

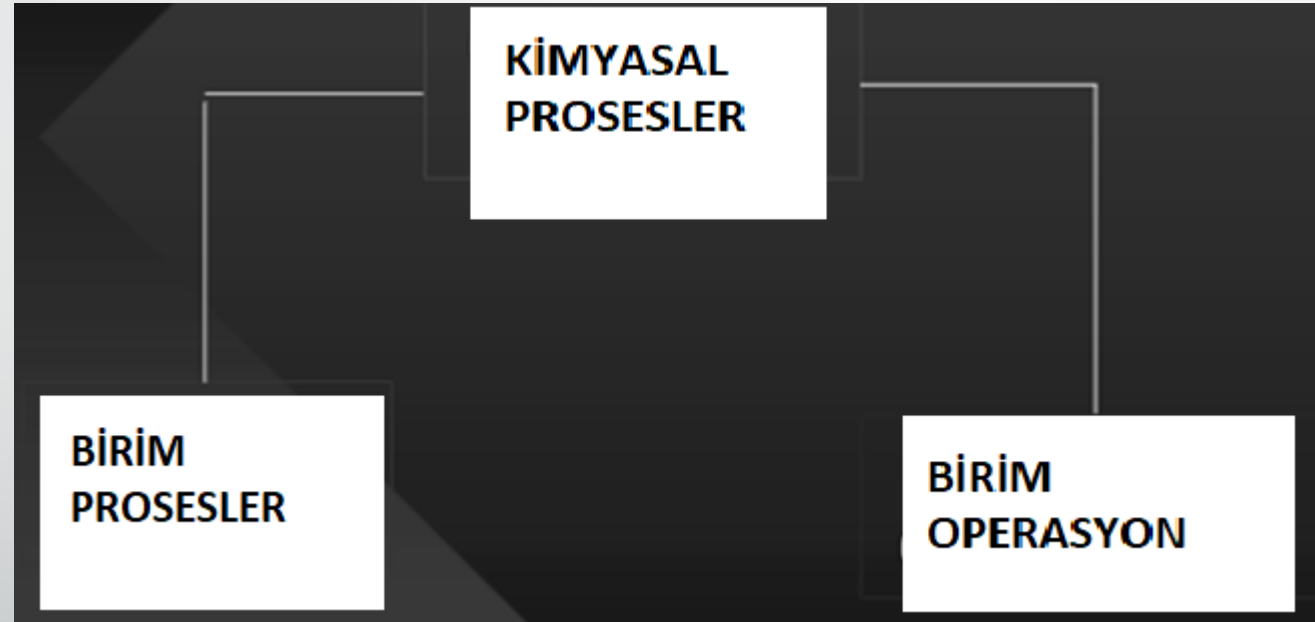


ENERGY CONSERVATION

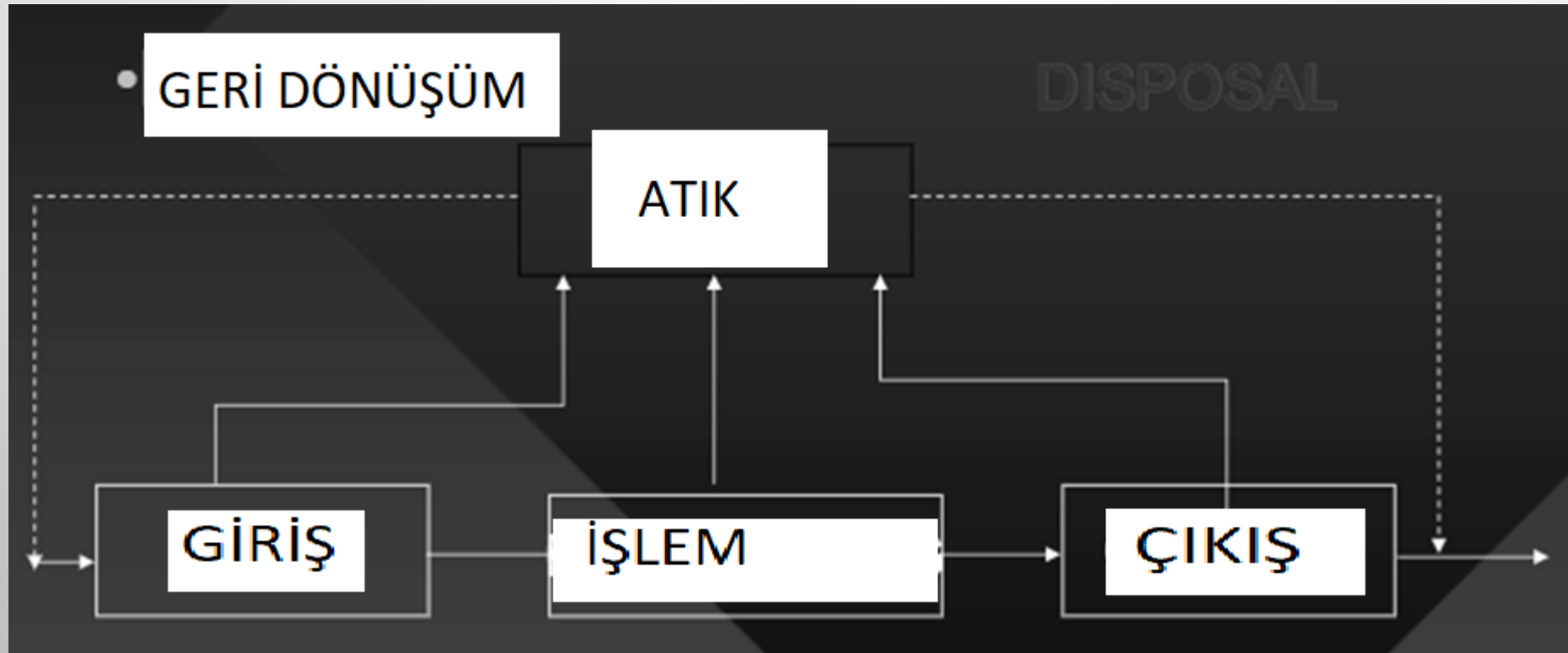
Assoc. Prof. Dr. S keyf

KİMYA ENDÜSTRİSİNDE ENERJİ TASARRUFU BİRİM PROSES BİRİMİ OPERASYONU

KİMYA SEKTÖRÜNDE ENERJİ TASARRUFU



KİMYA SEKTÖRÜNDE ENERJİ TASARRUFU



Chemical Reaction Types in Petrochemical Industries

1 Pyrolysis

2 Alkylation

3 Hydrogenation

4 Dehydration

5 Hydroformylation

6 Halogenation

7 Hydrolysis/Hydration

8 Dehydrogenation

9 Esterification

10 Dehydrohalogenation

11 Ammonolysis

12 Reforming

13 Oxyhalogenation

14 Condensation

15 Cleavage

16 Oxidation

17 Hydrodealkylation

18 Isomerization

19 Oxyacetylation

20 Oligomerization

21 Nitration

22 Hydrohalogenation

23 Reduction

24 Sulfonation

25 Hydrocyanation

26 Neutralization

27 Hydrodimerization

28 Miscellaneous

29 Nonreactor processes

BİRİM İŞLEMLERİ

Sıvı buhar ayrışma (distilasyon, buharlaştırma , sıyırma)

Sıvı sıvı ayrışma (ekstraksiyon, boşaltma)

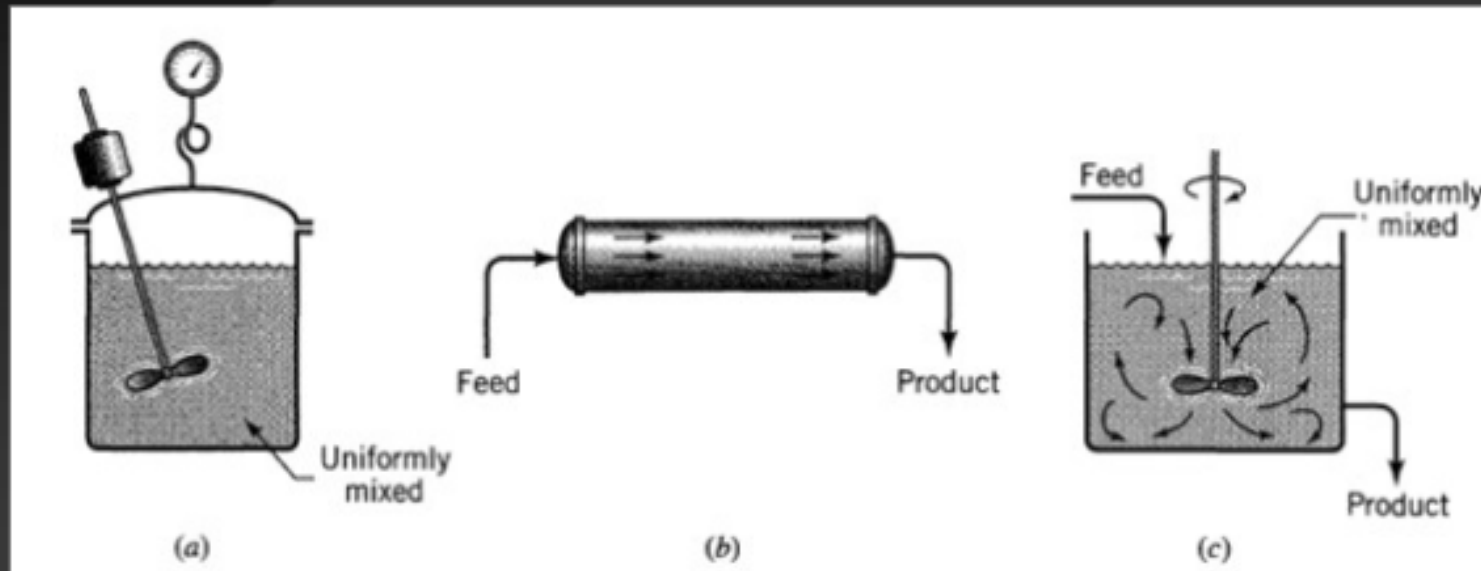
Katı- sıvı ayrışma (santrifüj ,filtrasyon)

Gaz –Katı ayrışma (filtrasyon)

Katı- katı ayrışma (tarama ,yer çekimi)

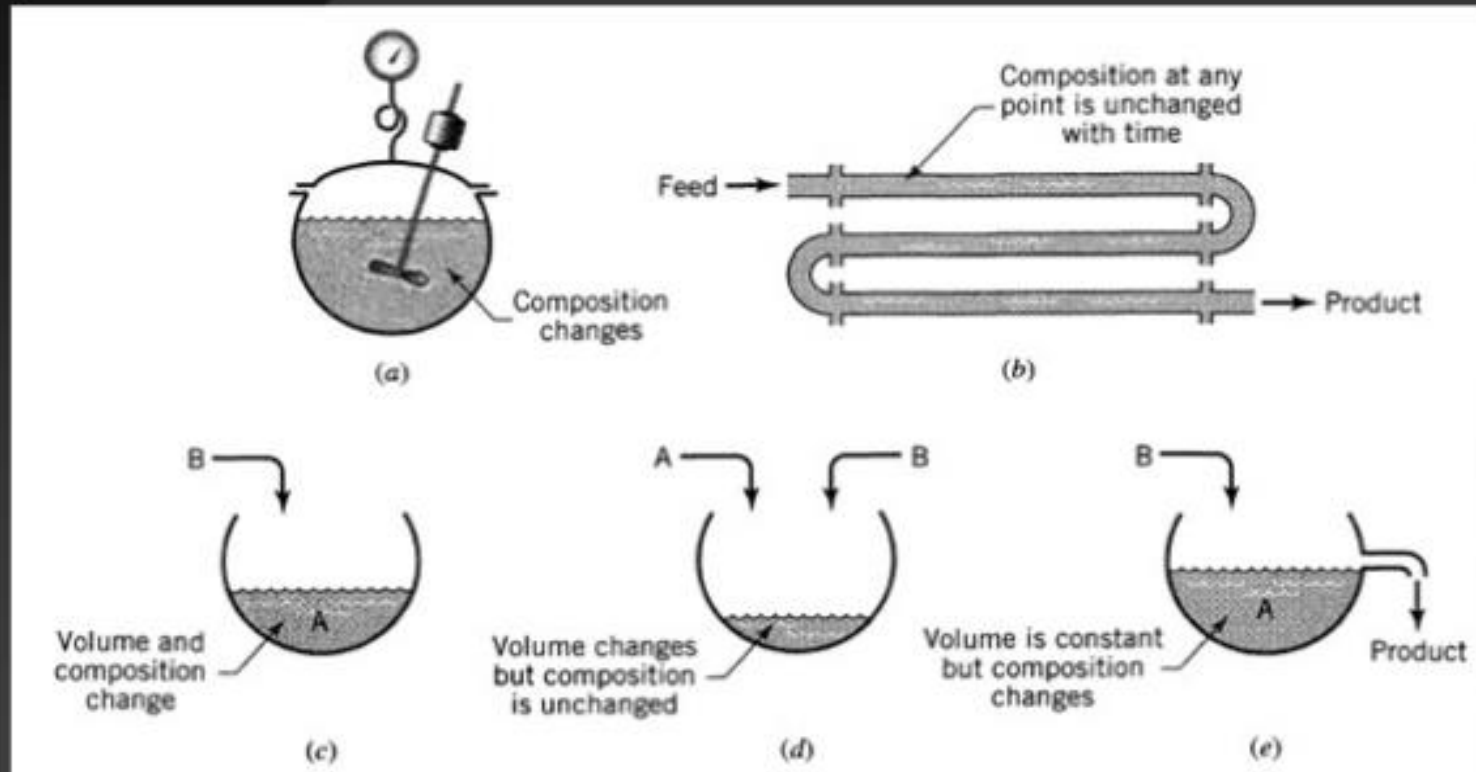
REAKTÖRDE ENERJİ TASARRUFU

Ideal Reactors



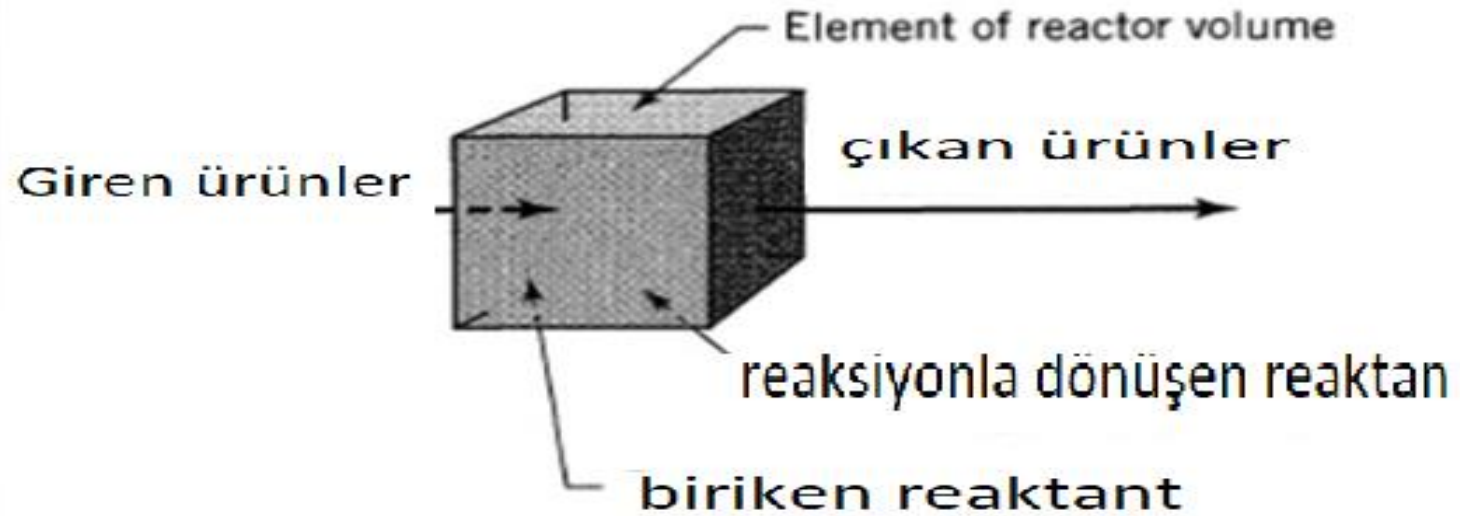
- (a) Batch reactor, or BR (b) Plug flow reactor, or PFR and
(c) Mixed flow reactor, or MFR

Broad Classification of Reactor Types



(a) The batch reactor. (b) The steady-state flow reactor. (c), (d), and (e) Various forms of the semibatch reactor

Reaktör hacmindeki kütlenin dengesi

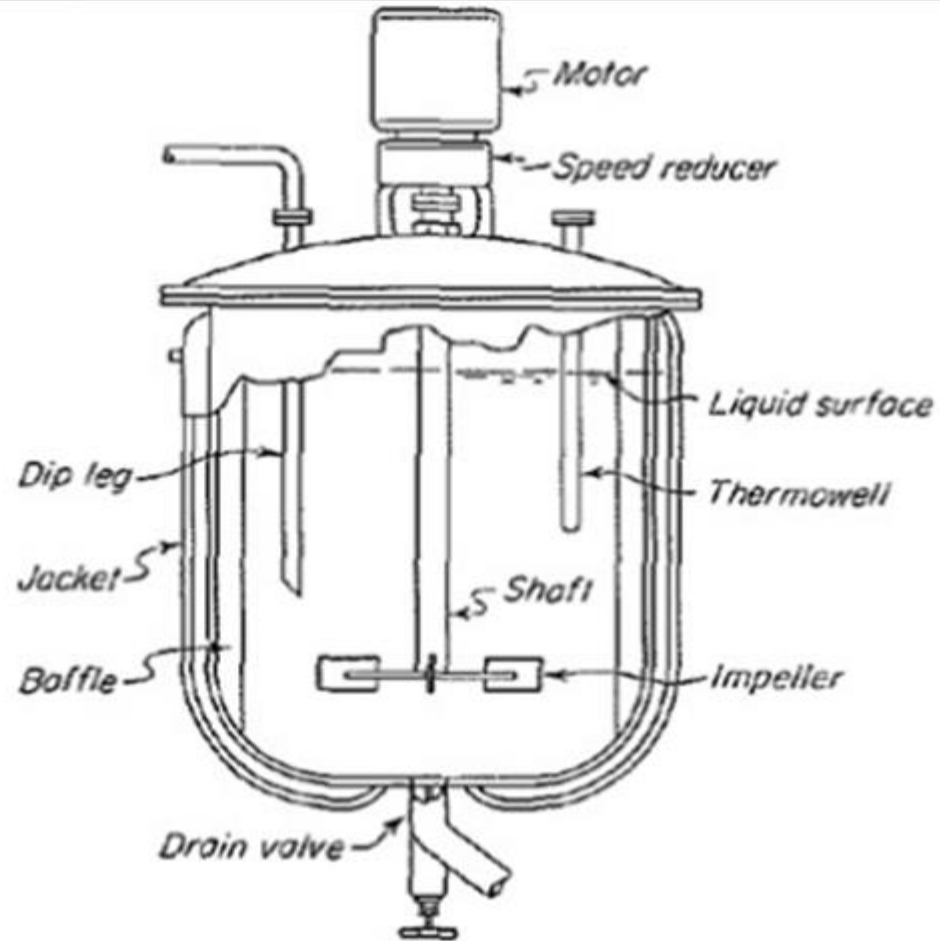


ENERGY CONSERVATION IN REACTORS

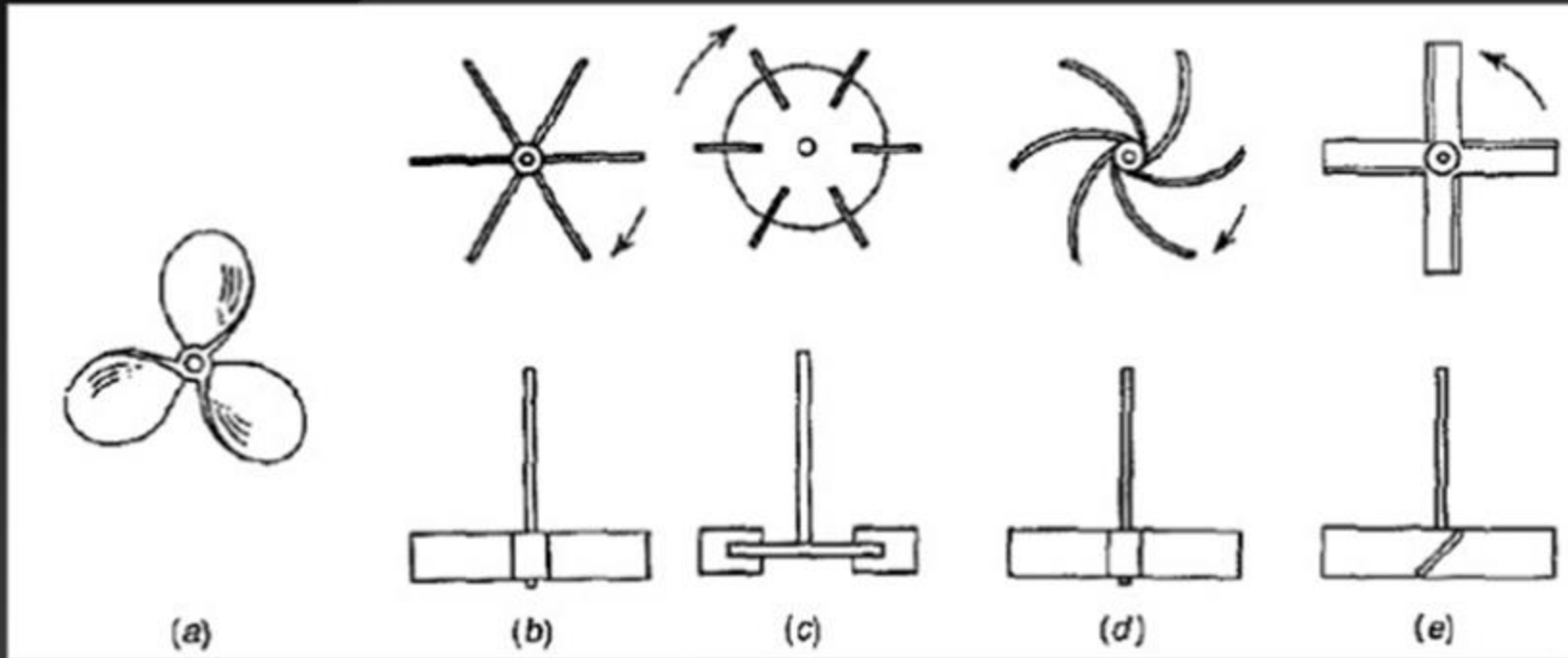
Reaktör hacmindeki kütlenin dengesi

$$\left(\begin{array}{c} \text{rate of} \\ \text{reactant} \\ \text{flow into} \\ \text{element} \\ \text{of volume} \end{array} \right) = \left(\begin{array}{c} \text{rate of} \\ \text{reactant} \\ \text{flow out} \\ \text{of element} \\ \text{of volume} \end{array} \right) + \left(\begin{array}{c} \text{rate of reactant} \\ \text{loss due to} \\ \text{chemical reaction} \\ \text{within the element} \\ \text{of volume} \end{array} \right) + \left(\begin{array}{c} \text{rate of} \\ \text{accumulation} \\ \text{of reactant} \\ \text{in element} \\ \text{of volume} \end{array} \right)$$

karıştırma süreci reaktörü



kariřtırma arkları



- (a) three-blade marine propeller; (b) open straight-blade turbine; (c) bladed disk turbine; (d) vertical curved-blade turbine; (e) pitched-blade turbine