

outcome of pigging before the separator is that too much sludge material passes through the separator into the gas lines. During the cleaning process, petroleum debris and dirt can clog the inward spools mounted on the internal pipe wall and cause major errors. This leads to system down time and expensive maintenance to remove the ultrasonic device and clean the area.

The Kurz sensor location near the middle of the pipe makes it much less susceptible to reading errors caused by petroleum debris in the flow stream. In the event the Kurz flow instrumentation needs to be removed, **the simple single-port design allows for quick removal, fast cleaning, and easy re-insertion.**



Thermal Technology

Thermal technology has moved well beyond the limits of when many industry reviews and standards were written in favor of ultrasonic. Today's Kurz thermal flow meters are the ultrasonic alternative, providing consistently accurate flow measurements in dry and condensing gas applications for a fraction of the installation and maintenance costs. Even among all thermal device manufacturers, Kurz thermal flow meters provide the highest flow sensitivity across wide flow ranges and superior response time to changing flow velocities.



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