for on-line/ in-line/ at-line analysis and monitoring of industrial processes
WHO WE ARE

**Process Analytical Technology (PAT) solutions for on-line/in-line/at-line analysis and monitoring of product quality in a production process.**

**Quantitative and qualitative analysis of liquid products.**

**Analysis and characterization of light scattering media (suspensions, emulsions).**

**New analytical instrumentation/solutions (process analyzers).**

**Multivariate calibration models.**
Sprana Ltd established.

Sprana awarded “Innovation Award 2014”.

Sprana Ltd nominated to “Knowledge Economy Companies 2014”.

Process Colour analyzer developed.

NIR analyzer for liquid fertilizers developed.

Argus Europe Fertilizer exhibition
Distribution agreement with Sintrol.

Achema exhibition.
Analytica exhibition.
Cooperation with ProMtec.

Sprana awarded “Innovation Award 2014”.

Sprana Ltd established.
NIRSpec

THE WORLD'S MOST POWERFUL

ON-LINE NIR PROCESS ANALYZER FOR LIQUID NITROGEN FERTILIZERS
NIRSpec is the NIR process/industrial analyzer for on-line quantitative/compositional analysis of liquid products. It enables continuous real-time monitoring and control of the composition of the product in the production processes. NIRSpec has a high end InGaAs spectrometer array, that has a good signal to noise ratio even without additional TE cooling and a great thermal stability, and features robust industrial design (no moving parts). State of the art proprietary multivariate calibration algorithms, including compensation for turbidity and temperature, allow accurate stable and reproducible concentration measurements.

The light is shaped and collimated into the beam with large cross-section/diameter which results in less sensitivity to optical windows fouling, bubbles and other contamination. High quality stainless steel body material is able to withstand harsh process environments: aggressive chemical materials, high temperatures and pressures. Optical windows from different materials (fused silica, quartz, sapphire) are available depending on the process conditions/requirements.
UNIQUE advantages of NIRSpec in the analysis of liquid nitrogen fertilizers

ON-LINE BIURET DETECTION
ACCUARACY UP TO 0.1% WT
TEMPERATURE COMPENSATION
TURBIDITY COMPENSATION
LESS SENSITIVE TO CONTAMINATION
MEASUREMENT OF MULTIPLE CHEMICAL COMPONENTS AT THE SAME TIME
State of the Art Multivariate Calibration models.

Robust, durable industrial design (no moving parts).

Market leader’s Ocean Optics FLAME-NIR spectrometer.
The optical design of the analyzer is such that it has a single linear optical path from the source directly to the detector. The light is collimated, transmitted through a sample and focused/directed straight into the spectrometer.
NIRSpec

Main unit assembly drawing
NIRSpec vs Lab comparison for UAN analysis

**AMMONIUM NITRATE CONCENTRATION**

**UREA CONCENTRATION**

**WATER CONCENTRATION**

**BIURET CONCENTRATION**

![Graphs showing comparison between NIRSpec and Lab measurements for different concentrations.](image-url)
CONTINUOUS ON-LINE QUANTITATIVE ANALYSIS FOR BETTER PROCESS CONTROL

ELIMINATES TIME-LOSS AND COST FOR SAMPLING AND LABORATORY MEASUREMENTS

STATE OF THE ART MULTIVARIATE CALIBRATION MODELS

COMPENSATION FOR TEMPERATURE

COMPENSATION FOR TURBIDITY

LOW OPERATING AND MAINTENANCE COSTS
### Technical Specification

<table>
<thead>
<tr>
<th><strong>Model</strong></th>
<th><strong>NIRSpec</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring principle</td>
<td>NIR absorption</td>
</tr>
<tr>
<td>Light source</td>
<td>Halogen lamp</td>
</tr>
<tr>
<td>Wavelength range</td>
<td>950 – 1650 nm</td>
</tr>
<tr>
<td>Resolution</td>
<td>10 nm</td>
</tr>
<tr>
<td>Optical path length</td>
<td>From 2 to 30 mm</td>
</tr>
<tr>
<td>Illumination area / spot (diameter)</td>
<td>15 mm</td>
</tr>
<tr>
<td>Detector</td>
<td>128 pixel InGaAs photodiode array</td>
</tr>
<tr>
<td>Material of optical windows</td>
<td>Fused silica (other materials available)</td>
</tr>
<tr>
<td>Material of flow cell body</td>
<td>Stainless steel (other materials available)</td>
</tr>
<tr>
<td>Connecting pipeline diameter</td>
<td>DN25 (other size available)</td>
</tr>
<tr>
<td>Output/connection</td>
<td>LAN, MODBUS RTU/ASCII RS485/RS232, MODBUS TCP/IP</td>
</tr>
<tr>
<td>Computer</td>
<td>Industrial PC</td>
</tr>
<tr>
<td>Analyzer dimensions (L × H × W)</td>
<td>534 × 168 × 168 mm</td>
</tr>
<tr>
<td>Transmitter dimensions (L × H × W)</td>
<td>326 × 200 × 152 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>25 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>12 V DC, 5A</td>
</tr>
<tr>
<td>Power consumption</td>
<td>60 W</td>
</tr>
<tr>
<td>Sample temperature</td>
<td>Up to +120 °C</td>
</tr>
<tr>
<td>Pressure</td>
<td>Up to 10 bar</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>From -15 to +40 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>Below dew point</td>
</tr>
</tbody>
</table>
DIMENSIONS (mm)
CONTACT

Mokslininku st. 6a
Vilnius, Lithuania
info@sprana.eu

Mr. Mindaugas Steponavičius
+370 650 57 256
m.steponavicius@sprana.eu

Dr. Raimundas Steponavičius
+370 685 30 552
r.steponavicius@sprana.eu

Registration code: 302724293
VAT: LT100007402316AB
DNB bank a/n: LT754010051002138866
for on-line/ in-line/ at-line analysis
and monitoring of industrial processes