

**Application Survey for**

**MKS Process & Environmental Analysis Solutions**

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Please fill in as much as you can so we can determine the measurement feasibility with the optimal system configuration that will support your application as an FTIR or Precisive TFS analyzer.

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| **Customer Name:** |
| **Company:** |
| **Address:** |
| **City:**  |
| **State / Zip:** |
| **Country:** |
| **Email:** | **Phone :** |
| **Date of this request:** | **MKS Contact:** |
| **IF DIFFERENT FROM ABOVE:** |
| **End User:** | **Installation Country:** |

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| **1. Please describe your application or process?** |
| TYPE HEREExamples: * Vehicle or engine Combustion emission monitoring
* Continuous emissions monitoring
* Ethylene production (alkanes, alkynes, alkenes)
* Natural gas metering (C1-C6)
* Acid &/or sour gas monitoring,
* LNG, LPG, Syngas, Biogas, CNG
* Power generation (BTU, Methane Number, Wobbe Index)
* Trace impurities in natural gas (i.e. moisture &/or sulfur).
* Total BTU measurement (i.e. burner of furnace control)
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| **2. What methods or instruments are currently used and why are they insufficient?** |
| TYPE HEREExamples:1. GC-TCD, GC-FID, FTIR, NDIR, TDL Residual Oxygen, etc.
2. Need to lower the cost of testing
3. Wants faster response with hydrocarbon speciation
4. In-line unattended monitoring is critical, etc.
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| **3. Sample Conditions – Please provide the following information** |
| **Requested Information** | **Range** | **Additional Notes** |
| Sample temperature [ ] oF or [ ]  oC | Minimum | Nominal | Maximum |  |
| Sample pressure at tap / sampling point:[ ] ATM [ ] PSIG [ ] TORR | Minimum | Nominal | Maximum |  |
| If pressure > 20 psig can it be dropped to 20psig? | [ ]  YES or [ ]  NO |  |
| Sample flow rate (in LPM) | Minimum | Nominal | Maximum |  |
| Desired plumbing interface for TFS Sensor (size & type of fittings) |  |
| Other information? |  |

FTIR Analyzer Related ONLY

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| **1. Do you have any previous experience with FTIR?** |
| **a.** [ ]  Yes [ ]  No **b.** If yes, which manufacturer of FTIR? |

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| **2. FTIR Temperature:** The MKS FTIRs are configured to run Hot and Wet gas streams however there is a limit on how high the gas stream temperature can be.  |
| If temperature > 191oC can it be dropped to 191oC? [ ]  YES or [ ]  NO |

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| **3. FTIR Detector Options:** MKS uses high sensitivity MCT detectors. For the broadest range of components Liquid N2 (LN2) is needed to cool the detector every 14-18 hours. For 24/7 use an external 5L dewar can be added to allow up to 3-5 days of unattended use. MKS also has thermal electrically (TE) cooled detectors (which do not need LN2, and run continuously) but they have a more limited list of components.  |
| **a.** Can LN2 be used to cool the detector? [ ]  Yes [ ]  No  |
| **b.** If YES, do you want to include the External 5L Dewar? [ ]  Yes [ ]  No  |

Gas List

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| **Please list ALL of the gas component names, measurement ranges, accuracy requirements for each application. Please indicate if the compound is to be measured (YES in Measured column) or just in the background of the composition (NO in Measured column). List ALL the gases that will be present at high concentrations (possible interferents) even if you do not need to measure them (e.g., H2O, CO2, Air, Matrix Gas)** |
| **Component name** | **Component Concentration** | **Required Detection Limits** | **Accuracy / Repeatability**  | **Measured****(Yes / No)** |
| **Min** | **Normal** | **Max** |
| *Example 1: CH4* | *0%* | *90%* | *100%* | *1%* | *+-1% absolute / <0.1% absolute* | Top of Form[YesNo](http://support.office.microsoft.com/client/Insert-a-check-mark-symbol-09B3D8E6-CD92-423A-9F5E-7F813E7E4B9E?NS=EXCEL&Version=14#showFB)Bottom of Form |
| *Example 2: NH3* | *0 ppm* | *300 ppm* | *1000 ppm* | *0.1 ppm* | *+-3% relative /**< 1% relative* | Top of Form[YesNo](http://support.office.microsoft.com/client/Insert-a-check-mark-symbol-09B3D8E6-CD92-423A-9F5E-7F813E7E4B9E?NS=EXCEL&Version=14#showFB)Bottom of Form |
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## Environmental

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| **1. Installation related questions:**  |
| **Requested Information** | **Range or MKS Available Options** | **Additional Notes** |
| Ambient temperature [ ] oF or [ ]  oC | Minimum | Nominal | Maximum |  |
| Ambient humidity  | %RH = \_\_\_ |
| Where will the analyzer be housed? | TYPE HEREExample: Climate controlled shelter, environmental shelter, open air, etc. |
| Is the area Climate Controlled? [ ]  YES or [ ]  NO | TYPE HEREIf NO, any extreme conditions? (Humidity, vibration, direct sunlight, etc.) |
| Analyzer voltage requirement | [ ]  120V / 60Hz [ ]  220V / 50Hz [ ]  220V / 60Hz [ ]  Other? \_\_\_\_\_\_\_\_\_\_\_ **TFS ONLY**  [ ]  24DC  |
| Other information? |  |

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| **2. Data acquisition and interface measurements** |
| **Requested Information** | **MKS Available Options** | **Additional Notes** |
| Desired measurement rate? | [ ]  5 Hz (200 msec) [ ]  1 HZ (1sec) [ ]  5 sec [ ]  30 sec [ ]  60 sec[ ]  Other (specify) \_\_\_\_\_\_\_\_ |  |
| Desired data OUTPUT interface and protocol (TFS ONLY) | [ ]  Analog/Digital I/Os [ ]  OPC [ ]  MODBUS [ ]  OTHER  |  |
| Desired data INPUT/OUTPUT interface and protocol (FTIR ONLY) | [ ]  AK Protocol [ ]  Analog/Digital I/Os [ ]  OPC [ ]  Toolweb (free)[ ]  MODBUS  |  |
| Other information? |  |  |

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| **3.** **Hazardous Area Classification:** |
| [ ]  CSA Class1 Div1 [ ]  CSA Class1 Div2 [ ]  ATEX ZONE 1 [ ]  ATEX ZONE 2 [ ]  IECEx [ ]  TIIS [ ]  CE [ ]  OTHER?\_\_\_\_\_\_\_\_\_\_\_\_ |

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| **4. Any special analytical or acceptance criteria needed (e.g. specific EPA, ASTM or DIN regulations).**  |
| [ ]  EPA 1065/1066 [ ]  Euro 5, 6 [ ]  TUV [ ]  MCERTS[ ]  Other?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| **5.** **TFS ONLY Options:** |
| [ ]  Portable (general purpose rated)[ ]  Rack mountable (4U general purpose rated)[ ]  SS316L low-carbon stainless steel enclosure[ ]  SS316L low-carbon stainless steel gas cell & wetted parts[ ]  Stream switching[ ]  Local HMI/display[ ]  Analog outputs[ ]  3 year total warranty package |

## OTHER REQUIREMENTS

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| **1. What is the timeframe for a solution or analyzer (i.e. now, 3 months, 6 months, 1+ year)** |
| [ ]  Now [ ]  3 months [ ]  6 months [ ]  12+ months |

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| **2. Are there other requirements not covered in any section above?** |
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