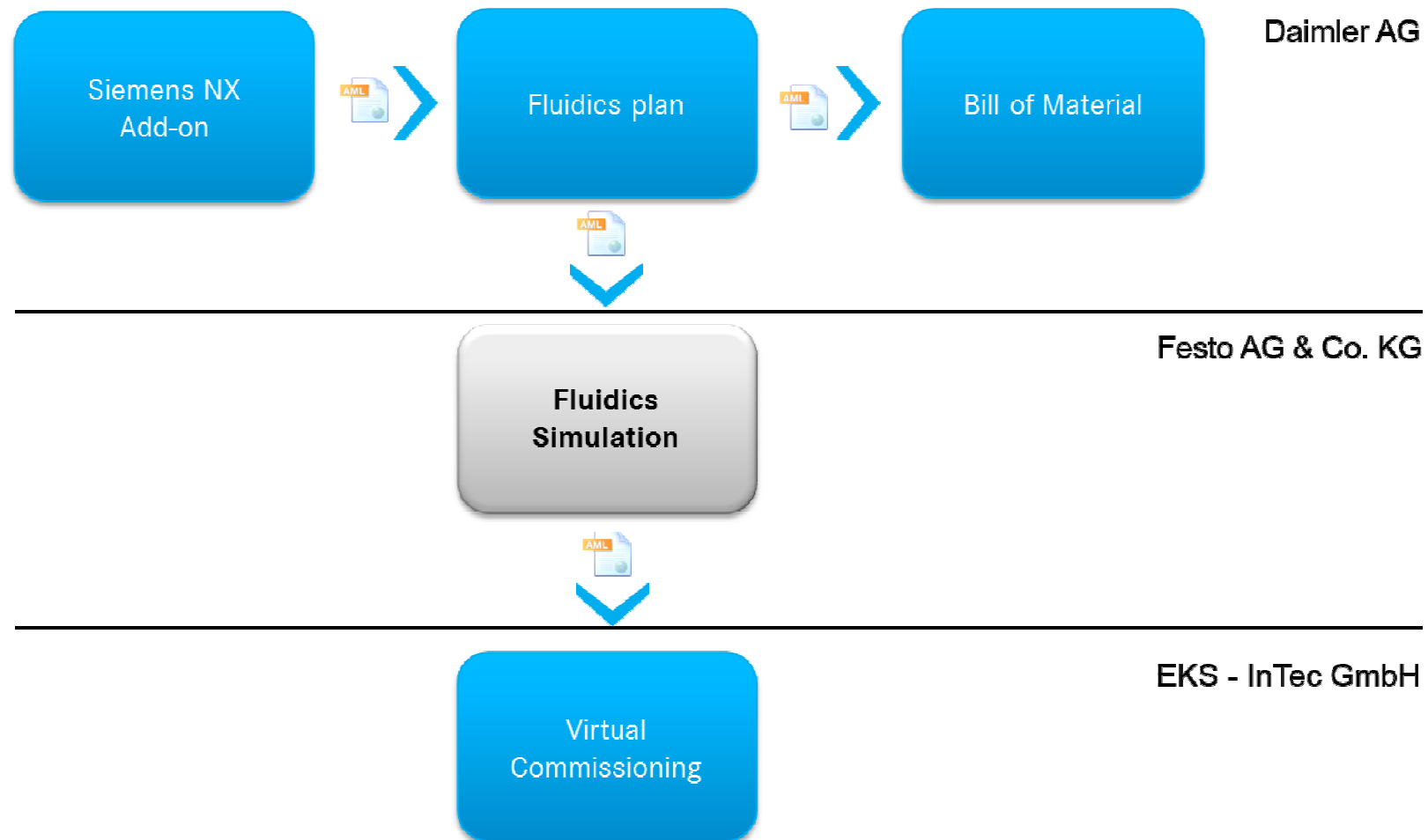
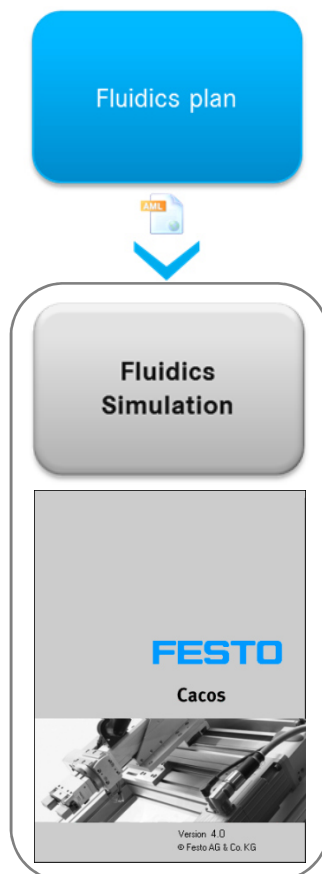


## Practical Application of AutomationML in Engineering Toolchains



# Practical Application of AutomationML in Engineering Toolchains

**CACOS** (Computer **A**ided **C**ylinder **O**ptimisation **S**ystem)

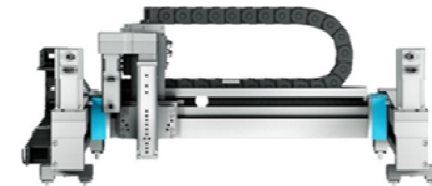


For what is the simulation tool CACOS good for?

- simulation program for the support of users
- selection and recalculation of applications with pneumatic or electric drives



pneumatic drive



electric drive

# Practical Application of AutomationML in Engineering Toolchains

## AML File to Festo



<AutomationML/>

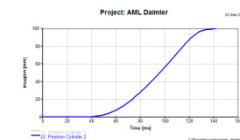
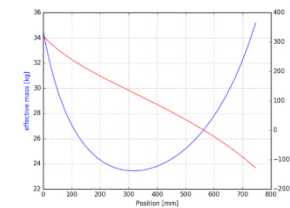
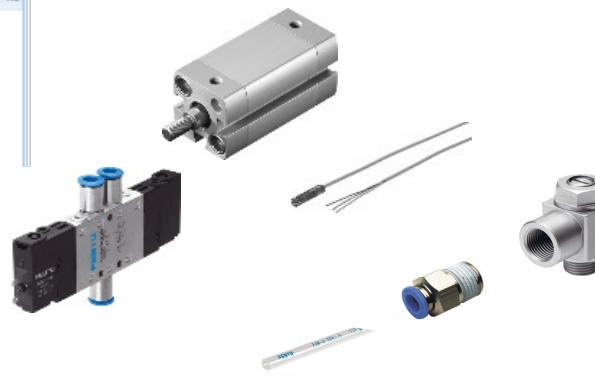
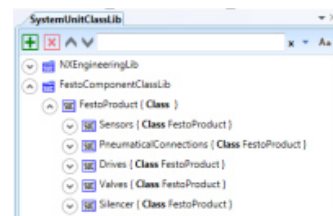


Fluidics  
Simulation



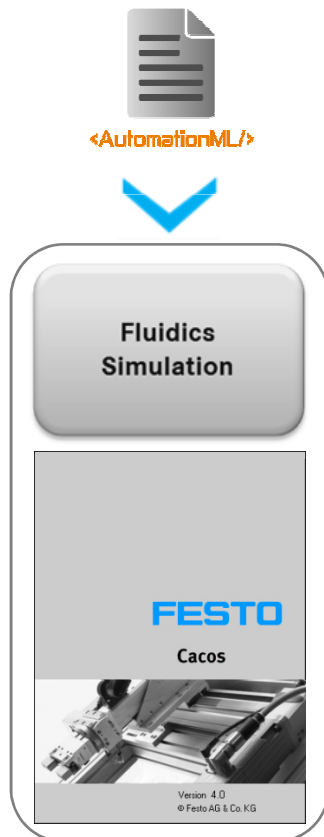
project data includes full defined pneumatic data in <AutomationML/> :

- hardware: pneumatic cylinder, valve, throttle, tubes, connectors
- requirements: load curve, defined moving time

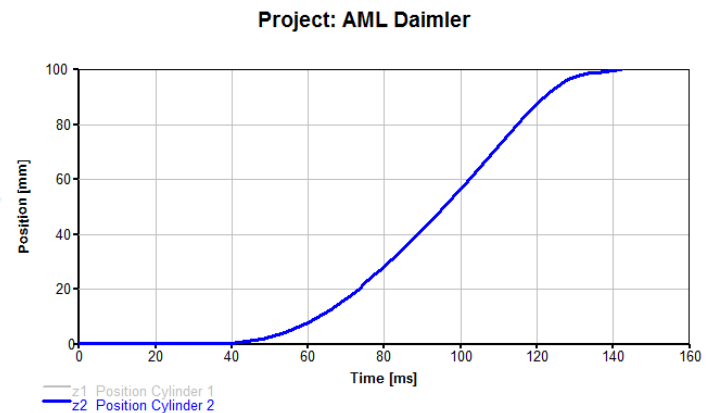
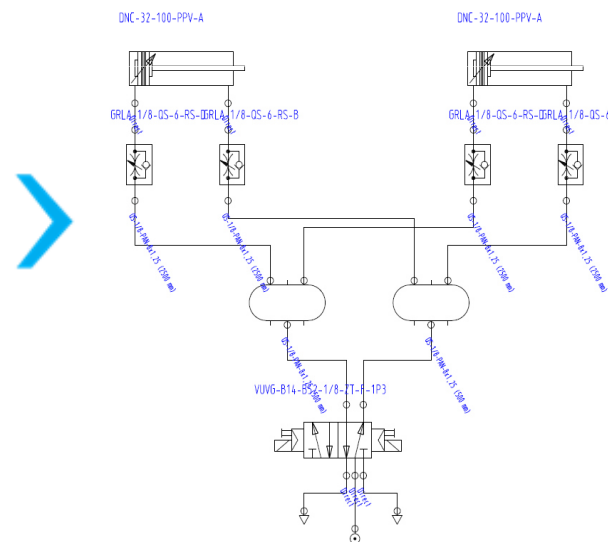


# Practical Application of AutomationML of Engineering Toolchains

## AML File in Festo CACOS



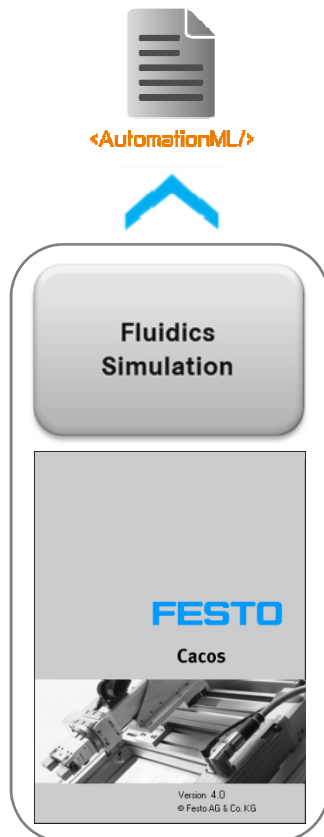
Build up the pneumatic system depending on the AML project file in CACOS.



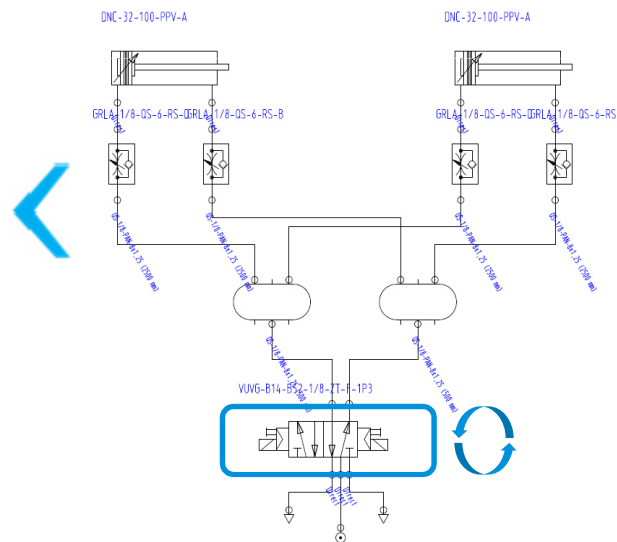
Start calculation depending on the requirements.  
Compare the requirements with the calculation results.

# Practical Application of AutomationML in Engineering Toolchains

## Optimisation of the Pneumatic System with Festo CACOS



Optimisation of the chosen components in dependence of the requirements.



requirements: defined moving time

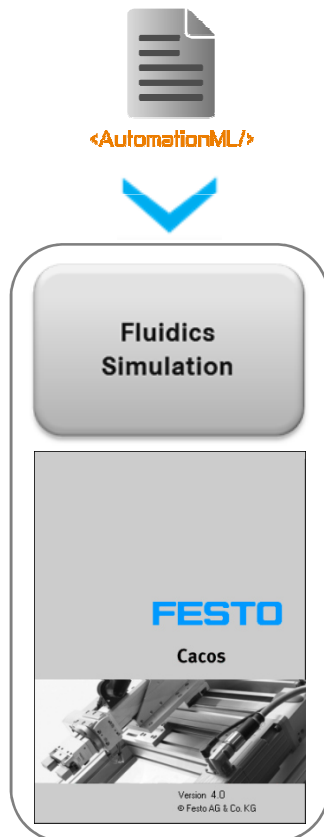
not reached

proposal for a other valve

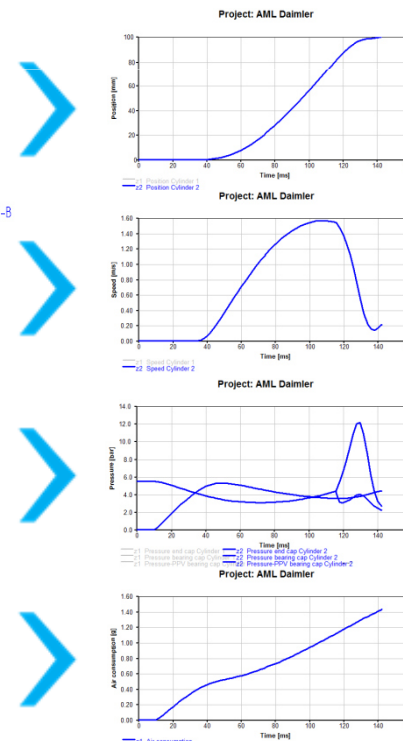
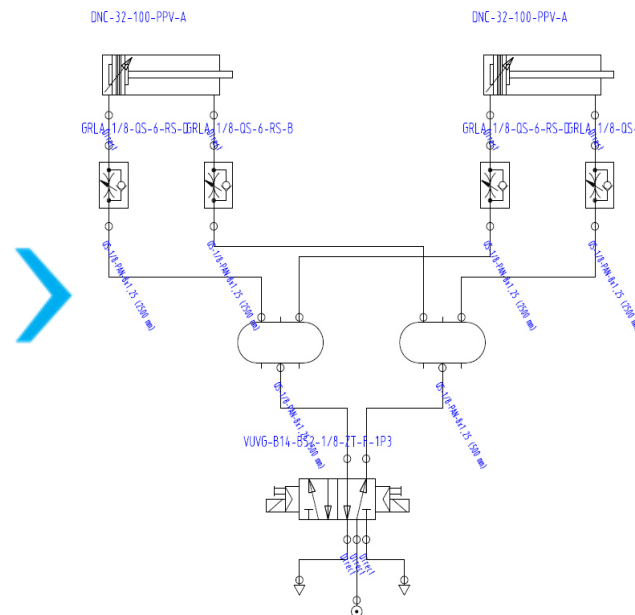
Write the optimised components in the AutomationML-file to confirm the new configuration of the pneumatic plan by Daimler

# Practical Application of AutomationML in Engineering Toolchains

## AML File in Festo CACOS



Calculation of the pneumatic system depending on the AutomationML project file in CACOS.



position

velocity

pressure

air consumption

# Practical Application of AutomationML in Engineering Toolchains

## Confirmed AML file in Festo CACOS



### CACOS benefits:

- Planning, design and optimisation
  - select and optimise suitable components
  - optimisation of the cycle time
  - reduce energy consumption
  - determine of characteristic values
  - calculate characteristic curves
  - creation of behaviour models possible\*

\*encrypted FunctionalMockupUnit (FMU) behaviour models are realized in the AVANTI project