



Automotive



Fluids



Electronics



SOLUTIONS FOR CLEANLINESS / CONTAMINATION ANALYSIS (FOR COMPONENT AND FLUID)

Critical components going into fluid or air circuitry, engine components and some transmission assemblies are needed to be free from particle contamination arising from manufacturing and assembly process. Particle contamination beyond limit will invariably affect the performance of the component during its life cycle.

Also solid contaminants in fluids such as oils, fuels and coolant may cause serious problems during service life of equipment.

Cleanliness tests (QUALITATIVE AND QUANTITATIVE) performed on finished components form the integral part of quality control system of any manufacturer involved in manufacturing these critical components.

Conation Technologies, a pioneer in India for cleanliness test equipment manufacturing, has specialized systems for Component's and Fluid Cleanliness Test.

• Component Test Cleaning • Contamination analysis – Gravimetry & Granulometry (particle analysis)

Solutions offered by Conation are compliant to most of the international standards such as **VDA19.1, ISO16232-2018, ISO 4406 & 4407, ISO 18413, ASTM F312 etc.** All these equipment have been designed after careful understanding of relevant standards and customer requirements.

Customization of most of the equipment are possible to comply with any OE standard

Being first in India to launch a fully automated Particle Analysis System, in-house developed, Conation Technologies has extensive experience in understanding the test requirements and offering apt solutions for cleanliness test.

- Fuel Systems
- Breaking Systems
- Steering
- Air intake systems and exhaust tracks
- Air-conditioning and cooling systems
- Systems for post-treating exhaust gases
- Lubricating and Hydraulic oils

PARTICLE ANALYSIS SYSTEMS

FULLY AUTOMATIC PARTICLE ANALYZERS

STEREOBASED SYSTEMS : Particle Size Measurement From 15 Micron

Model: Filtrate II (P)

Features/Highlights

- **Parallel Optics Stereozoom microscope – 8X to 50X – Make CONATION; White LED illumination**
- Better resolution and image clarity
- Accuracy of results improved due to parallel optics
- Motorized X-Y scanning stage with controller, Manual focusing (Z drive)
- High Precision screw and stepper motor driven XY stage; Travel range - 60X80 mm; Positioning accuracy - 10 micron
- Controller for motorized X, Y operation
- 5 MP Color camera, DeXel-CAM (Made in Germany); 2.2X2.2 square pixel
- DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
- State of the art Unified and simplified user interface software, user friendly navigation

Optional – Motorized Z (focusing), Joystick, Advanced reporting tool & analytics software etc



Model: Filtrate II

Features/Highlights

- **Stereozoom Microscope – 7X to 45X – Make CONATION, White LED illumination**
- Motorized X-Y scanning stage with controller, Manual focusing (Z drive)
- High Precision screw and stepper motor driven XY stage; Travel range - 60X80 mm; Positioning accuracy - 10 micron
- Controller for motorized X, Y operation
- 5 MP Color camera, DeXel-CAM (Made in Germany); 2.2X2.2 square pixel

- DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
 - State of the art Unified and simplified user interface software, user friendly navigation
- Optional – Motorized Z (focusing), Joystick, Advanced reporting tool & analytics software etc



Model: Filtrate II (N)

Features/Highlights

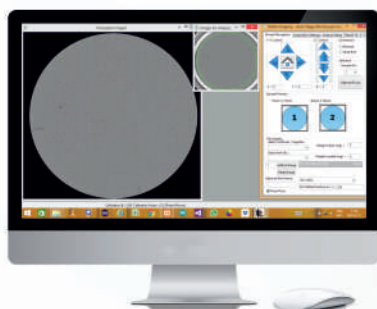
- **Stereozoom microscope – 6.7X to 50X – Make NIKON, Zoom Ratio - 7.5:1; White LED illumination**
- Nikon's unparalleled to capture each particle with greater clarity
- Motorized X-Y scanning stage with controller, Manual focusing (Z drive)
- High Precision screw and stepper motor driven XY stage; Travel range - 60X80 mm; Positioning accuracy - 10 micron
- Controller for motorized X, Y operation
- 5 MP Color camera, DeXel-CAM (Made in Germany); 2.2X2.2 square pixel
- DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
- State of the art Unified and simplified user interface software, user friendly navigation

Optional – Motorized Z (focusing), Joystick, Advanced reporting tool & analytics software etc



OPTICAL MICROSCOPE BASED SYSTEMS

Particle Size Measurement Right From 1 Micron



Model: Filtrate Optical IV

Features/Highlights

- **CONATION** make Advance vertical microscope – 50X to 200X
 - **Advanced Infinity Optics; Semi-Apochromat objectives 5X, 10X, 20X** with higher numerical aperture (N.A.)
 - **Brightfield and Darkfield observation**
 - **Polarizer and Analyzer**
 - **Motorized programmable XY stage, Travel range - 80X60 mm; Positioning accuracy - 5 micron**
 - Motorized Z (focusing); focusing accuracy - 1 micron
 - Controller for XYZ moterization and Joystick for user-friendly operation
 - Halogen 24V/100W high intensity illumination
 - 5 MP Color camera DeXel-CAM (Made in Germany)
 - DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
 - State of the art Unified and simplified user interface software, user friendly navigation
 - Many other advanced features in Microscope system
- Optional – Advanced reporting tool & analytics software, Apo chromate objectives 50X and 100X, DIC etc**



Model: Filtrate Optical III

Features/Highlights

- **CONATION** make vertical microscope – 50X to 200X;
 - **UIS Infinity Optics; Plan Achromatic objectives 5X, 10X, 20X**
 - **Polarizer and Analyzer**
 - **Motorized programmable XY stage, Travel range - 50X50 mm; Positioning accuracy - 10 micron**
 - Motorized Z (focusing); focusing accuracy - 2 micron
 - Controller for XYZ motorized operation
 - Halogen 6V/30W illumination
 - 5 MP Color camera DeXel-CAM (Made in Germany)
 - DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
 - State of the art Unified and simplified user interface software, user friendly navigation
- Optional – Joystick, Advanced reporting tool & analytics software, 90 mm scanning stage, Objectives 50X & 100X, m etc.**



Model: Filtrate Optical NLV

Features/Highlights

- **NIKON make, Model LV-150 vertical microscope – 50X to 200X**
 - **Nikon's unparalleled to capture each particle with greater clarity**
 - **High class Semi-Apo "CFI TU Plan FLUOR" objectives 5X, 10X, 20X**
 - **Polarizer and Analyzer** • Halogen or LED illumination option
 - **Motorized programmable XY stage, Travel range - 80X60 mm; Positioning accuracy - 5 micron**
 - Motorized Z (focusing); focusing accuracy - 1 micron
 - Controller for XYZ moterization and Joystick for user-friendly operation
 - 5 MP Color camera DeXel-CAM (Made in Germany)
 - DeXel-Filtrate Imaging software Compliant to ISO 4407, IS 16232, VDA19.1 etc
 - State of the art Unified and simplified user interface software, user friendly navigation
 - Many other advanced features in Microscope system
- Optional – Advanced reporting tool and analytics software, Sem-Apo 50X & 100X objectives, DIC etc**

BASIC PARTICLE ANALYZERS

Scanner based system, Model: Filtrates

Features/Highlights

- High Resolution scanner bed
- DeXel-Filtrate Imaging software – Specially designed Image analyzer for analyzing single scanned image of filter paper for determination of particulate contamination as per various international standards.
- Quick and easier analysis



Semi-Auto system, Model: Filtrate I

Features/Highlights

- Stereozoom microscope 7X to 45X - Make Conation
- Manual X-Y scanning stage, Manual focusing
- 5 MP Color camera, DeXel-CAM (Made in Germany)
- DeXel-Filtrate I Imaging software - Specially designed Image analyzer to manually capture set of images, batch run analysis, Separation of particles in Metallic, Non-metallic, fiber and Distribution of them as per their sizes, Reporting of largest particles from analyzed data and Customized Report generation

Upgradation of Existing Microscope to Automated particle analysis system

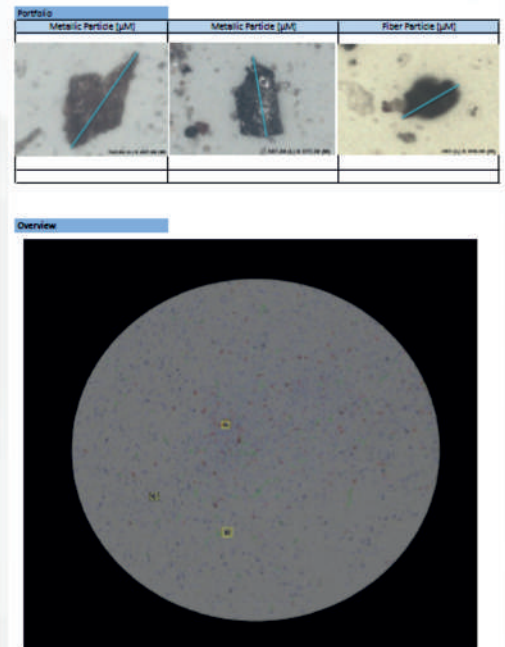
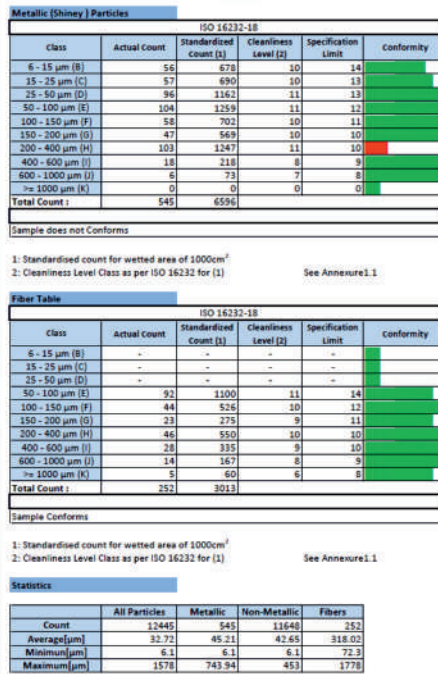
Any of the existing vertical microscope of any make (Nikon, Leica, Carl Zeiss, Olympus etc) can be upgraded to fully automatic system for particle or metallurgical analysis by incorporating Conation make Motorized XYZ stage, color camera and dedicated image analysis software.



All Particle Analysis Systems come with customizable 'Info-graphical' Report which includes

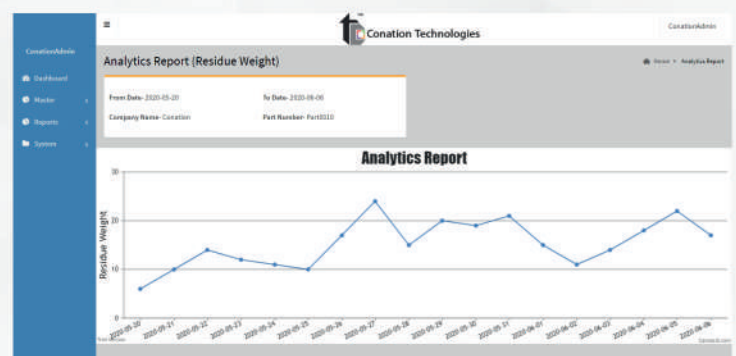
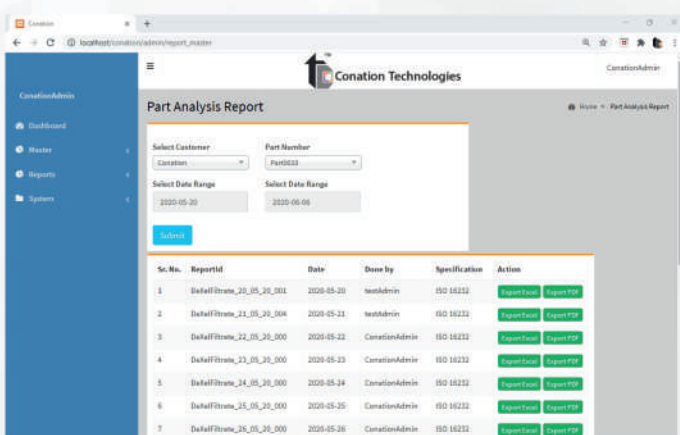
Total No. of particles, separation as per type (metallic, non-metallic and fibre OR Reflective and Non-reflective), distribution as per size, Component Cleanliness Code (CCC), Geometrical parameters such as major and minor axes, area, perimeter etc for individual particle along with graph and pie charts for various results.

- Report also includes Sample details, test condition details, equipment details and user details apart from results.
- Reports are as per ISO 16232/ VDA 19.1 but can be customizable for any OE standard or User requirement.
- Report can be offered in Excel and PDF



Specially designed Advance Reporting Tool and Analytics Software

- Integrates the customer database (customer name, ID, address etc), part database (part no., part name, part area/wetted surface area etc) to reporting tool of Particle Analysis system
- User can generate the reports as per selected customer and as per selected part no.; as per provided report template. The report shall include patch photograph, derived CLEANLINESS CLASS as per specified standard / customer etc.
- Special login to authorized users only. Report will have Name and ID of user who has generated it.
- Monthly / Yearly analysis of cleanliness reports as per part no. / Customer
- Admin can fetch specific data using different search parameters. Search parameters can be user, part No., customer ID, or combination of any of these 3 parameters.
- Fetches data can be exported to excel for further analytics.



CONTAMINATION EXTRACTION AND FILTRATION SYSTEMS

PRESSURIZED CLEANING AND FILTRATION SYSTEMS

FOR SMALL AND MEDIUM SIZE COMPONENTS

All critical and intricate; small and medium engine components like Fuel injectors, nozzles, springs, tappets, valves, piston rings, pistons, turbocharger wheels, connecting rods, small powertrain components, fasteners etc

- Fully Enclosed Cleaning chamber – Made from high grade of S.S., Inside Mirror finish polished (customized size) with manual front loading
- Single or cascade filtration (test filtration); vacuum assisted
- In line multi-stage filtration for solvent recirculation
- Blank value test facility
- HMI Touch screen with PLC for feeding different programs, control and operation
- Variables - Cleaning nozzle sizes, plugs, sample fixtures, tank sizes
- Fume extraction with AHU (optional)



FOR MEDIUM AND LARGE SIZE COMPONENTS

All medium and large Cylinder heads, Cylinder Blocks, Crankcase, Crankshafts, Intake and exhaust manifolds, turbocharger housings, Flywheels, Large powertrain components etc

- Extra Large Cleaning chamber – Made from high grade of S.S., Inside Mirror finish polished (customized size) with manual front loading
- Pneumatic top door for sample loading / unloading (Optional)
- Single or cascade filtration (test filtration); vacuum assisted
- In line multi-stage filtration for solvent recirculation
- Blank value test facility
- HMI Touch screen with PLC for feeding different programs, control and operation
- Variables - Cleaning nozzle sizes, plugs, sample fixtures, tank sizes
- Fume extraction with AHU
- Sample rotation/movement while cleaning (optional and customizable)



TABLE TOP CLEANING AND FILTRATION SYSTEM

This table top kit from Merck Millipore consist of complete extraction as well as filtration assemblies.

i) Model: FiltrPrep I

For smaller components which can be washed in separate SS tray with pressurized filterjet gun and solvent can be further filtered through filtration assembly assisted with vacuum system.

System typically consist of

- Vacuum / Pressure Pump
- Hydrosol SST Filter Holder, 47 mm
- Vacuum filtering flask, 1 L
- Filter forceps
- Vacuum trap assembly
- Solvent Filtering Dispenser
- Dispensing Pressure Vessel
- Filterjet Solvent Dispenser (Gun)
- Vacuum hose silicone 4.5" long
- SS Tray



ULTRASONIC CLEANING AND FILTRATION SYSTEMS

INTEGRATED ULTRASONIC CLEANING AND FILTRATION SYSTEM

- Ultrasonic Cleaning chamber – Made from high grade of S.S., Inside Mirror finish polished (customized size) with manual loading
- Single or cascade filtration (test filtration); vacuum assisted
- In line multi-stage filtration for solvent recirculation
- Timer
- Variables – chamber size, frequency, power
- Different size baskets and containers for samples



TABLE TOP ULTRASONIC CLEANING AND FILTRATION SYSTEM

Table top systems includes ultrasonic tanks of desired capacity and independent filtration system (from Merck Millipore)
Ultrasonic cleaners of different sizes and capacities depending upon component's size and shape. Component is placed in suitable ultrasonic tank containing specific liquid and cleaned for predetermined time, liquid is then collected in suitable container and later filtered through separate filtration flask having vacuum attachment.

Accessories and Consumables

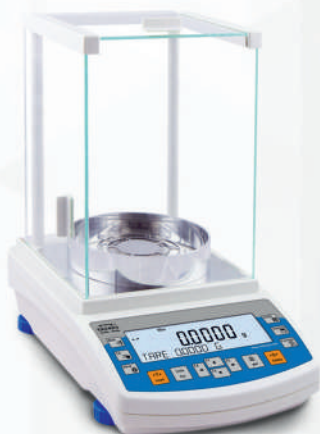
a. Laboratory Drying Oven

- Temp - upto 200 Deg C
- Internal Dimensions –Aprox 10"X10"X10"
- Temp. Control.: Microprocessor based PID Temperature Controller.
- Inner Chamber: S.S. 304 quality with mirror finish buffing
- Outer Chamber: Mild Steel duly powder coated

Optional: Timer facility



ACCESSORIES



b. Precision Balance for Gravimetry Analysis

European / Japan / US make precision balance for weighing the filter paper and contamination precisely.

i) 0.1 mg resolution

Analytical balance, 80 mm pan size, capacity 220g, resolution 0.1 mg with internal calibration

ii) 0.01 mg resolution

Semi-micro balance, 80 mm pan size, Dual range, Capacity 82g 0.01mg / 220g 0.1 mg with internal calibration

c. Desiccators

Glass / Plastic desiccators for cooling down the filter paper after removing from oven

1. Filter Papers

From Merck Millipore of various pore sizes, material and diameters

Mixed Esters of Cellulose Filter Papers

0.45 μ m, 25mm dia (100/Pk) | 0.45 μ m, 47mm dia (100/Pk)

1.2 μ m, 47mm (100/Pk) | 3.0 μ m, 47mm (100/Pk)

5.0 μ m, 47mm (100/Pk) | 8.0 μ m, 47mm (100/Pk)

Nylon Net Filter Papers -

10 μ m/ 20 μ m/50 μ m, 47mm (100/Pk)

2. Petridish, MOC Glass, 47 mm dia

3. Petrislides, 100/pk

4. Vacuum hose, Silicone



CONSUMABLES

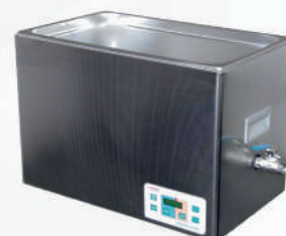
Cleanliness / Contamination Analysis Testing Services

Conation offer complete cleanliness testing services for gravimetric and Particle Analysis Testing.

Being manufacturer and having served many internationals throughout the automotive industry, our accumulated knowledge of Cleanliness Tests are best utilized in our services as well. Tests can be conducted as per ISO 4406 and 4407, ISO 16232-18, VDA 19.1 or any other relevant OE standard if required. Particle Analysis reports can be generated as per any of these standards. You may please share your relevant standard so as to understand your requirement. Any other particle testing pertaining to metal or non-metallic powder, dust, slag, contamination etc can also be done with microscopy method

Laboratory Setup Includes :

- Contamination analysis Kit from Merck Millipore consisting of Vacuum/Pressure Pump, Pressure vessel (5 litres), Hydrosol filter holder with filtration flask, Vacuum trap assembly and filterjet solvent dispenser (pressure gun).
- Ultrasonic cleaning tank – Make RTUL, Capacity – 45 Ltrs with different beakers and baskets
- Oven with SS chamber and temp upto 200 ° C; accuracy within +/- 2 ° C
- Balance with 0.01 mg readability – Radwag Poland Make, calibration is traceable to NABL
- Cleanliness Particle Analysis System, Model: DeXel-Filtrate II P – Parallel Optic Stereozoom Microscope system with Motorized stage and advanced particle analysis software – for measurement of 15 micron and above particles, calibration traceable to NABL
- Cleanliness Particle Analysis System, Model: DeXel-Filtrate Optical NLV - Nikon Optical Microscope system with Motorized stage and advanced particle analysis software – for measurement of 5 micron and above particles, calibration traceable to NABL or CMTI



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