

GAYDA ENERGY ENGINEERING

LONG-TERM HARMONIZATION TEST (ENDURANCE TEST) SYSTEM

LONG-TERM HARMONIZATION TEST (ENDURANCE TEST) SYSTEM FOR MV CABLES

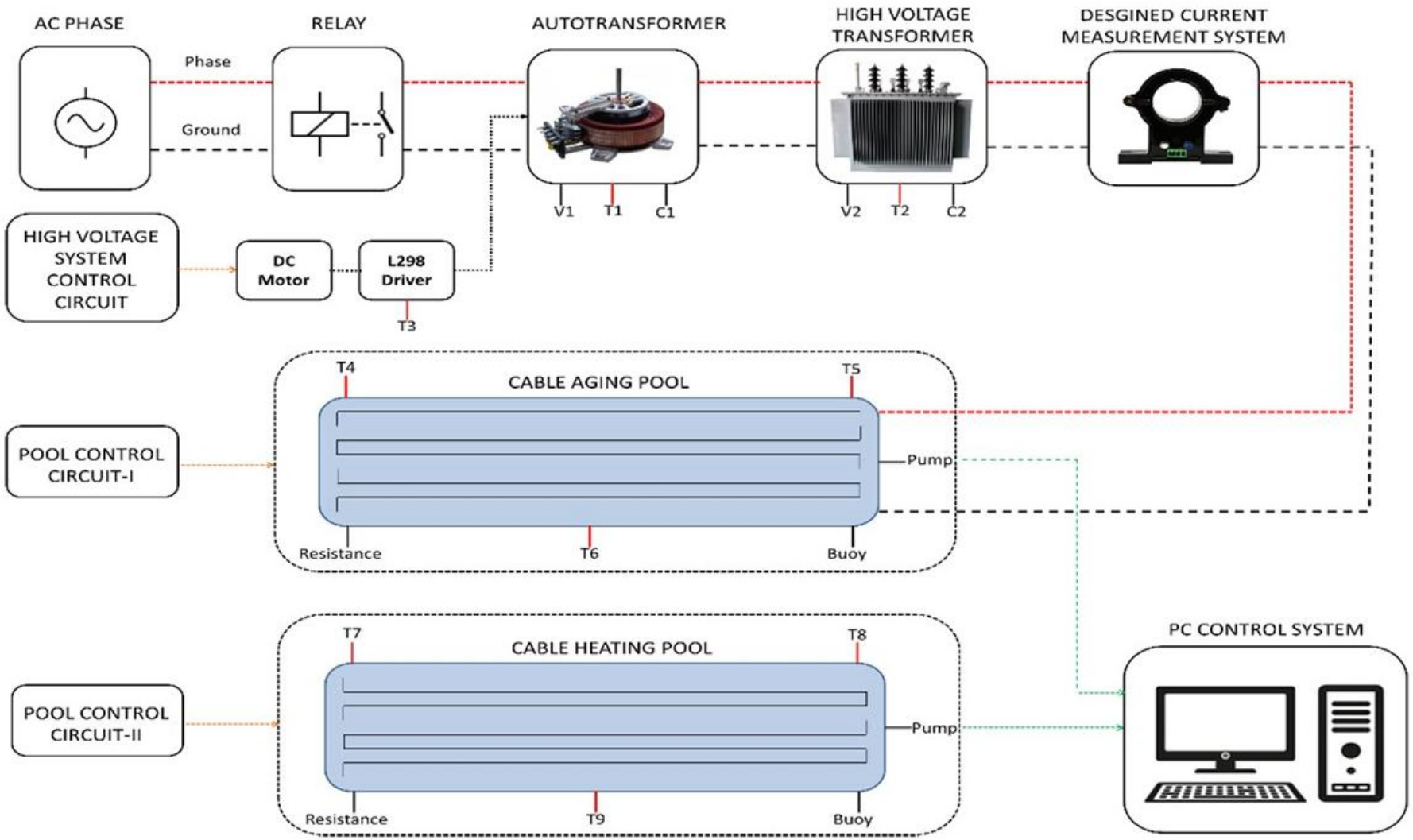


Fig. 1. General overview of cable aging system.

Pre-Condition System (1st Aging Pool + Control Panel)

1st Aging Pool

- Dimensions of the pool is 2 x 2 x 0.5 in meters
- All Systems are moveable on the wheel
- Three Temperature Sensor
- Water level is controlled by a panel using a water level sensor and control valve
- Two resistances (2x10kW) heat the pool.
- A 0.75kVA mono-phase water pump circulates the water in the pool.
- The water filtered and circulated prevents to growth of bacterias
- Pool is covered by Policarbonate wings to minimize water loss
- Surfaces of the pool are well-isolated for heat loss

Control Panel

- Control Panel controls all temperature sensors, water level sensors, heat resistance, water pump, and valve and can communicate with PC.
- The Control Panel reads the temperatures by three sensors.
  Each average temperature value is recorded.
- The faulty sensor (if it happens) is automatically detected and disabled.
- Temperature data are sent to the PC by Bluetooth module on the PCB
- Two resistances (2x10kW) are controlled by SSR (solid state relay)







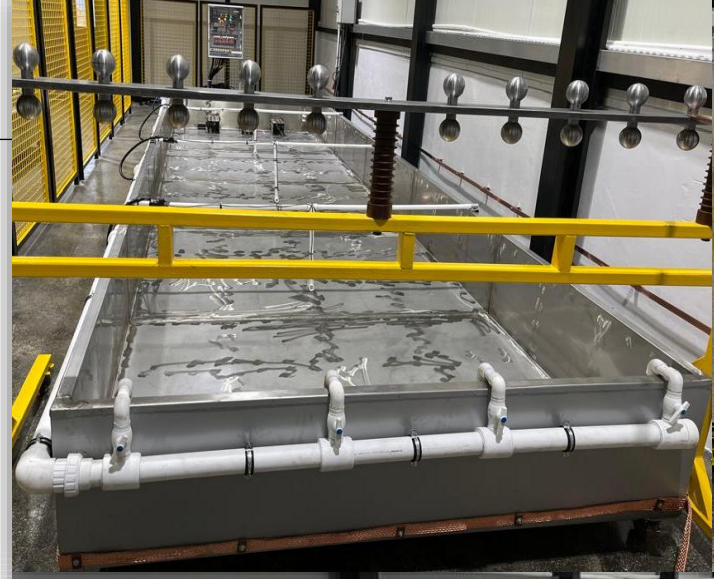
Aging System (Aging Pool + Control Panel)

2nd Aging Pool

- Dimensions of the pool is 2 x 7 x 0.5 in meters
- All Systems are moveable on the wheel
- Three Temperature Sensor
- Water level is controlled by a panel using a water level sensor and control valve
- Three resistances (3x10kW) heat the pool.
- A 1.5kVA mono-phase water pump circulates the water in the pool.
- The water filtered and circulated prevents to growth of bacterias
- Pool is covered by Policarbonate wings to minimize water loss
- Surfaces of the pool are well-isolated for heat loss

Control Panel

- Control Panel controls all temperature sensors, water level sensors, heat resistance, water pump, and valve and can communicate with PC.
- The Control Panel reads the temperatures by three sensors.
  Each average temperature value is recorded.
- The faulty sensor (if it happens) is automatically detected and disabled.
- Temperature data are sent to the PC via Bluetooth module on the PCB
- Three resistance (3x10kW) are controlled by SSR (solid state relay)







Power System (Power Units + Control Panel)

Power System

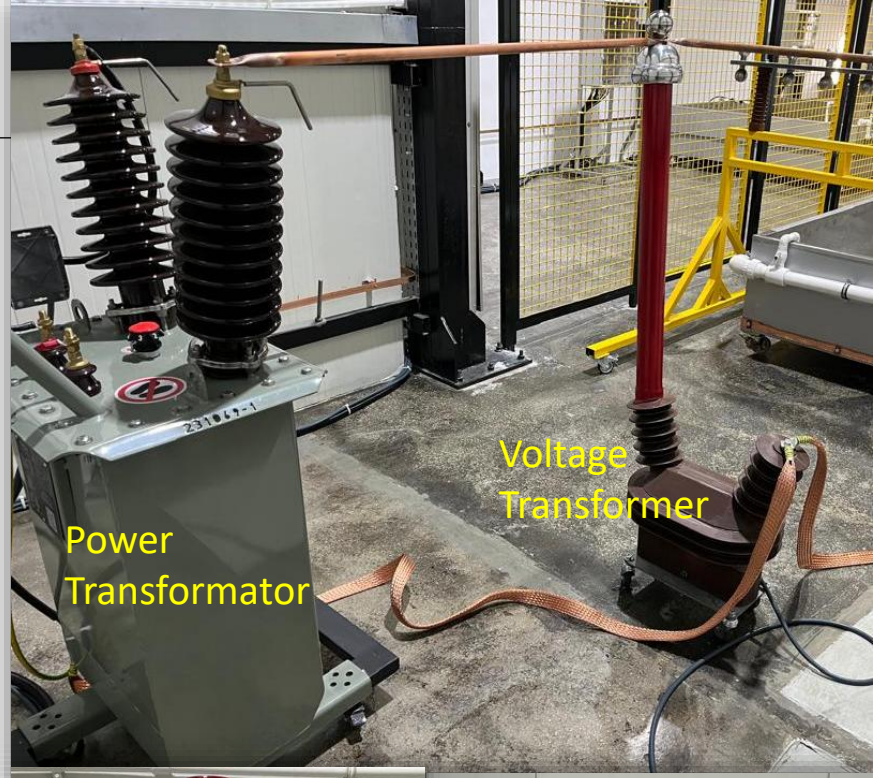
- 220 / 38kV, 50kVA Mono Phase Power Transformer
- 38kV / 220 Voltage Transformer
- 220V /220V, 45kVA Auto Transformer

- **Power Transformator include;**
  - Temperature sensor
  - High Volt Current Transformer
- **Auto Transformer include;**
  - Temperature sensor and Fans
  - Current Transformer

- **Control Panel**
  - The control panel adjusts the voltage and current limitations based on data received from a computer.
  - If the measured values (currents, temperatures, and voltages) exceed predefined desired or limit values, the system automatically activates protection mode.
  - Currents, voltages, and temperature readings from the Power System are sent to a PC via Bluetooth and are recorded.

Power Transformer
Voltage Transformer
Auto Transformer

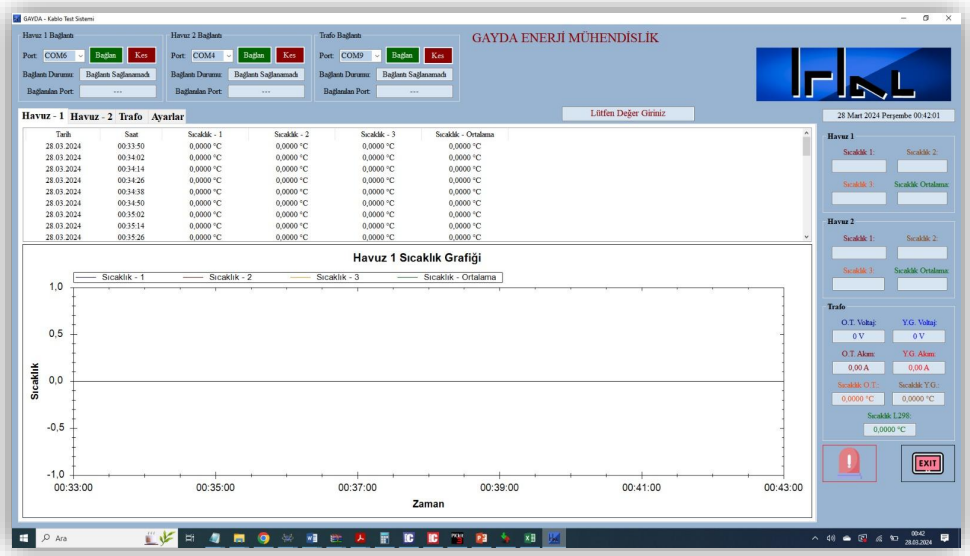
Data ⇄ **Control Panel** Data ⇄ **Computer**



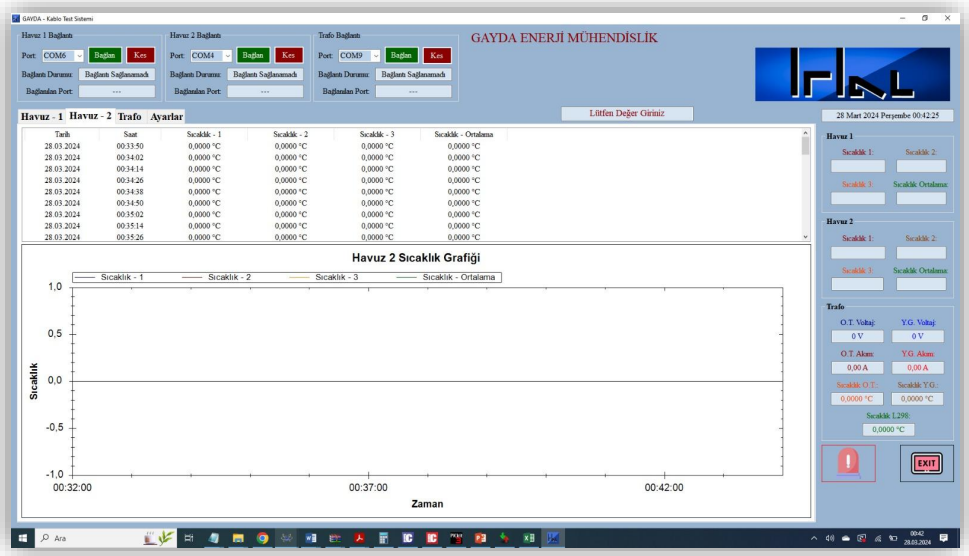




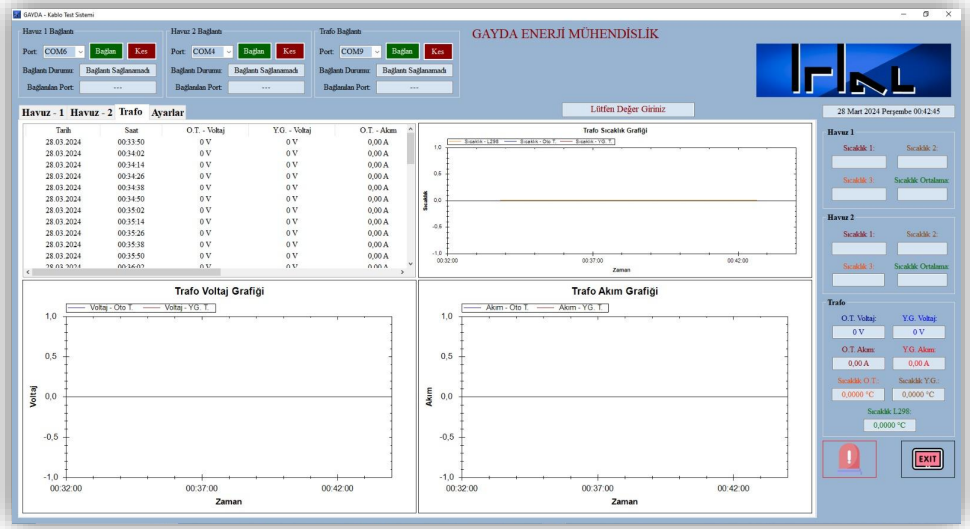
User Interface Program



Pre Condition Pool Interface



Aging Pool Interface



Power System Interface

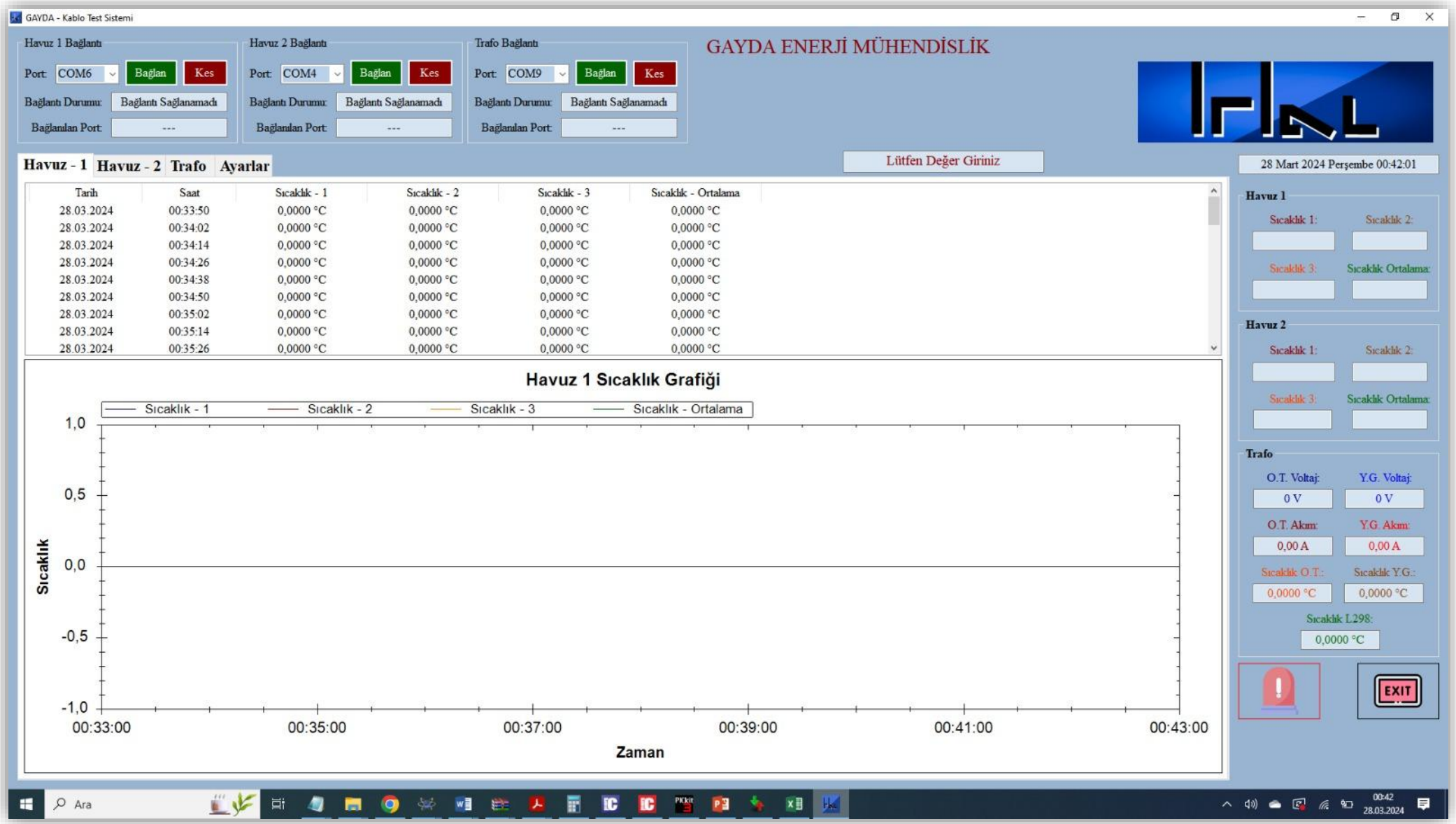


Settings of Power System Interface

Next Page

First Pool Interface

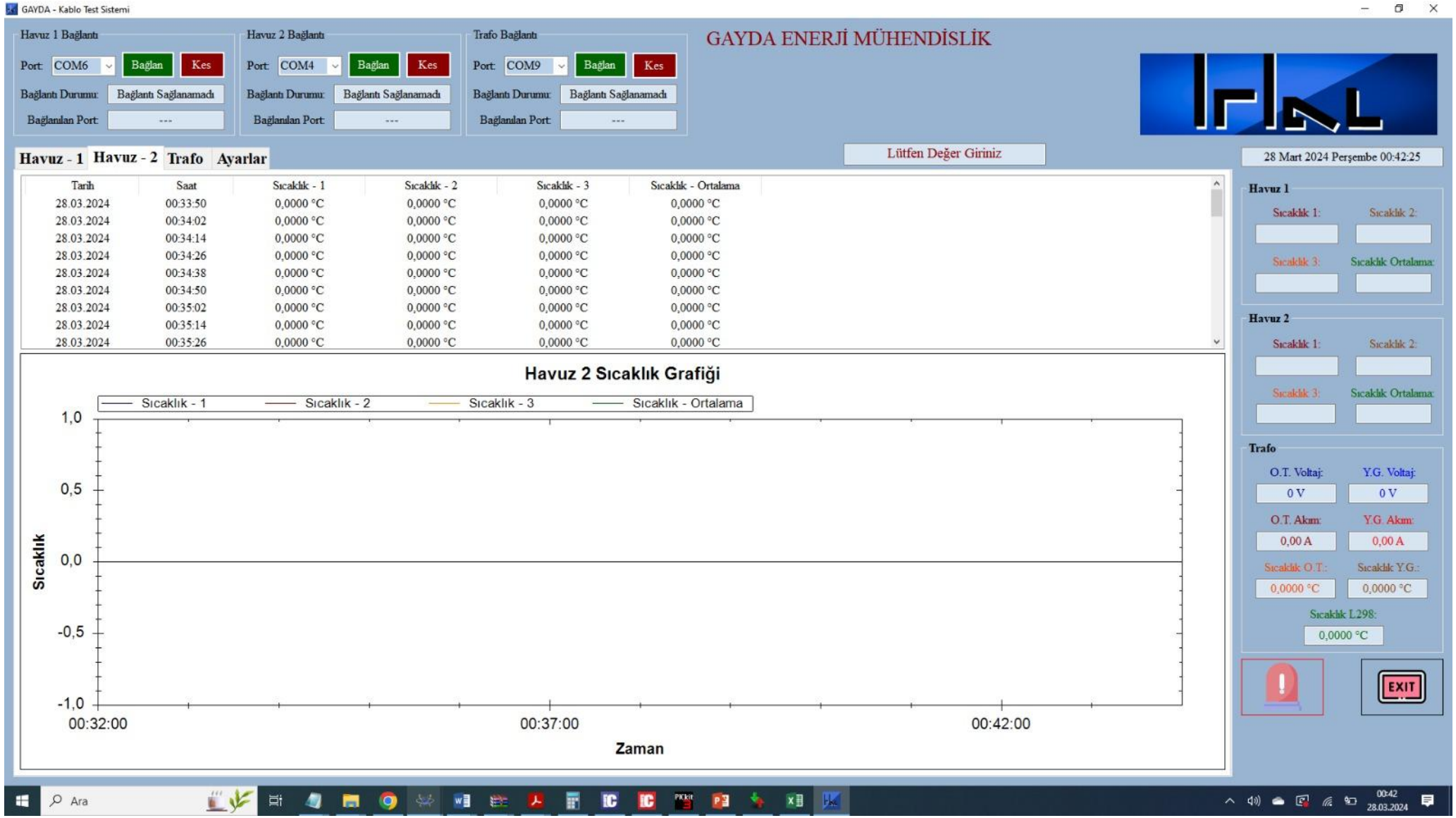
Temperature-Time Values of 1st Pool Interface are shown as below.
It can be shown and recorded as graphically or excel format.



Back to Main Page

Aging Pool Interface

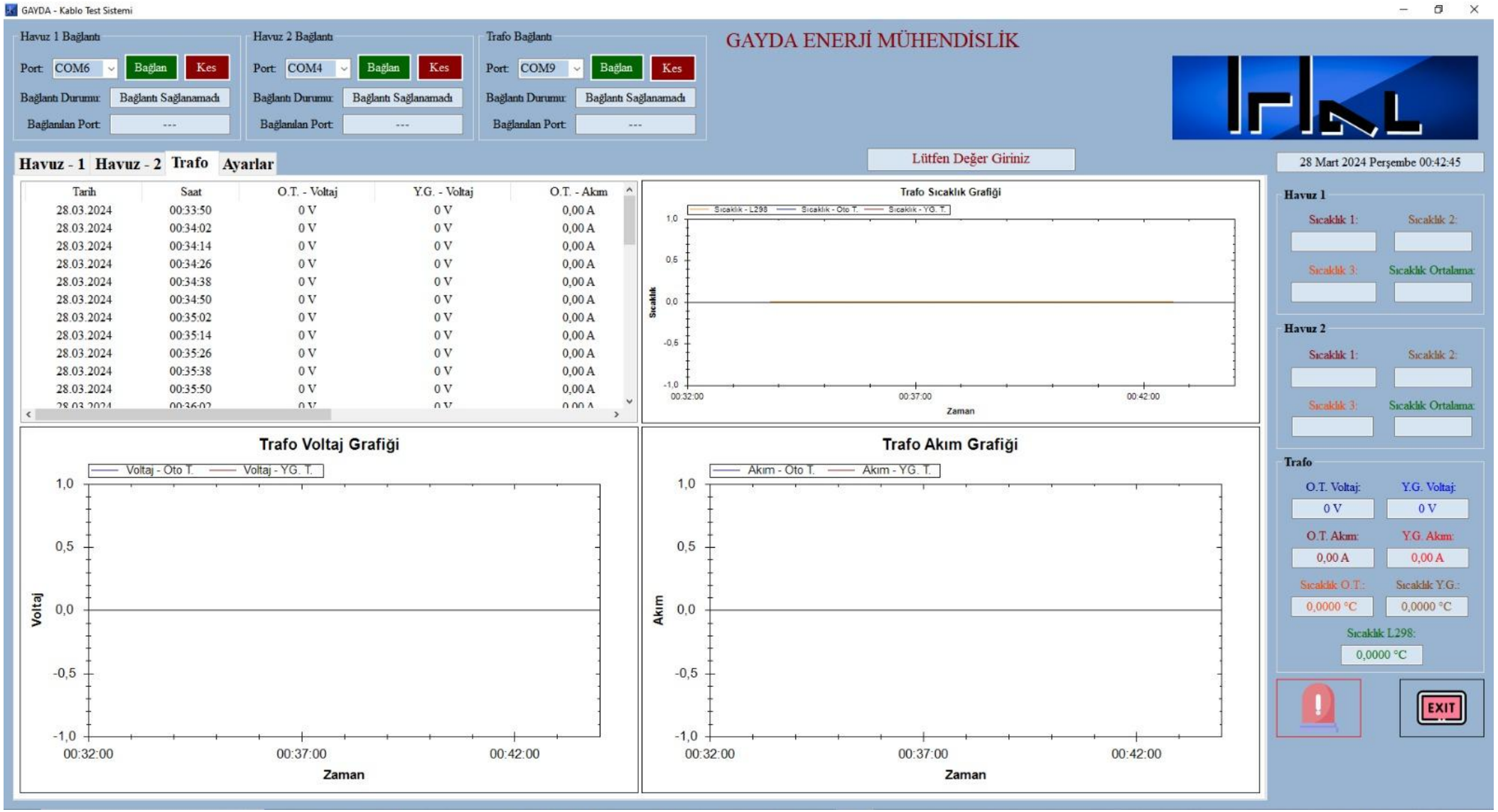
Temperature-Time Values of 2nd Pool Interface are shown as below.
It can be shown and recorded as graphically or excel format.



Back to Main Page

Power System Interface

Temperature-Time Values, *Output Voltage-Time*, *Current-Time* of Power Trasnformer Interface are shown as below. It can be shown and recorded as graphically or excel format.



Back to Main Page

Settings of Power System Interface

Time Interval, Desired Voltage, Current Limitations can be determined on this page.
In addition, Power System can be turned on/off in same page.



Back to Main Page

System Definiation

- The temperature of the two pools can be controlled and adjustable up to 90 celsius.
- The Voltage applied to Test Cable is bewteen 0 to 40 kV
- Output Current of Auto Transformer is up to 240A , Output Current of Power Transformator is up to 2A
- 24 cables can be connected to the copper **busbar** at the same time.
- In the case of any short circuit, the control system can be immediately shot down in 20ms or the desired time.



System Requirements From Factory

- A minimum of 8 x 15 m area is required to construct the entire system.
- For the Power System of the Test Unit, a minimum mono-phase of 50kVA should be supplied to Our Power System from The Power Panel.
- For the 1st Pool and 2nd Pool, a minimum of three-phase 20kW and 30kW power should be supplied to us from The Power Panel.
- All *Power Panel* must be contained;
    - Lightning and Surge Protection
    - Leakage Current Relay
    - Circuit Breaker
    - Thermal Magnetic Switch
    - Fuses

The client should have to set up us the Power Panel as mentioned above

System Requirements From Factory

- There should be clean water input and waste water output for Pools.
- A *fire alarm, ventilation*, and *security camera system* must be installed.
- Due to the high voltage, a fence around the test unit must be established.
- Independent Ground Connection must be supplied with flexible copper cable.
- Cabling and Cables are provided by the Client.
- After installation, temperature sensors and voltage transformer must be calibrated by a certified calibration service company

Intallation Time

- **Procurement of All Units:** 1 Month
- **Construction and Installation Pools**: 7 days
- **Setting up and commissioning the Power Systems**: 7 days

(These durations may vary depending on transportation process and exclude shipping charge)

Service Support

- 2-year service guarantee.
- Failed Units, Parts, or PCBs are replaced with new ones.
- A manual explaining system usage is provided. Interactive training is provided.
- 24/7 support is always provided, and updates are made remotely

Our References

HES KABLO

DEMİRER KABLO

VATAN KABLO

prysmian

SEVAL KABLO

RR KĀBEL WIRES & CABLES

Nexans

Tunisie Cables
A Onetech company