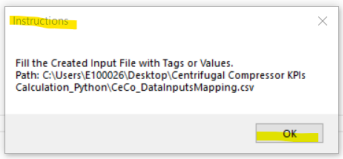
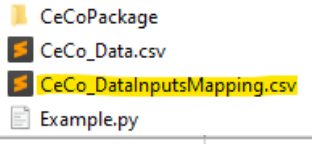
Step1: Fill in with data and Call `CeCo_GetDataInputModel`, there some error that will be checked:

- File Not Found Error of one of the files can't be found
- Number of stages is valid
- The Data File Delimiter
- KPI exists or Not to check for typo

```
Users > E100026 > Desktop > Centrifugal Compressor KPIs Calculation_Python > Example.py > ...
from CeCoPackage import CeCoKPIsMain

path =r'C:\Users\E100026\Desktop\Centrifugal Compressor KPIs Calculation_Python'
InputMappingFileName = 'CeCo_DataInputsMapping'
DataFileName = 'CeCo_Data'
DataSeperator=','
ResultFileName ='CeCo_KPIsResult'
nbStage=2

listWantedKPIs=['ActualVolFlow' ]

#step1: Generate the Input file to choose the 'Value' or the 'TagName' (column name) as provided in the "DataFileName"
CeCoKPIsMain.CeCo_GetDataInputModel(path,InputMappingFileName,listWantedKPIs,nbStage)

#step2: Calculate KPIs
# CeCoKPIsMain.CeCo_GetKPIsCalculationResult(path,InputMappingFileName,DataFileName,ResultFileName,DataSeperator,listWantedKPIs,nbStage)
```



Step2: Fill In the created file with the tag name or value.



RelatedInput	TagOrValue
Timestamp	ToBeFilled
GasDensity1	ToBeFilledIn[kg/m3]
GasDensity2	ToBeFilledIn[kg/m3]
VolFlow1	ToBeFilledIn[kSCMH]
VolFlow2	ToBeFilledIn[kSCMH]
GasMoleWeight1	ToBeFilledIn[g/mol]
GasMoleWeight2	ToBeFilledIn[g/mol]

RelatedInput	TagOrValue
Timestamp	Timestamp
GasDensity1	203.3506281
GasDensity2	203.3506281
VolFlow1	61FY120
VolFlow2	61FY120
GasMoleWeight1	19.94000946
GasMoleWeight2	19.94000946

Step3: Call `CeCo_GetDataInputModel` and a result file would be generated, wait until a Msg box is shown.

```
14
15  #step2: Calculate KPIs
16  CeCoKPIsMain.CeCo_GetKPIsCalculationResult(path,InputMappingFileName,DataFileName,ResultFileName,DataSeperator,listWantedKPIs,nbS
17
18
19
```

```
PROBLEMS 3   OUTPUT   DEBUG CONSOLE   TERMINAL

Windows PowerShell
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PS C:\Users\E100026> & C:/Users/E100026/AppData/Local/Programs/Python/Python37/python.exe "c:/Users/E100026/Desktop/Centrifugal Compressor KPIs
In CeCo_GetKPIsCalculationResult: Calculation In Progress...
In CeCo_GetKPIsCalculationResult: Calculation done!
```
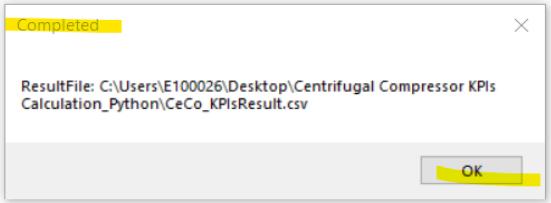
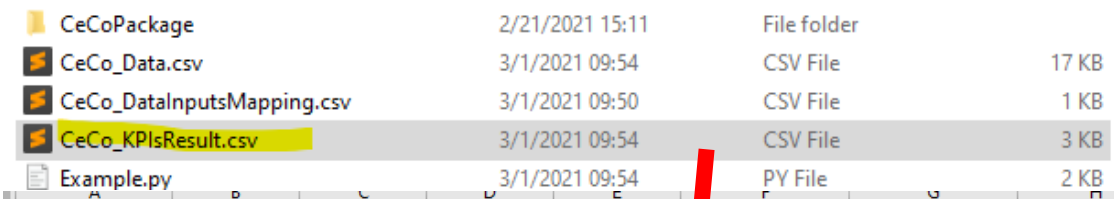



Step4: Check the result File ResultFileName



Timestamp	GasDensity1	GasDensity2	VolFlow1	VolFlow2	MoleWeight1	GasMoleWeight2	ActualVolFlow1	ActualVolFlow2
7/27/2017 16:10	203.3506281	203.3506281	328.5549316	328.5549316	19.94000946	19.94000946	0.399268089	0.399268089
7/27/2017 16:20	203.3506281	203.3506281	328.4080505	328.4080505	19.94000946	19.94000946	0.399089596	0.399089596
7/27/2017 16:30	203.3506281	203.3506281	328.0917358	328.0917358	19.94000946	19.94000946	0.398705202	0.398705202
7/27/2017 16:40	203.3506281	203.3506281	327.7413635	327.7413635	19.94000946	19.94000946	0.398279421	0.398279421
7/27/2017 16:50	203.3506281	203.3506281	328.1994934	328.1994934	19.94000946	19.94000946	0.398836152	0.398836152

Additional Tools:

You can use some of the created functions without creating csv for immediate results

- To check the unit of KPIs or Input
- To check All/ Non-Stage/ Is Stage Related Inputs for a Particular KPI
- To check the list of all Available KPIs
- To check the Value of a Particular KPI result with values, CecoKPIsFunctions.py contains the functions with parameters just copy the headers.

```
#Additional Things Can be done without creating csv for immediate results
from CeCoPackage import CeCoKPIsDictionaries
from CeCoPackage import CecoKPIsFunctions
InputOrKPIToCheck='ActualVolFlow'

# Tool 1: To check The unit of KPIs or Input
print("Tool 1: "+ str(CeCoKPIsDictionaries.CeCoUnitsDictionary[InputOrKPIToCheck]))

# Tool 2: To check The Get All Related Inputs for a Particular KPI
print("Tool 2: "+ str(CeCoKPIsDictionaries.GetKPIsRelatedInputs(InputOrKPIToCheck)))

# Tool 3: To check The Get Non Stage Related Inputs for a Particular KPI
print("Tool 3: "+ str(CeCoKPIsDictionaries.GetKPIsRelatedInputs(InputOrKPIToCheck)['RelatedNonStageInputs']))

# Tool 4: To check The Get Is Stage Related Inputs for a Particular KPI
print( "Tool 4: "+str(CeCoKPIsDictionaries.GetKPIsRelatedInputs(InputOrKPIToCheck)['RelatedIsStageInputs']))

# Tool 5: To check the list of all Available KPIs
print( "Tool 5: "+str(CeCoKPIsDictionaries.listAllAvailableKPIs))

# Tool 6: To check the Value of a Particular KPI with values: It can be used to check before launching the whole rows in the Data csv
print("Tool 6: "+str(CecoKPIsFunctions.ActualVolFlow( GasDensity=203.3506281, VolFlow=380.0322266, NormalDensity=CecoKPIsFunctions.NormalDensity(GasMoleWeight=19.94000946))))
```

```
PROBLEMS 3  OUTPUT  DEBUG CONSOLE  TERMINAL                                  1: Python

Windows PowerShell
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PS C:\Users\E100026> & C:/Users/E100026/AppData/Local/Programs/Python/Python37/python.exe "c:/Users/E100026/Desktop/Centrifugal Compressor KPIs Calculation_Python/Example.py"
Tool 1: [m3/s]
Tool 2: {'RelatedNonStageInputs': [], 'RelatedIsStageInputs': ['GasDensity', 'VolFlow', 'GasMoleWeight']}
Tool 3: []
Tool 4: ['GasDensity', 'VolFlow', 'GasMoleWeight']
Tool 5: ['ActualVolFlow', 'NormalVolFlow', 'AdiaWorkCoeff', 'GasPowerRef', 'IsoEfficiency', 'MachNumber', 'NormalHead', 'AdiaEfficiency', 'GasPower', 'PolyHead', 'MassFlow', 'PressRatio', 'SbvPosDeviation', 'VanePosDev', 'PluggedSuctFilterDetection',
 'SuctVelocity', 'TempRatio', 'TempRise', 'VolFlowRef', 'PolyWorkCoeff', 'PolyWorkCoeffRotor', 'PolyWorkInput', 'NormalPower', 'SpecificPower', 'PolyHeadM', 'NormalDensity', 'AdiaHead', 'AdiaHeadM', 'GasGamma', 'IsoHead', 'IsoHeadM', 'NormalHeadM', '
PolyHeadRef', 'PolyHeadRefM', 'PressRise', 'AreaExit', 'AreaInlet', 'DensityRatio', 'SpeedRatio', 'RotorTipSpeed', 'PolyRatio', 'AdiaRatio', 'PolyEfficiency', 'DPress', 'DTemp', 'DesignMassFlow', 'MassFlowDeviation', 'MassFlowDevnPcn', 'DesignPolyEff
iciency', 'PolyEfficiencyDeviation', 'PolyEfficiencyDevnPcn', 'DesignPolyHead', 'PolyHeadDeviation', 'PolyHeadDevnPcn', 'DesignGasPower', 'GasPowerDeviation', 'GasPowerDevnPcn', 'DesignSpecificPower', 'DesignPolyHeadM', 'PolyHeadMDeviation', 'PolyHea
dMDevnPcn', 'TotalDesignGasPower', 'TotalGasPowerDeviaton', 'TotalGasPowerDevnPcn', 'DegradationCost', 'TotalDesignPolyEfficiency', 'TotalPolyEfficiencyDeviation', 'TotalPolyEfficiencyDevnPcn', 'TotalDesignPolyHead', 'TotalPolyHeadDeviation', 'TotalP
olyHeadDevnPcn', 'TotalDesignPolyHeadM', 'TotalPolyHeadMDeviation', 'TotalPolyHeadMDevnPcn', 'TotalDesignAdiaEfficiency', 'TotalPolyHead', 'TotalMassFlow', 'TotalSpecificPower', 'TotalPressRatio', 'TotalPolyEfficiency', 'TotalPower', 'TotalPolyHeadM'
, 'TotalAdiaHead', 'TotalAdiaHeadM', 'TotalIdealPowerAdia', 'TotalIdealPowerPoly', 'TotalGasPower', 'TotalPressRise', 'TotalAdiaEfficiency']
Tool 6: 0.46182457281853595
PS C:\Users\E100026>
```