

MANTECH Multi-Parameter Analysis Systems

Optimize Results
Improve Sustainability
Increase Throughput



About MANTECH

- MANTECH is a manufacturer of laboratory, portable and online, analyzers for water, wastewater and soils.
- With more than 2,500 analyzers installed in 45 countries, over 500,000 samples are analyzed everyday by MANTECH systems.



MANTECH's mission is to generate the highest quality results in the shortest amount of time with the goal of enabling our customers to have significant positive economic and sustainable impacts on their businesses and communities.

MANTECH Products

- MT Titration and Multi-Parameter

- Environmental
- Agricultural
- Manufacturing
- Pharmaceutical

- Automated BOD

- PeCOD

- Rapid, Safe, Green COD
- Water and Wastewater



MT Series Environmental Analyzers

- Automated Multi-Parameter Analysis from a Single Sample
- Feature X,Y,Z Autosamplers
- Proven, Reliable and Robust
- Most Popular Applications
 - pH, Conductivity and Alkalinity
 - Automated Turbidity
 - All waters
 - Metals screening
 - Fluoride, Chloride & Ammonia



MT-Series System Levels

MT-10



MT-30



MT-100



MT-10 Overview

- Budget Conscious, “Smart” Model
- Utilizes Static Rinse Sites
- Operator refreshes rinse sites when necessary
- In-Beaker Analysis
- x1 Destructive Analysis per sample
- All waste contained in vessels



MT-30 Overview

- Upgraded Rinse Station to Dynamic Rinsing
- IntelliRinse™ Option Available
- Supports all sample vessels including customer-supplied
- x1 Destructive Analysis per sample



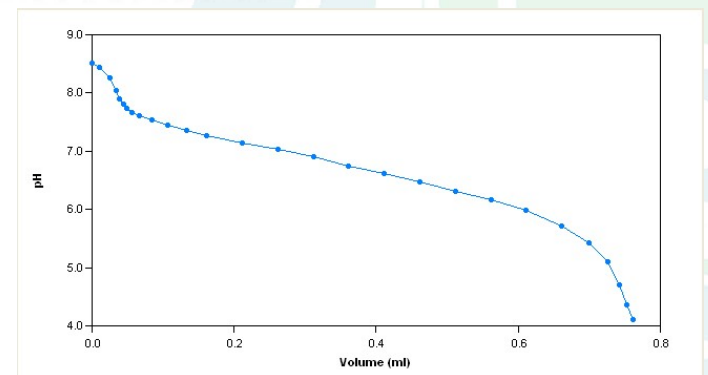
MT-100 Overview

- Highest level of automation
- Dynamic Rinsing x2 locations with IntelliRinse™ Option
- Supports 15mL Sample Tubes, allowing 212 samples in smallest Autosampler
- TitrasiP Analysis
- Multiple Destructive Analyses per sample



Hardware: TitrasiP™

- Sample mixing vessel
- Allows for multiple destructive analyses (titrations, PeCOD, etc.)
- RapidAlk™
- Automated Rinsing and Draining
- 35mL or 85mL Vessel
- Dual-Head Rinse Pump
- Auto-Pipetting to Class A specifications



Titrasip™ Analysis vs. In-Beaker Analysis

Titrasip Analysis

- Multiple Destructive
- Dual-Head Rinse Pump
- Automated Pipetting
- Auto-dilution

In-Beaker Analysis

- One Destructive
- Requires Separate Rinse Pump
- Analysis in Sample Cup
- Over-range samples must be re-run
- Capability to add IntelliVol™ for sample levelling to a set volume

Hardware: AutoMax™ Samplers

Model	Sample Capacity (50mL)	Sample Capacity (125mL)	Sample Capacity (BOD)
AutoMax73	73	30	11
AutoMax122	122	47	23
AutoMax197	197	77	N/A
AutoMax354	312	96	54
AutoMax372	416	128	72
AutoMax390	520	160	90

All Models Can Accommodate
Laboratory-Supplied Vessels!



T10 Turbidity

- Automated Turbidity from batches of samples
- Majority of volume can be used for further analyses
- Intelligent rinsing and meter averaging ensure quality results for every sample
- T10 can also be used as a handheld meter

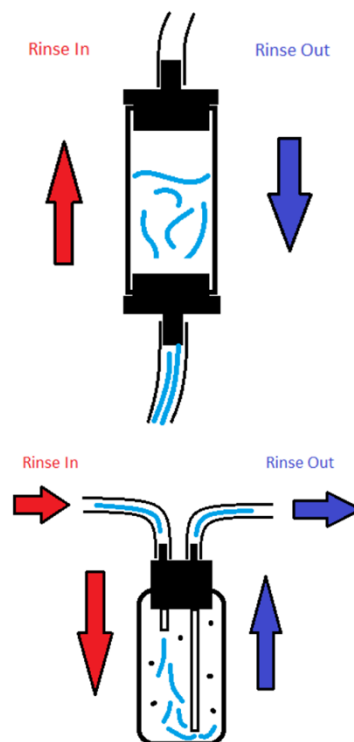


T10 – Automated Turbidity from 50mL Tubes

- Small volume
- Zero bubbles
- Proprietary flow cell
- Simple and fast
 - 2-3 min per sample if alone
 - Faster or no time added when combined with other parameters (dependant upon on the sample cups utilized)
- Powered direct by USB
- Multi-point, single point and zero point calibrations

MANTECH proprietary flow cell

- “flows bottom to top” vs top in/top out
- Cell is completely emptied between sample and rinse



MT – Online Analyzers

- MT-100 in a cabinet
 - Software is the “sampling” device; for example
 - Sample and measure every hour
 - Calibrate every day at 6am
 - QC check at 12:30pm and 12:30am
 - Applications
 - Online alkalinity and fluoride
 - pH, EC and PeCOD in a drinking water plant
 - Strengths are multi-parameter and PeCOD (when required)
 - Examples:
 - Potato Chip Manufacturer: peracetic acid disinfection monitoring of wash water for potatoes for chips
 - Drinking water monitoring of Source water and treated drinking water, EC, pH and “optimized” TOC (PeCOD) every 2 hours
 - Dual stream



Common MANTECH Chemistry Methods

- Acidity
- Alkalinity
- Ammonia
- Chloride
- Color
- Conductivity
- Oxidation-Reduction Potential (ORP)
- Dissolved Oxygen
- pH
- Salinity
- Temperature
- PeCOD
- TDS
- Hardness
- Turbidity
- Fluoride
- Nitrate



Multi-Parameter Capabilities

- MANTECH Systems have ability to perform many analyses on one sample
- Additional analysis capabilities easily upgraded
- Number of possible analyses depends on setup
- MANTECH Systems are defined by:
 - Sample size (50mL vs. 125mL)
 - Titrasip vs. In-Beaker
 - Number of Electrodes
 - Speed of Analysis



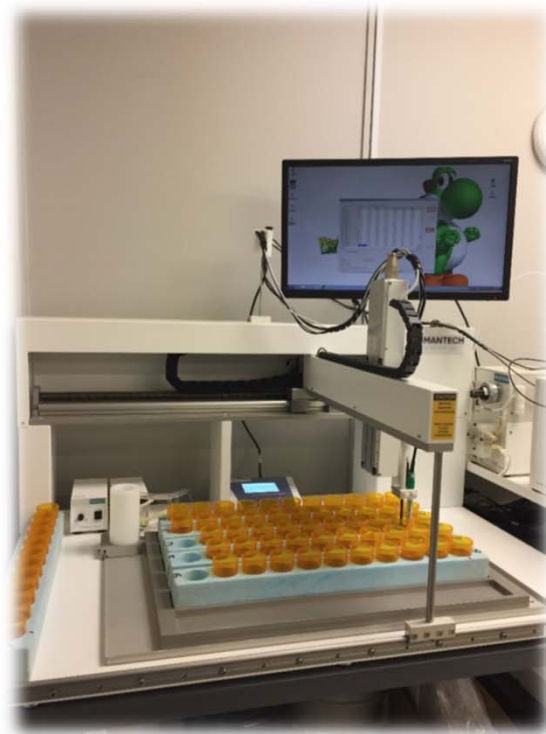
MT Titration and Multi-Parameter Advantages

- X,Y,Z Autosamplers
- 95,300 step buret drives
- Rapid Titrations customizable to suit requirements
- Separate conductivity from pH measurements, if required
- Turbidity with only 40ml of sample, and fast
- TitraSip™ Module: pipetting, rinsing, analysis in one module
- Any combination of parameters from a single vessel with MT-100
- Low-cost or customer supplied vessel options

Agricultural Laboratories



Automated water/salt addition to create soil slurry for analysis



Irrigation water "Production" System



Dual Probe pH and EC
Can also 2x or 4x
pH/EC probes for fast
throughput

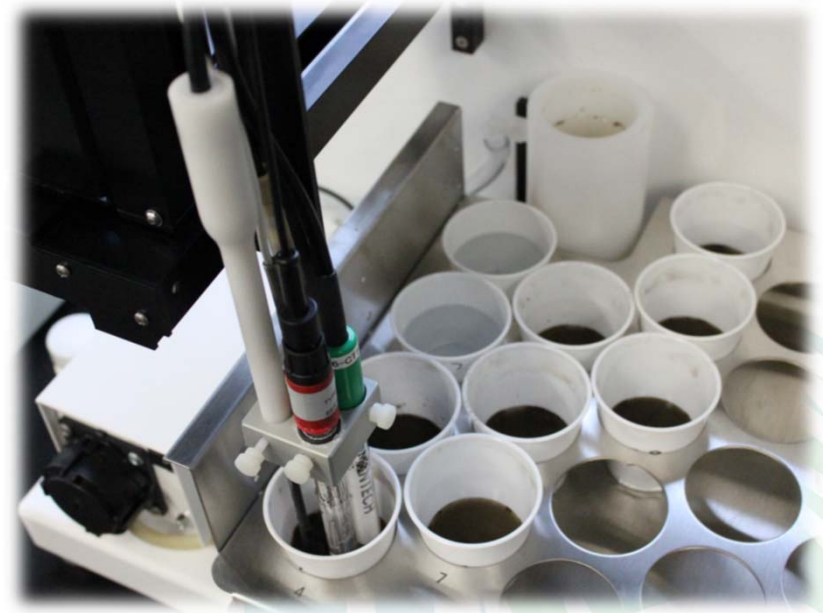
Agricultural Laboratories



Soil pH in 50ml tubes



Powerful, baffled soil stirrer



Soil pH and EC together
In low cost cups

Manufacturing and Process Industries

Benchtop Titrator for
pH and Acidity In Wine



MT-100 performing pH, EC, Alkalinity,
Turbidity, Colour, and Ammonia at a
Remote Mine Site

Online pH, Conductivity, and COD
Installed on Rolling Cart for use
at different plant locations



PC-BOD – Automated BOD₅ Analyzers

- Automated 5 Day BOD Analysis
 - Automated sample preparation
 - Dissolved oxygen Measurements
 - Initials
 - Finals (5 Days Later)
 - Automated Calculations for BOD₅ Made Easy and Trustworthy
- Single and Dual Probe



Automated BOD₅ with 10 Minute BOD Estimator in a Single Package



- Screen for BOD with a FAST and GREEN Method
- Connect and operate simultaneously from the same computer
- Reduce # of Dilutions and ensure Valid BOD results after 5 days



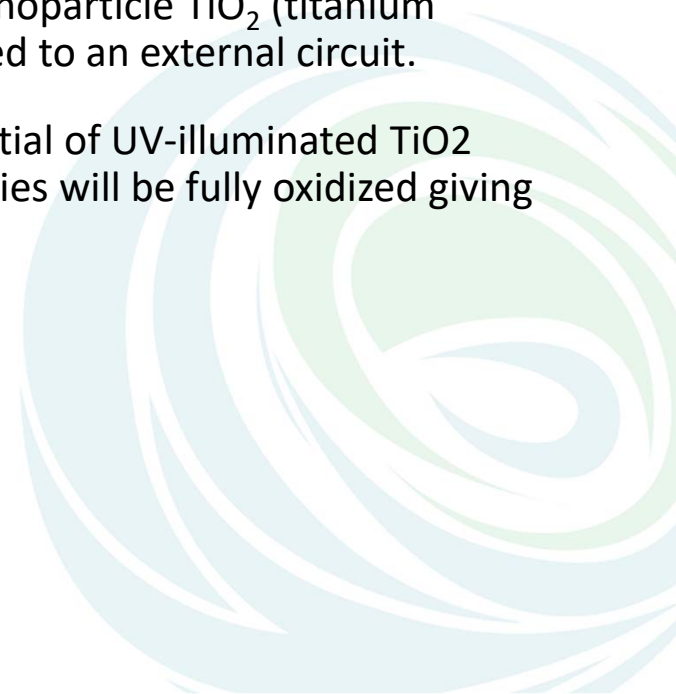
PeCOD[®] COD Analyzer

- A patented technology that measures soluble COD in real time by oxidizing organic matter, and measuring the extent of oxidation.
- PeCOD[®] eliminates the use of **mercury and potassium dichromate**
- Safe for both the environment and the analyst
- Results in less than 10 minutes
- Accurate method with a detection limit of 0.7 mg/L, and upper range of 15,000 mg/L



Nanotechnology

- The core of the technology is the PeCOD[®] sensor, which consists of a UV-activated nanoparticle TiO₂ (titanium dioxide) photocatalyst coupled to an external circuit.
- The powerful oxidizing potential of UV-illuminated TiO₂ ensures that virtually all species will be fully oxidized giving a true measure of COD.



Standard Test Method for Photoelectrochemical Oxygen Demand of Freshwater Sources for Drinking Water Treatment Plants and Treated Drinking Water

- Approved and Published
- D8084
- NEW METHOD
 - New organic monitoring tool
 - New parameter
- 2 in 1 SUVA Analyzer
 - “Optimized” TOC



AMERICAN WATER



PeCOD[®] Applications

Municipal



- Incoming COD monitoring
- Weather events
- Discharge compliance
- Potable water analysis
- Water reuse applications

Industrial



- In-plant COD monitoring
- Process optimization
- Upset prevention
- Discharge compliance
- Fine avoidance

Laboratory



- Rapid COD analysis
- Automated with multi-parameter
- Improved accuracy and detection
- Safety of employees
- Reduction of hazardous waste

Trusted & Proven Globally



MANTECH Resources

- Website: www.mantech-inc.com
- Email: info@mantech-inc.com
- Telephone: [+1-519-763-4245](tel:+1-519-763-4245)

Thank you for your time!

