

## TECHNICAL SPECIFICATIONS

### **1. Gas chromatograph with FID detector, automatic injector and automatic sample feeders**

The system offer must include:

- Gas chromatograph with FID detector, split / non-divider input for liquid input samples and a sampling system for the introduction of liquid samples,
- Gas chromatograph installation, computer, monitor and material needed for successful GC system installation,
- qualification of the installation and validation of the GC system,
- basic user introduction.

Where:

- All components or modules of the instrument and software must be new and from one manufacturer.
- Service for all hardware and software offered must be provided by provider registered in Slovenia.
- The price of the offer may not exceed EUR 50,000 without VAT.

System specification:

- The offered hardware and software licenses must fully suit everyone the stated technical specifications and requirements of the contracting authority, whereby they must be specifications can be seen from the attached documentation, which must also be publicly available.
- All equipment must be new. In any case, the used equipment does not meet the requirements of the tender.

#### **1.1. The gas chromatograph (GC) must meet the following basic technical specifications specifications :**

- The gas chromatograph should consist of modules from one manufacturer, which should be the same as software manufacturer.

The requirements for the gas chromatograph are:

- electronic control of flows / pressures of all gases connected to the instrument (injector inputs, detectors, additional connections for other applications),
  - split / split injector inlet (Split / Splitless) for capillary columns, carrier gas hydrogen or helium or nitrogen,
  - possibility of installing an additional injector inlet,
  - tool-free injector inlet maintenance system,
  - FID detector optimized for capillary columns,
  - possibility of installing two additional detectors,
  - compensation of changes in outdoor temperature and pressure with built-in sensors for ensuring stable retention times,
  - the oven temperature must be adjustable from 4 °C above the room temperature to 450 °C,
  - setting at least 15 temperature rises in one program,
  - Built-in module for easy conversion of carrier gas backflow into chromatography columns, column replacement, injector inlet seal replacement, liner replacement injector inlet,
  - built-in additional three-channel module for electronic control of gas flows / pressures,
  - built-in system for automatic detection and warning of carrier gas leaks,
  - A touch screen is mounted on the gas chromatograph for information purposes instrument status, configuration, chromatographic signal view, parameter entry methods, diagnostics of possible deviations of operation,
  - the possibility of programming the transition of the system to sleep mode with less use of electricity
- energy and gases, the possibility of programming the system from idle status to status operation,
- calibration of the retention time dependence of the selected component / standard component v
- dependence on the pressure at the injector inlet (simplification of the transfer of analyzes between instruments and transfer analysis to a new column of the same dimension, transfer analysis to another type detector).

The requirements for the sampling system are:

- introduction of a liquid sample, repeatability of injection below 0.3% RSD depending on the peak area,
- the possibility of using injection needles up to a volume of 500µl,
- detection of a missing sampling vessel,
- automatic adjustment of the injector and sample feeder,
- rinsing the sampling needle before and after injection, rinsing with rinsing solvents and with pattern,
- capacity of at least 150 2-ml sampling containers,
- preparation of the sample for injection during the preliminary analysis,
- Optional option to heat one sample tray or cool the other tray with patterns,

- the possibility of upgrading the sampling system for real-time sample preparation (dilution, addition of internal standard, preparation of calibration curve, derivatization, mixing samples, heating samples).

**1.2. Computer software and hardware:**

Software for gas chromatograph control and data acquisition and processing must contain:

- a suitable computer to install all the software to manage the GC system with sampling system,
- 24 " LCD monitor,
- color laser printer, double-sided printing, network connection,
- Software for managing the entire GC system, capturing and processing data.

**1.3. The equipment must meet the following conditions:**

- Installation of all parts of the gas chromatograph and software and services for maintenance and quality use of the system.
- At least 24 months warranty period.
- Lifespan: 10 years
- Operating instructions for use of the equipment: Instructions for use, which may be in Slovene or English.
- Installation verification and performance validation of GC system and software s transparent and regulatory protocols (GLP guidelines).