Kayseri Water Supply & Pump Stations Rehabilitation

KASKİ, Turkey
The city Kayseri, with an altitude of more than 1000m, has a history of 6000 years, is one of the oldest settlements in mid of Anatolia. Being on the silk route, Kayseri has maintained its importance throughout the history due to its strategic location. It used to be known in its past as the center of commerce, but with appropriate investment it has become one of the leading industrial cities of Turkey.

Kayseri has attracted attention not only for its natural beauties but also its financial possibilities and opportunities. Mount Erciyes (3917m) is only 30 km away from the center of the city, has made Kayseri also a winter sport center of Anatolia. By now, there are more than One Million inhabitant in Kayseri, and the most emerging need is for more water to be used both in household and in the growing industry.

Kayseri Water Work, KASKI is the authority that is in charge of water supply services to the city Kayseri. The water is fed to the city network from 7 main water resources areas, which consists in total 42 wells and a spring source. The water pumped from wells by submersible pumps and then elevated to the water storage depots, which in turn are feeding the city, by gravity. The water production capacity today is almost 170,000 m³/day from these sources.

There are more than 185,000 consumers in the city with annual water demand of 68-Million m³.
The primary objectives of the Kayseri "Pump Stations and Water Supply Improvement" project was to: 1) make emergency short term rehabilitation in the total water works to insure the continues water supply to the city Kayseri; 2) improve the water supply system as a whole; 3) optimized the energy cost and extend the functionality of existing Water Distribution Remote Control system; and 4) improve the operations and maintenance to increase the amount of water extracted from the available water resources.

The program of supplying and installation of pumps and pump appurtenances has included three main parts:

Part 1) Replacement of 10 submersible pumps including valves, non-return valves, pipes, fittings and electrical system at 3 well field sites. Replacement of pipes, fittings and electric systems at a further 17 stations located at 5 well field sites.

Part 2) Replacement of valves, return valves, pipes, fittings and electrical installation, rehabilitation and installation of surge protection measures and installation of stand-by generators for 21 pump sets at high lift pumping stations.

Part 3) Replacement of 32 control valves with motorized butterfly valves at 6 water depots.

Within the scope of the project, Piomak revamped all the existing "Electromechanical" parts in the wells, pumps and depots areas. The revamping included all the pipes, joints, fittings and pipe connections.

Within the project scope of supply, also it was a must to renew all the existing 74 low voltage power distribution and control panels. More over, stand-by generators were installed almost in all the locations to insure continues electrical energy in the stations.

Within the improvement program, Piomak also has added electronic "Soft Starters" to the new feeding panels of all the pumps installed to insure safe operation and reduce energy consumptions.

Aiming to increase the functionality of the exciting SCADA system, Piomak has added the needed instrumentation to monitor all the parameters in the renewed water supply system. In this conjunction, Piomak also replaced manual operated valves with motor actuated valves, which can allow any needed remote control and operating.
Germiraltı is the second biggest water source for Kayseri and its located on the east part of the city center. Germiraltı Wells’ water production capacity is 425 ft/s. The water from Germiraltı pump station is elevated to the Talas Main depot.

In this location, which consists 9 wells and 3 high lift pumps (132 kW each), Piomak has replaced the exciting 7 DN 800 valves with new motorized valves in the depots. Piomak also renewed the fittings, pipes and electrical control panels and equipment in the pumping station as well as in the well fields.

To back up any energy fail, a 500kVA unit stand by generator is installed in the Germiraltı station.
Bestepeiler Zone

Bestepeiler Pump Station located in the southern part of the city center, with 575 l/s capacity, close contains
the biggest pump station in KASKI system.

In this location, there is a natural spring water resource
that is fed by the Mountain Erciyes. Bestepeiler Pump
Station is accepted to be the water source of the main
avenues and the city center.

In this location, there are 2 pumping stations; the first one is PS1 and the second one is PS2. Even though
the water production capacity of this area is rather high,
Karpuzatan Pump Station also feeds Bestepeiler Depot.

Booth PS1 and PS2 have 4 high lift pumps
(200 kW each). PS1 is feeding Bestepeiler
15,000 m³ Main Depot and PS2 is feeding
Talas and Mahrmlar Main Depots by a 500
mm in diameter pipelines.

In PS1 and PS2, all the manual valves changed
into motorized valves. Each pump line was
renovated by adding non-return valves and
necessary instrumentation.

Depot, the new motorized valves installed by
Piomak are replacing the old 6 DN 1000
manual valves.

For such a big pump station the stand by
generator to be installed was calculated to
be at least 1000kVA.

Egribucak Zone

Egribucak is located on the southern part of Kayseri. There are 3 wells and
3 high lift pumps (130 kW each) in
this location. Egribucak Wells' water
production capacity is 150 l/s.
Egribucak depot had 2 DN 700 and 1
DN 400 size valves.

Piomak has renewed all the parts and
equipment belongs to the
"Electromechanical" system in the
well fields as well as in the pumping
station and in the depots.

No new submersible pumps are
installed in Egribucak, rather than that,
all the pipelines and equipment out
of the wells has been totally renewed
by Piomak. The new DN 700 and DN
400 motorized valves where replaced
the old manual valves in the reservoir.

Considering the size of the pumps,
the installed stand by generator for
this part was 250kVA.
Keykubat Zone

The Keykubat Zone is located on the north-west side of the city. Keykubat Wells' water production capacity is 305 l/s.

In this location, there are 7 wells and 4 high lift pumps (200 kW each), and 5 DN 800 valves in the water depots.

Piomak has renewed all the fittings, pipes and electromechanical equipment in this field. Also Piomak has replaced 5 submersible pumps with new ones in Keykubat. The new DN 800 motorized valves installed in the reservoir has by now given the possibility for the remote control.

In Keykubat, beside the renewal of the Electrical system, Piomak also installs a 500kVA Generator stand-by Unit.

Karpuzatan Zone

Karpuzatan water resources are located on the north side of the city and the location has a capacity of 339 l/s of underground water.

There are 6 wells and 3 high lift pumps (110 kW each). The old manual valves in the water depots was of DN 800 and DN 600 size.

Piomak has replaced 4 old submersible pumps with new ones in Karpuzatan. Also replaced the 3 DN 800 and 1 DN 600 valves installed in the reservoir by motorized ones.

In Karpuzatan, beside the renewal of the Electrical system, Piomak also installs a 500kVA Generator stand-by Unit.
Mahrumlar, located on the west part of the city, has two old wells with a water production capacity of 100 l/s.

The fittings, pipes and electromechanical parts and equipment in the well fields are renewed. Also in Mahrumlar Plomak installed one new submersible pump.

The new 5 DN 800 and 1 DN 500 motorized valves are installed in the reservoir. Plomak, renewing all of the Electrical system in this part also did install a 250kVA generator for any energy back up needed.

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**Project Highlights**

- **Customer**: Kayseri Water and Sewerage Administration - KASKİ
- **Main Contractor**: Plomak Automationstechnik GmbH
- **Total Value**: 2.526.654.- Euro
- **Financed by**: Kreditanstalt für Wiederaufbau – KfW
- **Project Control**: Dorsch Consult / München
  Alter Mühendislik/ Ankara
- **Commencement Date**: July 2001
- **Start-up Date**: April 2002
Main Reference List for Water Works

Istanbul Water And Sewerage Authority - ISKI
Istanbul - Turkey
Project: Kartal - Soganik - Maden Pump Stations
Installation: Pump Station Revamping & Automation

Kayseri Water And Sewerage Authority - KASKI
Kayseri - Turkey
Project: Electromechanical Work for Water Supply
Installation: Electromechanical Installation

Rize Municipality
Water Works - Rize
Project: Potable Water Treatment Plant
Installation: Electromechanical Work for Water Treatment Plant

Diyarbakir Water and Sewerage Authority - DISKI
Diyarbakir - Turkey
Project: Water Supply SCADA installation
Installation: Automation & SCADA System installation for water network

Arab Petroleum Pipelines CO. - SUMED
Egypt
Project: Oil Pipeline Automation
Installation: SCADA System installation for Oil Pipeline

Bursa Water And Sewerage Authority - BUSKI
Bursa - Turkey
Project: Water Supply Automation
Installation: Automation & SCADA System for water supply

Khartoum State Water Corporation - KSWC
Khartoum - Sudan
Project: Sewerage Pump Stations
Installation: Electrification and SCADA system

Istanbul Water and Sewerage Authority - ISKI
Istanbul - Turkey
Project: Paşaköy Wastewater Treatment Plant
Installation: Automation and SCADA System

Khartoum State Water Corporation - KSWC
Khartoum - Sudan
Project: Al-Bahri Water Treatment Plant
Installation: Electric and Automation System

Municipality of Kavaja
Water and Sewerage Works
Kavaja - Albania
Project: Wastewater Treatment Plant
Installation: Turn Key Electric & SCADA System
Since starting its activities in May 1992 as an Electromechanical Engineering and Contracting Company, Piomak has placed a great emphasis on Development and Design of Turn Key Installation for various applications and projects in the Industry and Utilities sectors. Piomak has focused its professional labour and knowledge background in Water and Waste Water treatment area for the last 2 decades.

Piomak carried its activities, including design, manufacturing, installing and startup, under three main items. The first item is to supply essential electro-mechanical equipment and process machinery, as well as Turn Key solutions, for Water and Waste Water processes.

The second activity concentrated on Electrification and Automation project implementations for water work utilities. Reciprocally, Piomak has supplied "SCADA and Telemetry System" applications for the large-scale facilities.

Throughout the design and implementation phases of the projects completed, beside a highly flexible workshop; Piomak is utilizing comprehensive equipment, hardware equipment and software packages to complete the total work in the most optimum time.

Proficient and knowledgeable technical support from Piomak's team of highly experienced engineers are ready to assist the client, from the feasibility study stage up to even solving sophisticated design problems.

Achieving substantial reference list in its principal markets; Turkey, Central and Eastern Europe, North Africa and the Middle East; Piomak became solution partner for many companies and utilities in these regions.

Since its business strategy relies on sustainable quality, Piomak devoted all its ambition for “Quality” work, and as a spin-off, for quality water, and life...