A PROJECT REPORT

ON

PRODUCTION OF FORMALDEHYDE FROM METHANOL (SENSITIVITY ANALYSIS)

For the partial fulfillment of the requirement for the degree of M.Tech (CAPE) in Chemical Engineering



Faculty TA Supervisor

**Mr. Tamal Banerjee Mr. Sanbed Das**

**Professor Mr. Sanjeev Patel**

Chemical Engineering Department

IIT Guwahati Submitted by

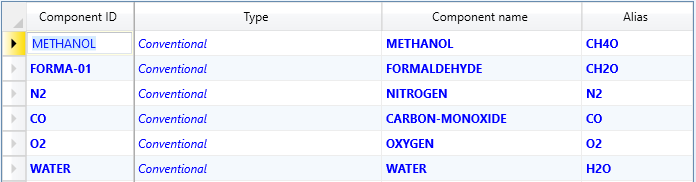
**Sudhakar Verma**

M.Tech(CAPE)

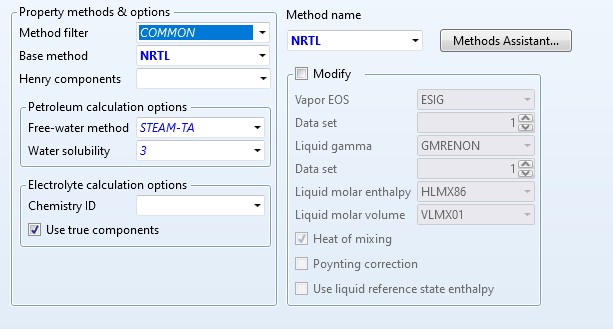
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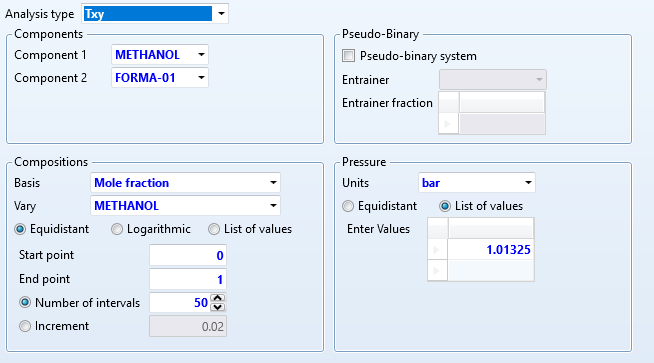
* Desired to produce about 120,000 tons/year of Formaldehyde (99.1%) and by- product pure nitrogen which originally onsets from the inlet air
* Deside on the property method and come up with the proper design to end up with atleast 99.1 wt.% pure formaldehyde and 99.1 wt.% pure nitrogen at the indicated annual production rate

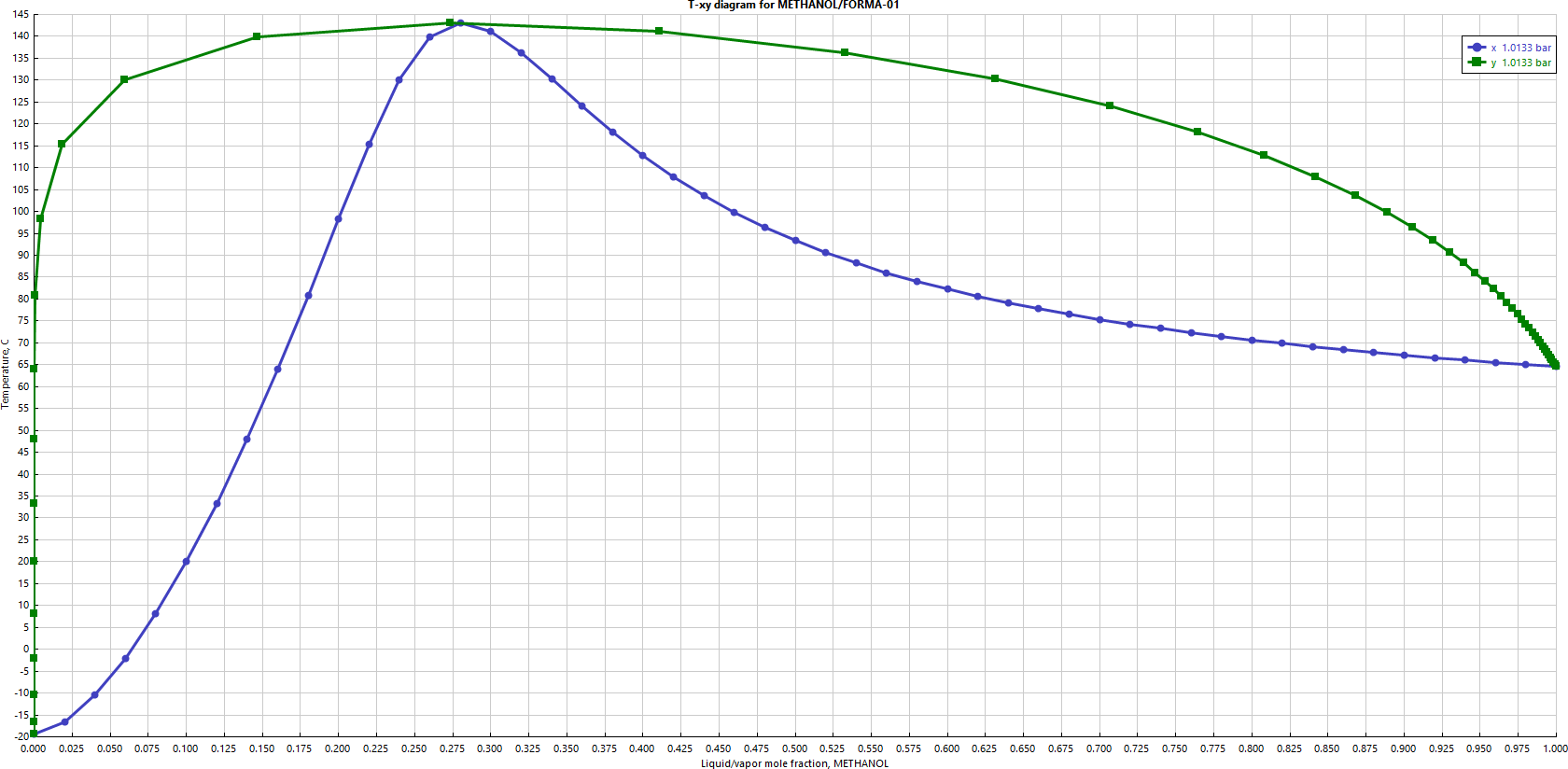
# Component Specification :-



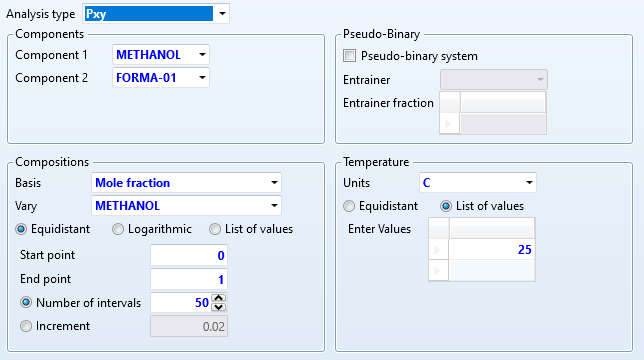
Property Method Specification :-

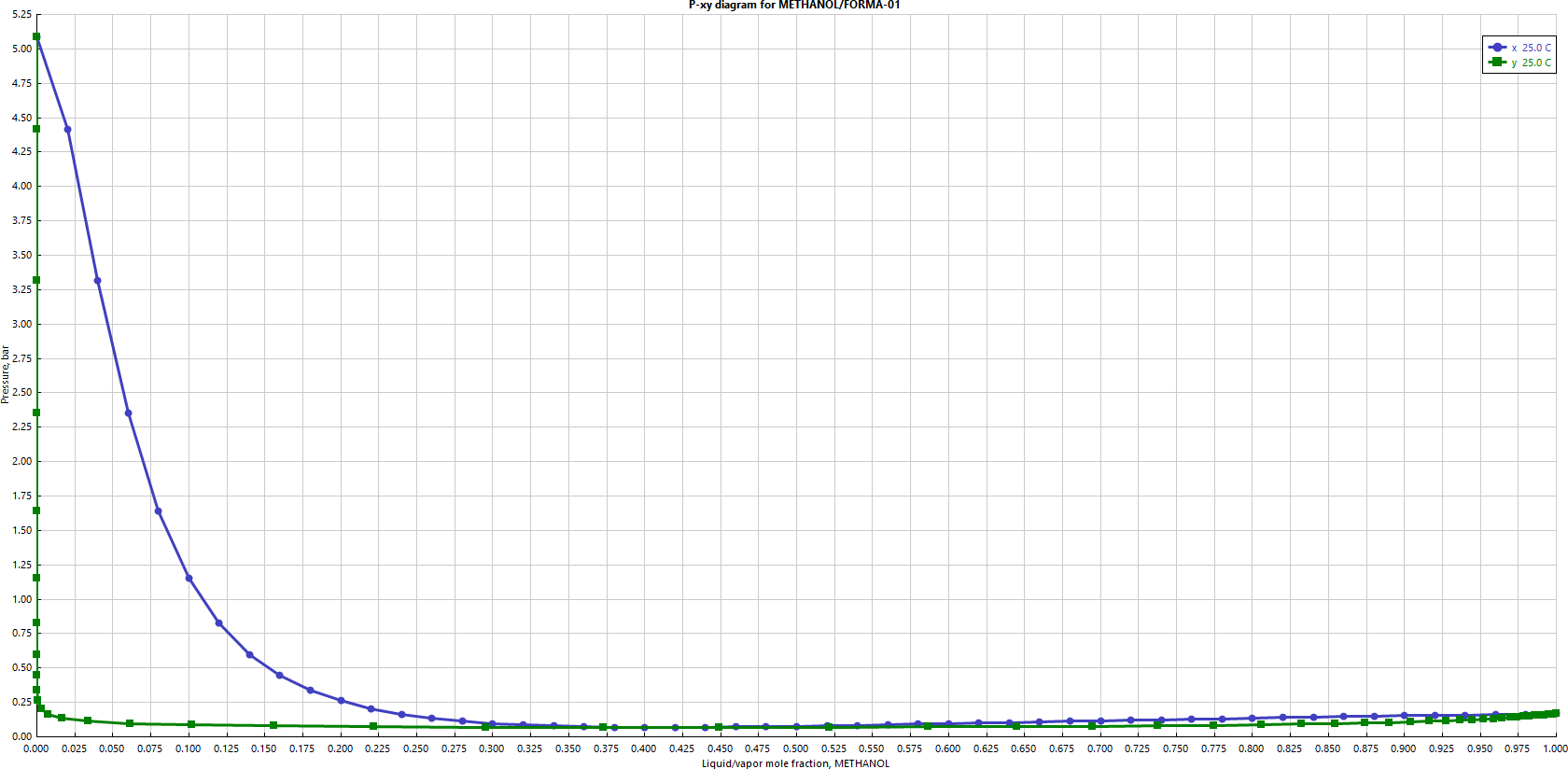




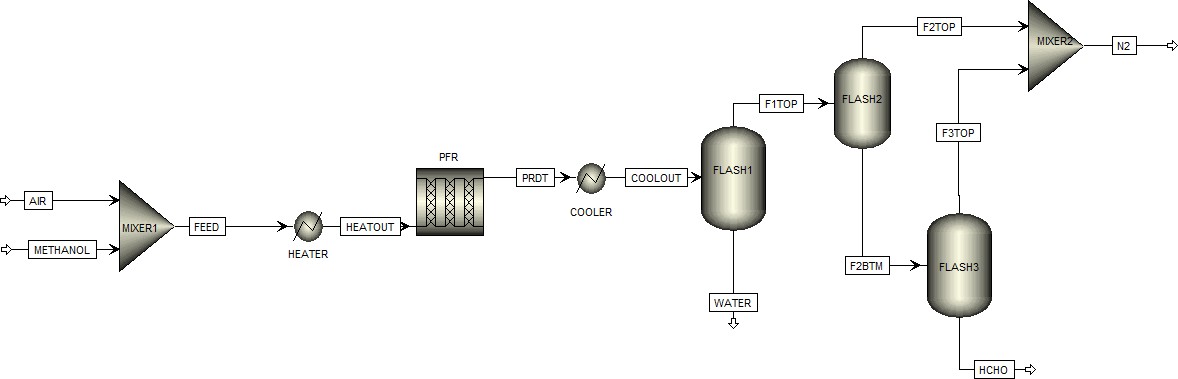


Temperature **vs** liquid/vapour mole fraction of METHANOL



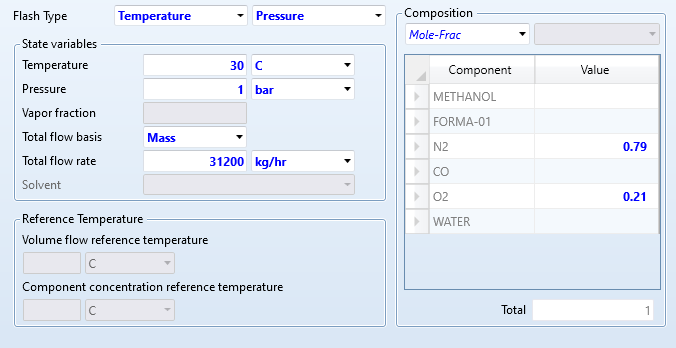


Pressure **vs** liquid/vapour mole fraction of METHANOL

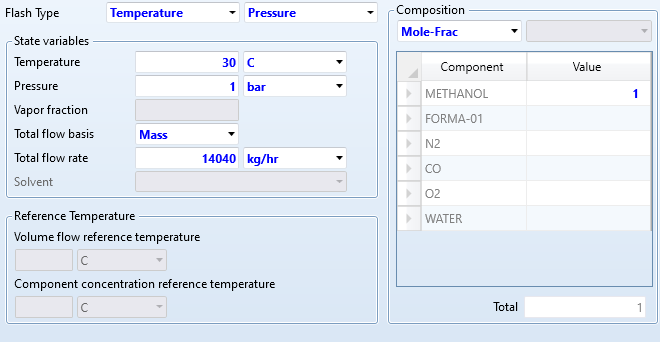


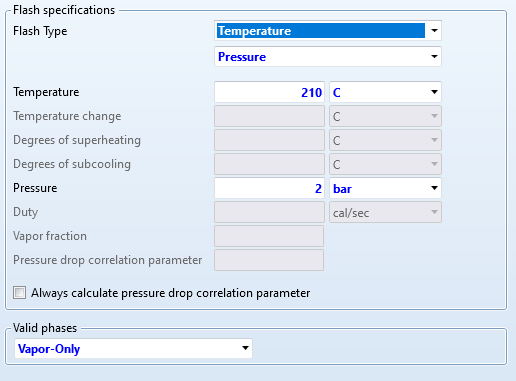
# Feed :-

* Air

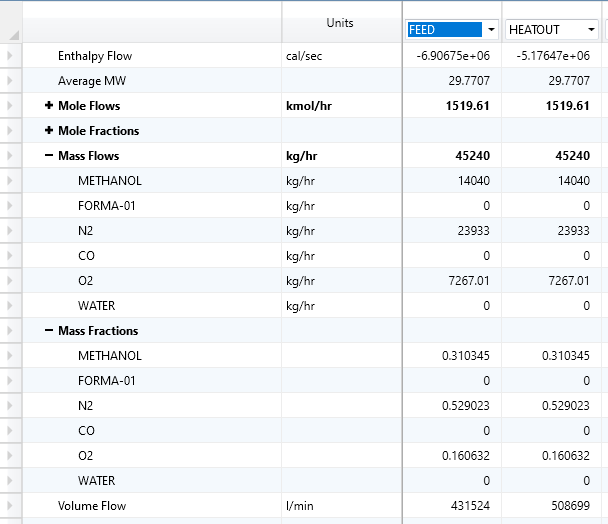


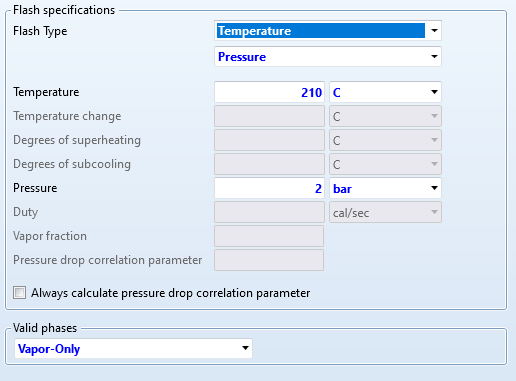
* Methanol



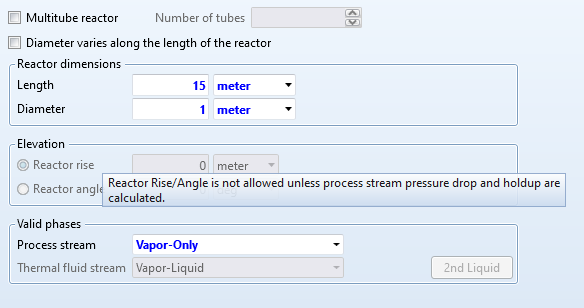


* Stream Results

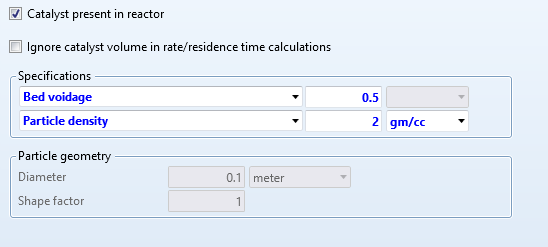




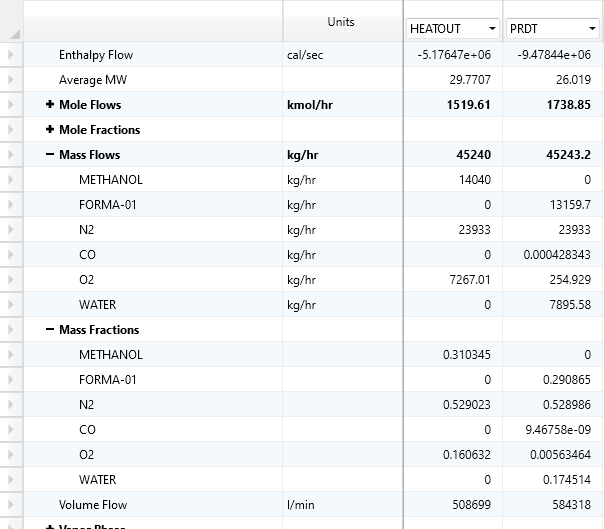
* Configuration



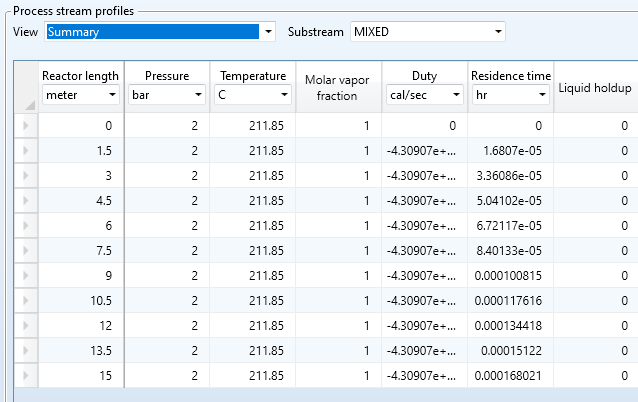
* Catalyst

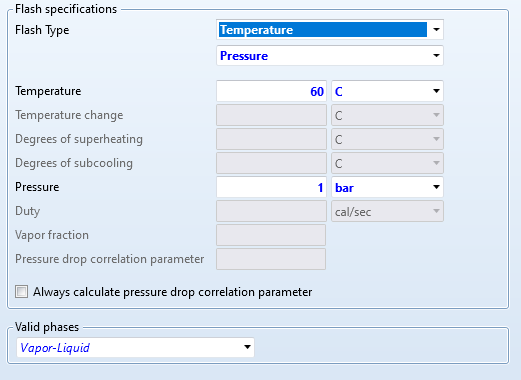


* Stream Results

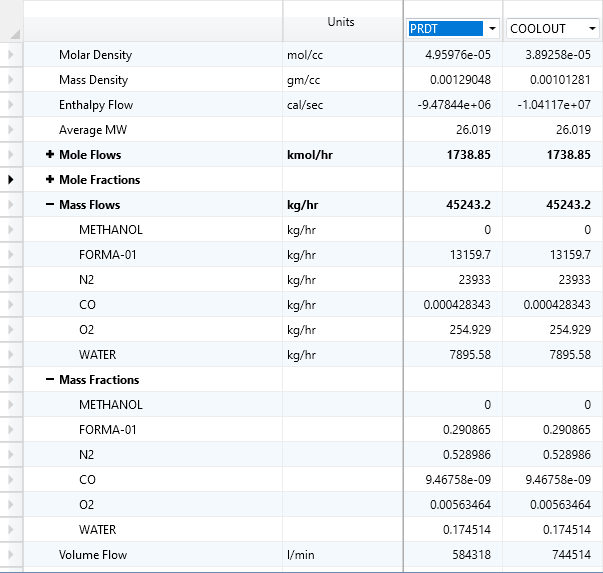


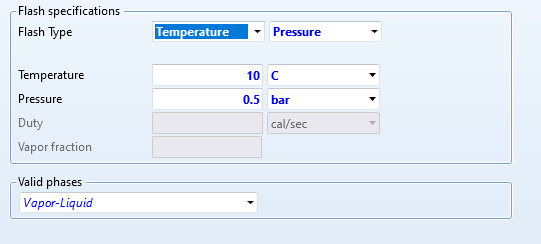
* Profiles



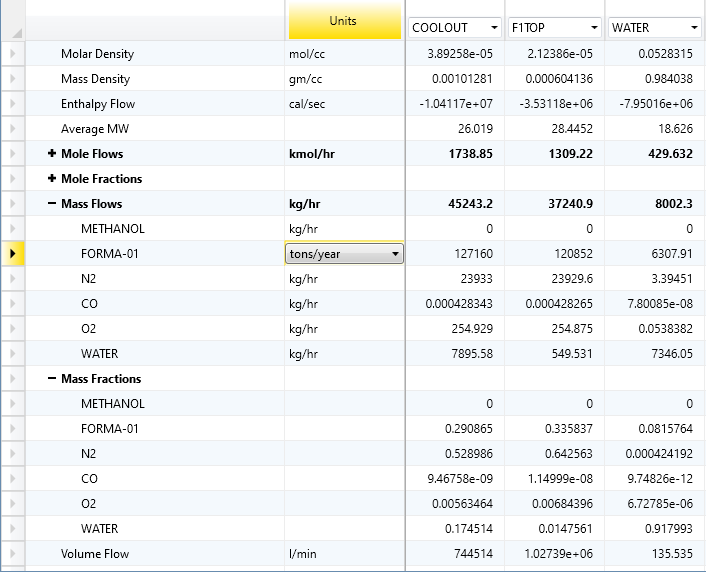


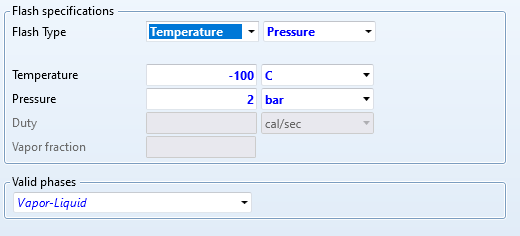
* Stream Results



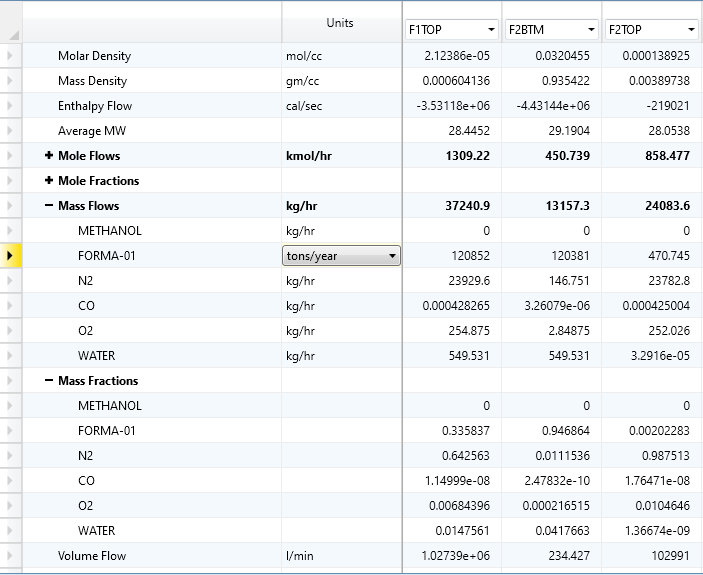


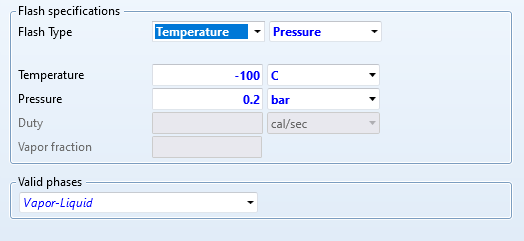
* Stream Results



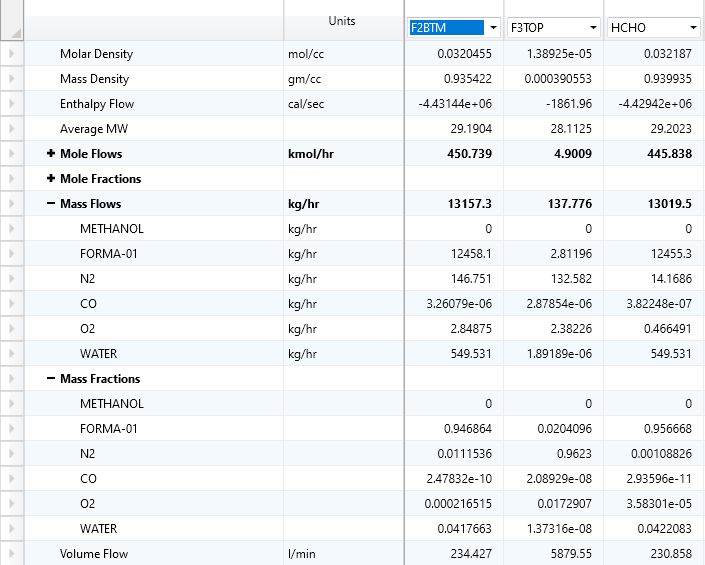


* Stream Result



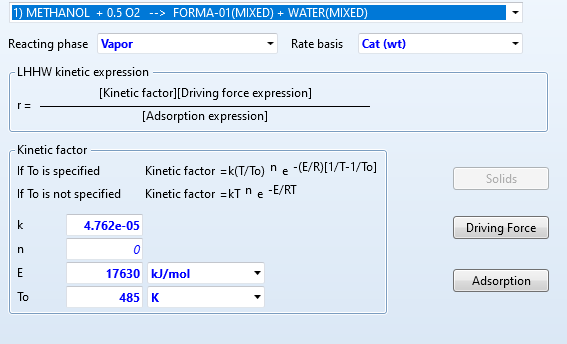


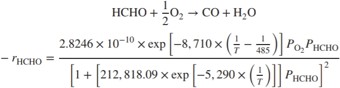
* Stream Result

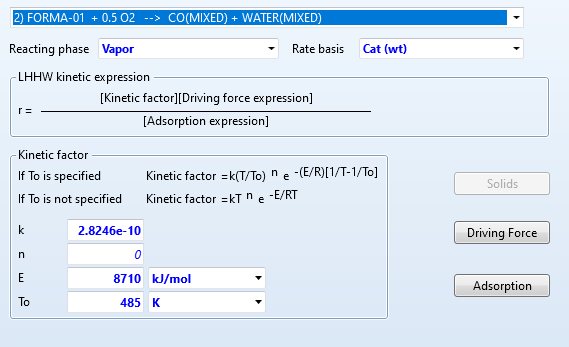


# Reactions :-

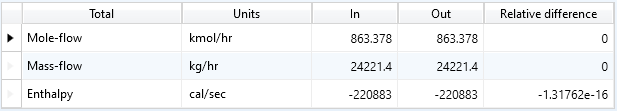




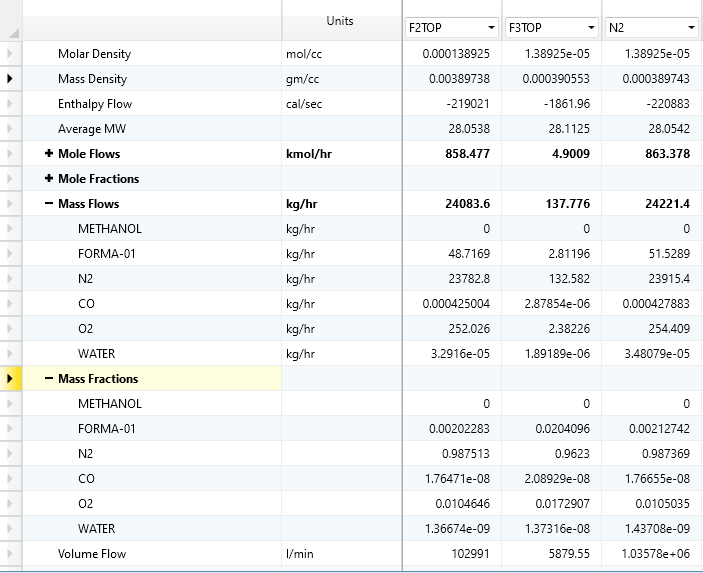




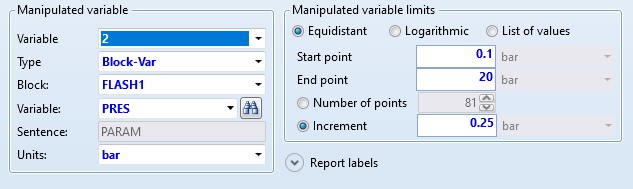
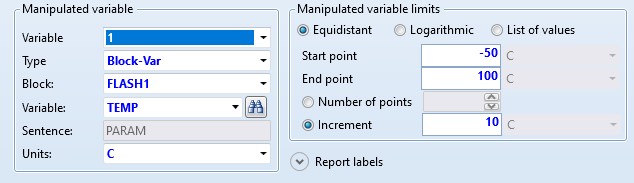
* Summary



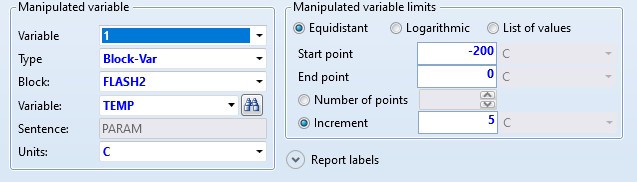
* Stream Result

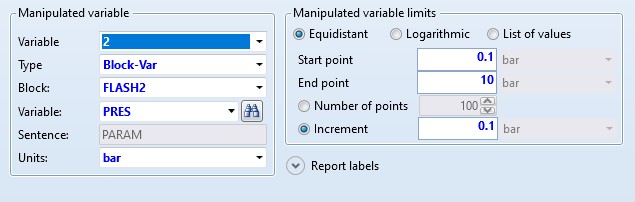


* F 1

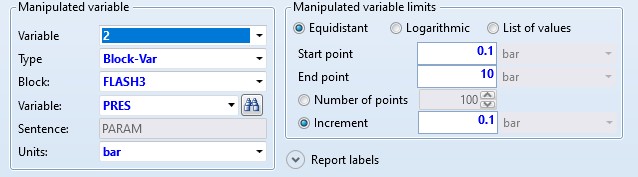
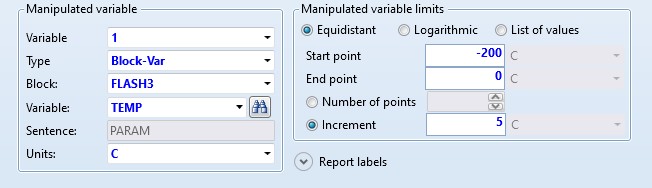


* F2

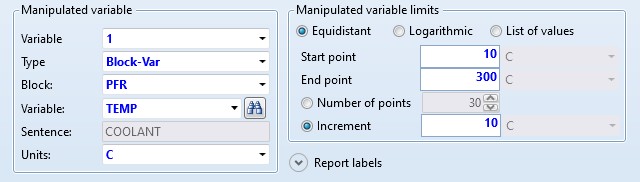


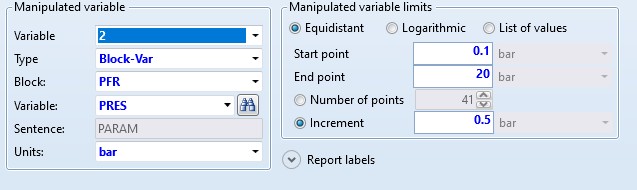


* F3

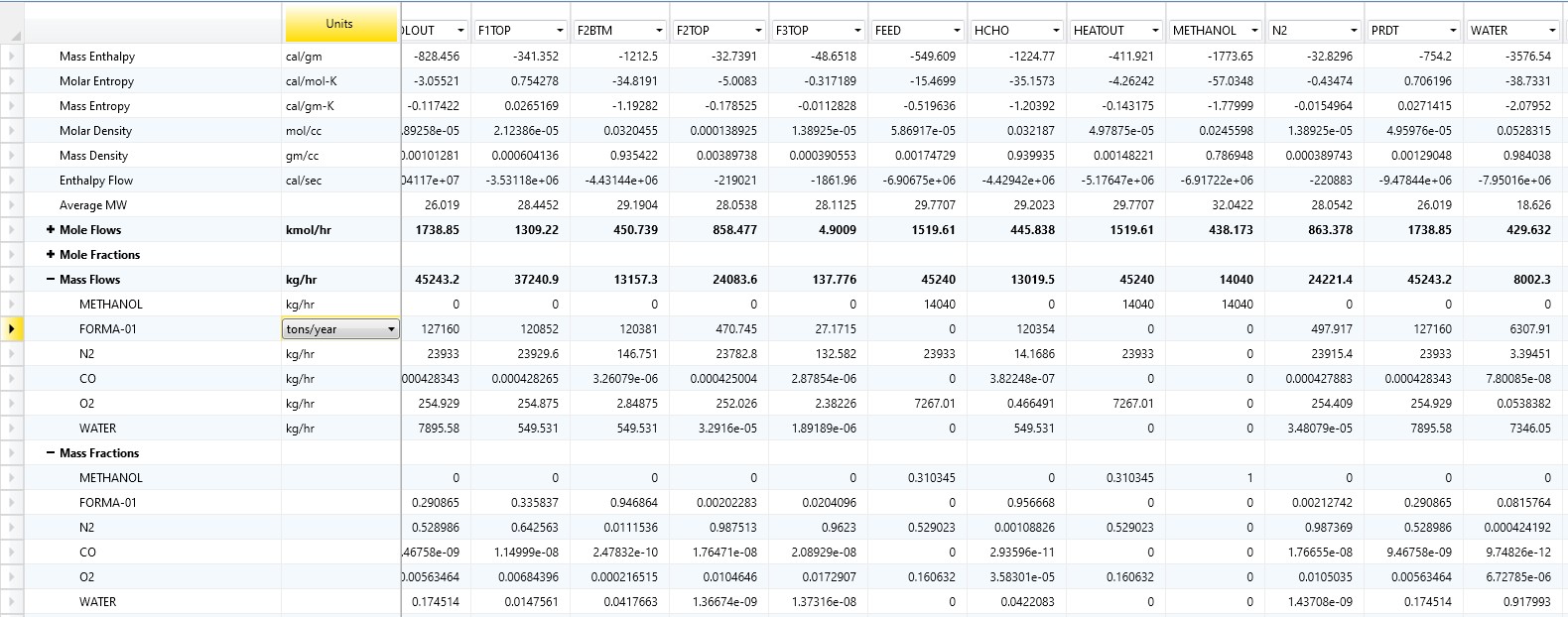


* PFRS





# Final Stream Result



Conclusion :-

* The mass fraction of the final Formaldehyde is 0.95668 which is obtained from the bottom of flash drum 3
* The mass fraction of the final nitrogen content is 0.987369 which is obtained from the mixer 2
* The mass fraction of the final water content is 0.917339 which is remove from the bottom of flash 1
* For the given feed,the final mass flow rate of formaldehyde is 120354 tonns/hour