

METHANE FROM FLARING TOOLKIT



Environmental Impacts: Crosswinds – Empirical data and observations

Do I understand the impacts of the environment on my flare? > Environmental Impacts: Crosswinds – Empirical data and observations

Summary

Strong cross winds have the potential to impact combustion efficiency. Especially during periods of low flow to the flare. Each facility will have its own unique wind profile which should be considered when designing and managing flares, but published data on how to adapt flaring to manage cross winds is limited.

How it works

Each oil and gas facility has its own unique weather patterns. Where strong are encountered these can have a significant impact upon the combustion efficiency of the flare, especially during periods of low flow such as when the flare is only using purge gases. However, understanding the full impact of crosswinds is difficult. Experimentation on full scale flares is limited by the reliance upon natural variation in wind speeds. This has

been overcome, in part, by the use of flare experiments conducted in wind-tunnels. What limited data is available has most focused on laminar-flow wind conditions that do not fully replicate the real world where turbulence is an important consideration. Research is ongoing. Alternatives to the use of empirical data come from tools such as computational fluid dynamics.

Advantages

- ✓ Empirical research allow complex scenarios to be modelled without the need for advanced computing capabilities

Limitations

- ✗ Full scale experiments hard to control and dependent upon local weather patterns that may not fully represent installed locations
- ✗ Reduced scale experiments may not be able to fully replicate advanced flare tips designs and assist mechanisms

Go Deeper

- [Flarenet](#)
- [Flarenet - PDF](#)
- [Research article - The efficiency of a flare in crosswind](#)

Case study

The effects of [flare](#) have been investigated as part of the Flarenet programme using a specially designed wind tunnel at Western University, Canada

[Theme 3: The Effects of Turbulent Crosswinds](#)

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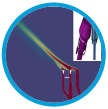
Do I understand the impacts of the environment on my flare?



Environmental Impacts: Flare Tip Integrity Inspection # Manual Inspection



Environmental Impacts: Flare Tip Integrity Inspection # Drone deployed



Environmental Impacts: Computational Fluid Dynamics (CFD) modelling to determine the effect of crosswind on flares efficiency