# TOPKAPI ENDÜSTRİ
# &
# KAESER COMPRESSORS

## Energy Efficiency in Compressed Air Stations

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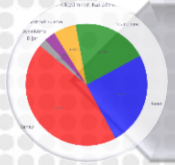
A. Energy Report of Turkey



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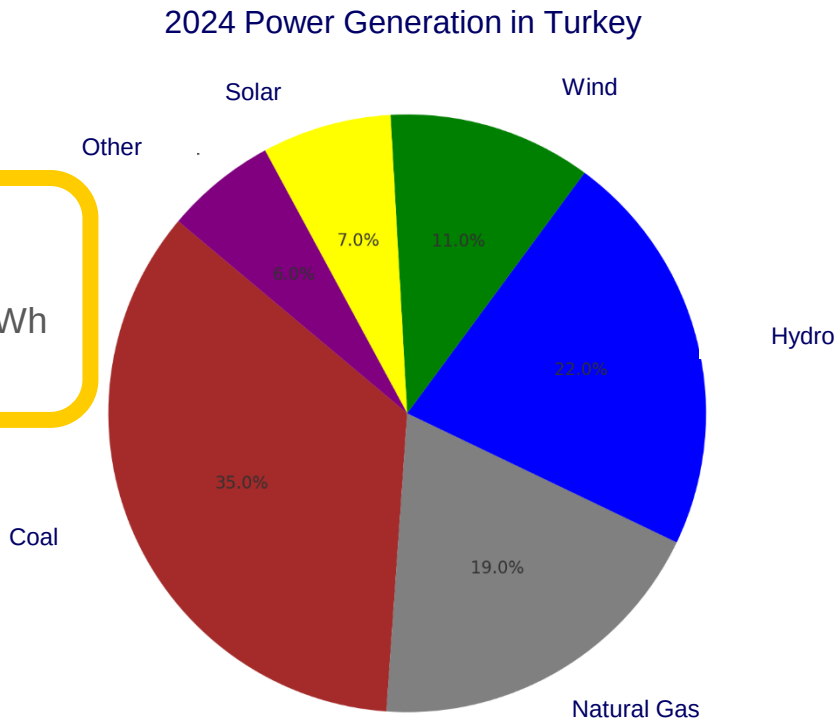
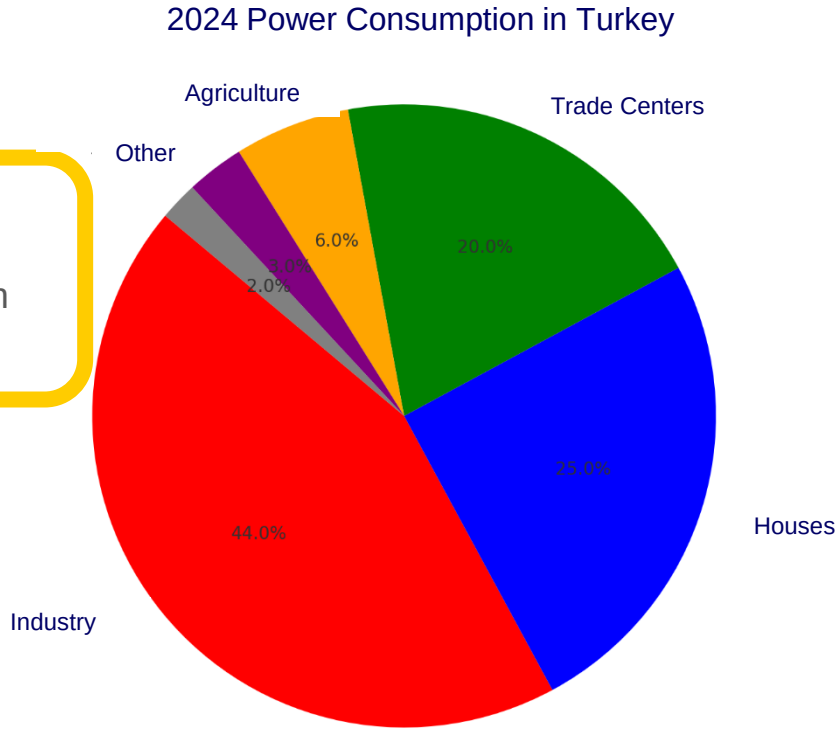
# Energy Report of Turkey

- Turkiye ~ 340 billion kWh
- Fossil Fuels ~ 185 billion kWh



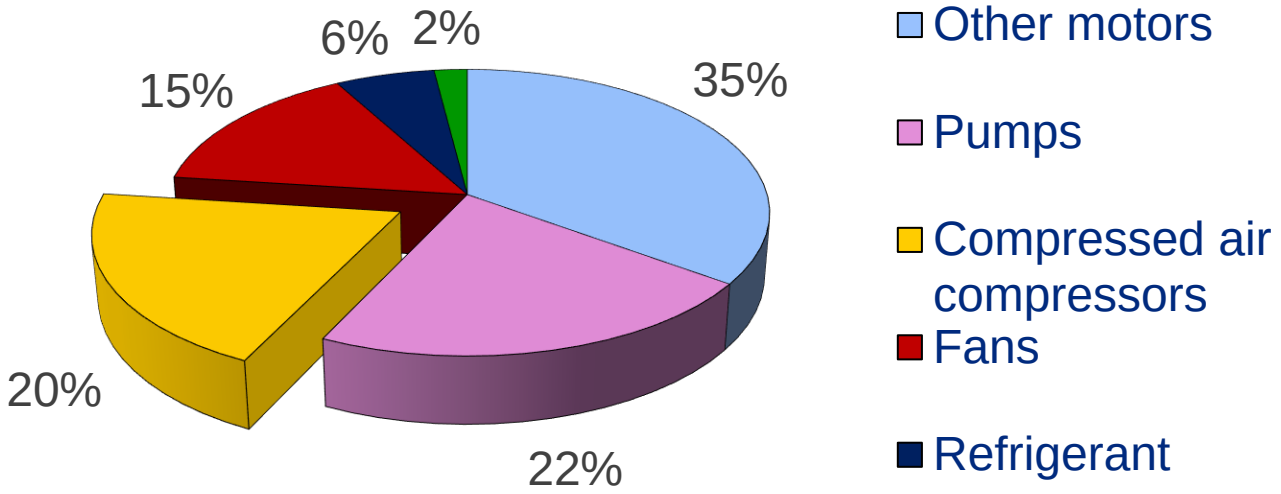
# Energy Report of Turkey

- Turkiye ~ 340 billion kWh
- Industry ~ 150 billion kWh



# Energy & Compressed Air Relation

- Energy consumption 2024 ~ 340 billion kWh
- Energy consumption in Industry ~ 150 billion kWh
- Power consumption to generate compressed air ~ **30 billion kWh**




**Saving Potential in Turkey: 1 Billion Euro**

## Energy & Compressed Air Relation

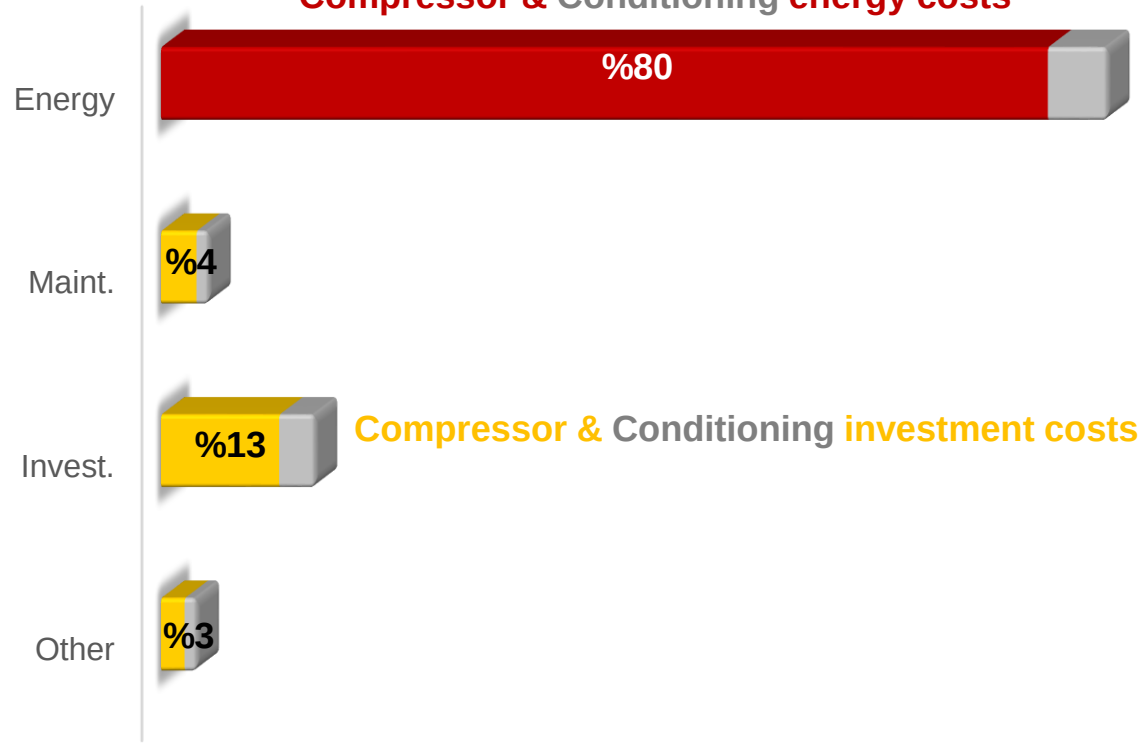
### Saving Potential in Compressed Air Station

- There is a saving potential in a compressed air station between %20 to %50.

| Optimization | Saving Potential (%) |
|---|---|
| Efficient compressors | **10% - 25%** |
| Decreasing pressure level of compressed air station | **5% – 10%** |
| Elimination of leakss | **20% - 40%** |
| Waste heat recovery systems | **10% - 20%** |
| Pipe diameter selection and optimization | **3% - 10%** |
| Automation and intelligent control systems | **10% - 30%** |

# Energy & Compressed Air Relation

## Cost structure of an optimized compressor station




| | | |
|---|---|---|
| **Energy Cost** | 0.10 €/kWh | |
| FAD | 20 m³/min | |
| Yearly operation cost | 8,000 h/year | |
| Operation Presssure | 7,5 bar | |
| Year | 5 year | |
| Air Cooled Pspec | 6 kWmin/m3 | |
| Compressed Air Quality | Oil | 1 |
| (to ISO 8573-1) | Particule | 1 |
| | Water | 4 |

# Efficient Compressed Air Station Design

## Correct Product Selection

$$P_{spec}\ \text{specific power} = \frac{\text{P total energy consumption (kW)}}{\text{V free air delivery (m}^3\text{/min)}}$$

- Base load air requirement ➔
- The amount of air that a business needs on an ongoing basis.

- Over load air requirement ➔
- The amount of air that will be required within certain maximum consumption periods.

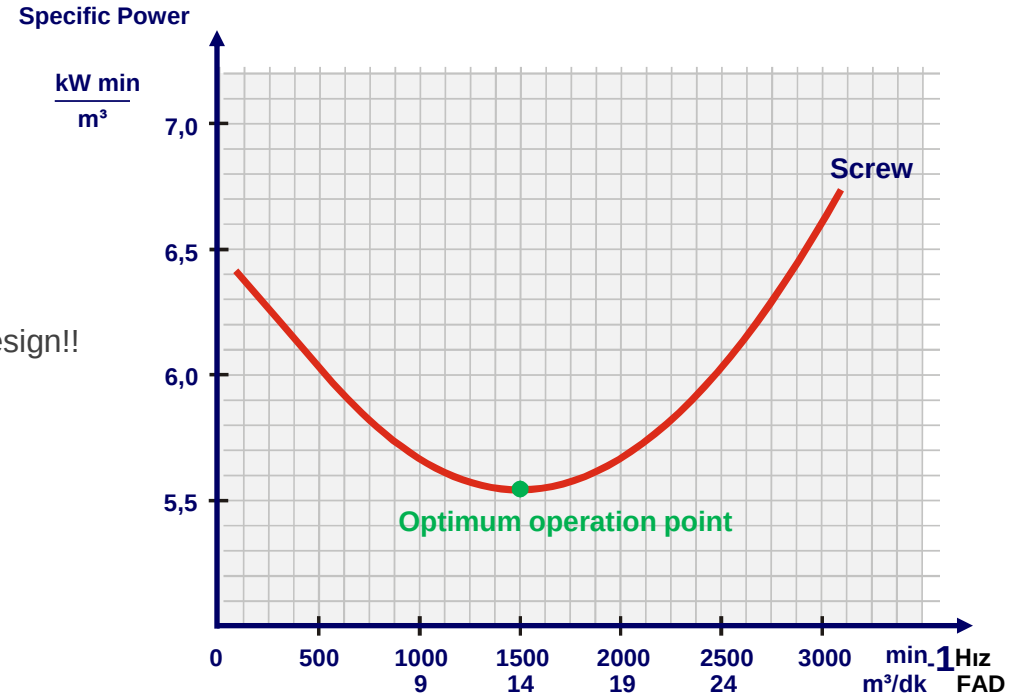
**Fixed speed Compressors**


**Frequency Controlled Compressors**

# Efficient Compressed Air Station Design

## Optimum Operation Poing


- **ADA – KESS** aplication for the best compressed air design!!



# Efficient Compressed Air Station Design

## Potential Saving

**Annual Energy Cost** = Consumption x Annual Working Hour x Specific Power x Energy Cost

X Compressor

Spesifik güç: 5,60 kW/(m3/min)

Y Compressor

Spesifik güç: 5,95 kW/(m3/min)

Common Data:

Consumption: 50 m3/min

Annual Working Hour: 8.000 h

Energy Cost: 0,10 €/kW

Annual Energy Saving Cost

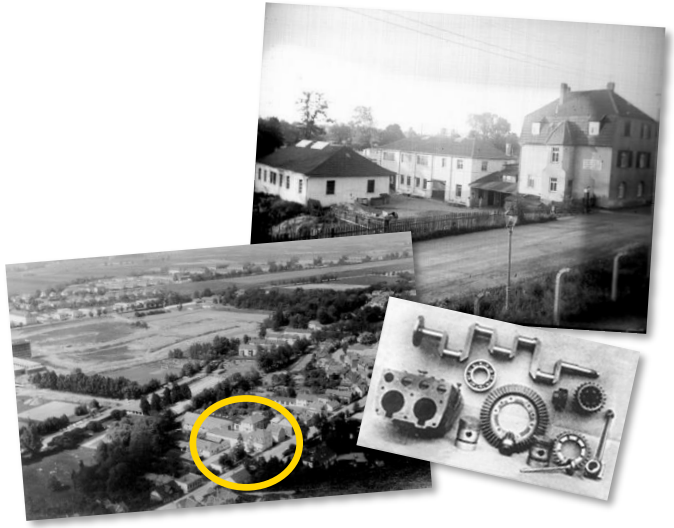
50 x 8000 x (5,95 – 5,60) x 0,10 = 14.000 €

# KAESER

## History

- 1919: Established by Carl Kaeser Senior in Coburg
- 1937: Carl Kaeser joined
- 1979: Thomas Kaeser son of Carl Kaeser joined
- since 2010 Thomas Kaeser and his wife Tina-Maria Vlantoussi-Kaeser managing the company

Carl Kaeser Senior | Thomas Kaeser | Tina-Maria Vlantoussi-Kaeser



Coburg, Hahnweg

# KAESER

- 3 different manufacturing plant in Germany

Coburg, Gera, Sonnefield

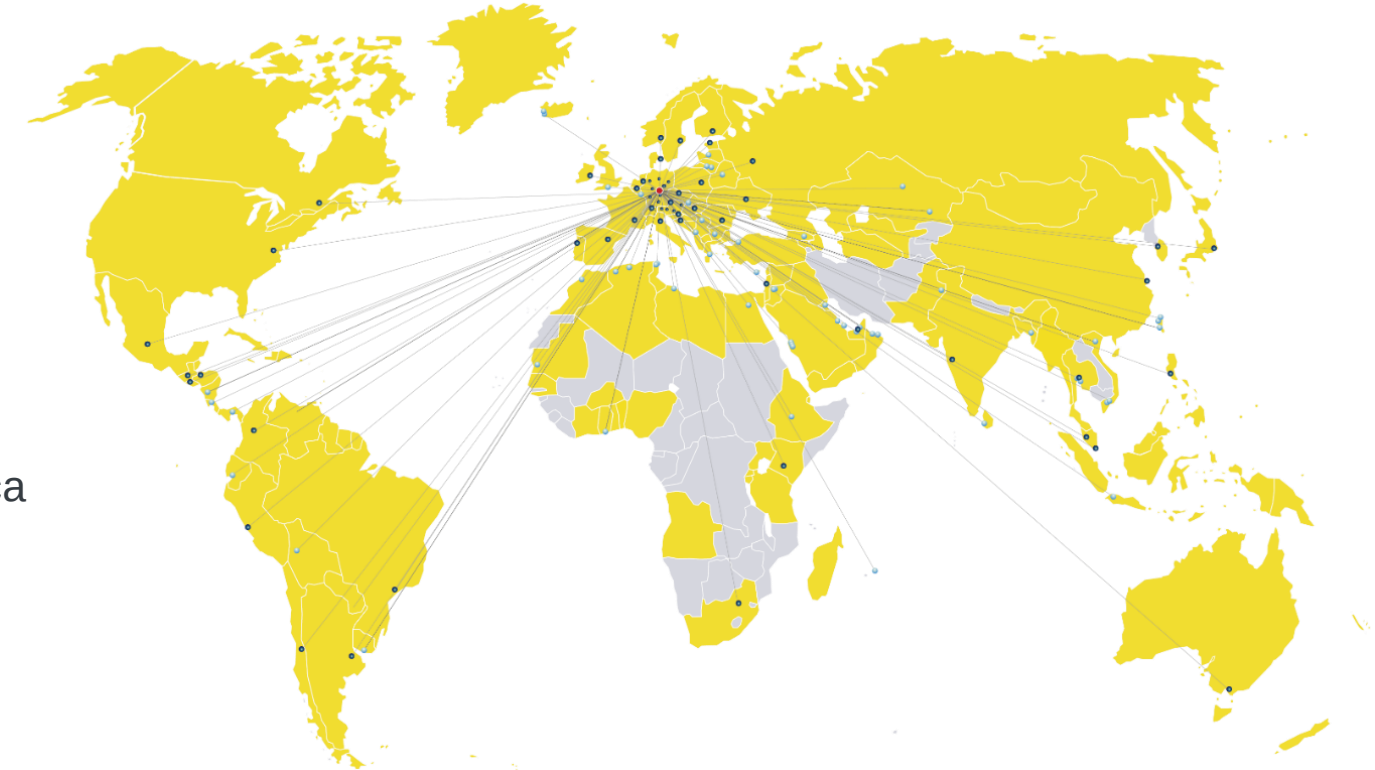
- 2 different R&D Center

3.300 m² area

- Mobilair Manufacturing Factory
- 1,7 Milliar EUR Income
- Worldwide 8.100 employee

# World Wide

Australia
Assia
Africa
Europe
North & South Africa



# KAESER – Ürün Gelişimi

SIGMA PROFILE

1975

1948

Reciprocating Compressors

1982

MOBILAIR

SIGMA AIR UTILITY

1991

1993

Rottary Blowers & SECOTEC® Dryers

SIGMA AIR MANAGER

2002

2008

Oil free screw compressors

Thermal Mass Dryers

2014

2014

KAESER Fillters and Screw Blowers

SIGMA AIR MANAGER 4.0

2015

SIGMA SMART AIR

2017

Turbo Blowers

2019

# KAESER – Product Range


Compressed Air Systems

- 515 kW – 88 m3/min
- Belt driven, 0-22 kW
- Screw, 18-515 kW
- Oil-free screw 37-355 kW
- Booster


Air Treatment Equipments

- Up to 98 m3/min refrigiration dyryers
- Calosec and heat dessicant dryers
- Hybrit type dessicant dryers

# KAESER – Product Range

- Rotary blowers – 1000 mbar
- Screw blowers – 1100 mbar
- Turbo blowers – 1400 mbar


Blowers

- 0,6 m3/min – 47 m3/min
- Oil and oil-free diesel compressors
- Technical oil free, aftercooler filter options


Mobile Compressors

# KAESER – Product Range


Compressed Air Systems


Air Treatment Equipments


Blowers


Mobile Compressors

# KAESER – Türkiye References

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