Process Modeling & Simulation

Lecture (1) / Introduction to Process Simulation

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For 4th year students of Chemical and Petrochemical Engineering Department

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Commercial Process Simulation Software		
Corporations	**Software**	**Websites**
AspenTech	AspenONE Engineering (consists of Aspen Plus, Aspen HYSYS, Aspen Economic Evaluation, Aspen Exchanger Design & Rating, Aspen Energy Analyzer, Aspen Utilities Planner)	www.aspentech.com
Honeywell	UniSim Design	www.honeywellprocess.com
Schneider Electric	SimSci PRO/II	http://software.schneider-electric.com
Chemstations	ChemCAD	www.chemstations.com
WinSim	DESIGN II for Windows	www.winsim.com
Intelligen	SuperPro Designer, SchedulePro	www.intelligen.com
Bryan Research & Engineering	ProMax	www.bre.com
Process Systems Enterprise	gPROMS	www.psenterprise.com

1. Introduction to Process Simulation

Process simulation is the **representation** of a chemical process by a mathematical model, which is then solved to obtain information about the **performance** of the chemical process. It is also known as process **flowsheeting**.

1. Introduction to Process Simulation

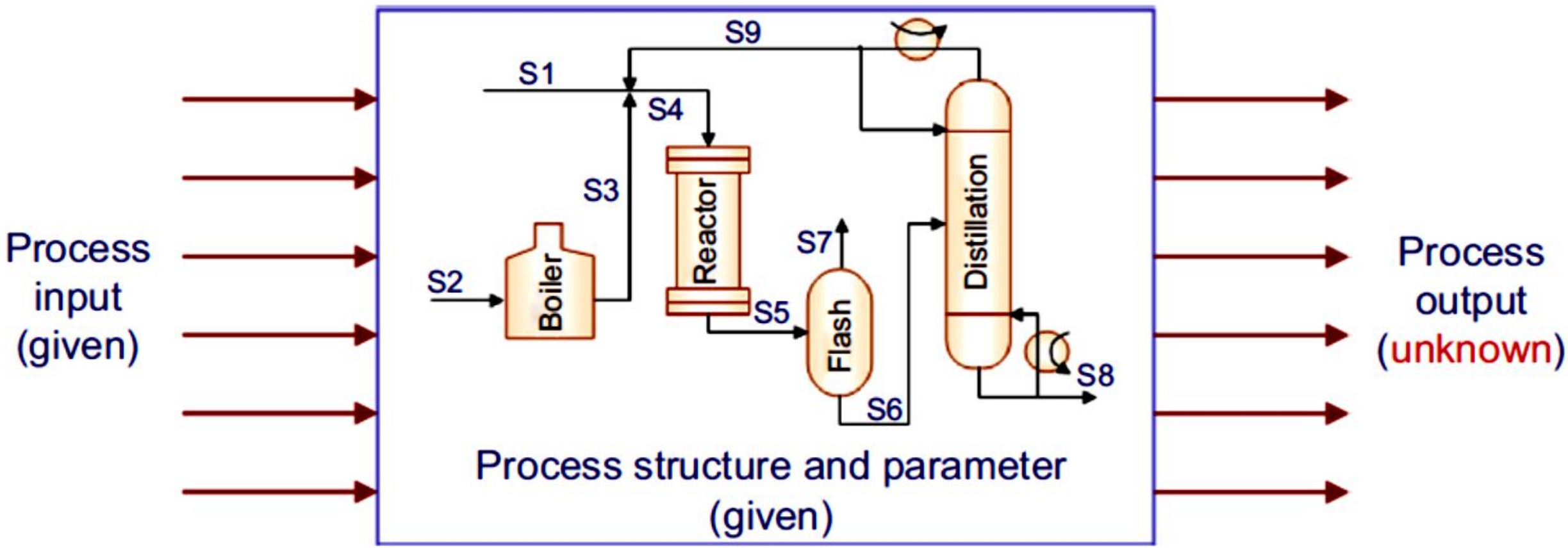
The flowsheeting is use of computer aids to perform steady-state heat and mass balancing, sizing, and costing calculations for a chemical process.

1.1 Process Design & Simulation

Process simulation and process synthesis are two important and **interrelated** elements in chemical process design, which may be used to achieve optimum process design.

1.1 Process Design & Simulation

The aim for process simulation is to predict how a defined process would **actually behave** under a given set of operating conditions. In other words, we aim to predict the outputs of the process when the process flowsheet and its inputs are given


Process input (given)
S9
S1
S4
S3
S2
Boiler
Reactor
S5
S7
Flash
S6
Distillation
S8
Process structure and parameter (given)
Process output (unknown)

End of Lecture 1