

COMMONLY ASKED QUESTIONS



Q What is a Tunable Diode Laser (TDL)?

A TDLs are monochromatic, coherent sources of light with very narrow emission wavelength bands, typically down to 0.00004 nm. TDLs have the ability to scan over a range of wavelengths to a limited degree.

Q What are their advantages as an on line analytical Technique?

A The ability to tune to very small areas enables them to be selective and avoid cross interference. They can scan from baseline through the peak area to baseline, which enables them to take account of the background in dirty processes.

Q What can be measured with TDLs?

A Small molecules in the gas phase which have rotational fine structure (narrow peaks) in the broad infrared spectral region.

Q What is the most common application?

A Oxygen measurement. Even though it is not thought of as an IR absorbing molecule it does have an absorption in the near IR.

Q How are TDLs installed?

A Most usually as a transmitter and receiver installed on either side of a stack or process pipeline. (in situ).

Q So it is a fast, non sampling, non contact technique?

A Yes – the only service required other than 24V power supply is a purge gas which forms a barrier between the process gas and the analyzer components.

Q Purge Gases?

A Gas type depends on application – usually air except for O₂ measurement where nitrogen is most commonly used. It is possible to use air even for O₂ applications, but accuracy may be reduced.

Q Other good applications?

A High and low levels of moisture in corrosive environments (hydrocarbons, chlorine).
Some applications, such as this one, are often done with extractive units located close to the process. Sometimes extractive units are preferred as calibration can be done more readily.

Q How often does a TDL need calibrating?

A Major users of the analyzer on difficult applications have not needed to calibrate in less than one year.

Q How do they know?

A In situ and extractive analysers include a gas cell which enables validation to be carried out on line.

Q Available for Hazardous Areas?

A Yes Atex certified.

Q Can we measure more than one component ?

A Sometimes. Currently available TDLs scan over a relatively small wavelength and are usually used for one component. Depending on the application it is sometimes possible to measure two (CO₂ and H₂O have many absorption bands). Yokogawa/ASI have a patented measurement designed for combustion safety and efficiency applications where CO, CH₄ and H₂O can be measured on one analyzer.