

# FORMALDEHYDE PLANT

## FeMoCat

### Technical Questionnaire

#### 1. General

<b>Customer:</b>	
<b>Process/Licensor :</b>	
<b>Plant Capacity [mt] :</b>	
<b>Start up [year]:</b>	
<b>Number of reactors:</b>	

**● Feedstock:**

◇ Methanol Quality:.....

#### 2. Process Conditions (design values)

<b>Methanol Loading Vol%</b>	
<b>Air rate per tube [Nm<sup>3</sup>/h]:</b>	
<b>Reactor inlet gas temperature [°C]</b>	

Maximum Salt Bath – Oil Temperature [°C]	
Minimum Salt Bath – Oil Temperature [°C]	
Pressure at reactor inlet [mbar]	
$\Delta p$ across reactor [mbar]	
Maximum pressure at reactor inlet [mbar]	
Possibility to control reactor pressure	

### 3. Reactor Data

	Reactor 1	Reactor 2	Reactor 3	Reactor 4
Manufacturer				
1 <sup>st</sup> start up [year]				
Number of tubes				
Inner tube diameter [mm]				
Total tube length [mm]				
Maximum filling height [mm]				
Tube bottom support (sieve or spring coil)				

- Adiabatic post reactor installed or Catalyst bed in the bottom of the mainreactor

◇ yes ◇ no

- Total catalyst volume post reactor/Catalyst bed [m<sup>3</sup>]

\_\_\_\_\_

- Ratio L/D (length/diameter) for post reactor

\_\_\_\_\_

#### 4. Installed Catalyst

	Reactor 1	Reactor 2	Reactor 3	Reactor 4
Type of catalyst				
Total Loading Height [mm]				
Installed since [month/year]				
Scheduled exchange [m/y]				
1 <sup>st</sup> Layer Depth [mm]				
1 <sup>st</sup> Layer Weight/Reactor [kg]				
2 <sup>nd</sup> Layer Depth [mm]				
2 <sup>nd</sup> Layer Weight/Reactor [kg]				
3 <sup>rd</sup> Layer Depth [mm]				
3 <sup>rd</sup> Layer Weight/Reactor [kg]				
4 <sup>th</sup> Layer Depth [mm]				
4 <sup>th</sup> Layer Weight/Reactor [kg]				
5 <sup>th</sup> Layer Depth [mm]				
5 <sup>th</sup> Layer Weight/Reactor [kg]				
6 <sup>th</sup> Layer Depth [mm]				
6 <sup>th</sup> Layer Weight/Reactor [kg]				
Total Catalyst/Reactor [kg]				
Total Inert/Reactor [Type/kg]				

#### 5. Temperature Control

		Reactor 1	Reactor 2	Reactor 3	Reactor 4
Number of thermocouple tubes	multi				
	single				

<b>Number of measuring points</b>					
<b>Inner tube diameter of thermocouple tubes</b>	multi				
	single				
<b>Outer diameter of thermocouple protection tube</b>	multi				
	single				

## 6. Purification

Waste gas treatment

Catalytic off-gas purification       yes  no

Type of off-gas catalyst \_\_\_\_\_

## 7. Yield

### Yield at start of run (SOR)

	Reactor 1	Reactor 2	Reactor 3	Reactor 4
Reaction Gas Yield [Mol-%]				
Overall plant Yield [Mol-%]				

### Current Yield

	Reactor 1	Reactor 2	Reactor 3	Reactor 4
Reaction Gas Yield [Mol-%]				
Overall plant Yield [Mol-%]				

**Others:**

-Want Empty and Reloading/Filling support of Fe/Mo Catalyst?     **yes**     **no**

-Want to Rent or buy Empty- and Reloading/Filling machines of Fe/Mo Catalyst?     **yes**     **no**

-Any need for spare parts, new thermocouples, etc....?     **yes**     **no**

When do You want to have the Catalyst delivered at site? .....

Hope to hear from You and we look forward for our long term good mutual cooperation.

Have a nice day.

Very best regards

*Tommy Heino*

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