



Yaşar University Energy Systems Engineering

Outline

- Department Info
- Renewable Energy in Izmir & the Aegean Region
- Industry in Izmir & the Aegean Region

Izmir and the Aegean Region



School of Engineering

Five Departments

- Computer Engineering (BS, MS, PhD)
- Electrical & Electronics Engineering (BS, MS)
- Energy Systems Engineering (BS)
- Industrial Engineering (BS, MS)
- Software Engineering (BS)



Energy Systems Engineering

- Founded in 2012-2013 academic year
- *First and only* Energy Systems Engineering Department in Izmir & the Aegean region
- A curriculum that consists of mechanical and electrical engineering fundamentals with strong focus on energy related aspects.
 - Thermal systems
 - Power systems
 - Building Energy Management
 - Renewable Energy Technologies



Faculty

- Prof. Arif Hepbaşlı
 - Ph.D. in Mechanical Engineering, Selcuk University
 - 10+ years industry experience
 - Expert in exergetic analysis of energy systems, energy efficiency and management
- Assist. Prof. Özgür Kilit
 - PhD in Mechanical Engineering (2007), Ege University
 - Industrial Experience (12+ years)
 - Research Field: Machine Theory and Mechanisms
- Assist. Prof. Nurdan Yıldırım Özcan
 - PhD in Mechanical Engineering (2010), Izmir Institute of Technology
 - Industrial Experience (3 years)
 - Research Field: Geothermal Energy, Energy Management, Thermodynamics, Heat and Mass Transfer

Teaching

- Application focused curriculum complemented by two summer internships
- Strong support for industry experience
- 2-semester design project as a graduation requirement
- Graduates equipped with technical as well as soft skills required for problem solving, teamwork, creativity



Yasar Univ. Solar Race Car

Laboratories

THERMODYNAMICS and RENEWABLE ENERGY



- 15 experiment sets,
- Meeting section (LED TV, meeting table and seats),
- Mini class (smart board and chairs with armrest).

Laboratories

Experiment Sets

No	Type of experiment set	Name of experiment set
1	Thermodynamics	Heat recovery air conditioner
2		Cooling
3	Fluid mechanics	Series/parallel catrifugal pump
4		Pressure losses
5		Air tunnel
6		Water booster
7	Heat transfer	Radiation
8		Multiple heat exchanger
9		Thermal conductivity
10	Renewable energy	Wind and solar cell
11		Hydroelectricity
12		Biomass
13		Fuel cell
14	Control systems	Green house
15		Multiple control

Softwares

- TRNSYS
- LABVIEW
- MATLAB & Simulink
- FLUENT
- EES (Engineering Equation Solver)
- SOLIDWORKS
- Eco 99

Research

- Faculty is actively involved in energy research
 - Energy efficiency and management
 - Exergeconomic analysis
 - Optimal control in power plants
 - Electric distribution networks
- Member of several multinational consortiums for European Union funding (7th Frame Programme)
- Student participation in research projects will be strongly encouraged



Research Funding



European Union – 7th Frame Programme

Support for multi-national scientific research across EU members and associate members.



Turkish Scientific and Technological Research Council

Support for scientific research as well as international collaboration, travel, summer programs, etc.

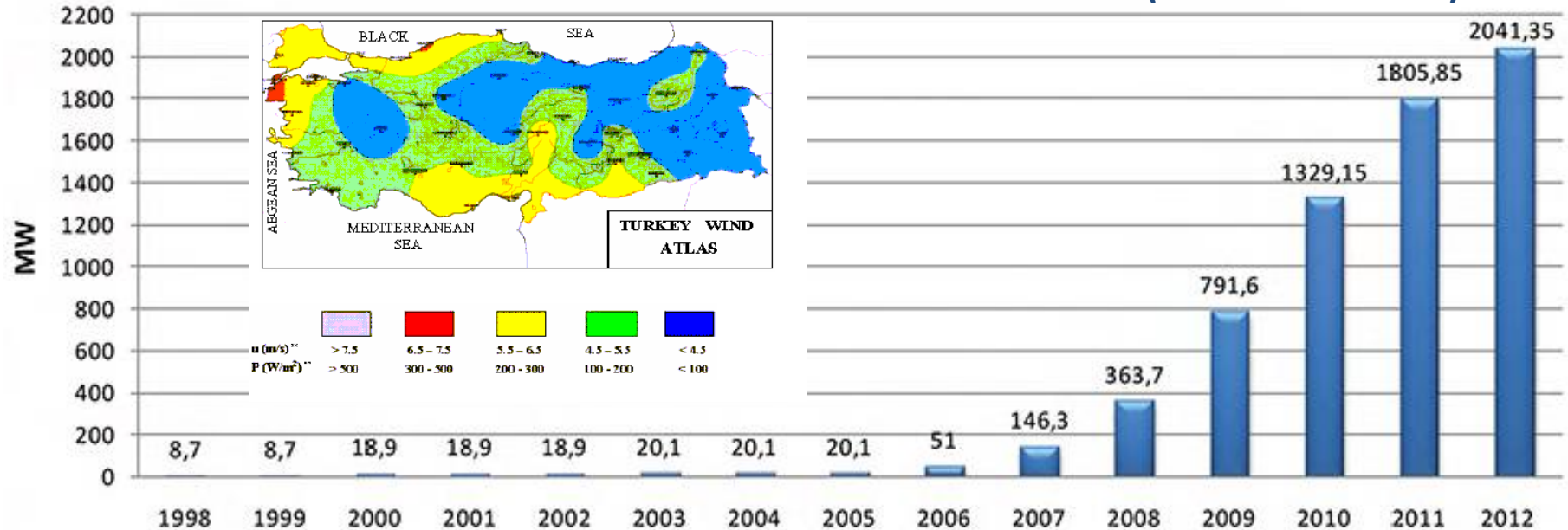


Industry and other Turkish Government Agencies

Renewable Energy in Izmir & the Aegean Region

Wind Energy

INSTALLED CAPACITY OF WPP IN TURKEY BY YEARS (AS OF JULY 2012)



Electricity generation through wind energy for general use was first realized at Cesme Altinyunus Resort Hotel (The Golden Dolphin Hotel) in Izmir, Turkey in 1986 with a 55 kW nominal wind power capacity

Distribution of Turkey's wind energy installations by regional as of October 2003 [22,25]

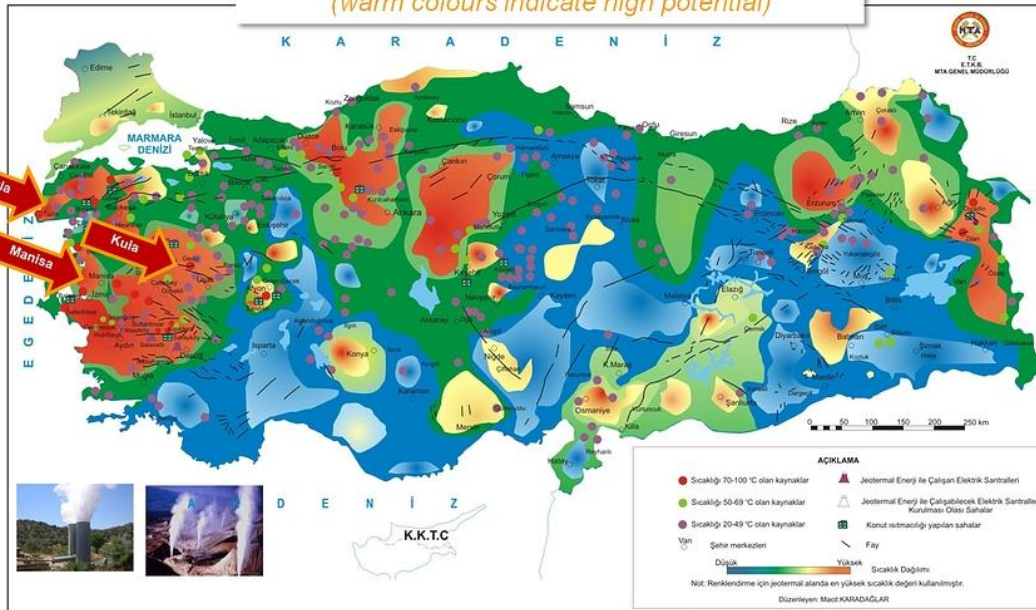
Name of project	Place	Region	Commissioning date	Capacity of each turbine (kW)	Number of turbines	Installed capacity (MW)	Diameter of rotors (m)	Type of generator
Cesme Germiyan	Izmir—Cesme	Aegean	February 1998	500	3	1.5	40.3	Enercon-40
Cesme Alacati	Izmir—Cesme—Alacati	Aegean	November 1998	600	12	7.2	44	Vestas-V44
Bozcaada	Canakkale—Bozcaada	Marmara	25 July 2000	600	17	10.2	44	Enercon-40

Geothermal Energy

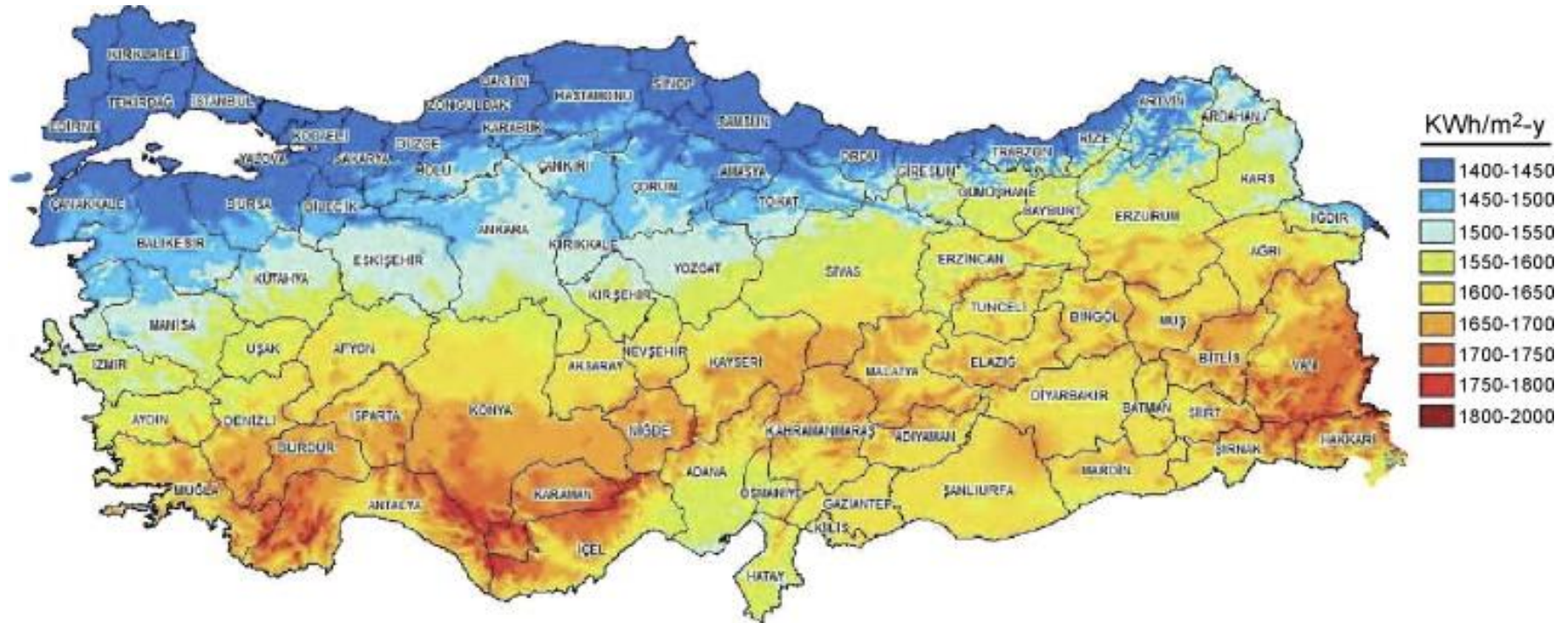
Balcova (Izmir) Geothermal District Heating System

- Geothermal direct use applications in this region have reached up to 32000 residences equivalent of geothermal heating
- 1 residence equivalence = 5.81 kW (5000 kcal/h) with a floor area of 100 m²
- 18500 customers

The Geothermal Potential Map of Turkey
(warm colours indicate high potential)



Solar Energy Potential



Industry in Izmir & the Aegean Region

Yaşar Holding



- 60+ year old conglomerate with presence in food, paint, energy, pulp & paper, and hospitality services businesses.

PINAR	- Dairy and meat products
DYO	- Paint
DESA ENERGY	- Cogeneration plant
VIKING PAPER	- Pulp & paper



- Very close ties with the university – opportunities for internship training and hands-on learning in various plants.

NGOs



The Aegean Region Chamber of Industry

Presently active in 67 different industrial sectors and with a membership of nearly 4.500 member companies.

http://www.ebso.org.tr/icerik_en.php?sayfa_no=750



Izmir Development Agency

- Improvement of the cooperation among public sector, private sector and NGOs
- Ensuring effective usage of resources
- Stimulating the local potential
- Fostering the regional development and ensuring its sustainability
- Decreasing the inter-regional development disparities