J.U.M. Engineering Ges.mbH

COMPANY OVERVIEW

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COMPANY OVERVIEW

J.U.M. Engineering was established on the 15th of November in 1973 in Munich Germany. The company was started by Tillmann W. Knapp and two partners to fulfill some important requirements for unbiased heated sampling solutions in the automotive raw diesel exhaust hydrocarbon gas emissions market also to be applied to industrial hydrocarbon gas emissions.

During its first year, J.U.M. soon recognized the urgent needs of the industry for easier to use heated sample filters. As a first in the industry we successfully installed the first heated sample filters to be back-purged for cleaning and a patent was issued. These instruments made their way into conventional multi component analysis system for raw diesel exhaust emissions at a diesel engine developer. At that time it appeared to us that the conventional way of heated gas emissions sample handling techniques had one basic flaw; each time an emissions test came nearly to its end, the hydrocarbon hang up already was way up and showed too high hydrocarbon concentration numbers. The user ended up with not good enough test results mostly in a situation, where he could not simply make the change of his contaminated sample filter without interrupting his test. Our back purge feature completely eliminated filter changes.

Short after, J.U.M. also recognized the importance for an easy to use and very rugged heated total hydrocarbon FID analyzer where a sample filter change (of the internal filter) could not be tolerated during long and mid term analysis runs.

During our first 18 months of its existence, J.U.M. has developed a heated sample filter module with a built in filter back-purge feature. A patent has been filed and issued for this product. Towards the end of 1974, we introduced our first fully heated total hydrocarbon analyzer, actually designed around our heated back purge filter module and based upon a FID detector. This FID analyzer was already equipped with our proprietary high pressure back-purge sample filter system. This new type of an easy to use hydrocarbon analyzer was also equipped with our fail safe FID ignition fuel enrichment system and internal combustion air supply, both another fist in the industry.

Also in 1975, We successfully introduced a FID combustion air generator for gas chromatography with FID-detectors and other analyzers with FID-detectors. This new and money saving product allowed FID users for the first time to operate their gas chromatographs or analyzers without the use of costly and bulky high pressure synthetic air cylinders. Several thousand of these instruments are still in use in laboratories in many different countries.

All of the J.U.M. total hydrocarbon analyzers are based upon our proprietary designed flame Ionization detector (FID) which is well recognized for its high sensitivity, long term stability and easy serviceability. Also, about 80% of our FID-analyzers are equipped with our permanent stainless back-purge sample filter. To overcome known hydrocarbon condensation problems in THC analyzers, J.U.M. Engineering has developed a very special flow system in a heated oven. We have first introduced to the industry a sample pressure control system for highest sample flow rate stability and lowest maintenance without the use of the conventional sample back pressure regulator in the fall of 1974. Conventional back pressure regulators are highly effected by condensation products, and by heat. For those applications, where an undiluted sample bypass is required, J.U.M. has developed a heated dome loaded sample back pressure regulator for high temperature applications in our FID-analyzers during the year 1984.

Beginning with 1985, J.U.M. was selected by NASA to built the first 3 THC systems for the detection of very low traces of hydrocarbons for the Hubble space telescope and shuttle program. At that time, JUM was the only European instrument manufacturer being actively involved in the Hubble Space Telescope Program for analyzer systems inside of the clean room facility where the space telescope was assembled. After the Challenger disaster in 1986, 3 more systems were installed at the Kennedy Space Center to monitor the various clean room conditions at the inspection area, the vertical loading facility at the launch pad when the space telescope was loaded into the space shuttle.

In 1988, J.U.M. has introduced Their first methane only FID-analyzer which allowed to continuously methane only hydrocarbon emissions. Being combined with another THC FID analyzer the user had the chance to measure CH4 and THC simultaneously to determine the NMHC concentration an a sample. This became possible by using our proprietary non methane hydrocarbon cutter design.

In 1990, J.U.M. Engineering has introduced the first working heated FID analyzer in the industry with our proprietary internal dual pump bypass system design. This analyzer is completely unaffected by pressure fluctuation at the sampling point. This system is also capable to overcome high pressure drops of long heated sample lines and can deliver the hot and wet sample to another gas analyzer without the need for a separate sampling system.

In 1991, J.U.M. introduced with the model 109A the first working heated non methane hydrocarbon analyzer by using our dual detector/ dual electrometer technique in conjunction with our proprietary non methane hydrocarbon cutter design. Very large numbers of the 109A analyzer are in use internationally.

In 1994, J.U.M. has introduced the first working, easy to operate heated FID-analyzer for the continuous measurement of total hydrocarbons in live hot or wet steam. This analyzers uses a newly developed proprietary internal sampling method to extend up time and accuracy.

During the Gulf Coast Conference in Galveston, TX in late fall of 1998 we introduced our first wall mount vertical mounted heated FID analyzer. Other J.U.M.® Engineering systems are now available in the 19" standard rack mount/table top configuration or in our vertical mounted housing. These systems can be air purged, heated and/or air conditioned.

All vertical wall mounted FID analyzers have a choice of a sample inlet from the top or from the right side. Our proprietary FlexiProbeTM, which reaches through the back of the analyzer allows direct analyzer mountings on a process pipe or a duct wall with our custom mounting plates. No heated line is needed. The hinged mounting plate in combination with the FlexiProbe allows free access to the probe opening in the process wall at any time.

The field service friendly wall mounted units are designed to give full access to all modules and sections of the analyzer including the sample contacting parts in the heated oven.

Also during that conference, we have introduced our new model FPM 605 PAH monitor to measure PPM levels of dissolved or emulsified mineral oil traces in water. This monitor is based upon the ultraviolet fluorescence method with a UV light source which needs replacement every two to three years. The 605 does not require any preparation of the sample with chemicals for analysis. We use our proprietary non fouling open flow cell for continuous measurements.

Since early 2001, our model 5-100, 5-500 and 4-400 heated FID analyzers for low trace monitoring of clean gases are available to measure trace hydrocarbon concentrations in compressed hydrogen.

During late 2001, J.U.M. Engineering has redesigned the time proven El Paso Stripping Unit for Clear Passage Products L.P. in Houston after it was resurrected by the TNRCC (Texas EPA) in mid 2000, This Model RT201 Air Stripping Unit allows the measurement of VOC concentrations in cooling tower water for example to monitor for heat exchanger leaks.

Also in 2001 J.U.M. Engineering has designed the first ever FID based high speed propellant gas analyzer for leak detection of filled aerosol cans to replace the expensive and difficult to handle heated water bath systems at production speeds of up to 200 cans per minute. Today our leak testing FID analyzers handle the testing and reject of leaking cans for production speeds up to 400 cans per minute.

During the 2002 PITTCON Show in New Orleans, we introduced the Model RT202 HRVOC in water monitor. It exists of the RT201 VOC stripping with our proprietary heated FID monitor. The FID is integral part of the stripping unit.

With a background at that time now over 8000 heated FID-analyzers were installed, J.U.M. today tailors its heated total hydrocarbon analyzers for nearly every THC application in the industry by using the time proven building blocks from our large range of more than 15 different basic FID analyzers. We also manufacture a broad range of heated sample filters, sample pumps and sample interface modules for the stack gas emissions industry. All three of our basic total hydrocarbon analyzers (VE7, 3-300A and 3-200) are TÜV approved, CE regulation and QAL1compliant These analyzers also are approved to be in full compliance with the North American standards of EPA-Method 25A and EPA-Method 305. Actually, a significant part of Method 25A was written around our VE7 analyzer. A superb network of sales representatives and distributors, most with factory certified service departments throughout Europe, internationally, and in the United States guarantees best possible service.

J.U.M. Engineering currently has its production facilities and head offices in Karlsfeld, Germany. We have gained a solid reputation and good success over the period of the last forty years. This continuing success is due to our unyielding dedication to client satisfaction. J.U.M.'s main goal is to offer the most complete FID service package possible to our clients.

Since 2000, our new factory building accommodates our manufacturing, check out and service facility, based at Gauss-Str. 5 in Karlsfeld, just 20 minutes North/ West of the city of Munich.

In Germany we are working with 2 independent exclusive manufacturers representatives and three independent sales organizations (North-, East-, West- and South Germany).

In the European Union we have contracted independent exclusive manufacturers representatives in Norway, Finland, Sweden, Denmark, Great Britain, Netherlands, Belgium, France, Italy, Spain, Portugal, Poland, Bulgaria, Hungary, Slovenia, Slovakia, Czech Republic, and Austria.

Outside of the countries of the European Union, we work with exclusive representatives in the USA, Canada, Switzerland, China, Taiwan, South Korea, Japan, Israel, Australia, South Africa.

Analyzer Installations

Besides the numerous instrument installations which we have in the countries and territories of Europe and in the United States of America, where we are represented through our network of independent exclusive representatives, J.U.M. also has analyzer installations in countries like Singapore, China, Hong-Kong, Taiwan, South Korea, Japan, Russia, Ukraine, Poland, Latvia, Estonia, Lithuania, Czech Republic, Romania, Bulgaria, Canada, Egypt, India, Indonesia, Brazil, Peru, Australia .

Our Customer Base (basic selection only)

1) Aeronautics industry
Lockheed Martin (USA), Participated in the Hubble Space Telescope program with many FID analyzer systems in California and Florida, NASA Kennedy Space Center (USA), NASA Glenn Research Ctr. (USA), MC Donald Douglas (USA), Boeing, Boeing Aerospace Company, Lufthansa Technik (Germany), France and the USA, United Launch Alliance (USA) Vandenberg AFB (USA).

2) Automotive industry, truck and large-engine manufacturers
BMW, Renault, Peugeot, Citroen, IFP, Volvo, Volvo BM, Volvo Truck, Volvo, Volvo Penta, Scania, Opel, Volkswagen (Poland) Karmann, BMW, Mercedes Benz, Chrysler (Germany, USA and Austria), Ballard fuel cells, Xcelsis Fuel Cell Technology Merceses Nnz AG (Germany), Ford Motor Company (Germany, USA), Honda Motors (USA, Japan), Nissan (Japan), KIA (Korea), Sanjong (Korea), Hyundai (Korea), RAI (India), Rolls Royce UK, BMW Rolls Royce Germany, B&W Diesel Germany and Denmark, Jenbacher Diesel Engines, SKL Magdeburg, Waukesha USA, MAN Truck, MAN Diesel, MTU Gas Turbines, MWM Natural Gas Engines, DMT Germany, DFVLR, Johnson Matthey Catalyst research (Sweden), FAW-Volkswagen Changcun (China)

3) Oil, chemical and pharmaceutical industry including cosmetics, semiconductor industry:
Novartis/Ciba Geigy (USA Germany and Switzerland), Hoffmann La Roche (Switzerland and France), Sandoz, Hoechst AG, Linde AG, Bayer Leverkusen, Merck, BASF, Olin Chemicals (USA), Boehringer Ingelheim, Glaxo Welcome, Wella, Schwarzkopf, Agfa, Eastman Kodak (USA), Kneipp Werke, Beiersdorf, Dow Chemical (USA and Germany), Solutia (former Monsanto USA), Du Pont (USA), Coastal Eagle Point Oil Company (USA), Degussa Huls Corp. (USA), Georgia Gulf Corp. (USA), IBM (Germany and USA), Intel (USA), Texas Instruments (USA), GraceTec (USA and Germany), 3M Company (USA), Shell (USA, Great Britain, Germany), Esso/Exxon (USA and Germany), ARAL, Mobil, BP (Great Britain and Germany), Linde Oxy Dry Corp. (USA), PPG (USA) Lyendale (USA), Chevron (USA), Sinopec (China), China Oil (China), FRIPP (China), Messer AG, Air Products, AGA Gas,.

4) Other industries and institutions
University and Environmental institutes in the Cities of: Munich, Weihenstephan, Frankfurt, Stuttgart, Kaiserslautern, Magdeburg, Leipzig, Berlin, Hohenstein, Memmingen, Nürnberg, Hamburg, Essen, Frankfurt, Bremen, TÜV Nord, TÜV Hamburg, TÜV Munich, TÜV Thüringen, TÜV Sachsen, GWI-Gas Wärme Institut, University of Zürich, University of Michigan, University of Wisconsin, University of Washington, University of Oregon, Penn State University, National Council of Paper Industry, Frauenhofer Institute, Bergbauforschung, University of Taipei (Taiwan), University of Beijing (China), FRIPP (China), University of Beijing, University of Shanghai, RAI University of India, Standfort University (USA), ITT Research Inst. (USA), IT Corporation (USA), Pennsylvania State University (USA), University of Mississippi (USA), Oregon State University (USA), Perdue University (USA), University Shanghai, University of Beijing (China), Guangzhou University (China), Seoul University (Koorea), Taipei University

(Taiwan), Penn. Dept. of Environmental Protection (USA), University of Michigan (USA), University of Wisconsin Oshkosh (USA), R.R. Donnelley (USA), Roy F. Weston (USA), Wisconsin Tissue (USA), Seagram's (USA), Weyerhaeuser Comp. (USA), Medusa Cement (USA), Lafarge Cement (France, USA, Canada), Continental Cement (USA), Pre Coat Metals (USA), QC Finishers (USA), Weatherford Pipelines, Clean Harbors Chemical and others

Instrument Features (general)

The J.U.M. Heated Total Hydrocarbon Analyzers reflect the state of the art, both in internal sample handling design, detector design and simple and robust electronics. It is truly a "heated FID", maintaining the detector oven with all sample contacting parts at up to 200°C. This includes the entire sampling system, filters, pump, capillaries, and the detectors.

The electronic package incorporated within the J.U.M. FID's features an ultra stable monolithic electrometer amplifier. Optional microprocessor technology greatly expands the versatility and capabilities of our Total Hydrocarbon Analyzers like automatic sample filter back purge, automatic FID ignition and re-ignition, minutely and hourly averaging with RS232 output, RS232 concentration output, engineering units displays with RS232 output, data logging and auto-ranging can be provided when minimal operator attention is required. Many other standard features exists such as our proprietary calibration gas overflow system that protects against calibration errors due to fluctuating or too high calibration gas pressures. Our uniquely designed adapter plate system in combination with our unique easy accessible wrench port on the right side panel allows the user to connect his heated sample line inside of the heated oven without the need of special tools. This feature prevents the hydrocarbon hang up build up on so called cold spots in the sampling system. Also, our standard built in burner air supply frees the user from handling bulky and expensive high pressure cylinders with synthetic air.

A Selection of some Typical FID Applications

Ambient Air Monitoring Systems: The usage of total hydrocarbon (THC) analyzers and Non Methane Hydrocarbon (NMHC), Non Methane/ Non Ethane HydroCarbon (NMNEHC) analyzers in multiple component analytical systems and air monitoring stations: FID analyzers in such systems are used to measure the NMHC level, or the THC level in the ambient air besides other air contaminants like O3, SO2, CO, CO2, NOx, BTX and others.

CEM's (Continuous Emissions Monitoring Systems): The use of total hydrocarbon (THC) analyzers and non methane hydrocarbon (NMHC), non methane/ non ethane hydrocarbon (NMNEHC) analyzers in multi gas analytical systems: FID analyzers in such systems are used to measure the THC level in stack gases besides the combustion parameters like CO, CO2, NO, O2, when other materials than the typical fossil fuels are burned. like in waste incinerators, stack emissions, wood processing, paint and pigment industry, waste oil blending, printing and coating industry, chemical process gas and many others.

Catalytic Converter Testing: To measure the destruction efficiency of catalytic converters, FID analyzers are used as single THC analyzers as well as THC analyzers in multi component systems. Catalytic converters can be found in passenger cars, on bigger gasoline engines, on large modern diesel engines, in paper printing plants, in paint spray applications, at soil remediation plants, in oil refineries as cat crackers.

Thermal Oxidizer Testing: To measure the hydrocarbon destruction efficiency of a thermal oxidizer, FID analyzers are used as single THC analyzers with or without alternating sample sequences or as two simultaneous working analyzers. Thermal oxidizers can be found in the

printing and coating industry, in paint spray applications, at soil remediation plants and in oil refineries.

Carbon Adsorption Regeneration Control: In many industrial applications where solvents are used, these solvents are being recovered in so called solvent recovery systems. As an example, this can be a textile factory which needs solvent for some textile processes. It is absolutely not allowed to dump the solvents they use. This is in violation to environmental regulations, and this is very expensive. Therefore, very often such solvents are being recovered for new (or other) uses on large activated carbon adsorbers. In such case, the FID analyzer detects on the outlet of the adsorber exactly the one moment when the activated carbon becomes saturated with solvents, which is increasing the THC level significant. When this accrues, the FID internal alarm board switches to the second (or third) adsorption tower to regenerate the one being used and switch to the already regenerated one.

Detection of Low Trace Hydrocarbons in High Purity Gases: The semiconductor industry (and in many other industries as well) uses very expensive high purity gases like Helium, Nitrogen, Argon and others. To meet the highest production standards for these products in the semiconductor industry, these gases must not contain any hydrocarbons and therefore need to be analyzed with FID analyzers for the THC content.

To discuss your individual needs in the field of hydrocarbon or VOC analysis, please do not hesitate to call on us at any time.

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