





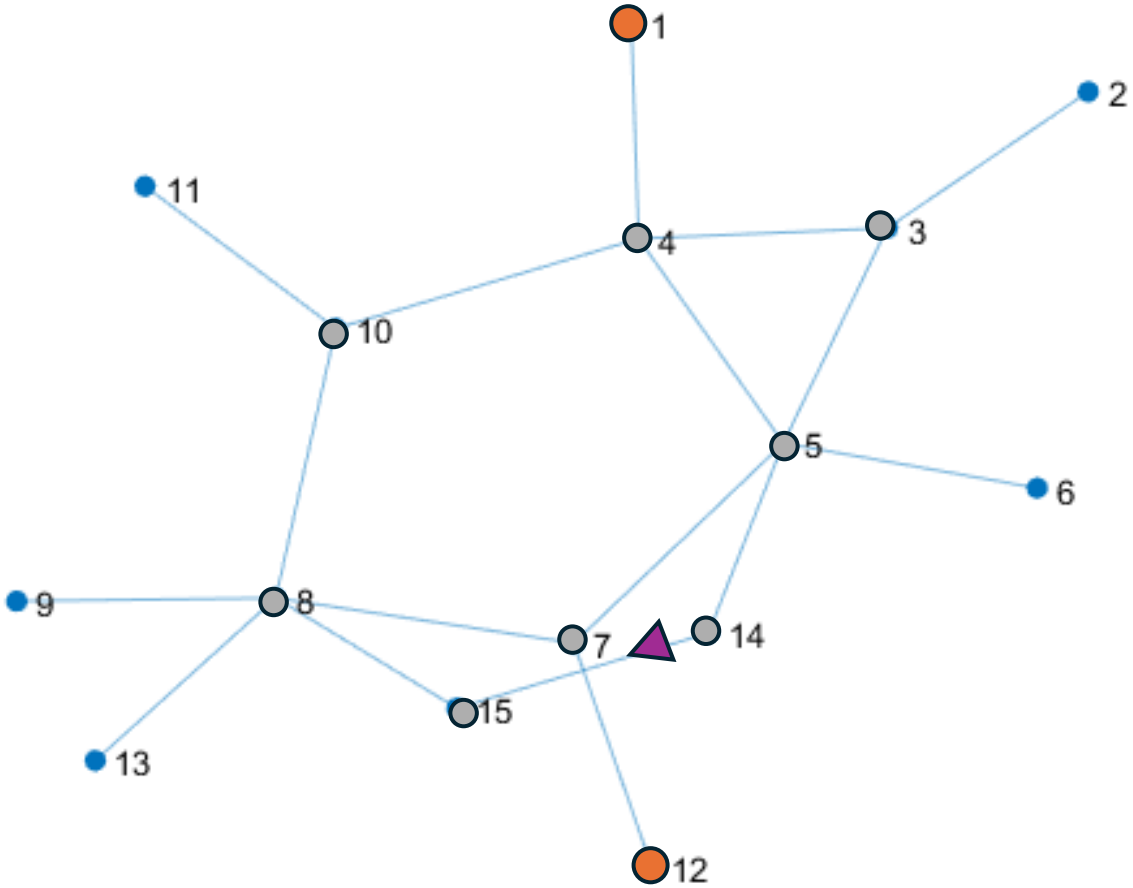
# 1<sup>st</sup> Test Case for Internal Validation

SHIMMER WP4 Update

# Case Study Presentation

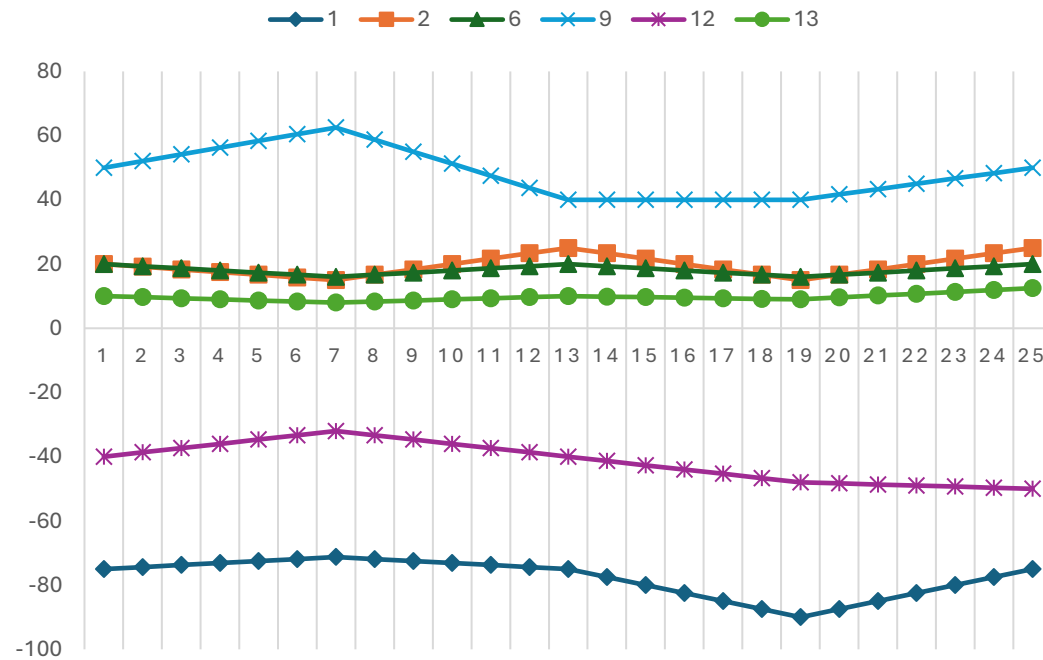
## Topology

	Entry Node	Nodes: 1, 12
	Junction Node	Nodes: 4, 5, 8
	Exit Node	Nodes: 2, 3, 6, 7, 9, 10, 11, 13, 14, 15
	Compressor	Pipe: 16 Nodes: 14 - 15

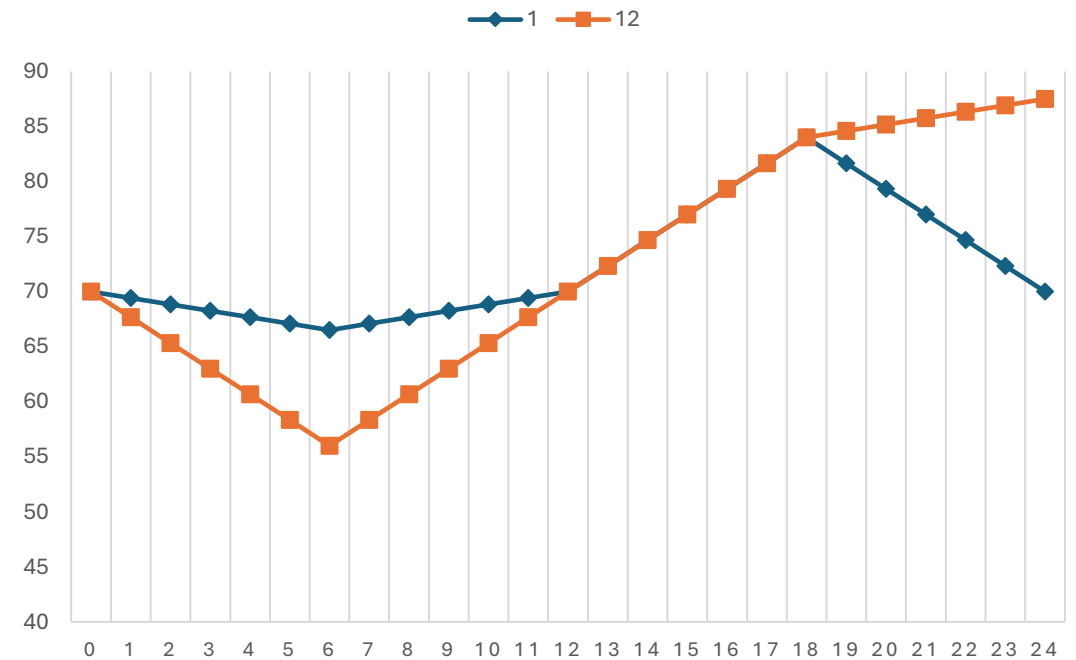


# Case Study Presentation Profiles

## CONSUMPTION PROFILE [KG/S]



## PRESSURE PROFILE [BAR]



# Remarks

## General

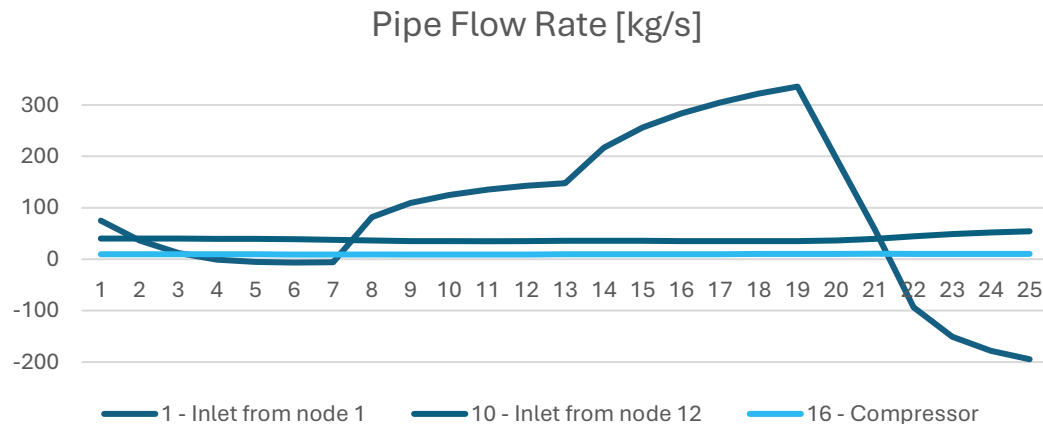
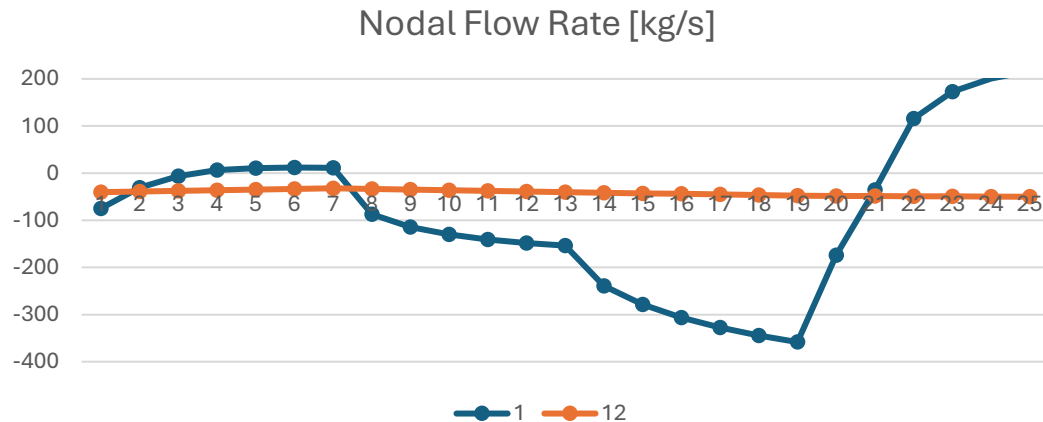
- Pressure set points and pressure guess are given in [bar]
  - Matlab code converts [bar] in [Pa]
- No compressor control mode switch
  - Compressor control mode is given as input and never changed
  - For example, if the compressor is regulated as Outlet Pressure, it cannot be changed to Power Driver

# Remarks

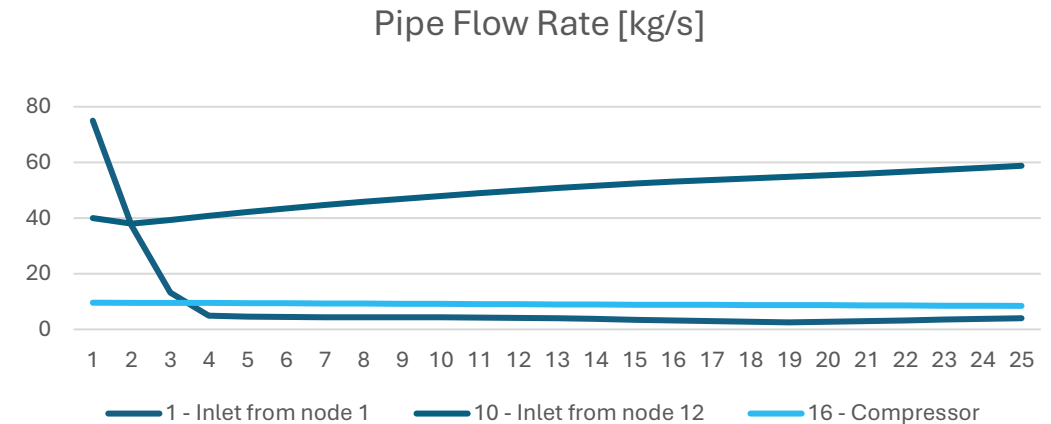
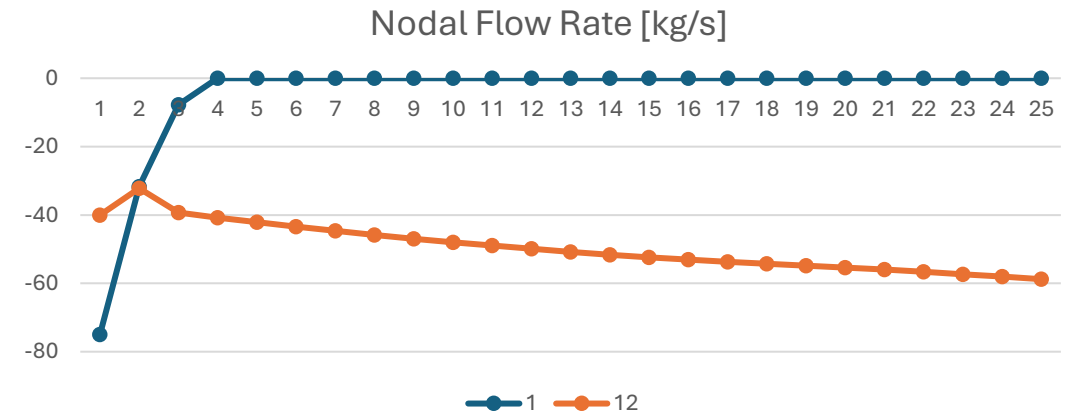
## Nodal Boundary Condition Check

Once the node is “Closed”  
it cannot be “Opened” again  
in the Matlab Version

### No Boundary Condition Check Node 1 becomes an Entry

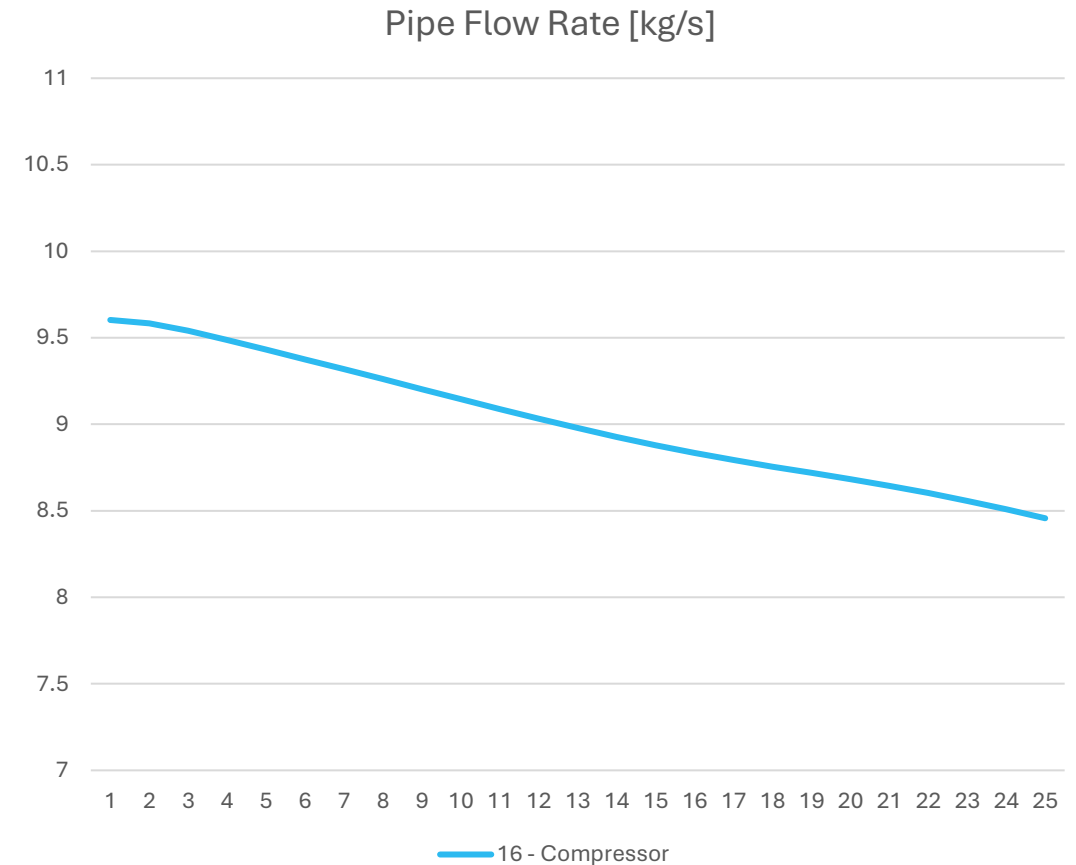
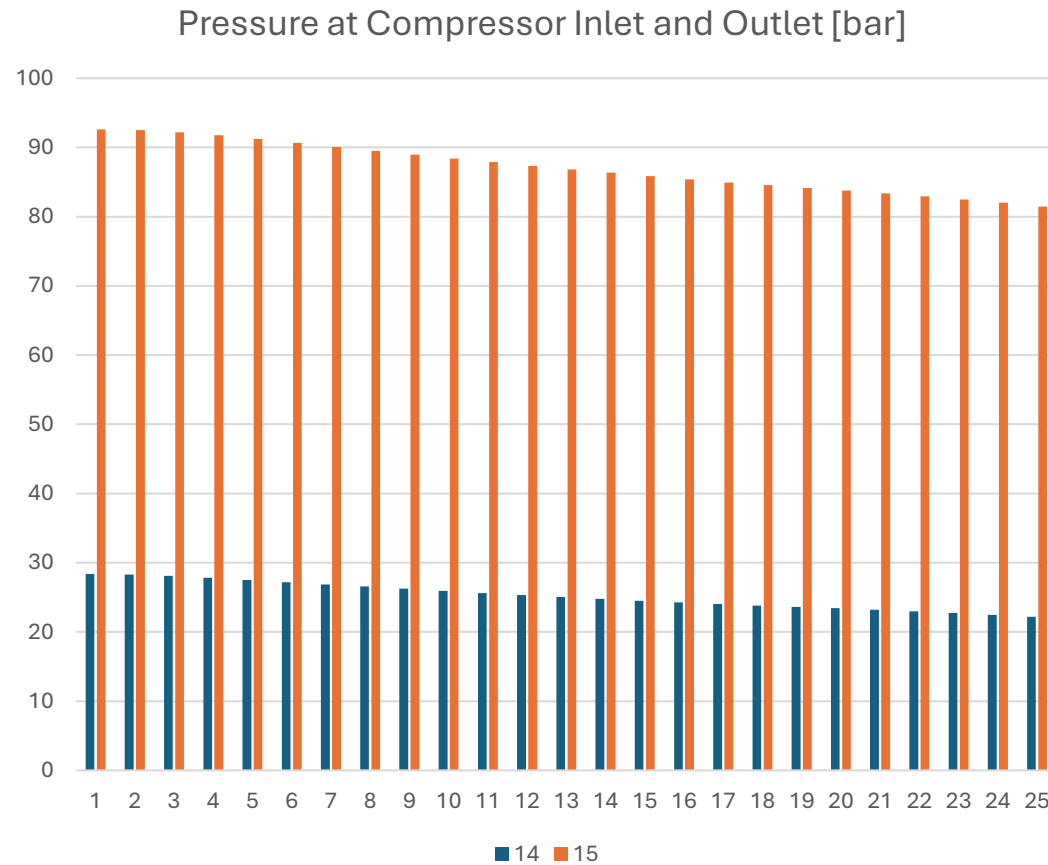


### With Boundary Condition Check Node 1 is “Closed”



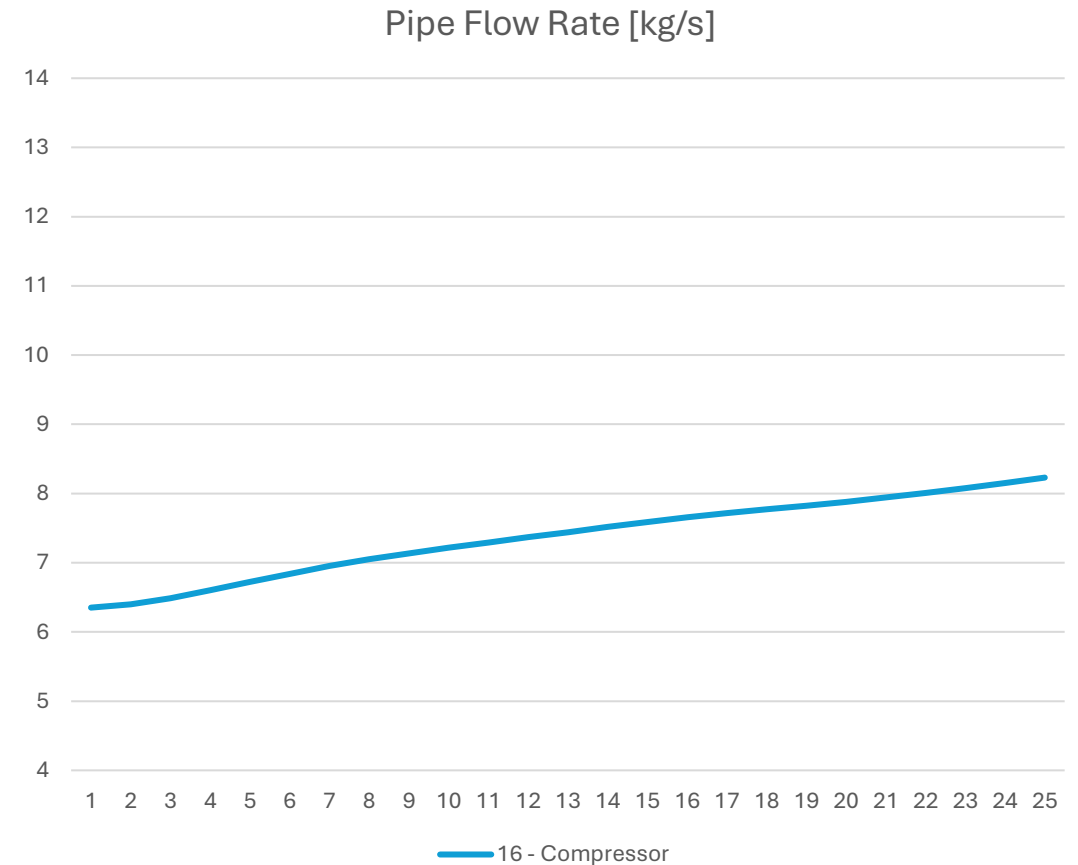
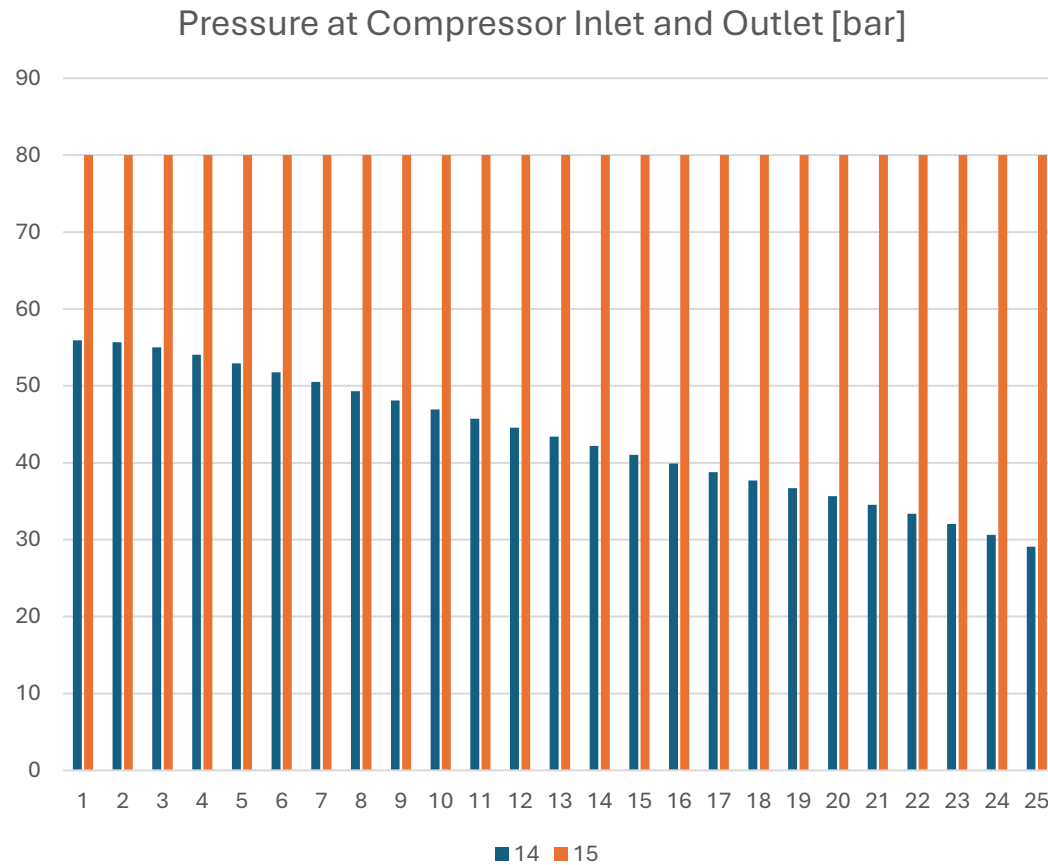
# Results

## Power Driver = 2 MW



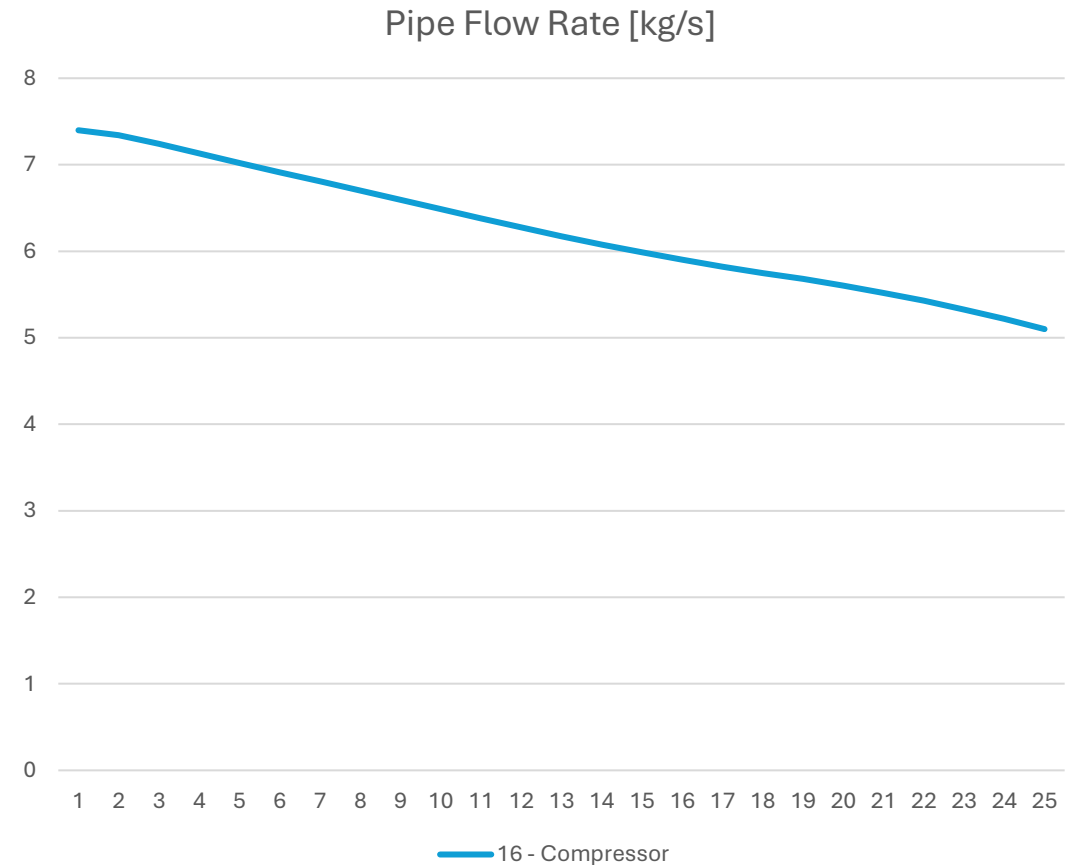
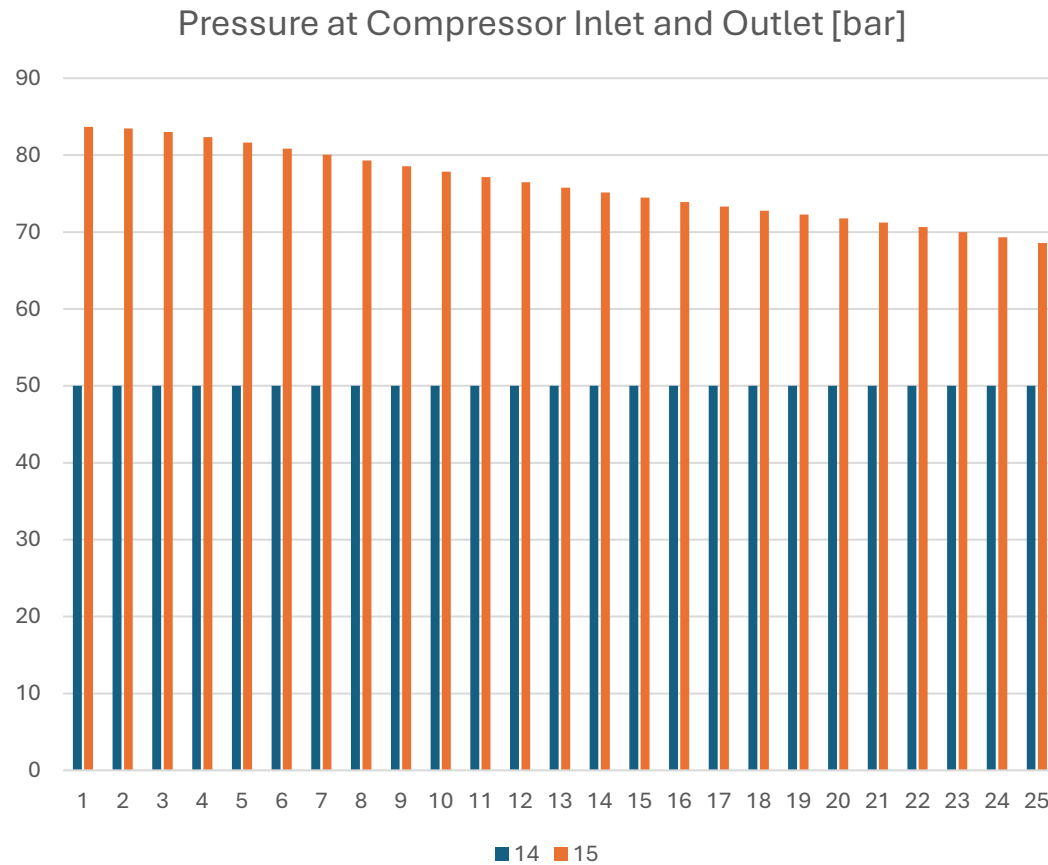
# Results

## Compressor Outlet Pressure = 80 bar



# Results

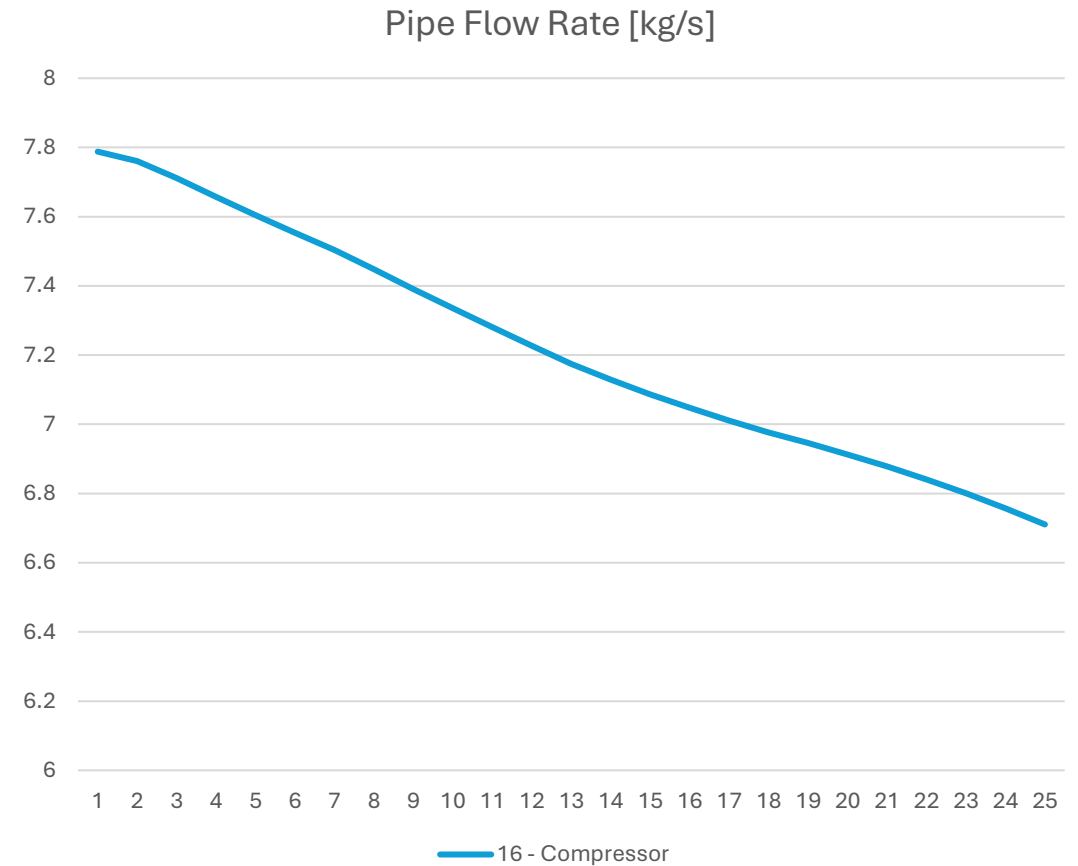
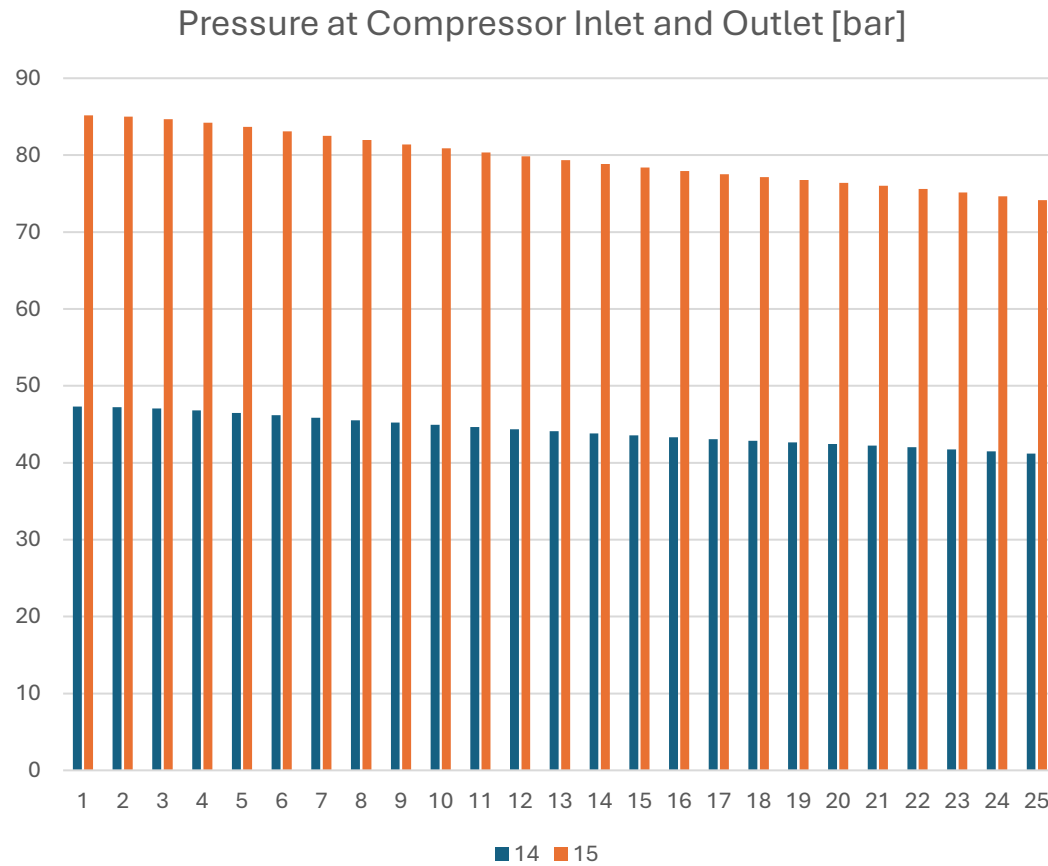
## Compressor Inlet Pressure = 50 bar





# Results

## Beta = 1.8



# Results

## Compressor Flow Rate = 5 kg/s

