



Mühendislik Fakültesi

Kimya Mühendisliği Bölümü

KMB 245-Enerji Teknolojileri

Dr. Öğr. Üyesi, İsa DEĞİRMENCI

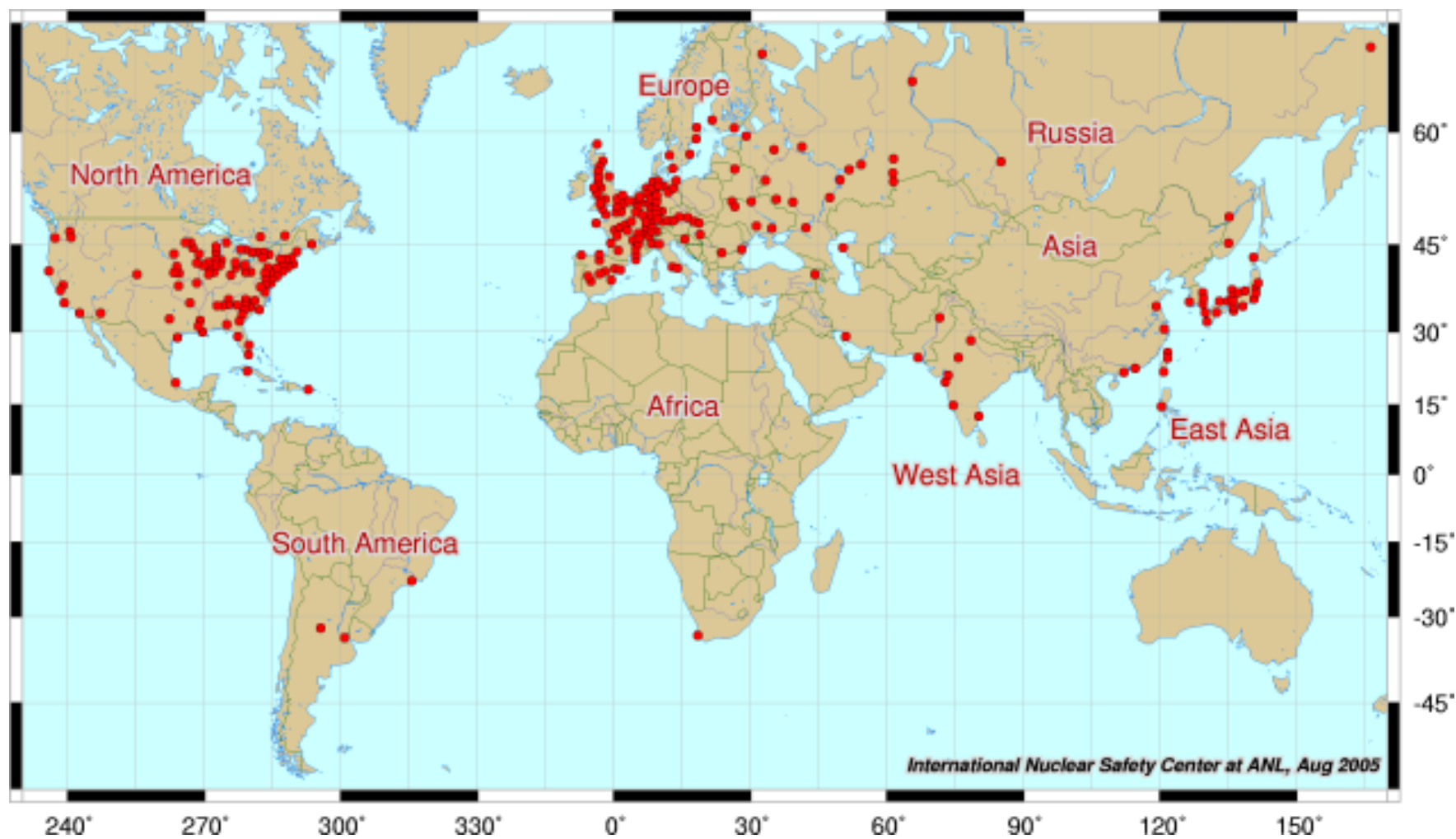


NÜKLEER REAKTÖR SİSTEMLERİ



2016

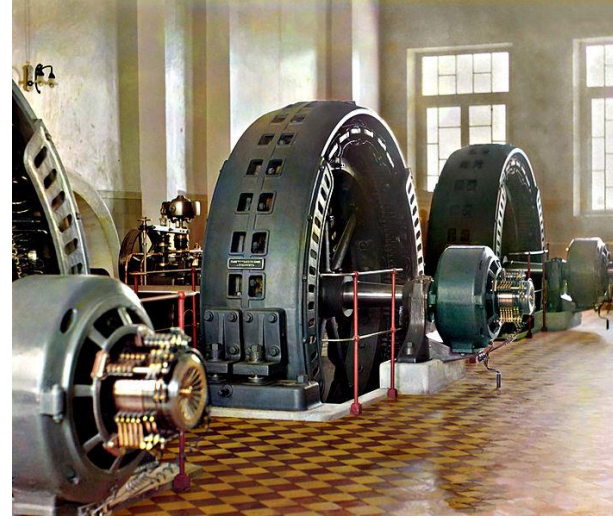
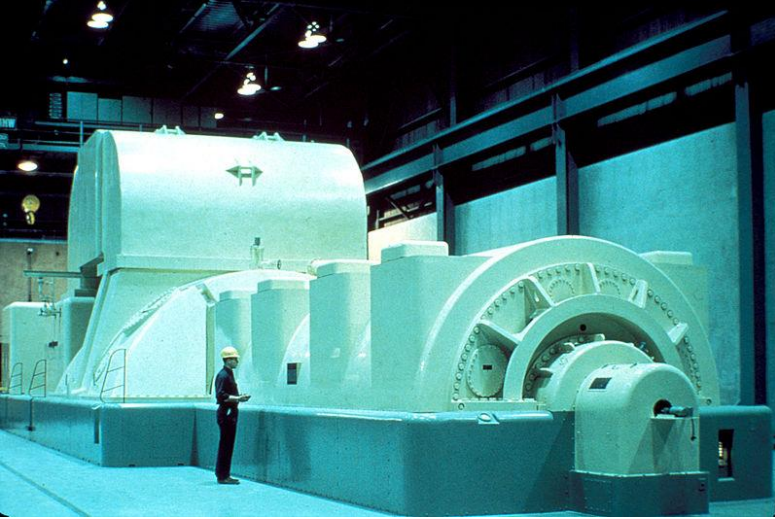
Ülke	NR Sayısı	Güç Kapasitesi (GW)	Elek. Üret. %
Kanada	19	13,5	%15,6
ABD	100	100,4	%19,7
Çin	36	31,4	%3,6
Rusya	36	26,5	%17,1
Japonya	43	40,3	%2,2
Hindistan	22	6,2	%3,4
G. Kore	25	23	%30,3



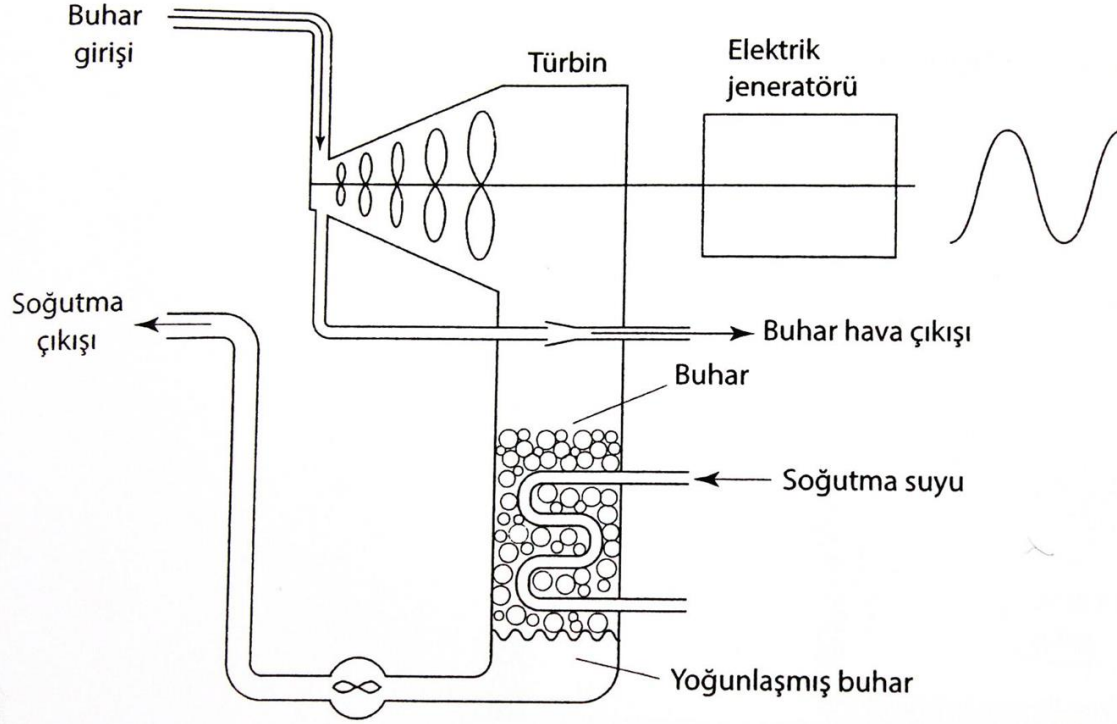
Nükleer Reaktör Sistemleri



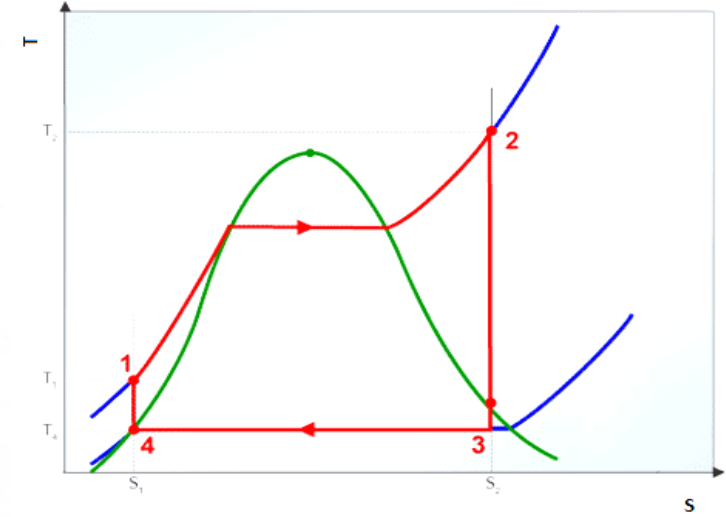
Elektrik üretimi



Elektrik üretimi



Rankine Çevrimi

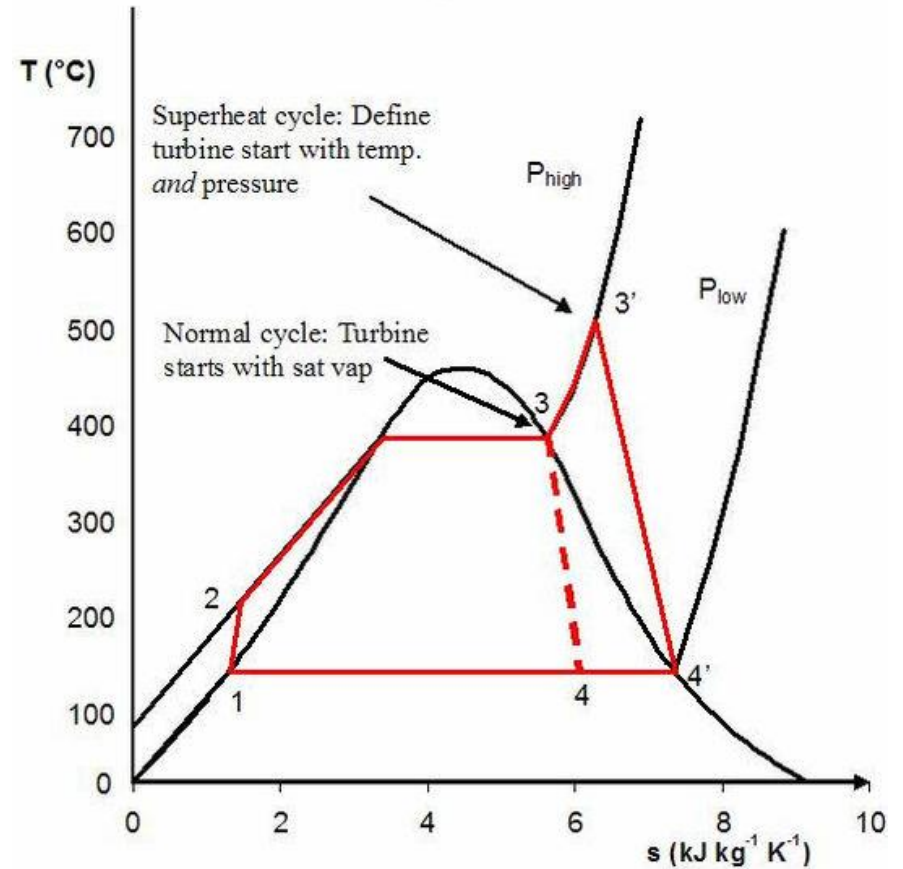


Şekil 5-7 Bir turbojeneratör şeması.

Buhar Türbinleri



T-s diagram for steam

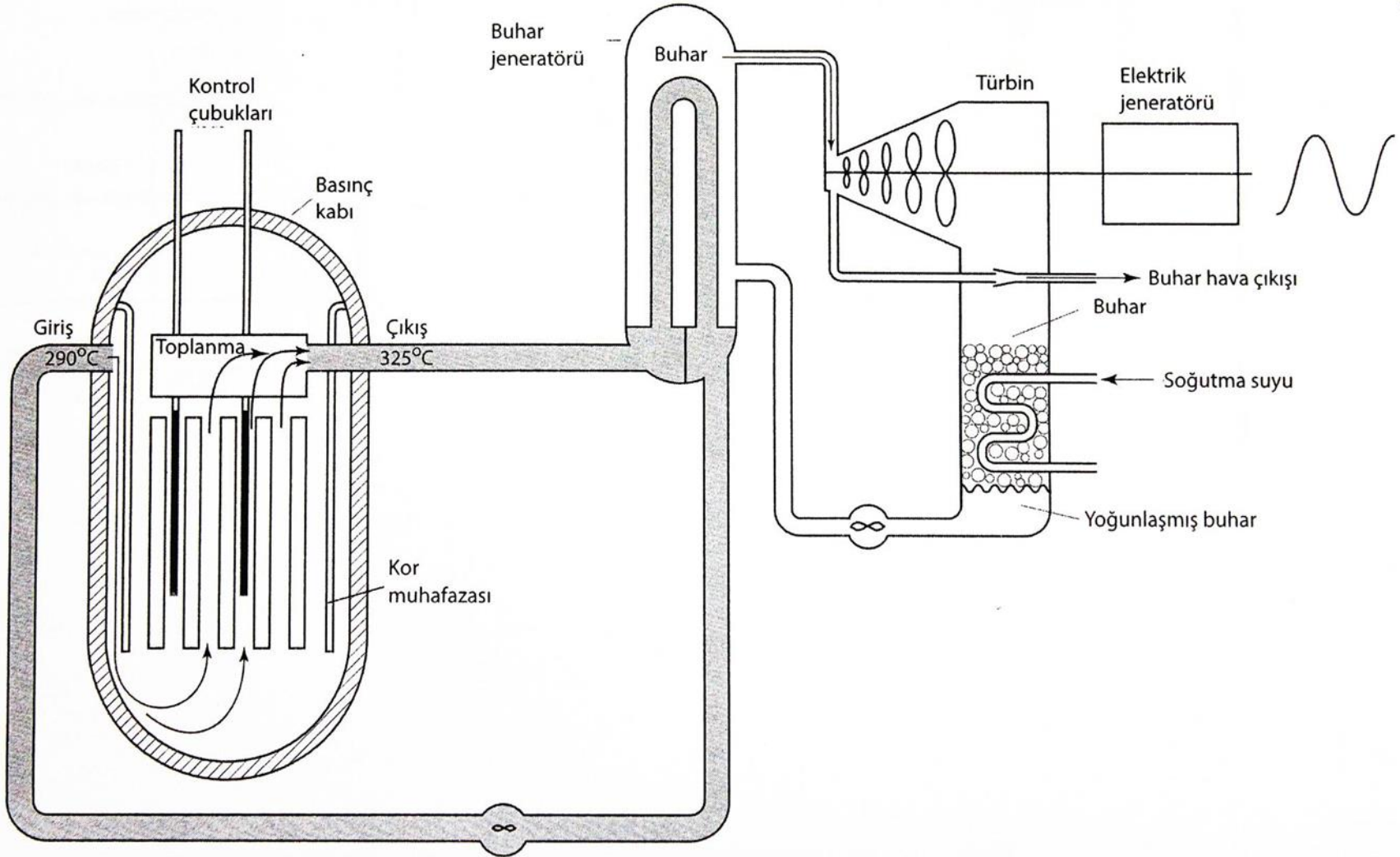


Not: Grafikte kritik sıcaklık 374 (647K) C'nin üzerinde gösterilmiş!

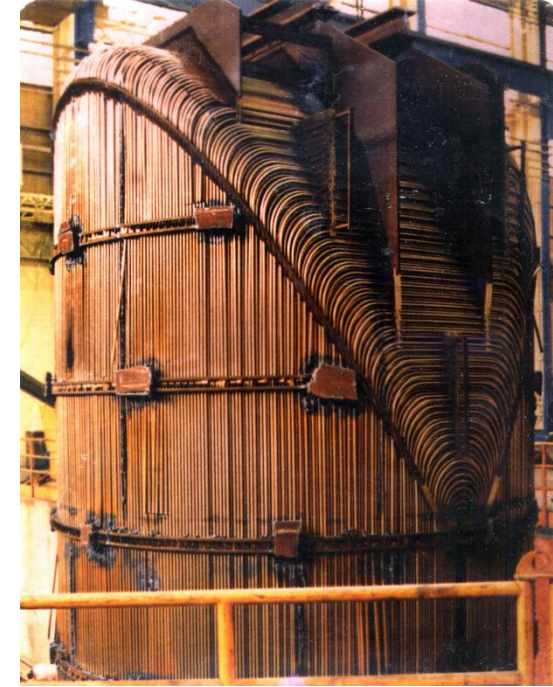
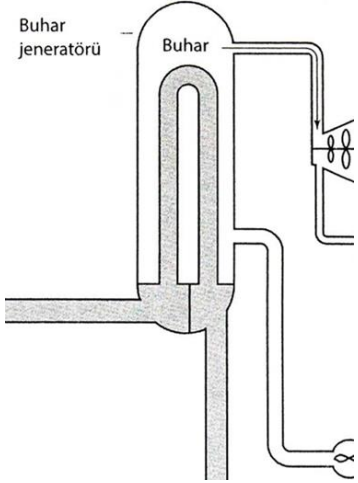


Basınçlı Su Reaktörü (PWR)

Şekil 5-9 Basınçlı Su Reaktörünün şematik gösterimi.

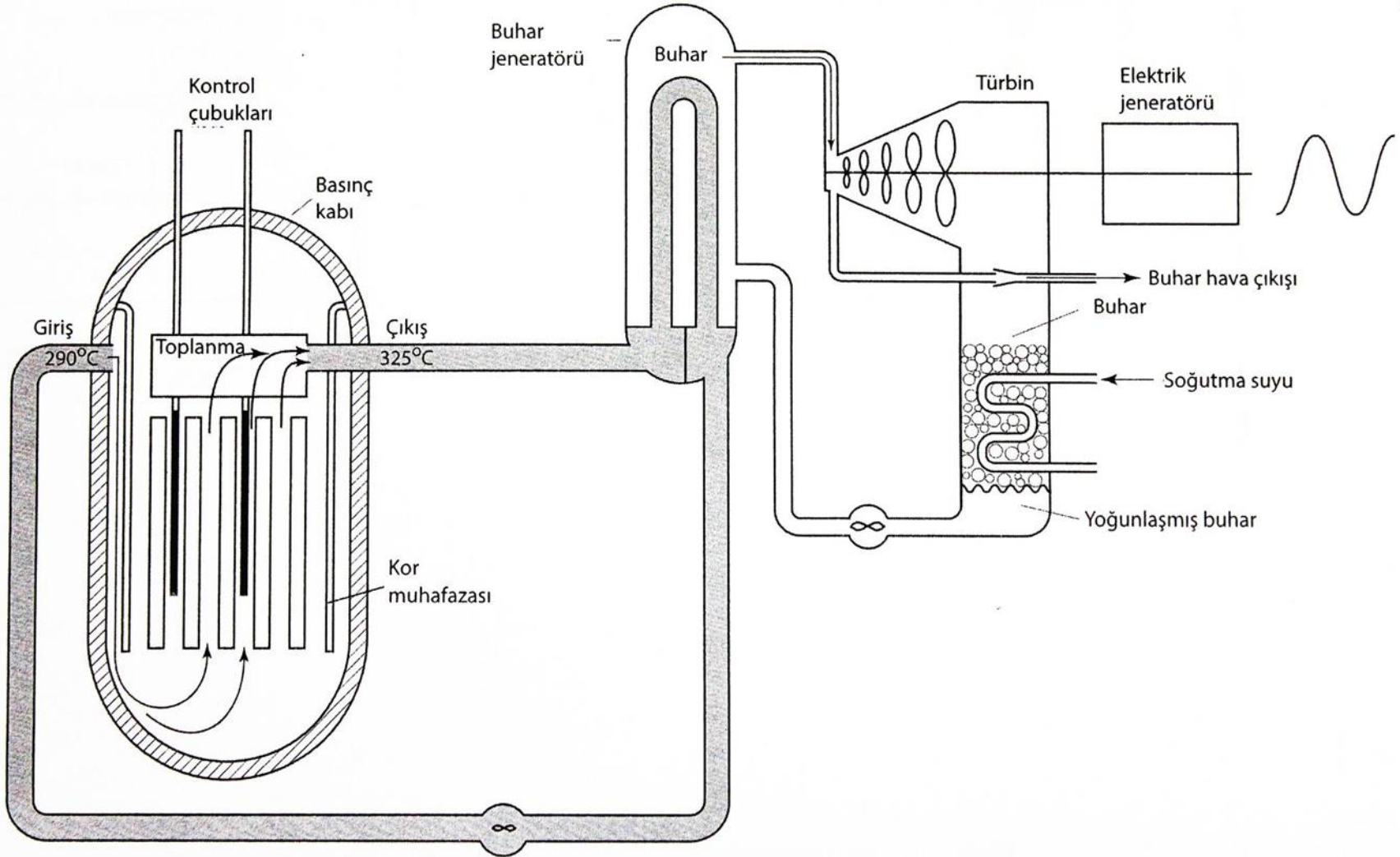


Buhar Jenaratörü

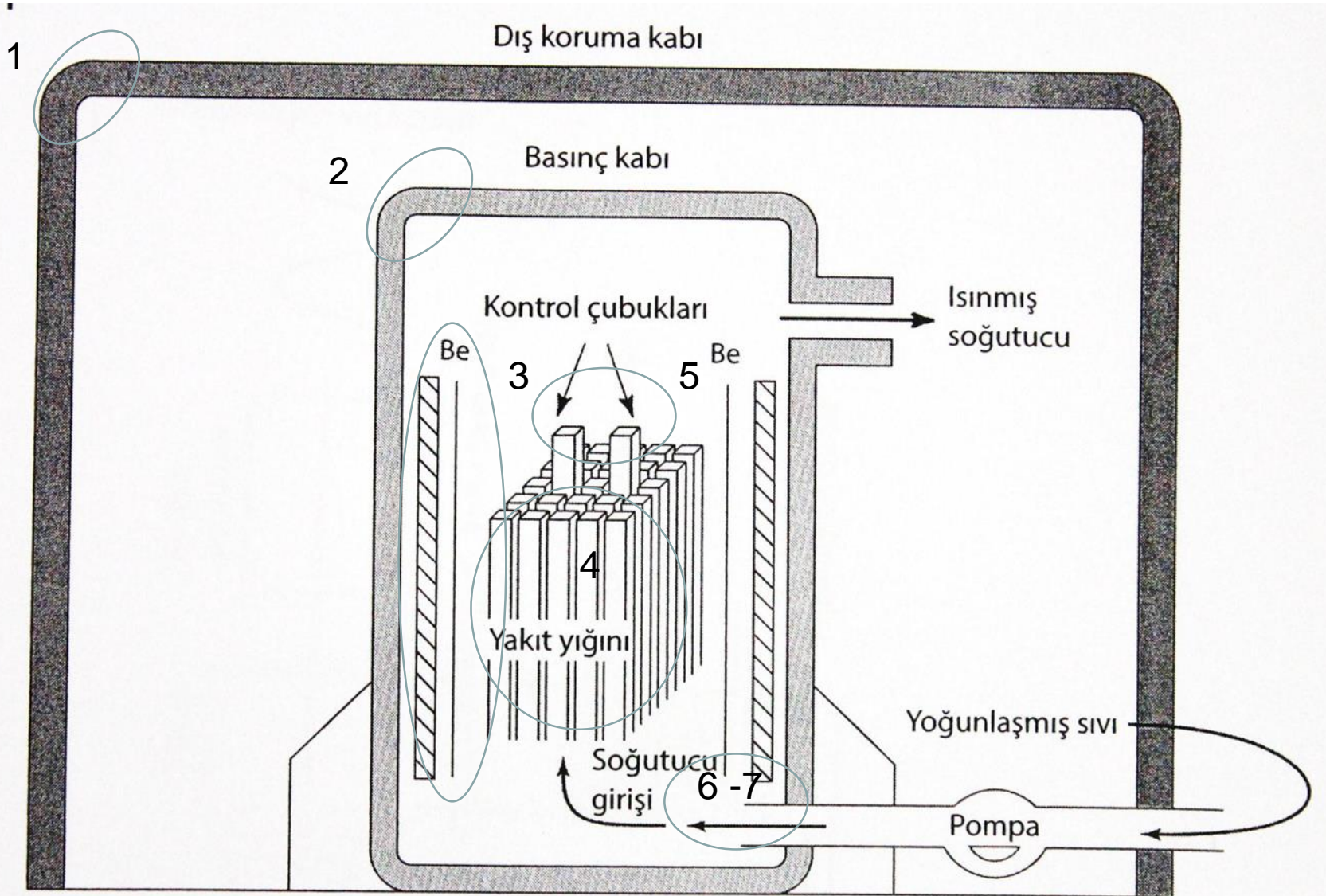


Basınçlı Su Reaktörü (PWR)

Şekil 5-9 Basınçlı Su Reaktörünün şematik gösterimi.



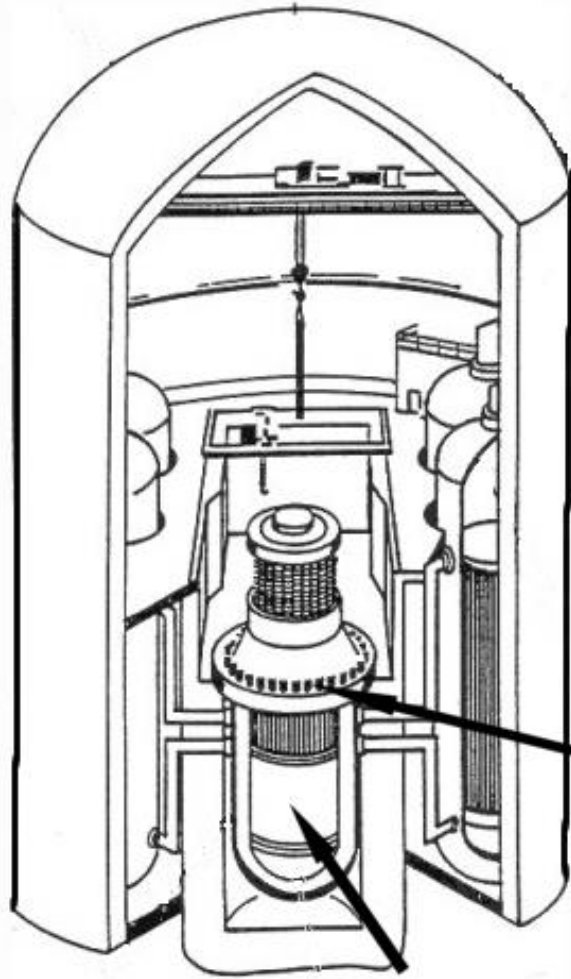
Nükleer Reaktör



Şekil 5-8 Bir nükleer reaktörün ana bileşenlerinin şematik gösterimi.

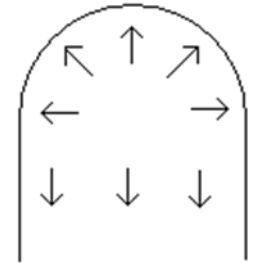
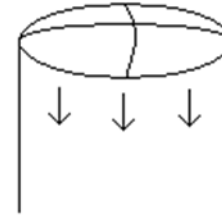
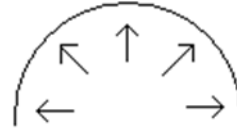
1- Dış Koruma Kabı

Dış Koruma Kabı



Basiñç Kabı

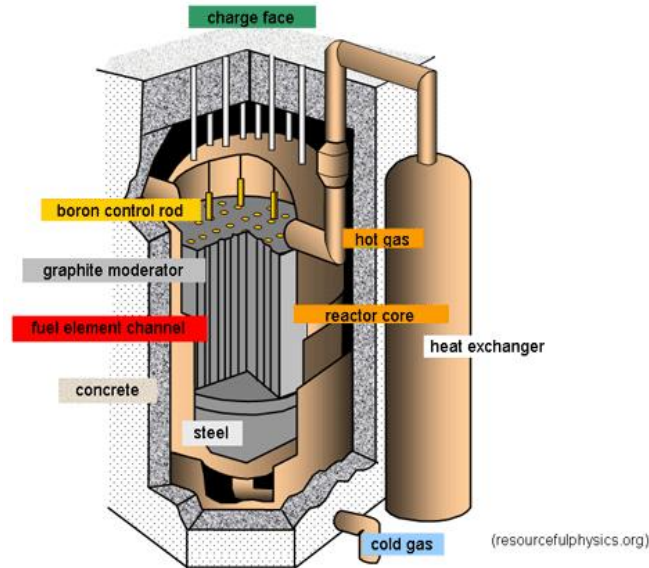
Yakıt Demeti



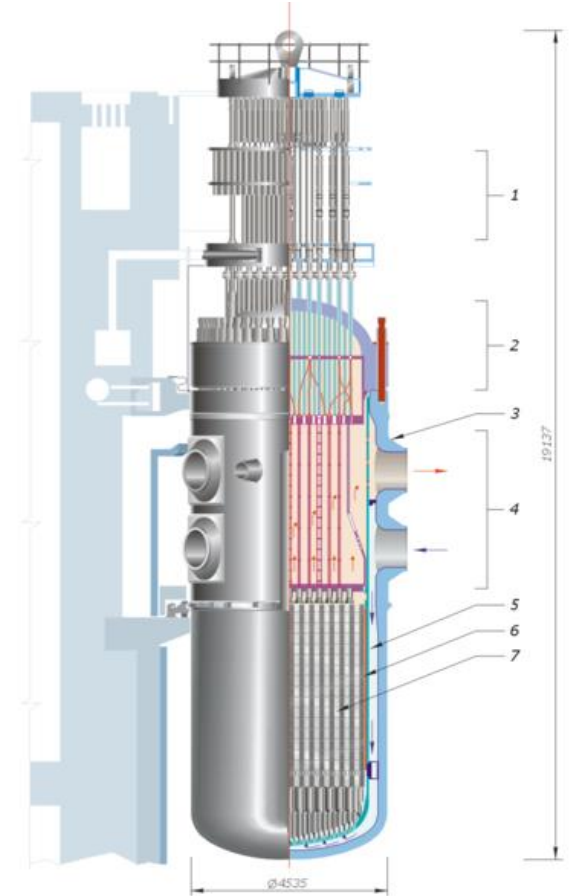


Reaktör kalbi

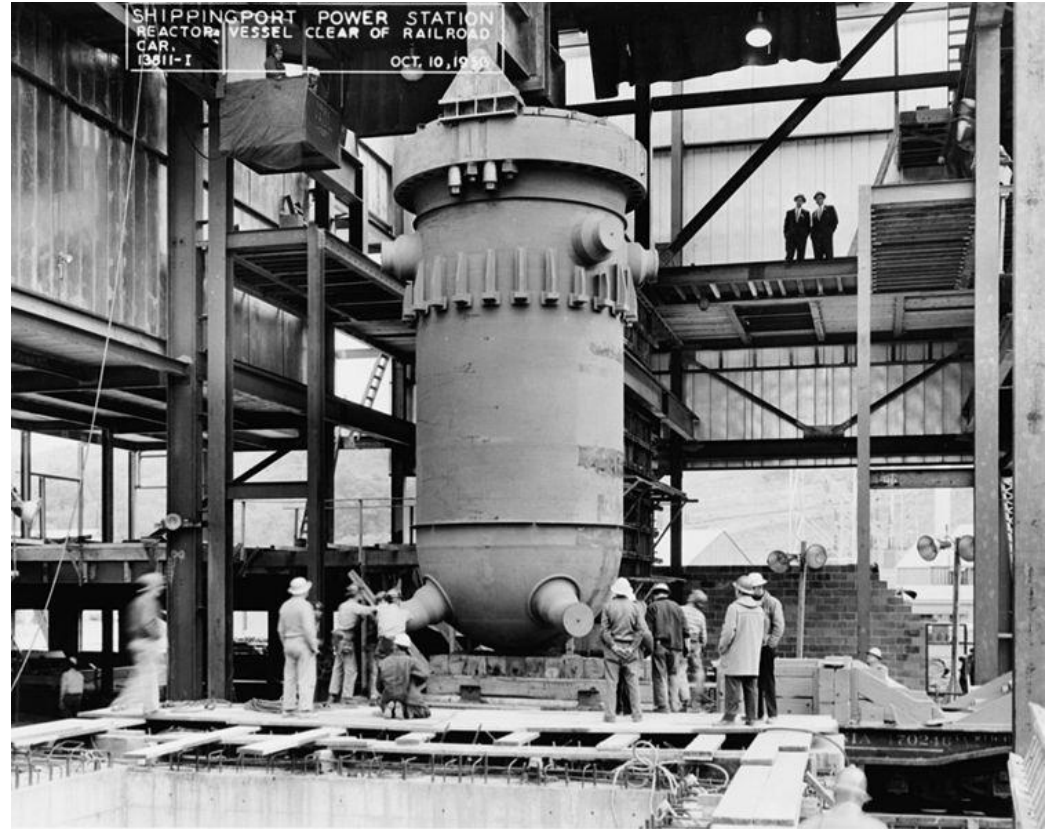
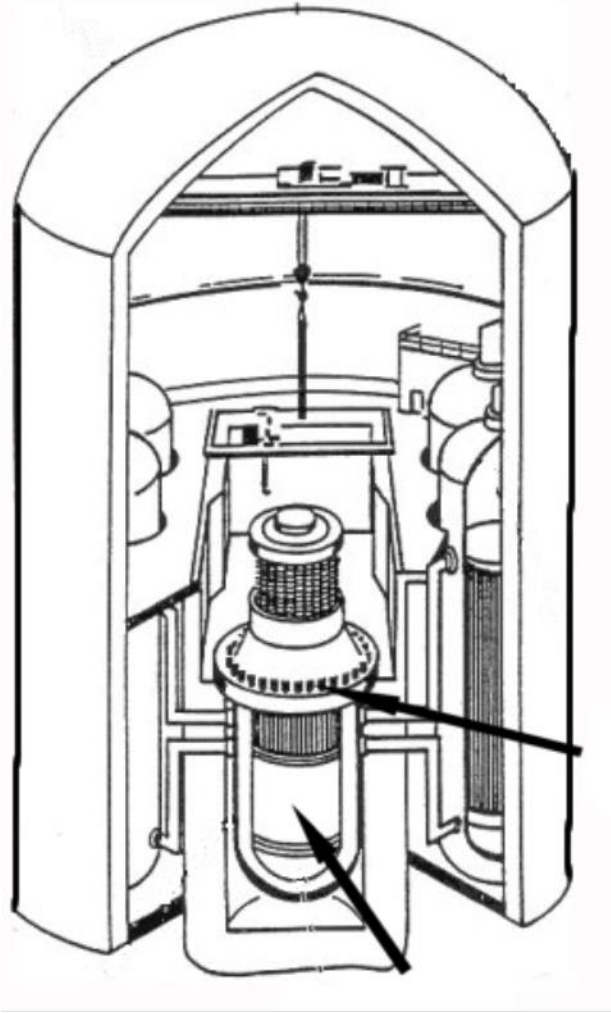
- Erimiş tuz reaktörü



- Genel görüntü

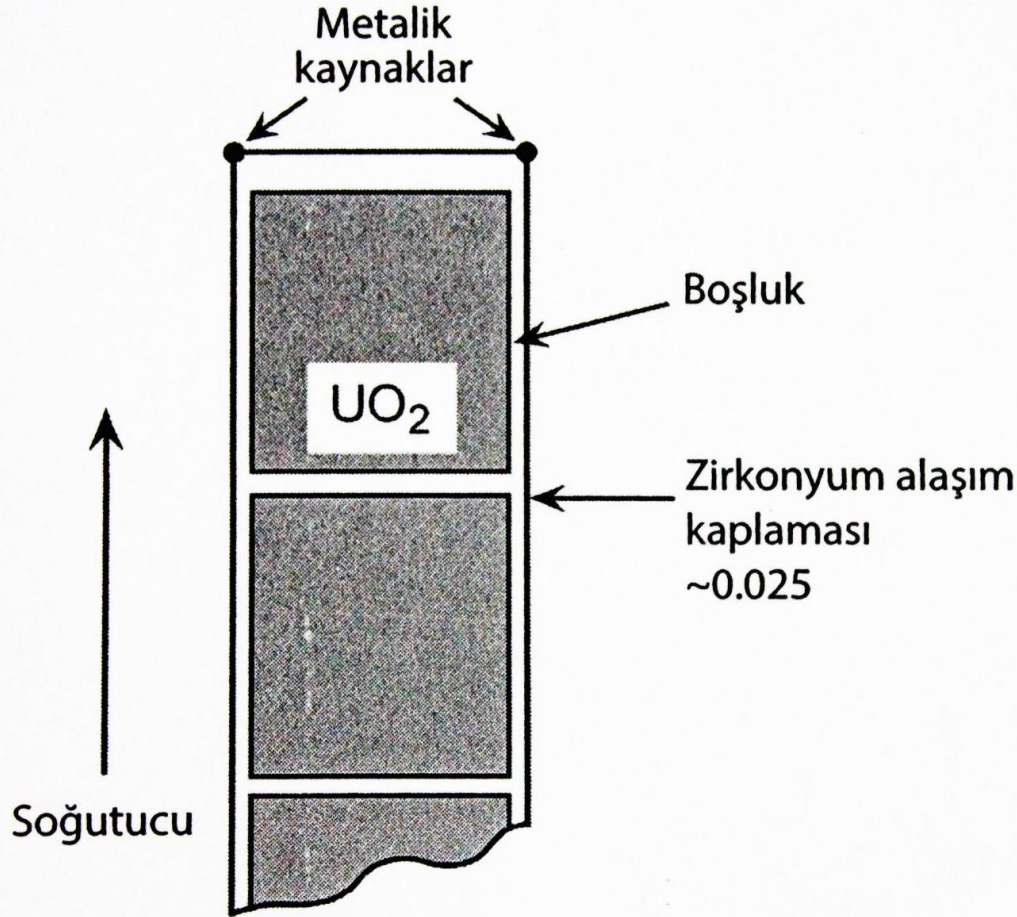


2-Basınç kabı



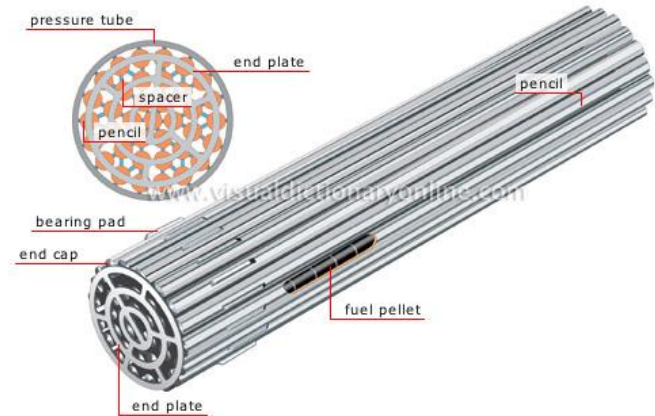
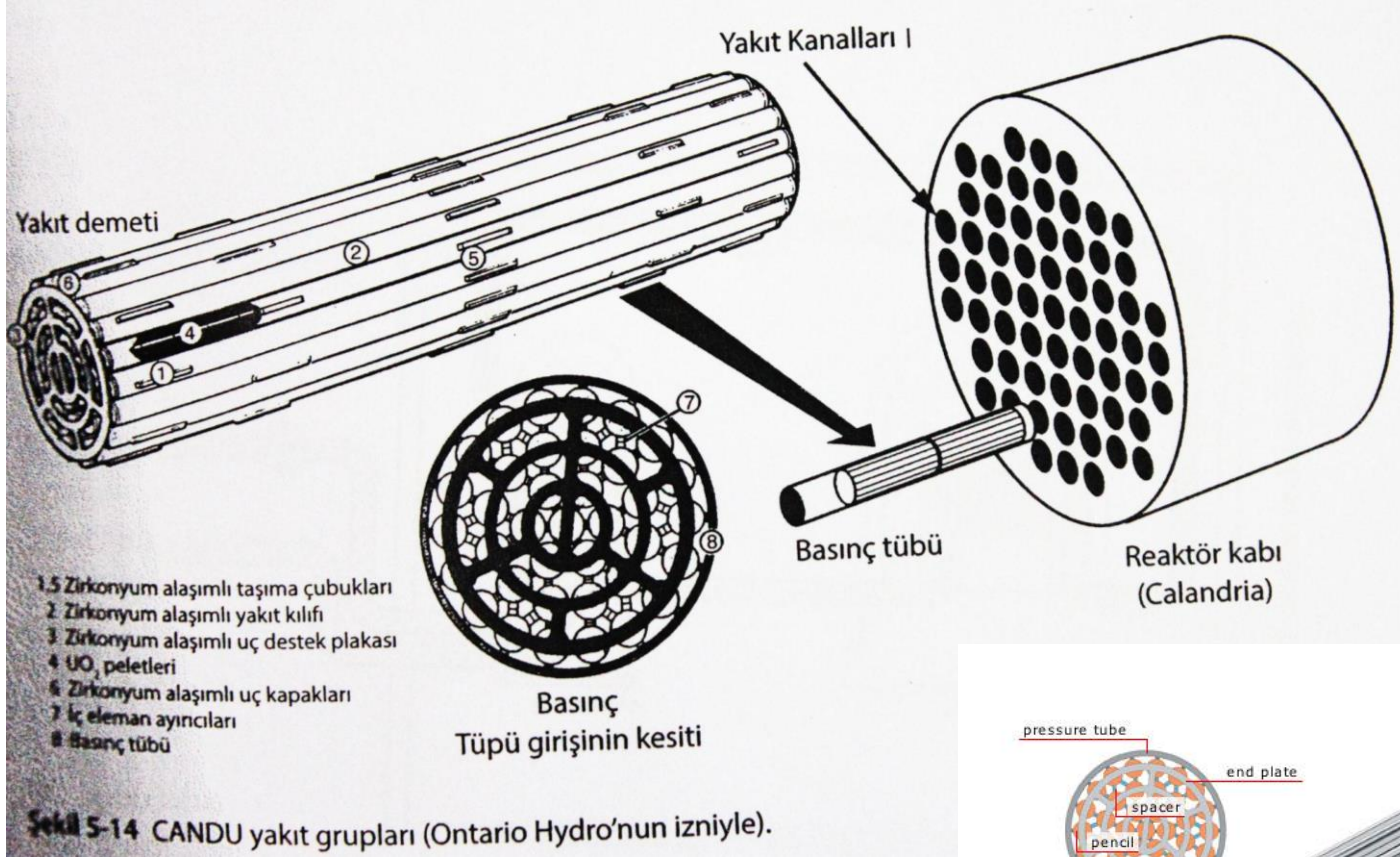
3- Yansıtıcılar

4- Yakıt (Pellet)



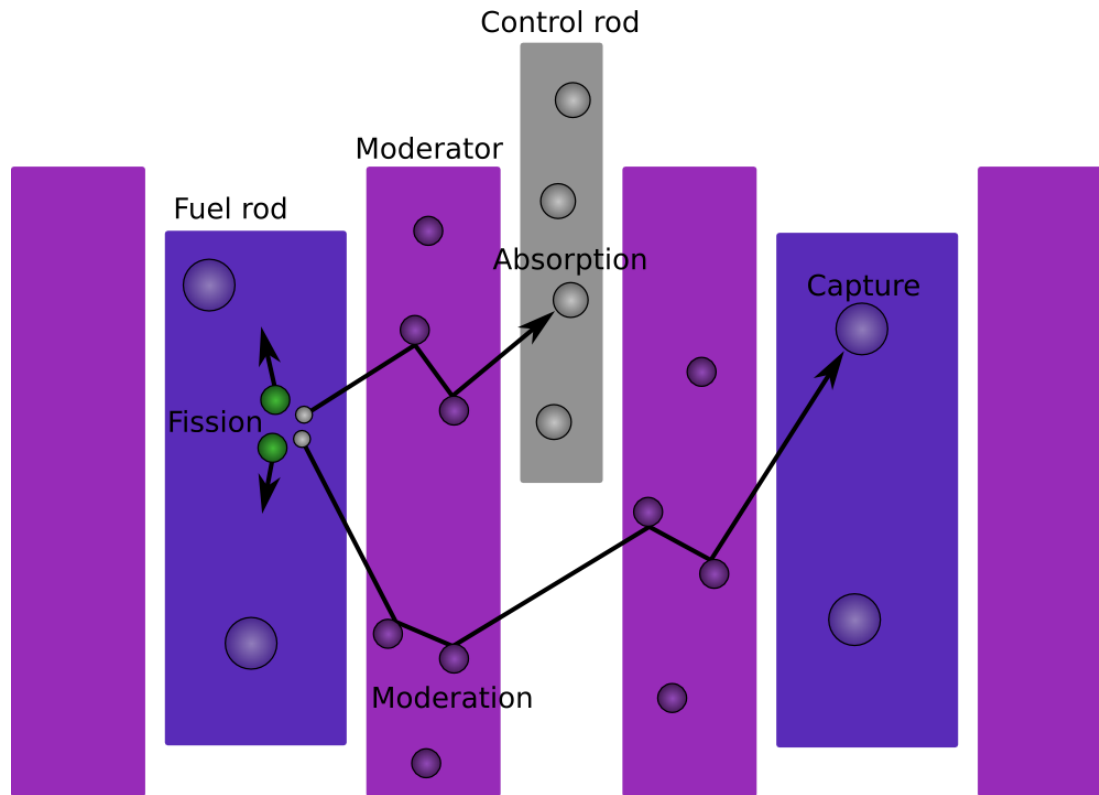
Şekil 5-19 Zirkonyum alaşımıyla kaplanmış UO₂ yakıt peleti.

Yakıt Demeti ve Basınç Tüpleri

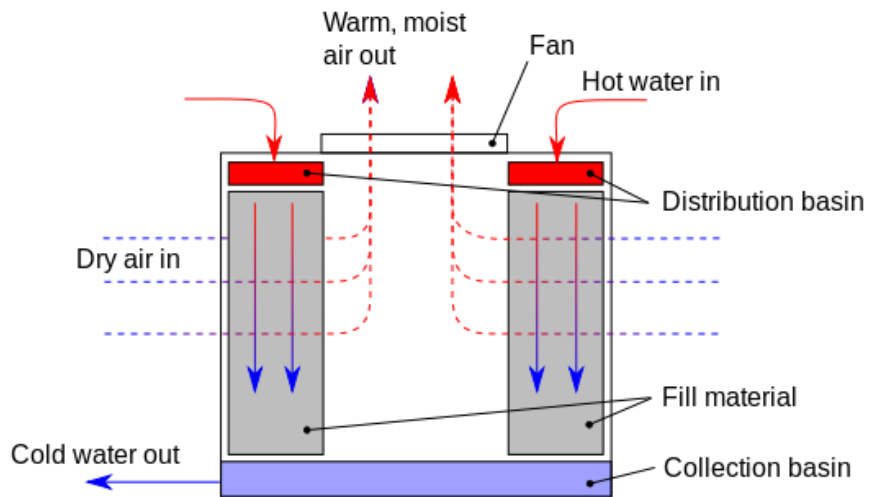




Moderatorlar

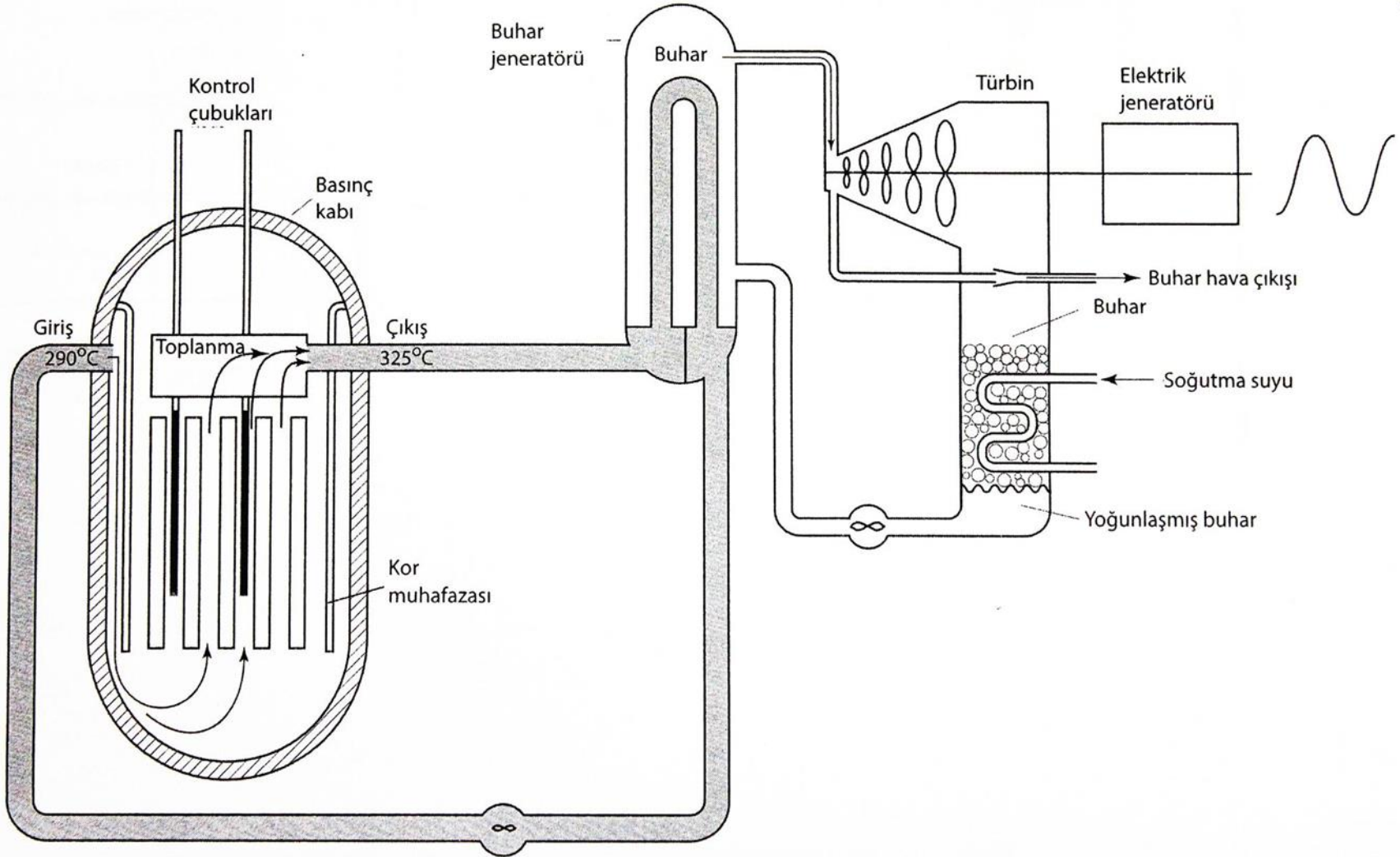


Soğutma kuleleri

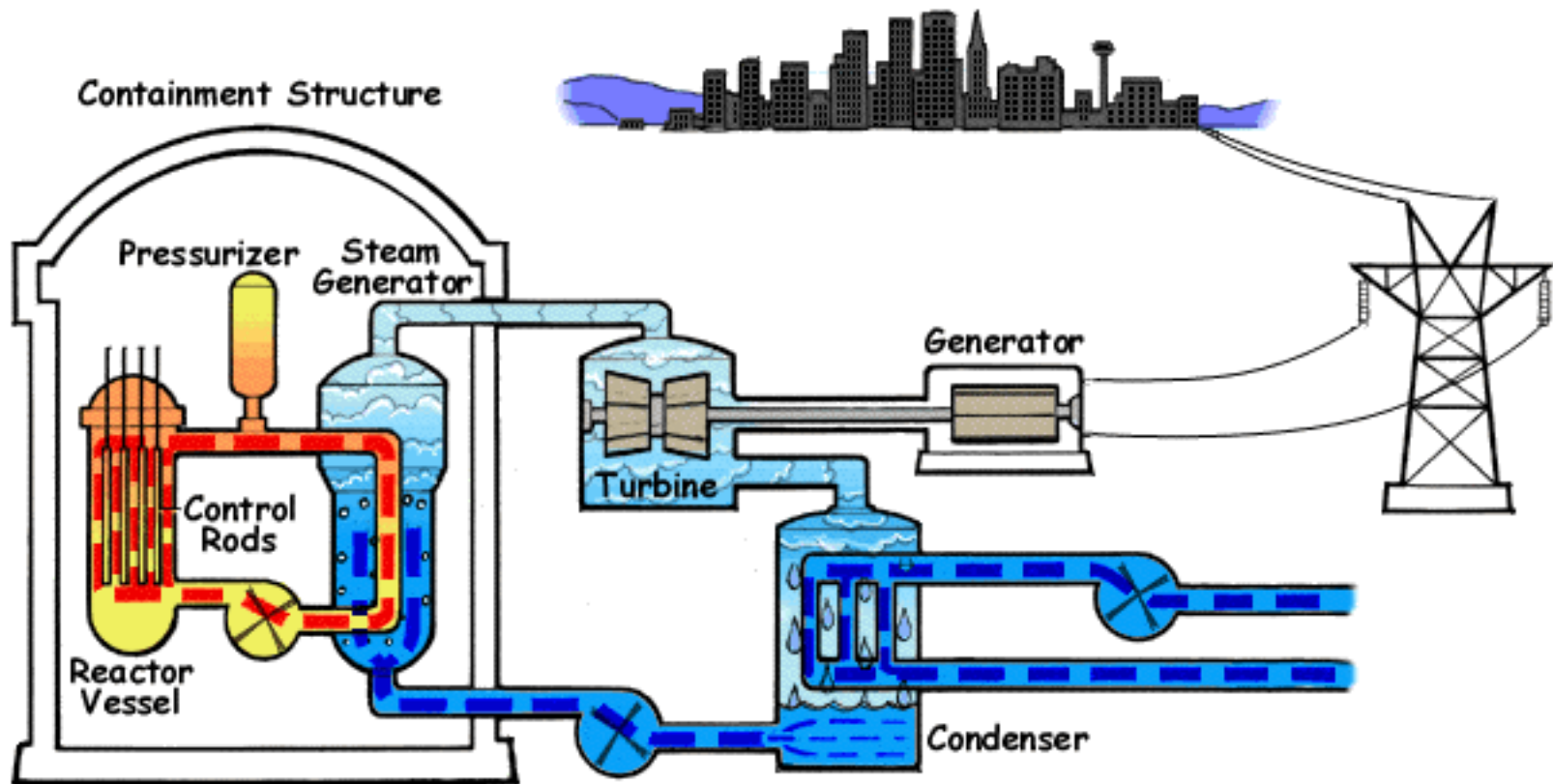


Basınçlı Su Reaktörü (PWR)

Şekil 5-9 Basınçlı Su Reaktörünün şematik gösterimi.

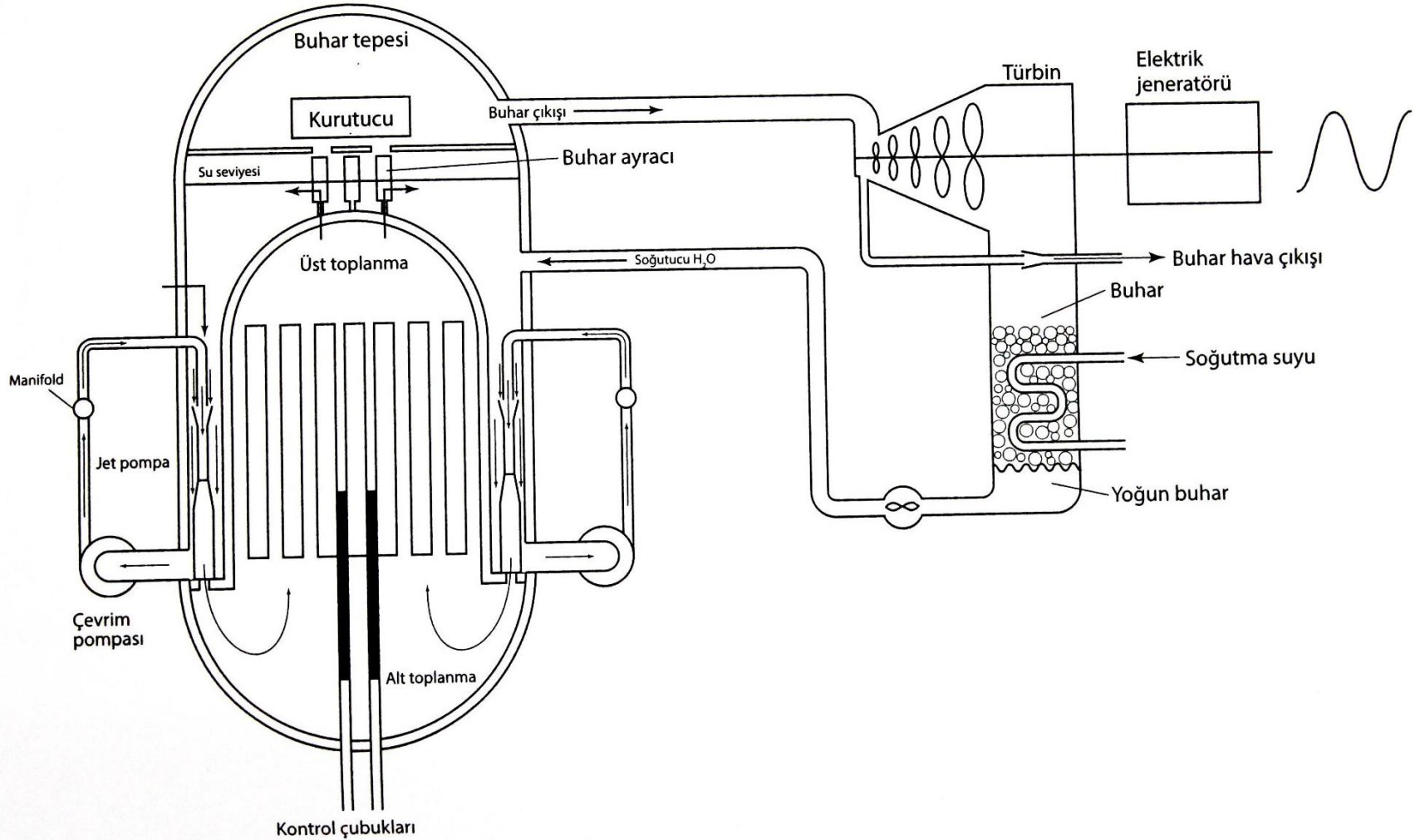


Containment Structure



Kaynar Su Reaktörü (BWR)

Şekil 5-10 Kaynar su reaktörünün şematik gösterimi.



Containment Structure

