AGENDA

1. WHITE GOODS PRODUCTION
2. SMALL HOME APPLIANCE PRODUCTIONS
3. HVAC PRODUCTION
4. PATENTS IN DURABLE CONSUMER GOODS AND HVAC
5. R&D CENTERS IN DURABLE CONSUMER GOODS AND HVAC
Türkçe is the 2nd largest production base in the world with 7% of world white goods production.

**KEY TAKEAWAYS**

- 15K Retailer
  - 3500
  - AFTER SALES
- 60K Direct
  - 600K Indirect
  - EMPLOYMENT
- 26 million unit
  - EXPORT
- 34 million unit
  - PRODUCTION
- 7.7 million Unit
  - DOMESTIC
  - MARKET

Source: Turkish Electrical Electronic Exporter Union
Türkiye is the second largest producer in the sector.

Major Domestic Appliances Global Production (Million Units)

*China Excluded (275 Million Units)

Source: Euromonitor Database
WHITE GOODS PRODUCTION IN TÜRKİYE

There are nine significant white good companies that have production facilities in Turkey:

Arçelik
- Arçelik offers a wide product range with 12 brands (Arçelik, Beko, Grundig etc.). Arçelik A.Ş. is active in more than 100 countries including China and the United States through its 13 international subsidiaries and over 4,500 branches in Turkey. The company operates 15 production plants in the world.

Vestel
- Vestel Group of Companies is comprised of a total of 24 companies, 16 of which are located overseas. With 20,000 employees including 1,800 R&D staff, we are engaged in efforts that shape our industry. We are bringing our technology to 158 countries of the world.

Candy
- The Group, one of the largest white goods manufacturers in Europe, moved its factory in China to Turkey with an investment of 70 million euros. Candy Haier Qingdao Haier as officially completed the acquisition of the Candy Hoover Group in 2019.

Kumtel
- Kumtel has been among Turkey’s top 500 industrial firms since 2005. In 2016, the company expanded its production and opened a home appliances factory in Ethiopia.

Simfer
- Simfer is one of the leading Turkish manufacturer of home appliances with exporting to more than 150 countries and is placed in top 500 industrial corporations in Turkey with a 6 million unit annual production capacity.

BS/H/}
- BSH Group’s largest manufacturing center is located in Çerkezköy, just 80 miles from Istanbul. They serve with main brands (Bosch, Siemens), special brands (Gaggenau) and local brand (Profilo).

Whirlpool
- Whirlpool manufacturing mainly refrigerator and washing machine with Hotpoint, Whirlpool and Indesit brands. Arçelik signed an agreement to acquire Whirlpool’s enterprise in Manisa. (May 2021)

Franke
- Franke completed the acquisition of the Faber Group in 2004. Franke opened its factory in Manisa with 1.5 million product capacity that is 5th biggest production in the world.

Silverline
- Silverline exports to more than 70 countries. The company is one of the top five hood manufacturers in Europe and one of the top ten in the world and has an annual production volume of 2.3 million.

Sources: Business Press and Companies’ websites

Turkish white goods industry exports 75% of its production, mostly to European countries.
WHITE GOODS PRODUCTION IN TÜRKİYE

BELOW MAP SHOWS LOCATION AND PRODUCT LINES OF THE FACILITIES. ISTANBUL, TEKIRDAG, MANISA, ANKARA, ESKİSEHIR —AND KAYSERI HAVE EVOLVED TO BE CLUSTERS FOR WHITE GOODS PRODUCTION.

Source: Turkish Statistical Institute Industry & Services Statistics NACE Rev2 Division 28, Central Bank of Republic of Türkiye
WHITE GOODS IN THE LAST 5 YEARS

PRODUCTION, EXPORT AND DOMESTIC SALES OF 6 MAIN PRODUCTS

PRODUCTION AND EXPORT CAPACITY INCREASED IN 5 YEARS (UNIT)

Production (UNIT)

- Refrigerator: 7,922,395 (2021) vs 1,250,929 (2015), +38%
- Oven: 6,588,204 (2021) vs 1,756,646 (2015), +38%
- Freezer: 3,278,021 (2021) vs 2,255,847 (2015), +43%
- Washing Machine: 9,466,366 (2021) vs 1,180,833 (2015), +38%
- Dishwasher: 849,286 (2021) vs 7,466,366 (2015), +i%
- Dryer: 1,125,32 (2021) vs 849,286 (2015), +i%

Export (UNIT)

- Refrigerator: 5,516,08 (2021) vs 1,180,833 (2015), +43%
- Oven: 3,049,78 (2021) vs 1,125,32 (2015), +i%
- Freezer: 1,180,833 (2021) vs 1,125,32 (2015), +i%
- Washing Machine: 5,616,44 (2021) vs 849,286 (2015), +i%
- Dishwasher: 5,138,98 (2021) vs 7,466,366 (2015), +i%
- Dryer: 5,480,74 (2021) vs 1,125,32 (2015), +i%

Source: Ministry of Science, Industry and Technology, Investment Office Team Analysis
WHITE GOODS IN THE LAST 5 YEARS

EXPORT OF 6 MAIN PRODUCTS

TÜRKİYE WHITE GOODS EXPORT

Source: Ministry of Science, Industry and Technology, Investment Office Team Analysis, Turkish Electric Elcronics Exporter Union Report
With its production capacity of **25 million units**, Turkish white goods industry has become a significant focus of production in the last 10 years and Türkiye has become **the 1st country in Europe** in the white goods sector.

The Turkish market used to sell 6.5 million units in domestic sales in the 2011; however, in the last 10 years, achieved a record by rising up to 24 million units by the end of 2021.

The white goods companies operating in Türkiye are making significant investments in the R&D area. As a result of developments, improvements in the energy efficiency of the products have reached up to 65% in the last 10 years.
Türkiye has a strong industrial base with a total production value of USD 3.2 billion...

- Türkiye is Europe’s manufacturing base for panel radiator, boiler and AHU’s.
- The sector in the last ten years to reach USD 1.9 Billion.
- Europe has over 40% share.
TÜRKİYE HAS A STRONG INDUSTRIAL BASE WITH A TOTAL PRODUCTION VALUE OF USD 3.2 BILLION...

In addition to the major manufacturers there are some companies which are focusing to manufacture commercial refrigerators as well as deep-freezers in Türkiye.

PRODUCTION CAPACITIES FOR SOME PRODUCTS (UNIT)

- Heat Exchanger
- Split AC
- VRF Indoor
- Fancoil
- Air handling unit

<table>
<thead>
<tr>
<th>Product</th>
<th>Capacity (Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Exchanger</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Split AC</td>
<td>797,000</td>
</tr>
<tr>
<td>VRF Indoor</td>
<td>240,000</td>
</tr>
<tr>
<td>Fancoil</td>
<td>118,000</td>
</tr>
<tr>
<td>Air handling unit</td>
<td>14,000</td>
</tr>
</tbody>
</table>
SMALL HOME APPLIANCES PRODUCTION IN TÜRKİYE

TÜRKİYE HAS A STRONG INDUSTRIAL BASE WITH A TOTAL PRODUCTION VALUE OF 4.5 TL BILLION...

**KEY FACTS**

- 4.5 billion TL total market size
- 80% capacity utilization rates
- 60% local market share in total sales
- 20K total employment

**MANUFACTURERS ARE MOST DENSELY LOCATED IN FIVE CITIES**

Supply products for the production are mainly **flat steel, plastics, copper and aluminum**. Istanbul, Bursa, Tekirdag, Manisa, Ankara, Eskisehir, Konya and Kayseri are the clusters for the supply products.

40% of Türkiye’s turnover is realized in the Marmara Region where SHA sector has grown more than doubled between 2013-2018 from 2 billion TL to 4.5 billion TL.

Source: Ministry of Science, Industry and Technology, Investment Office Team Analysis, TURKBESD
World exports of the small household appliances industry reached USD 53 billion. Türkiye’s market size is 4.5 billion TL. In 2018, 15.2 Mio small household appliances were sold.

ISMANY HOME APPLIANCES PRODUCTION IN TÜRKİYE

ISTANBUL, MANISA, ESKİSEHIR, TEKIRDAG AND KAYSERI ARE THE CLUSTERS FOR THE PRODUCTION.

NUMBERS OF EMPLOYERS

<table>
<thead>
<tr>
<th>City</th>
<th>Manufacturer</th>
<th>Engineer</th>
<th>Technician</th>
<th>Expert</th>
<th>Worker</th>
<th>Admin. Staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Istanbul</td>
<td>214</td>
<td>519</td>
<td>756</td>
<td>603</td>
<td>10.341</td>
<td>1.341</td>
<td>13.774</td>
</tr>
<tr>
<td>Manisa</td>
<td>32</td>
<td>300</td>
<td>203</td>
<td>141</td>
<td>9.650</td>
<td>594</td>
<td>10.920</td>
</tr>
<tr>
<td>Eskişehir</td>
<td>21</td>
<td>384</td>
<td>196</td>
<td>86</td>
<td>6.797</td>
<td>232</td>
<td>7.716</td>
</tr>
<tr>
<td>Tekirdağ</td>
<td>18</td>
<td>330</td>
<td>170</td>
<td>581</td>
<td>5.947</td>
<td>276</td>
<td>7.322</td>
</tr>
<tr>
<td>Kayseri</td>
<td>41</td>
<td>138</td>
<td>59</td>
<td>188</td>
<td>3.716</td>
<td>420</td>
<td>4.562</td>
</tr>
<tr>
<td>Türkiye</td>
<td>525</td>
<td>2.563</td>
<td>2.109</td>
<td>2.325</td>
<td>49.469</td>
<td>4.341</td>
<td>64.272</td>
</tr>
</tbody>
</table>

Source: The Union of Chambers and Commodity Exchanges of Türkiye (TOBB) database

MARKET SHARE (%)

- VACUUM CLEANERS: 32%
- IRONS: 15%
- HOT DRINK MACHINES: 13%
- OTHERS: 40%
SMALL HOME APPLIANCES PRODUCTION IN TÜRKİYE

EXPORT OF SMALL HOME APPLIANCES INCREASED %15 IN THE LAST FOUR YEARS

EXPORT & IMPORT

<table>
<thead>
<tr>
<th>Year</th>
<th>Export</th>
<th>Import</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1.047</td>
<td>525</td>
</tr>
<tr>
<td>2017</td>
<td>1.179</td>
<td>574</td>
</tr>
<tr>
<td>2018</td>
<td>1.303</td>
<td>455</td>
</tr>
<tr>
<td>2019</td>
<td>1.305</td>
<td>392</td>
</tr>
<tr>
<td>2020</td>
<td>1.332</td>
<td>560</td>
</tr>
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</table>

MARKET VOLUME

<table>
<thead>
<tr>
<th>Brand</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arçelik</td>
<td>23</td>
<td>24</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Balo</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>BSH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vestel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siemens (BSH)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Profilo (BSH)</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Akü</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Samsung</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hotpoint Ariston</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Sources: Ministry of Science, Industry and Technology, TURKSTAT
SMALL HOME APPLIANCES PRODUCTION IN TÜRKİYE

267 MILLION OUT OF $ 560 MILLION IMPORTS WERE MADE FROM CHINA. CHINA’S SHARE IN TÜRKİYE’S IMPORTS IN 2020 IS 48%.

**IMPORT BY COUNTRIES (%)**

- China 48%
- Malaysia 9%
- Germany 12%
- Slovenia 4%
- Poland 4%

**EXPORT BY COUNTRIES (%)**

- France 23%
- Germany 20%
- Russia Federation 15%
- Italy 13%
- United Kingdom 29%
- China 48%

Sources: Ministry of Science, Industry and Technology, TURKSTAT
## MAJOR INVESTMENTS DONE IN THE RECENT YEARS FOR WHITE GOODS AND HVAC PRODUCTION IN TÜRKİYE:

<table>
<thead>
<tr>
<th>Year</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>Arçelik – acquisition of Whirlpool Manisa production facility for <strong>EUR 78.3 Million</strong></td>
</tr>
<tr>
<td>2020</td>
<td>Whirlpool - modernization in Manisa production facility with <strong>TRY 97 Million</strong></td>
</tr>
<tr>
<td>2019</td>
<td>Haier – acquisition of Candy Hoover Eskisehir production facility and expansion with <strong>TRY 850 Million</strong> investment</td>
</tr>
<tr>
<td>2019-2014</td>
<td>Franke – modernization in Manisa facility around <strong>TRY 75 Million</strong></td>
</tr>
<tr>
<td>2018</td>
<td>Vestel - drying machine investment in Manisa production facility – <strong>750K units</strong></td>
</tr>
<tr>
<td>2018</td>
<td>Mitsubishi – USD 100 Million greenfield investment in Manisa for AC production</td>
</tr>
<tr>
<td>2018-2013</td>
<td>BSH – modernization in Tekirdag production facility at almost <strong>TRY 2 Billion</strong></td>
</tr>
<tr>
<td>2017-2014</td>
<td>Demirdöküm – modernization in Bozüyük production facility at <strong>TRY 52 Million</strong></td>
</tr>
</tbody>
</table>

### Source:
Ministry of Science, Industry and Technology, Investment Office Team Analysis, TURKBESD
FROM 2010 TO 2019, THE NUMBER OF DOMESTIC PATENT APPLICATIONS IN THE FIELD OF WHITE GOODS AND HOUSEHOLD ELECTRICAL APPLIANCES INDUSTRY IN TÜRKİYE AMOUNTED TO 5,217

In the number of patents, Arçelik ranks the first, Vestel is the second, and BSH is third.

Sources: Patent Effect, Patent Map of Türkiye as of March 2020
FROM 2010 TO 2019, THE NUMBER OF DOMESTIC PATENT APPLICATIONS IN THE FIELD OF WHITE GOODS AND HOUSEHOLD ELECTRICAL APPLIANCES INDUSTRY IN TÜRKİYE AMOUNTED TO 5,217

Source: Patent Effect, Patent Map of Türkiye as of March 2020
AS OF JUNE 2021, 21 OPERATIONAL R&D CENTER IN DURABLE CONSUMER GOODS INDUSTRY AND 18 OPERATIONAL R&D CENTER IN HVAC INDUSTRY...
AS OF JUNE 2021, 21 OPERATIONAL R&D CENTER IN DURABLE CONSUMER GOODS INDUSTRY AND 18 OPERATIONAL R&D CENTER IN HVAC INDUSTRY...

Source: Ministry of Industry and Technology