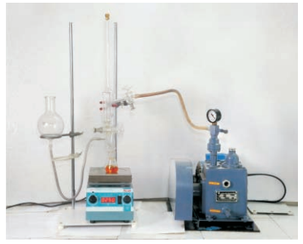
GC - 2011 Configured as MC-TOGA

GC -2010 configured as LC-TOGA



Extraction Method 7.3 of IEC 60567

GC - Pu Portable DGA ideal for Mobile Lab

GC - Dhruva Configured for Partial Degassing

PEM Based Hydrogen Generator

High Capacity Zero Air Generator

Finished Product Storage Area

Product Testing Area

Baroda 1972

Baroda 1980

Solan

Training Hall

A Company of Technocrats Since 1972

DGA / TOGA

With Head Space Auto Sampler conforming to IEC 60567 : 7.5

Based on Dhruva S2TS

TÜV NABCB QMS 002
An ISO 9001 Certified Company

Chromatography and Instruments Company

A Company of Technocrats
Since 1972

Dhruva S2TS

121, 122 GIDC Makarpura, Vadodara - 390 010. Gujarat.
Tel : 0265 - 2633926, 2631830 • Fax : 0265 - 2638273
Email : info@chromatographyinst.com / cicpltd@gmail.com
Web. : www.chromatographyinst.com

System Capabilities

The Dhruva S2TS (Dhruva Series 2 TOGA System) is a smart GC system especially configured for carrying out the Dissolved Gas Analysis (DGA) for transformer oil. The system is designed on our very successful & stable Dhruva GC to provide the customer with a truly advanced system built specifically for the DGA application. The system incorporates features that ensure that the system meets the requirements of the ASTM D-3612 (A/C), IEC 60599 & 60567 & IS 10593 as a stand alone unit. The Dhruva S2TS can be coupled to a gas extraction unit depending upon the customer choice - Single Cycle Partial Degassing Unit, Multi Cycle Partial Degassing Unit, Indigenous Manual Head Space Sampling with 1 vial or Head Space Auto Sampling system depending on the customer requirement.

- Color Touch Screen system with all functions & Parameters controlled through the touch Screen
- 6 (8) Channels of temperature controlled zones (PID control) for Oven / Injector / FID / TCD / Methanizer / Spare
- EPC control for all the gas lines - viz Carrier, Hydrogen & Zero Air can be provided (pneumatic air for valve operation excluded).
- Inline DMFC from parker for the carrier lines for providing ultra
- 12 auxiliary device control for controlling the various valves, signals & data systems with facility to program each zone for four steps to achieve a very flexible analytical setup
- MDL of 0.1 PPM for Methane, 1 PPM Hydrogen & 5 PPM CO / CO2 achievable for Dissolved Gases in Insulating Oil under ideal operating conditions.
- Auto Diagnostics for the system & specialized Interpretation S/W
- Ethernet control using the FTP protocol enables the user to get on site support from the factory using any standard software like Team viewer or Remote Desktop.
- Select components to be analysed from among Hydrogen, CO, Methane, Ethane, Ethylene, Acetylene, Co2, Oxygen, Nitrogen & Propane + Propylene. The first 6 components are standard while the other 3 need to be specified for the system to be analytically configured.
- Gas Generators(if included while ordering) for Hydrogen & zero air ensure better accuracies, resolution and lesser down times.

Specifications

CONTROL SYSTEM

Controller Action	24 Bit Micro Controller
Controller Type	1/4" VGA Touch Screen
Display & Colours	4000 Colours
Temperature Zones	Up to 8 - 2 Prog. & 6 Iso.
Pressure Zones	Up to 8 - 2 Prog. & 6 Iso.
Auxiliary Control Zones	Up to 12 with 4 Step Prog.
Number of Methods	Unlimited
External Start Pulse	Yes, for GC Start Externally
External System Control	Ethernet / Modbus RTU-485

COLUMN OVEN

Inner Volume	+22 Liters
Temperature Range	Ambient to 500°C
Cryogenic Option	Optionally Available
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	± 0.5% of Set Temperature
Temperature Stability	± 0.1°C
Overheat Protection	Dual Electronics + s/w
Heating Rate	50°C to 350°C in 7 min.
Programming Steps	32 Segment Ramp & Soak
Temperature Setting	0.1°C / 1.0°C

DETECTORS

Choice of Detectors*	FID/TCD/μ-TCD/PDHID/ECD
Number of Detectors	Any 3
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	+ 0.5% of Set Temperature
Temperature Stability	+ 0.1°C
Overheat Protection	Dual Electronics + s/w

*Other Detectors Like NPD, HID, TID, FPD etc. On Request from OEM

INJECTORS - INLET SYSTEMS

Choice of Inlet System	All Available
Number of Injectors	Up to 4
Temperature Range	Ambient to 450°C
Temperature Read Out	Dual Colour Display - PV & SP
Temperature Accuracy	± 0.5% of Set Temperature
Temperature Stability	± 0.1°C
Overheat Protection	Dual Electronics + s/w

ROBOTICS / AUTO MODE

Choice of Head Space Auto Samplers from HTA Srl
Choice of Liquid Auto Samplers from HTA Srl
Choice of Thermal Desorbers / Purge & Trap from CDS Inc
Choice of Pyrolyzers from CDS Inc

CHOICE OF PNEUMATICS

Pressure & Flow Control	Three Stage
Flow Control Option	EPP / EPC / AFC / DMFC / MMV
EPC Settability	0.1 PSI to 999 PSI
Programmable Steps	Up to 16 Steps

GENERAL SPECIFICATIONS

Results Re - Transmission	Up to 900 meters Optional
Conversion to OLGC	Yes
Voltage Input	230 VAC ± 10%
Power Requirements	15 Amperes
Operating Temperature	0 ~ 50°C
Humidity	0 ~ 95% NC RH
Weight	Approximately 50 KG

Choice of Inlets

PACKED COLUMN INLET SYSTEM

It is used for 1/4" & 1/8" glass or Stainless steel and wide bore capillary column by inter - changeable individual liners. The standard system supplied is with 1/8" liners.

SPLIT - SPLITLESS CAPILLARY COLUMN INLET SYSTEM TO BE USED WITH PLOT COLUMNS

It is used for mega bore capillary columns in split or split less mode. Built in septum purge with precise needle valve control for variable split ratio setting is provided on the front console of the GC. This is an optional accessory which needs to be pre-configuredprior to ordering.

GAS SAMPLING VALVES

The valves provided are for Automatic operation, however, manual can be accommodated. Four / Six / Eight & Ten port valve configurations are available in manual as well as pneumatically or electrically operated models which when assigned to system digital outputs can make the GC automatic depending on the user requirement & ordered configuration.

HEAD SPACE SAMPLER (MANUAL / AUTOMATIC)

The system can be configured with Head Space Sampler which can be a single vial manual system or an totally automated 40 vial auto head space sampler

METHANIZER - CATALYTIC CONVERTER

The choice of a Methanizer connected in series with the injector and column is an ideal proposition for low-level analysis of Carbon Monoxide (CO) & Carbon Dioxide (CO_2).

High Performance Detectors

The Dhruva S2TS can accommodate multiple (2 - 4) independently temperature controlled detectors that can be operated either singly or simultaneously as per customer ordered config & requirement :

FLAME IONIZATION DETECTOR (FID)

Operating Temperature : Ambient to 450°C
Amplifier Gain : X1, X10, X100
Sensitivity : 0.1 PPM Methane as DG
Linear Range : 1 x 10^7
Noise : Less then 1% / day (< 2 μV)
Drift : Less then 1% / day (< 5u μ / min)
Zero Balance : Two multi turn potentiometers.
Attenuator : Rotary type from X1 to X1024
Output : To recorder 1mV or 10 mV or 1VDC to PC

THERMAL CONDUCTIVITY DETECTOR (TCD)

Operating Temperature : Ambient to 450°C
Type : Flow through or semi diffusion
Current Range : Up to 350 mA (adjustable)
Sensitivity : 1PPM DG Hydrogen using Argon
Zero Balance : Two multi turn potentiometers.
Attenuator : Rotary type from X1 to X1024
Current monitoring : By four digits LED
Electronic Amplifier : included in the design with gain of 10 or 100

MICRO THERMAL CONDUCTIVITY DETECTOR (MTCD)

Our dual filament TCD is a stand alone unit consisting of the detector housing & a controller with electrometer & temperature controls. The detector coil includes two separate nickel / Iron filaments capable of independent or referenced (differential) operation. Cell volume and geometry are optimized for capillary chromatography and enhanced sensitivity at low flow rates, (Recommended total flow rate : 2 - 10 ml / min.)

HELIUM IONIZATION DETECTOR (HID / DID / PDHID)

offer better sensitivities as compared to the conventional detectors but are not only expensive but also require greater operator skill. More ever, as the detectors are not as such approved by the regulatory bodies it can be matter of concern when reporting the data.

SPECIALIZED DGA INTERPRETATION SOFTWARE is available for the interpretation of the data as per various standrards using the faults established as per the ratio of the different gases. Besides the faults and their diagnostics the software also gives the result in PPM for all the gases obtained after the analysis on the DGA. The software is user friendly and provides all the information for the relevant methods for sampling & interpretation. The report option is user programmable and the customer can put his name on the report to be generated and can save and retrieve the data at any later date if required. The software provides calculation as per Partial Degassing & Head Space sampling while interpretation methods include Duvall Triange / IEC Cubic & IS.