BPL_TEST2_Chemostat - demo

In [1]:
```
run -i BPL_TEST2_Chemostat_fmpy_explore.py
```

```
Windows - run FMU pre-compiled JModelica 2.14

Model for bioreactor has been setup. Key commands:
 - par()       - change of parameters and initial values
 - init()      - change initial values only
 - simu()      - simulate and plot
 - newplot()   - make a new plot
 - show()      - show plot from previous simulation
 - disp()      - display parameters and initial values from the last simulation
 - describe()  - describe culture, broth, parameters, variables with values/uni
ts

Note that both disp() and describe() takes values from the last simulation
and the command process_diagram() brings up the main configuration

Brief information about a command by help(), eg help(simu)
Key system information is listed with the command system_info()
```
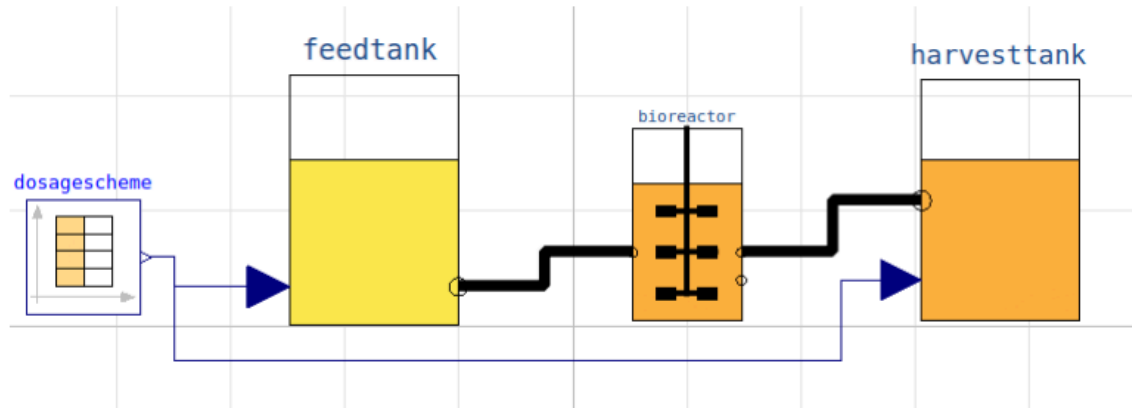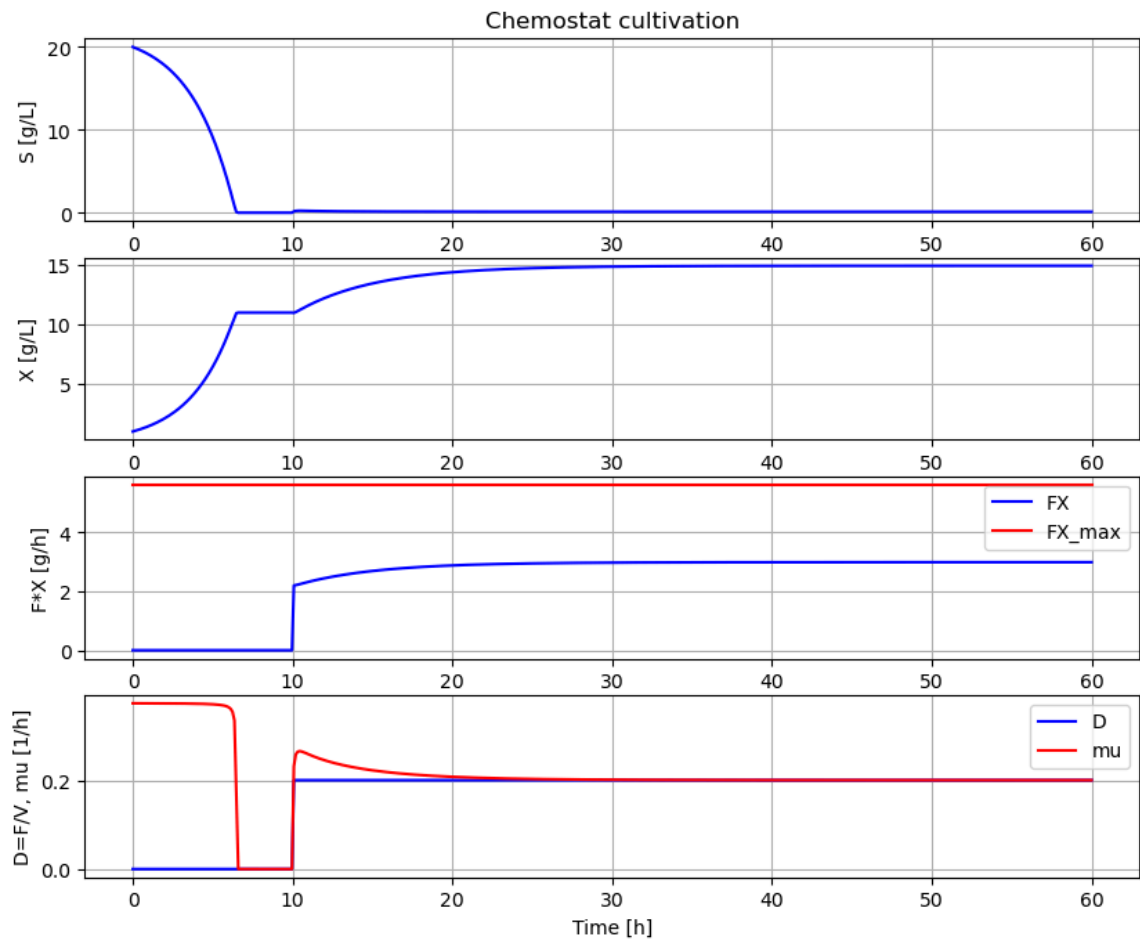
In [2]:
```
%matplotlib inline
plt.rcParams['figure.figsize'] = [25/2.54, 20/2.54]
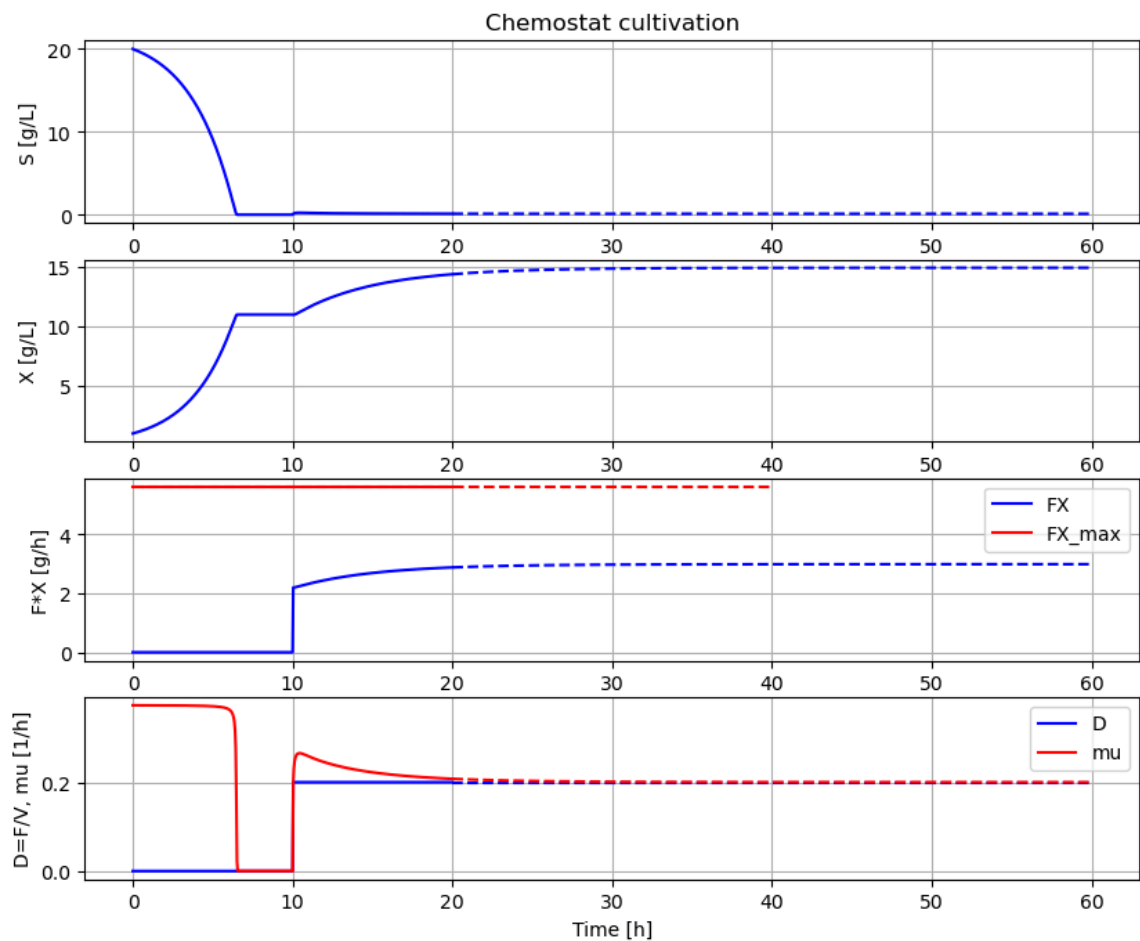```

In [3]:
```
process_diagram()
```

```
No processDiagram.png file in the FMU, but try the file on disk.
```


In [4]:
```
newplot()
par(Y=0.50, qSmax=0.75,  Ks=0.1)              # Culture parameters
init(V_start=1.0, VX_start=1.0, VS_start=20)  # Bioreactor startup
par(S_in=30, t0=0, F0=0, t1=10, F1=0.2)       # Substrate feeding
simu(60)
```

Chemostat cultivation


```
In [5]:  # Check simu('cont')
         newplot()
         simu(20)
         simu(40,'cont')
```

Chemostat cultivation

```
In [6]: disp('culture')

        Y : 0.5
        qSmax : 0.75
        Ks : 0.1

In [7]: describe('mu')

        Cell specific growth rate variable : 0.2 [ 1/h ]

In [8]: describe('parts')

        ['bioreactor', 'bioreactor.culture', 'D', 'dosagescheme', 'feedtank', 'harvestt
        ank', 'liquidphase', 'MSL']

In [9]: describe('MSL')

        MSL: RealInput, RealOutput, CombiTimeTable, Types

In [10]: system_info()
```

```
System information
 -OS: Windows
 -Python: 3.9.16
 -Scipy: not installed in the notebook
 -FMPy: 0.3.15
 -FMU by: JModelica.org
 -FMI: 2.0
 -Type: CS
 -Name: BPL_TEST2.Chemostat
 -Generated: 2024-02-29T19:45:40
 -MSL: 3.2.2 build 3
 -Description: Bioprocess Library version 2.1.2 prel
 -Interaction: FMU-explore for FMPy version 0.9.9
```

In [ ]: