

PROJECT RESULTS

Contract 82 CP / I / 13.09.2007

VERIBIOCOMB

Purchased equipments at ICIA Cluj-Napoca:

1. Instrument for the cetane number analysis.



Characteristics

The instrument is intended for the cetane number determination for the Diesel fuels, in accordance with the standardized method ASTM D613 (ISO 5165) and is a complete system that is composed of : The motive block; The command panel; The reading desk; Synchronic triphase engine for 220 V, 50 Hz; Double instrument, with digitally display for F,°the ignition delay; Pickups and cables; Temperature controller, Termistor 150 Security combined switch for water superheating and high oil pressure, Solenoid for fuel closing, Exhaust galery, Exhaust buffer tank; Protection for the transmission band. The system operating conditions are: 900 RPM, jacket F.°F, the temperature for intake air 150°F, oil temperature 135 °temperature 212 The instrument meets all the mentioned

standard requirements being a very good investment for Diesel and Biodiesel fuels characterization.

2. Instrument for the octane number analysis



Characteristics

The instrument is intended for the octane number determination for the gasoline fuels, in accordance with the standardized methods ASTM D2699 (ISO 5164), ASTM D2700 (ISO 5163) and is composed of: The motive block; The command panel; The reading desk; Synchronic triphase engine for 220 V, 50 Hz; Measurement instruments and monophasic heating unit, 120 V 60Hz; Ice refrigeration tower; 4 Units carburetor, one is water refrigerated; Pickups, Knockmeters and cables; Temperature controller; Thermistor F; Security combined switch for water superheating and high oil pressure; 150 Exhaust galery, Exhaust buffer tank; Protection for the transmission band; Double instrument, with digital display for the ignition delay; Electromechanic system for changing the compressing ratio. This instrument assures the octane number analysis with a global standardized accepted method for the analysis of gasoline and gasoline blends.

3. Ultraviolet Fluorescence Sulfur Analyzer



Characteristics

The instrument measures the sulfur content in very low concentrations in: gasoline, diesel, light oils and other light hydrocarbons, including GPL by means of a device that can be attached, in accordance to ASTM D-5453, ASTM D-4629 and ISO EN 20846. Because of the automatized injection device, a micro-syringe that introduces the sample by direct injection, the syringe cleaning double mechanisms, the combustion system represented by an horizontal oven that offers higher combustion efficiency, the UV detector with high-sensitivity because of the special optical system as well as the standard accessories, the analyzer offers a quick analytical technique with an extremely high degree of sensitivity and precision and that has great utility for biofuels analysis. The measurement domain for the sulfur content is from just 30 ppb to much higher concentrations.

Purchased equipments at ICIA Cluj-Napoca:

1. FT-NIR spectrofotometer



Characteristics:

- Optical system completely sealed and protected from moisture by desiccant.
 - Sample compartment – big size with top for easy accessing the sample and the internal components
 - Michelson interferometer with self compression for dynamic alignment.
 - Mirrors speed: 0,1 ... 2 cm/s.
 - Vibrations compression system.
 - Detector DTSG detector with Peltier temperature stabilization.
 - Permeates the work with 2 detectors.
 - Spectral domain: 14700 - 2000 cm^{-1}
 - Spectral resolution: 1 ... 64 cm^{-1} .
 - Wave number repeatability: smaller than 0.02 cm^{-1} .
 - Wave number accuracy: 0.1 cm^{-1} .
- Signal/noise rapport:
- <10 μA RMS, for measures taken in 1 minute;

2. Centrifugal extractor for biofuel



Characteristics

- Maximum capacity 4 x 100 ml (available depending on chosen rotor)
- Maximum speed: 6000 min⁻¹, RCF 4.186 with angular rotor
- Operating time: 1 - 99 min, the operation continues and the impulse button for short period of work.
- Consumed power: 300 VA
- Dimensions: 261 x 368 x 437 mm
- Compact metallic, durable.
- Inox interior
- Protection top
- Automatic clouser Inchidere automata la imbalans
- Easy change of rotor
- Automatic recognize of rotor.

The rotor is offered for biomass or some half made products obtain from biomass (biomass used: rape, residual food oil, etc.).

3. Press filter for biomass



Characteristics

Press filter with frame and slabs, with proportions of the slabs from 500x500 mm, operating pressure from 0,7 la 1,5 Mpa .

The automatic sozzled unload and supplementary with the charging pump.

Minimum productivity 50 kg /h

4. Binocular microscope



Characteristics

Ocular plane 10X

4X objective achromatic

Faze contrast:10X / NA 0.25, 40X / NA 0.65, 100X / NA 1.25 oil-achromatic-ph objective incl. dark/light field ABBE condenser

XY stand, mechanic , graded, with coaxial buttons for adjusting (fine or not fine)on both sides of the microscope

ABBE condenser ABBE / N.A. 1.25, with iris diaphragm

Filter support,

Blue filter

Adjustable lighting with tungsten-halogen light bulb 6 V / 20 W

Additional phototube for the digital photo camera or video

5. Press with screw for biomass



Characteristics

2 ends with the following characteristics:
Productivity minimum 100 kg/h
Efficiency minimum 38-42 litri/100 kg grains
Dimensiones 1300x800x1440 mm
Power 5,5kW
Garge 3x380V, 50Hz
Mass 400kg

6. Portable hammer mill and humidity meter used for grinding green biomass to obtain bio fuel



Characteristics

Electric engine power (Kw) 0.75 - 2.2
Electric engine revolution (rot/min) 2840
Gauge (LxH)(m) 1x0,8x1,1
Grinding capacity (kg/h) 100 oleaginous and cereals (biomass)
Weight (kg) 270

Precision humidity meter precision de 0.01 – 0.5, humidity domain 5 – 45 %, measurement temperature 0 – 45 °C and for interface for WINDOWS operating system

7. ABBE refract meter with digital display and temperature compensation



Characteristics

- Measurements limits: from 1,3330 to 1,5318 nD (0 to 95 Brix)
- Amplitude scale: min. 0,0227 nD (15 Brix), max. 0,1988 nD (95 Brix)
- Precision: $\pm 0,3\%$ from amplitude scale
- Maximum precision: $\pm 0,00007$ nD ($\pm 0,05$ Brix)
- Electronic control by the microprocessor
- Digital display (LED with 5 digits) of the value
- Automatic compensation of the temperature (to 20°C).
- Results can be transferred to the computer thru the interface
- Light source 2.4 W tungsten and blade of sodium that ensures in general a better line for the refraction index.
- Thermometer with thermistor incorporated in the prism, measured value can be compensated at 20 °C and the prism temperature control can be done with an external temperature controller.

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Access

Access: Monday – Friday, between 8.00 – 16.00 hours

The access is permitted according the conventions with the partners, and analyses customers respectively.

Services offered by the new laboratory:

- Cetanic number and octanic number determination from fuels;
- Sulphur content determination from fuels;
- Raw materials used for biofuels production characterization