



## Model Selection Guide

Type of Process or Appliance		Usual Process Conditions	Sensor Location(s)	Measuring Range	Models Used	Comments
<b>Boilers</b>	Package	Combusted gas or fuel oil	Flue	0.1 to 5% O <sub>2</sub>	1732 / 1633 & 1231	Probe insetion length is usually 250mm
	Power Generation	Combusted Coal, dusty fly-ash	Economiser Outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & FIL-2	If the probe can be mounted vertically downwards then filters are not required but the purge should still be used. Some fly-ash is abrasive.
		Combusted Oil	Economiser Outlet	0.1 to 5% O <sub>2</sub>	1732 & 1231	Don't use filters with oil fired appliances
		Combusted Wood Chips, ash	Economiser Outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & FIL-2	Vertically down for the probe or else use filters; purge required
	Black Liquor Recovery	Combusted Black Liquor, dusty	Economiser Outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & FIL-2	Large amounts of hydrated sodium sulphate & water vapour, use filters and purge (Na <sub>2</sub> SO <sub>4</sub> ≤90%; Na <sub>2</sub> CO <sub>3</sub> ≥10%) Dust Loading 5 to 15 g/Nm <sup>3</sup>
<b>Iron &amp; Steel</b>	Heating Furnace	Combusted Gas	Preheat, Heating & Soaking Zones	0.1 to 5% O <sub>2</sub>	1732, 1231 & S/Chamber	Gas flow ≈ 5 lpm, back-purge required
	Annealling Furnace	H <sub>2</sub> Nx (indirect fired)	Base of Furnace	1 x 10 <sup>-26</sup> to 1 x 10 <sup>-20</sup> % O <sub>2</sub>	1738 & 1231	4 - 5 years life at Bluescope Steel, Westernport works
	Coke Oven	Combusted Gas	Flue	0.1 to 5% O <sub>2</sub>	1732 & 1231	Use filters if gas contains particulate
	Soaking Pit	Combusted Gas	Before Recuperator	0.1 to 5% O <sub>2</sub>	1732 & 1231	Minimise ingot surface oxidation
<b>Aluminium</b>	Pottlines & Holding Furnace	Hostile component - fluoride	Sampling point from hood	< 1% O <sub>2</sub>	1732, 1231 & S/Chamber	Alco, Pt Henry, ≈ 5 year sensor life
<b>Incinerators</b>	PVC	Combusted Gas & HCl	Sample point from after-burner outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & S/Chamber	High HCl use condensate / acid trap before sample chamber
	Medical or Toxic Waste	Combusted Gas & hostile compounds	Sample point at the final combustion chamber outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & S/Chamber	Keep distance between sample point & chamber to a minimum to minimise transport lag time
<b>High Temp Kilns / Furnaces</b>	Rotary Lime	Combusted Gas	Kiln end	0.1 to 5% O <sub>2</sub>	1732, 1231 & FIL-2	Probe location is critical; large amounts of abrasive dust and tramp air
	Cement	Combusted Gas (and sometimes rubber)	Cyclone outlet	0.1 to 5% O <sub>2</sub>	1732, 1231 & FIL-2	Often used to incinerate rubber from spent vehicle tyres
	Glass	Combusted Gas (high silica)	Sample point from kiln roof	0.1 to 5% O <sub>2</sub>	1732, 1231 & S/Chamber	High silica destroys zirconia catalyst >800°C
	Ceramic	Combusted Gas (high glazing flux)	Sample point from reduction firing zone	< 1000ppm O <sub>2</sub>	1732, 1231 & S/Chamber	Glazing salts are hostile to the sensor >800°C, sample tube between sample point & chamber require periodic replacement due to salts condensing in tube
	Brick	Combusted Gas (high glazing flux)	Sample point from reduction firing zone(s)	< 1000ppm O <sub>2</sub>	1732, 1231 & S/Chamber	Same as ceramic kilns
<b>Heat Treatment</b>	Sealed Quench Furnace	CO / CO <sub>2</sub> (reducing)	Side mount	0 to 1.5% Carbon	1734 & 1232 253MA	Use purge to burn-out carbon build-up around the sensor
	Rotary Furnace	CO / CO <sub>2</sub> (reducing)	End mount	0 to 1.5% Carbon	1734 & 1232 253MA	These are usually "dirty" furnaces, use purge to burn-out carbon build-up around the sensor
	Mesh Belt Furnace	CO / CO <sub>2</sub> (reducing)	Side mount	0 to 1.5% Carbon	1734 & 1232 253MA	These are also usually "dirty" furnaces, use purge to burn-out carbon build-up around the sensor
<b>Nitrogen Purity</b>	Generator	Clean nitrogen	Sample drawn from outlet	< 100ppm O <sub>2</sub>	1732 & 1234	Use MOZ-1 for OEMs
<b>Oxygen Enrichment</b>	Generator	Oxygen & Nitrogen	Sample drawn from outlet	90 to 95% O <sub>2</sub>	1732 & 1234	1234 must be degreased for pure oxygen service
<b>Drying Ovens</b>	Direct Fired	Water Vapour	Side mount probe and sample tube	20 to 40% water vapour	1735, 1231 & RGS-17	Used in textile industry, gypsum dryers, paper machine drying hoods
	Indirect Fired	Water Vapour	Side mount probe	20 to 40% water vapour	1735 & 1231	
<b>Baking Ovens</b>	Indirect Fired	Water Vapour & possibly fat	Side mount probe	10 to 99% water vapour	1735 & 1231	Avoid direct jets of water on probe during wash-down
<b>Food Packaging</b>	Food Packs - Spot Checks	Clean gas	Hypodermic with septum to sample package gas level	1 ppm to 95% O <sub>2</sub> ; 0-100% CO <sub>2</sub>	1737-x, 1637-1 or 1637-5	Use the white particulate filters if dust is present, use the blue filter to block water if droplets are in the work area or food pack, use septum to seal the hypodermic through the food pack.
	Continuous Monitoring	Clean gas	Gas drawn from the packaging machine sample point	1 ppm to 95% O <sub>2</sub> ; 0-100% CO <sub>2</sub>	1732 & 1234	Use the activated carbon filter if hydrocarbons are present in the gas stream
	Laboratory Use	Clean gas	Analyse take-up rate of CO <sub>2</sub> and O <sub>2</sub> permeation of package film	1 ppm to 95% O <sub>2</sub> ; 0-100% CO <sub>2</sub>	1737-x, 1637-1 or 1637-5	The instruments are well looked after in most of these facilities