

The GUNT learning concepts of thermal process engineering

What does thermal process engineering involve?

The basis of thermal process engineering is thermal separation processes. In mixtures made up of at least two components, heat and material transfer processes are used to selectively change the composition (concentration) of the mixture. The motive forces for these transfer processes (temperature and concentration differences) are created by adding an opposite

phase selectively for one or more components in the mixture. Both the mixture of substances to be separated and the opposite phase can be in either solid, liquid or gaseous form. The processes are referred to as phase equilibrium processes and classified based on the combination of phases.

How can the unit operations in thermal process engineering be classified?

Phase equilibrium processes			
liquid / gaseous	evaporation	distillation / rectification	absorption
liquid / liquid	extraction	membrane separation / reverse osmosis	
solid / liquid		crystallisation	adsorption
solid / gaseous	drying		

Modelling of thermal separation processes is based on the absolute laws of conservation for mass, energy and momentum, as well as phase equilibrium and kinetic methods for modelling heat and material transfer flows. The parameters in the kinetic methods must be measured and the heat and material transfer flows optimised. Practical experiments are essential to obtain a comprehensive understanding of the fundamental recurring process engineering principles such as parallel and countercurrent flow, multistage processes, design of active surfaces and uniform progression of motive forces. Planning, setting up and performing experiments to determine modelling parameters is communicated most clearly and comprehensibly through the use of experimental units.



Prof. Dr.-Ing. habil. Kurt Gramlich (Anhalt University), our technical adviser on thermal process engineering

Prof. Gramlich advised us when we were setting up this range and contributed his many years of experience in the area of thermal process engineering.

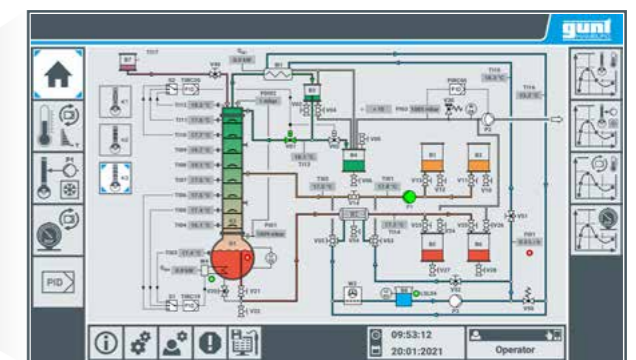
The text on this page was written by Prof. Gramlich.

Our training systems for thermal process engineering

Drying	CE 130 Convection drying
Evaporation	CE 715 Rising film evaporation
Distillation and rectification	CE 600 Continuous rectification CE 602 Discontinuous rectification CE 610 Comparison of rectification columns
Absorption	CE 400 Gas absorption CE 405 Falling film absorption
Adsorption	CE 540 Adsorptive air drying CE 583 Adsorption
Extraction	CE 620 Liquid-liquid extraction CE 630 Solid-liquid extraction
Crystallisation	CE 520 Cooling crystallisation
Membrane separation processes	CE 530 Reverse osmosis
Mass transfer	CE 110 Diffusion in liquids and gases



CE 600
Continuous
rectification



User interface of the touch screen