



# JDEVs

## High Voltage Engineering Center



**WWW.JDEVs.COM**

Designing, Engineering & Manufacturing of:  
High Voltage Test Equipment



**QUALITY & SAFETY**



## INTRODUCTION

JDEVS is an Iranian, public nongovernmental self-finance scientific, engineering and production organization, which has been established in 1980. It is mainly involved in technical and industrial activities in the fields of environmental, electrical, mechanical, civil and architecture engineering through its different subsections working as different centers by more than 500 well trained employee.

High Voltage Engineering Center has started its research in designing and manufacturing of electrical high voltage test equipment, since 1990. Now it is known as a major designer and manufacturer of high voltage test equipment, and high voltage test laboratory in accordance with international standards. Also, this center has capability for testing of generation, transmission and distribution of power system equipment in Iran.

This center has so far been able to carry out valuable expertise and professional test services for industries and manufacturers which use high voltage equipment, as well as making of high voltage test laboratory for higher education institutions and universities according to international standards. This center also has a high voltage test laboratory and portable high voltage equipment for proposing type and routine test services at its own laboratory and on-sites.

## PRODUCTS

### POWER FREQUENCY TEST SYSTEMS

AC test systems consist of modular transformer units that can be cascaded up to three stages to get higher voltages ranging up to 1200 kV. Our AC test systems can be provided with low or high power ratings. Small AC test systems with low power are mainly suitable for performing dielectric tests, whereas large systems with high power can be used to carry out additional tests such as high voltage withstand tests.



### HIGH ENERGY IMPULSE TEST SYSTEMS

Impulse test systems are based on the Marx generator. They provide the standard lightning ( $1.2 \mu\text{s} / 50 \mu\text{s}$ ) and switching ( $250 \mu\text{s} / 2500 \mu\text{s}$ ) impulses to test various test objects such as transformers, bushings, cables, insulators, switchgears, and many more from 10 kV upto 2.4 MV other specifications upon request.



### **MODULAR TEST SYSTEM (AC, DC, AND IMPULSE)**

The modular test system is based on portable and light elements which can constitute suitable circuits to provide AC, DC, and impulse voltages. For example, a DC test system is based on an AC voltage transformer which charges HV capacitors with a DC voltage through HV diodes and resistors. These systems provide high DC voltages to test HVDC facilities, long AC cables, capacitors and so on.



### **PORTABLE HIGH VOLTAGE TEST SYSTEM**

The portable AC & DC voltage test system consists of two separate parts: a control panel and a high voltage transformer with a voltage divider for voltage measurement. Its capabilities are as follows:

- Compatibility to provide high DC voltage tests by adding two light additional parts
- LV and MV insulation tests at any location in the factory and before operation on the site
- Light weight to be carried by one person
- Easily operated

### **HIGH VOLTAGE RESONANT TEST SYSTEM**

AC resonant test systems are practically important where the testing load is capacitive and proportionally big with low loss such as HV cables, GIS, and generator windings.

These systems are available both in variable reactance and frequency (20-300 Hz) types. They are built for indoor and also outdoor applications.

Test and manufacture orders will be accepted for different voltage and output power level upon request.



### **HIGH VOLTAGE LABORATORY TRAINING KIT**

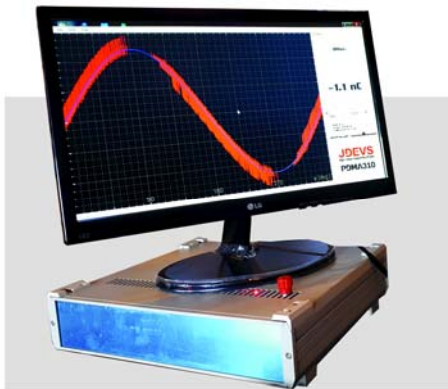
The high voltage laboratory training kit constitutes suitable circuits to provide AC, DC, and impulse voltages. Its application is in training and research centres. The classic high voltage test is used to teach high voltage science principles. It is possible to hold various voltage engineering courses with the following syllabus:

- |  |  |
|--|--|
| - Study of DC high voltage and its measurement           | - Study of discharge in gases  |
| - Study of AC high voltage and its measurement           | - Paschen's law  |
| - Study of impulse high voltage and its measurement      | - Study of the effect of electrode shapes on air breakdown under AC and DC high voltages |
| - Study of electrical breakdown in oil                   | - Study of the corona phenomenon   |
| - Study of insulators' ability to withstand high voltage | - Study of load effects on AC and DC high voltage circuits                               |





### PC BASED SYSTEM FOR PARTIAL DISCHARGE DETECTION AND ANALYSIS



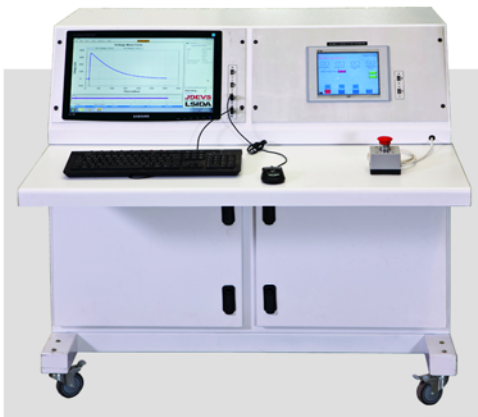
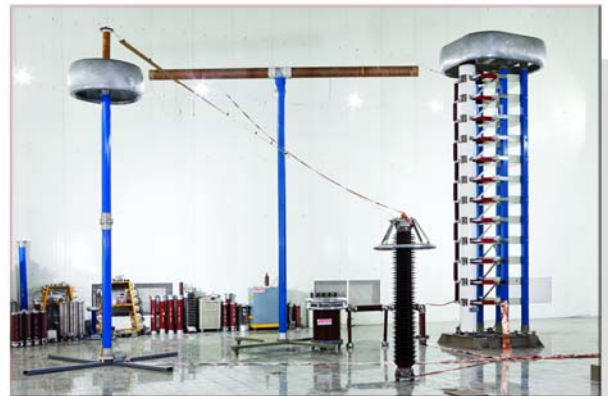
Partial Discharge (PD) measurement is a non-destructive insulation test of HV equipment. It is a vital test for several HV apparatuses according to IEC standards. The PC based system is applicable for PD measurement of equipment such as HV capacitors, transformers, insulators, cables, and electrical machines. In this system, PD pulses generated in the test-object are transmitted to the PC based PD meter, which consists of a high-speed A/D card, a software environment for PD signal processing, an external calibrator and an external synchronizing system. This system has several features to achieve superior performance.

### IMPULSE CURRENT GENERATOR TEST SYSTEM

Impulse Current Test Systems are manufactured for testing equipment applied in medium and high voltage transmission & distribution systems against the effects of lightning strokes (direct or indirect) or against electromagnetic interference effects.

The main application fields of impulse current testing are:

- Arresters and varistors (elements or complete systems)
- Lightning protection elements (For buildings, components of communication and distribution networks)
- Vehicles (Cars, bus, trucks, trains)
- Aircrafts
- Wind generators (Whole system or blades)
- Transmission lines with integrated fibre optic cables



### IMPULSE ANALYZER

Control unit for operating an impulse generator. It provides control for the charging and triggering process of an impulse generator.

- 14 bit real vertical resolution at 100 MS/s
- 32/64 Mbytes memory
- Automatic evaluation of all common impulse shapes and their parameters
- Support IEC 60060-1, 2010 and 61083 standards
- Clear documentation and reporting including, test information, notes, grouping, etc.

### HIGH POWER LABORATORY AND SHORT CIRCUIT TEST EQUIPMENT

This laboratory can be designed and constructed for short circuit tests of different types of equipment. The following tests can be done through the available one:

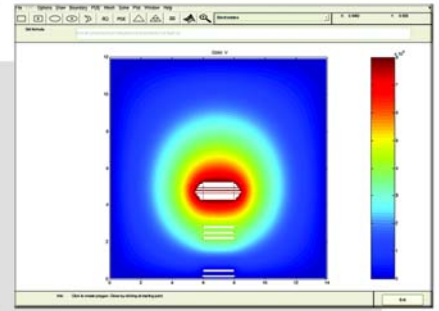
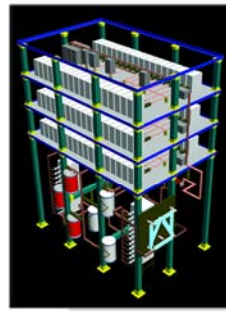
- Short circuit tests on circuit breakers
- Short circuit withstand tests up to 50 kA
- Making and breaking (synthetic method) tests according to IEC 62271-100
- Capability to do T10, T30, T60, T100 tests according to IEC 62271-100
- Different types of short circuit or high current tests on a variety of equipment





## **RESEARCH AND DEVELOPMENT**

The High Voltage Engineering Centre is able to design and manufacture high voltage equipment with different voltage and power levels and to design high voltage laboratories.



## **TRAINING**

JDEVS provides training courses on operation and maintenance at two levels: for industrial fields and for universities. The courses are presented at JDEVS headquarters, and complementary courses are offered at JDEVS workshops.

## **HIGH VOLTAGE LABORATORY**

Testing and quality control services according to IOS/IEC17925, Accredited by National Accreditation Center of Iran affiliated to National Standard Organization of Iran. High voltage measurement systems are calibrated by HighVolt-Germany.

High voltage laboratory of JDEVS is one of the major reference laboratories in Iran. Its dimension is about 22 m × 22 m × 22 m. Its test ability is power frequency withstand voltage test up to 800 kV and lightning impulse withstand voltage/current test up to 1800 kV/20 kA



## **TESTING AND QUALITY CONTROL SERVICES ACCORDING TO INTERNATIONAL STANDARDS**

- Dielectric tests on GIS (on-site tests after installation or maintenance)
- Power frequency AC voltage withstand (Hipot) tests up to 800 kV
- Lightning and switching impulse voltage up to 1800 kV
- Impulse current tests
- Partial discharge tests
- Temperature rise tests up to 4000 A of current



## **HIGH POWER LABORATORY**

- Short circuit breaking test of circuit breakers 25 kA/36 kV (through synthetic method)
- Accredited according to ISO/IEC 17025
- Short circuit making test of circuit breakers 25 kA/36 kV
- Short time withstand current test 50 kA/1sec, 35 kA/2 sec, 25 kA/3 sec)
- Other high power tests according to international standards (IEC 62271-100,102,103, IEC 60289, IEC 61439, ...)





## THE FOLLOWING EQUIPMENT CAN BE TESTED IN THIS LABORATORY:

- LV switchgear and controlgear assemblies
- HV switchgear and controlgear assemblies
- LV, MV, and HV cables
- Different types of MV switches, sectionalizers, disconnectors, and LBSs
- Different types of fittings in power system

## QUALITY CONTROL AND ON-SITE TESTING

Based on our experience and well-equipped facilities, we offer a wide range of quality control services and on-site testing to our clients according to international standards.

## GUARANTEE AND WARRANTY

All of our products are guaranteed for 12 months after commissioning or 18 months after delivery and have 15-year spare parts supply.

## SPARES

Extensive stocks of components and spare parts are maintained to support clients with fast delivery and replacement services.

## AFTER-SALES SERVICES

JDEVS is pleased to announce its fast after-sales services in the regional market. We respond to any requests from clients for supervision of installation, pre-commissioning or maintenance of JDEVS products by dispatching our specialists to customer sites in a very short time.

## CERTIFICATES AND AWARDS

With its strong design, engineering, QC/QA and production based on IEC standards, JDEVS has been able to achieve many prestigious awards, patents and certifications such as ISO 9001:2008 and ISO/IEC 17025





## REFERENCE LIST

Equipment classes	Technical specifications	Number of customers	Date
Modular test systems	Up to 300 kVAC/ 400 kVDC/350 kV Impulse	More than 130	1994-2019
Portable high voltage test systems	75 kVAC/100 kVDC/1000 VA	More than 27	1994-2019
Laboratory training kits	Up to 300 kVAC/ 400 kVDC/350 kV Impulse	More than 35	1994-2019
Power frequency test systems	Up to 1200 kV/800 kVA	More than 20	1994-2019
High voltage resonant test systems	Up to 125 kV/1000 kVA	More than 10	1994-2019
High energy impulse test systems	Up to 2400 kV/240 kJ	More than 6	1994-2019
Partial Discharge Measuring System	40~1300 KHZ IEC 60270-2000	More than 15	1994-2019

Test object	Technical specifications	Test title	Number of customers	Date
Insulator (dry test)	Power frequency withstand test Lightning impulse withstand test	Laboratory test	More than 120	1995-2019
Insulator (wet test)	Power frequency withstand test Lightning impulse withstand test		More than 80	1995-2019
Controlgear and switchgear	Power frequency withstand test Lightning impulse withstand test Temperature rise test		More than 95	1995-2019
Arrester	Power frequency withstand test Lightning impulse withstand test Residual voltage test Current impulse withstand test		More than 50	1995-2019
Vacuum Circuit Breaker (VCB) Load Break Switch (LBS) Disconnect switch	Short time & peak withstand current test Breaking test		More than 25	1995-2019
GIS station 20 kV ~ 400 kV	Power frequency withstand test	On-site test	More than 45	1995-2019



## CONTACT US

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188-190 Malekloo St., Haidarkhani St., Farjam Ave., Narmak, Tehran, IRAN, (Postal box: 16765-1899, postal code: 1684933511)

- Workshop address: ACECR R&D complex, Normanesh Blvd., Beheshtsakineh St., km 4 Karaj-Qazvin High way, Iran



JDEVS founded in 1980 as an industrial complex in Iran and operates in six core business areas. JDEVS is a leading designer and manufacturer of industrial power supplies, power protection system, high voltage test equipment, air pollution control, with a reputation for high quality and reliability products gained during its four decades of experience in the demanding market of Iran & ECO countries.



## ▼ Air Pollution Control Equipment

- Electrostatic filters, bag filters and scrubbers for non-metallic mineral and metal industries, refineries and petrochemicals
- Internal parts: collecting plates, electrodes, rapping systems, ...
- Upgrading of existing dedusting systems
- Supplying spare parts for ESPs and bag houses



## ▼ Oil Industry Equipment

- Designing & manufacturing of oil & gas land drilling rigs
- Designing & manufacturing of drilling rigs electrical and control system (SCR & MCC)
- Supplying spare parts, upgrading and repairing of land drilling rigs
- Technical & consultant services in the field of oil & gas land drilling rigs
- Automation in oil, gas and petrochemical industries
- Turn-Key projects in electrical and control packages
- Oil loading arms
- Submerged rotary jet (SRJ)
- Electrostatic oil desalter



## ▼ Mechanical Manufacturing Workshop

- Manufacturer:
- Mechanical and steel equipments
  - Steel structures
  - Steel ducts with different sections & dimensions
  - Cyclones, shots, hoppers & vessels
  - Material handling systems (elevator, screw conveyor, drag china)
  - Machining parts with light and semi-heavy weight
  - Cage for bag filter



## ▼ Converters & Power Supplies

- Industrial UPS single/three phase(s)
- Standard UPS
- Industrial charger
- Variable frequency drive (VFD)
- Special converter & inverter
- Battery monitoring test system
- AC/DC no break system



## ▼ Industrial Transformers & Rectifiers

- High current transformer rectifiers for zinc, copper and aluminum industries
- High voltage transformer rectifiers for ESPs & vacuum coating
- Rectifier for metro traction transformer
- Continuously adjustable autotransformer
- Primary current injection power supply
- Dry type transformer
- Multiply voltage power supply



## ▼ High Voltage Test Equipment & Services

- AC, DC, impulse, resonant and hipot test equipment
- AC, DC and impulse measurement equipment
- Quality control testing services
- On-site test services (GIS stations and ...)

## ▼ R&D Groups and Dependent Companies

- Measurement, processing and control
- Industrial power supplies
- Electrical converters and power systems
- Electro-Mechanics
- JDEVS power engineers Co
- Fajr-e-Tosea consulting engineers Co