



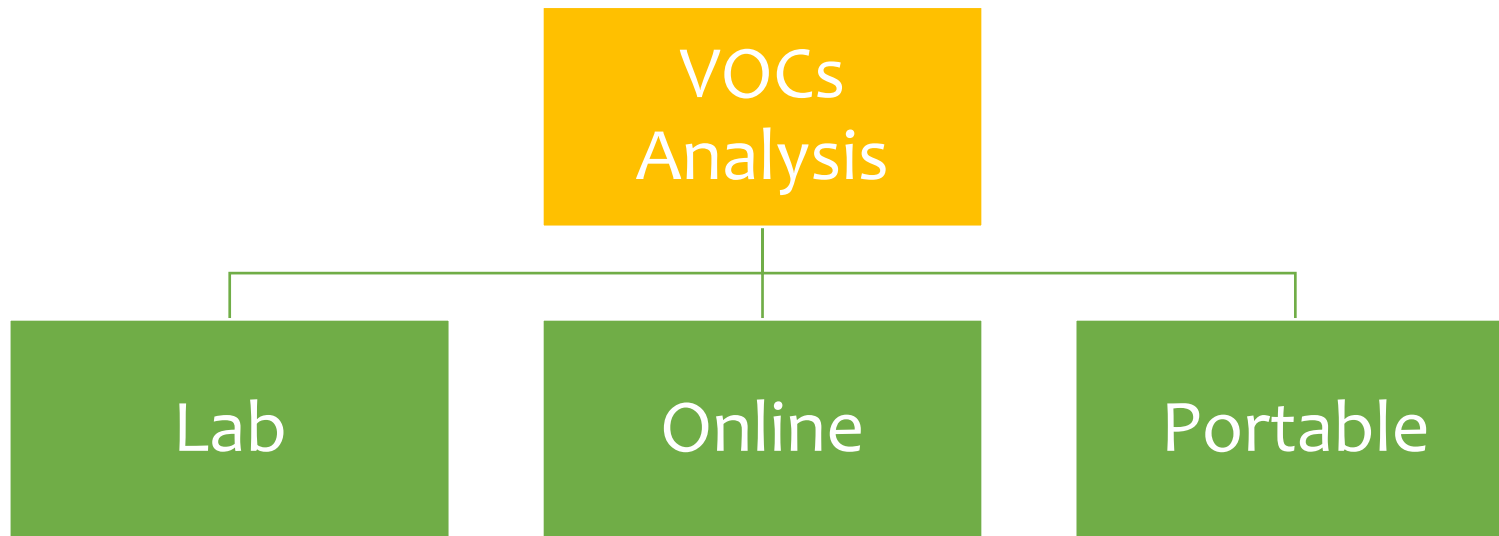
Delivering the Right Results for VOCs

Nutech 3000

The Latest Generation of
Portable VOCs Analyzer
for Stationary Emission Source & Plant Boundary



VOCs Analysis Methods



Nutech is the only company who can provide VOCs analysis solutions & products for lab, online and portable applications.

Nutech 3000 Portable THC & NMHC Analyzer is the latest generation product for portable VOCs analysis and we've made many improvements based on the existing products on the market.



The Necessity for a Portable VOC Analyzer

- The gas sample at emission source is hot and moisture. It is evitable to cause sample loss, adsorption and deterioration during sample collection and transportation for lab analysis and thus the test results will be affected.
- Lab analysis can't deliver timely results and thus its is not applicable for emergency monitoring.
- The lab analysis is labor intensive with samples to be collected, transported and analyzed.
- Online analyzers are permanently installed and need regular maintenance which doesn't fit for applications that only require occasional / periodical / emergency monitoring.



 **Occasional Monitoring**

 **Periodical Monitoring**

 **Emergency Monitoring**

Why List NMHC as an Monitoring Target

- TVOC can be represented by THC (CH₄+NMHC) or NMHC.
- CH₄ is only a greenhouse gas while NMHC is the harmful & hazardous part in THC. Thus, to analyze toxic VOCs, NMHC is a more precise target than THC.

Unharmful substance. Accounts for the major part of THC.



Typical Applications of Nutech 3000

- Environmental inspection and law enforcement by government regulator
- VOCs testing by commercial testing companies
- Effectiveness evaluation of VOCs control measures
- Self-inspection of VOCs emissions from chemical, printing and dyeing, spray painting companies
- On-site detection and supervision of kitchen oil fume
- On-site comparison with the results of online VOCs analyzer to determine whether the online analyzer's result is accurate.
- VOCs emission detection of combustion device exhaust

Typical Users of Nutech 3000

- **Government environment protection regulators.** They can bring this instrument to raid a suspected over-emission site and do test on-site to see if there is an over-emission. If yes, they can fine the owner. They can also use this instrument to do a before and after comparison to evaluate the effectiveness of their VOC control measures .
- **Polluters/factories.** Some polluters are required to install online analyzers to deliver continuous real-time test results all year long. But many polluters only need to perform periodical (weekly, monthly, quarterly ect) or occasional VOC testing. In this situation, a portable analyzer would be more applicable than an online analyzer.
- **Commercial testing companies.** They can use the portable VOCs analyzer to provide on-site VOCs testing service.
- **Research institutes.** They can use this instrument on their VOCs research projects.

Technology Principle of Nutech 3000

TVOC can be represented by THC or NMHC. The Nutech 3000 adopts catalytic oxidation + double FIDs technology to **simultaneously** analyzes THC & NMHC.

The sample gas is introduced to the analyzer by 2 channels. FID 1 analyzes the concentration of THC (total hydrocarbon) of the gas sample in channel 1. And the catalytic oxidation module oxidizes the NMHC (non-methane hydrocarbon) into CO₂ and H₂O in channel 2 and thus FID 2 only analyzes the concentration of methane. The concentration of NMHC can be calculated by concentration of THC subtracts the concentration of methane.

Concentration of NMHC = Concentration of THC – Concentration of CH₄



Analyzed by FID 1



Analyzed by FID 2

Advantages of Nutech 3000

The most lightweight portable THC & NMHC Analyzer on the market so far. Less than 12 KG.

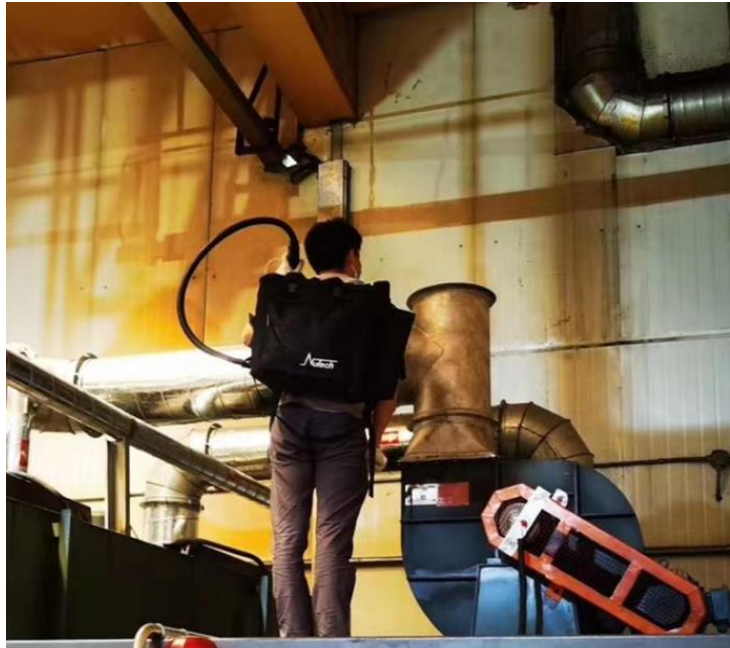
- Easily portable by one person and thus less manpower invest when executing monitoring task.
- Can be brought to inspection site by public transport like bus, metro, train. No need to send by car.



Advantages of Nutech 3000

Analyze THC & NMHC simultaneously with one single unit.

- 2 monitoring targets with one analyzer. No need to purchase another NMHC analyzer.



One analyzer for both THC & NMHC



Competing products needs 2 units

Advantages of Nutech 3000

Built-in H₂ & zero air supply

- H₂ is supplied by mini built-in metal hydride cylinder with very low pressure and thus is safe and easy to handle and transport.
- A full H₂ cylinder can support more than 60 hours of operation. It is recycle.
- Zero air (used for combustion air for FID) is supplied by internal pump.
- Also support external gas cylinder.

Competing product needs external gas supply



Advantages of Nutech 3000

Adopt high precision EPC for precise flow control

- The flow of H₂, air and sample gas are all controlled by EPC.
- Enhance the flow stability and thus ensure a better stability of testing data.
- Meet the analysis requirement of low concentration or low volume sample and save gas consumption.



Advantages of Nutech 3000

Powered by chargeable battery and 110V/220V power supply.

- Perfect for locations that is difficult or impossible to access to power supply.
- Perfect for emergency monitoring where customers need to analyze the gas as soon as they arrive at the site as the Nutech 3000 can pre-heat on road using battery.
- No need to bring long extension (50m or 100m) power cables in case of the socket is very far away.
- The battery can support maximum 6 hours of operation depending on working conditions.

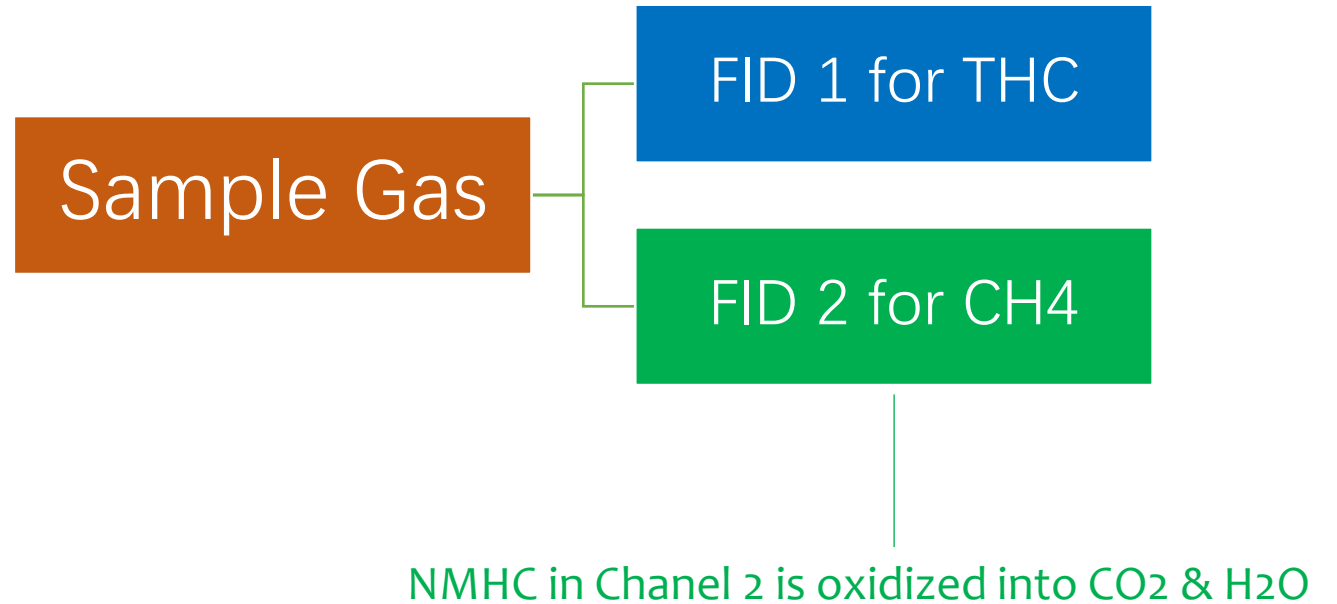


Nutech 3000 pre-heat on the car, ready to start monitoring when arrive on site

Advantages of Nutech 3000

Catalytic oxidation + double FIDs design, can deliver test results as fast as every seconds.

- Collect more data in limited time thus the test results is more representative.
- Perfect for applications which the gas concentration changes rapidly.
- Much faster than catalytic oxidation + single FID or GC-FID solution.



Advantages of Nutech 3000

Wide measuring range (0~10/100/1000/10000mg/m³) and low detection limit (<0.13 ppm) ensure it can be used for stack (extremely high concentration), inside the factory (medium concentration) and outside the factory (low concentration).



Stack
High Concentration



Inside the Factory
Medium Concentration



Outside the Factory
Low Concentration

Advantages of Nutech 3000

Sampling line can be heated up to 180°C max to avoid sample condensation and adsorption.

- Sample gas, especially sample gas in stack, is hot and moisture. In US, Europe and China, the standards require the temperature of the sampling line to be higher than the temperature of sample gas to avoid sample condensation & adsorption.

Advantages of Nutech 3000

Silanized sampling line to avoid sample adsorption.

- Silanization is a special surface treatment technology to make the surface utmost inert by adding a special coating to avoid sample adsorption and thus ensure the most accurate test results.

Table 1 Corrosion Comparison

Sample	A	B	C	D
condition	machine finish no coating	EP finish no coating	machine finish with Silcolloy®	EP finish with Silcolloy®
corrosion current (µA)	4000	64	21	0.083
corrosion rate (mpy)	125.3	2.01	0.66	0.0025
Improvement factor	N. A.	62x	190x	50120x

Silanization significantly increase the performance.

Advantages of Nutech 3000

System can be purged automatically or manually for utmost cleanliness.

- There is a cleaning process between every analysis. The cleaning time can be set.
- Customer can also implement manual purge.
- Purge function can keep the system clean and thus deliver more accurate test results.

Advantages of Nutech 3000

Detachable Microsoft Surface Go tablet for instrument control and data reading and process.

- The most convenient and intuitive way to control the instrument.
- Test data can be exported in Excel file and printed easily (the tablet is running on WIN 10).
- The tablet can be detached from the main unit and still connects with the main unit within 50 meters via WIFI. This enables the operator to operate while away from excessive heat and high concentration pollution.



Operators are exposed to hazardous conditions for competing products



Remote control and data reading with Nutech 3000's detachable tablet

Advantages of Nutech 3000

Working Temperature -20~50°C

- The wide working temperature is specially useful in markets where the temperature in winter is lower than 0°C.

Advantages of Nutech 3000

No need disposable gas bottle and thus keep the running cost minimal.

- The running cost of Nutech 3000 is the lowest in its kind.



Competing products need disposable gas bottle

Thank You for Your Time



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