Since 1982, Makkays has been successfully catering the industrial needs of power by introducing state of the art power equipments & solutions. Our comprehensive range of power management products and energy efficient solutions are engineered to ensure efficiency and productivity of our valued customers.

Our solutions are designed to cater the changing needs of our vast customer base including financial, commercial, industrial, health and educational sectors. We commit towards offering the right products to match the exact needs of our customers. Coupling solutions with a nationwide support, Makkays delivers unmatchable comprehensive offering designed specifically for your present needs and future growth.

**MAKKAYS AT A GLANCE**
- Founded in 1982
- Offices located in Islamabad, Lahore, Karachi, Peshawar, Faisalabad and Multan
- Technologies we deal in:
  - Information and Communication Technology (ICT)
  - Software Development
  - Power Solutions
  - Test and Measurement (T&M)
  - Electronics and Industrial (E&I)
We offer unbeatable services when it comes to solution designing, deployment and after sales support to our esteemed clientele.

ONE WINDOW OPERATIONS

Makkays takes pride in offering one window operations to its valued customers. Considering our clients’ unique requirements, we provide them with a complete package of integrated power management solutions bundled up with an exceptional after-sales customer support. Our confidence comes from our ability to understand our clients’ exact needs and their business procedures, which enables us to offer an integrated and customised solution best fitting to their organisational needs.

OUR HUMAN CAPITAL

Our core team is comprised of highly skilled industry experts well versed in delivering customised and state-of-the-art solutions. We ensure that our team is fully equipped with all the required skill set to ensure unmatchable service to our valuable clientele. Hence, our core team is trained by our partners to design and implement the right solution at client’s end. This helps us to maintain the quality in all phases of the project, which includes surveying, planning, solution designing and timely execution of the projects.

TECHNICAL SERVICES AND SUPPORT

UPS, RECTIFIERS, BATTERIES, LVC, AVR & SOLAR

- Detailed Solution Designing, Integration based on Power Requirements & Environment
- Installation, Testing & Commissioning
- Installation of Inverters, Charge Controllers and Solar Solutions

TESTING

- Energy Audits
- Health & Performance Testing of Existing Rectifiers, UPS & Battery Banks

REPAIRS AND MAINTENANCE

- After Sales Support, this includes Warranty & Non-Warranty Faults Identification & Rectifications
- Support on Preventive and Corrective basis

SPARES INVENTORY

Makkays Maintains Spares Inventory of UPS, AVR, LC & Rectifier Boards/Parts to Resolve Complaints in Minimum Duration

TRAININGS

- Product Trainings
- Product Demonstrations
Energy efficiency is a critical component of a well-designed power solution. To ensure the presence of uninterrupted power, we create reliable and predictable environments for our customers by offering them a comprehensive range of customizable UPS power backup systems. Ranging from intelligent online systems to modular scalable architecture, our solutions are agile for today's requirements and future driven for rigorous and changing power demands.

### Applications
- Data Centres
- Telecommunication Facilities
- Financial Systems
- Commercial Facilities
- IT Systems
- Racked Devices
- Precision Instruments
- Automatic Devices

### ONLINE UPS

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
<th>POWER FACTOR</th>
<th>ASSEMBLY TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kVA – 15 kVA</td>
<td>Single Phase In – Single Phase Out</td>
<td>0.8 – 1.0</td>
<td>Tower &amp; Rack Mount</td>
</tr>
<tr>
<td>10 kVA – 50 kVA</td>
<td>Three Phase In – Single Phase Out</td>
<td>0.8</td>
<td>Tower</td>
</tr>
<tr>
<td>10 kVA – 400 kVA</td>
<td>Three Phase In – Three Phase Out</td>
<td>0.8</td>
<td>Tower</td>
</tr>
</tbody>
</table>

**Features:**
- Pure Sine Wave Output
- Online Double Conversion
- Full Protection Function
- Wide Voltage Input Range
- Automatic & Manual Bypass
- LCD Display
- Power Factor Correction Technology

![Online UPS Images]
## II ONLINE MODULAR UPS

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
<th>POWER FACTOR</th>
<th>ASSEMBLY TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 kVA – 520 kVA</td>
<td>Three Phase In – Three Phase Out</td>
<td>0.9</td>
<td>Tower</td>
</tr>
</tbody>
</table>

**Features:**
- High Frequency Double Conversion UPS
- Advanced PFC Technology
- 3U Frame, Rack Mounted and Tower Convertible
- EPO Function
- Parallel Redundancy
- Advanced Battery Management
- Lightning and Surge Protection
- Short Circuit and Overload Protection
- Multilingual LCD and LED Display
- EMI/RFI Noise Filter

![Cabinet Control Panel](image)

![Module Control Panel](image)

## III PURE SINEWAVE INVERTER

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
<th>POWER FACTOR</th>
<th>ASSEMBLY TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kVA – 3 kVA</td>
<td>Three Phase In – Three Phase Out</td>
<td>0.8</td>
<td>Tower</td>
</tr>
</tbody>
</table>

**Features:**
- Meets the Standards of Telecommunication AC and DC Power Supply
- High Performance SPWM Inversion Technology
- AC and DC Complete Isolation
- Perfect Protection Measures
- Low DC and Current Noise
- RS232 Data Connection and Dry Contact Supports UPS Power Management Software or SNMP
2  POWER STORAGE SOLUTIONS I Keeping Power Stored at All Times

VRLA Batteries (AGM & GEL)

Makkays offers a wide array of power storage solutions to our nationwide customers. Establishing a more resilient power infrastructure we offer an exclusive range of top quality maintenance free batteries which deliver exceptional performance for peak requirements of broad range mission critical applications. Complying with international safety standards our VRLA technology based batteries are cleaner and safer for a wide variety of applications.

Applications
- UPS
- Solar
- Telecom
- Industry

<table>
<thead>
<tr>
<th>VOLTAGE RANGE</th>
<th>AMPERE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 Volts</td>
<td>5 AH – 200 AH</td>
</tr>
<tr>
<td>2 Volts</td>
<td>Up to 3000 AH</td>
</tr>
</tbody>
</table>

Features:
- Maintenance Free
- Excellent Charging Efficiency
- Leak-Proof
- Wide Operation Temperature Range
- Excellent Capacity Retention with Low Self-Discharge
- Safety and Automatic Valve System
- Heavy Duty Grids for Longer Service Life
- FAA and IATA Approved as Non-Hazardous

3  VOLTAGE REGULATION SOLUTIONS I Maintaining Continuous Voltage

Automatic Voltage Regulators (AVRs)

Our active voltage regulation solutions protect small to large scale business operations in environments where an unstable utility voltage affects productivity. The latest in advanced power management ensures continuous perfect power during fluctuations, better equipment protection, fewer power failures and lower energy costs across a wide range of industries and applications.

Applications
- Telecom Installations
- Industry
- Financial Institutions
- Indoor and Outdoor Applications
- Domestic Uses

<table>
<thead>
<tr>
<th>RELAY BASED AVR I for Small sized Enterprises</th>
</tr>
</thead>
</table>

Features:
- Wide Power and Voltage Intervals
- Fast Regulation
- High Efficiency
- Safe and Economic Usage
- Overvoltage, Low and High Voltage Protection
- Digitally Displayed Status, Input & Output Measurements
- Efficient Operation even in Extreme Working Conditions

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 kVA – 20 kVA</td>
<td>Single Phase</td>
</tr>
</tbody>
</table>
SERVO BASED AVR | for small to mid-sized enterprises

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kVA – 3000 kVA</td>
<td>Single Phase &amp; Three Phase</td>
</tr>
</tbody>
</table>

Features:
- Non-Linear Charges Drive
- Wide Power and Voltage Intervals
- Fast Regulation
- Microprocessor and Smart Driver
- High Efficiency
- Safe and Economic Usage
- 10 Years Spare Parts Support
- Load Transfer to Bypass via Pole Charge Switch
- Digitally Displayed Status, Input & Output Measurements
- Over Current and Overload Protection
- Surge Protection & RF Interference

STATIC BASED AVR | for Middle to Large sized Enterprises

<table>
<thead>
<tr>
<th>POWER RANGE</th>
<th>ELECTRICAL PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10kVA – 200kVA</td>
<td>Single Phase &amp; Three Phase</td>
</tr>
</tbody>
</table>

Features:
- Very High Regulation Speed (1000 Volts/Second)
- Microprocessor Control
- Efficiency>97%
- Excellent Dynamic Static Regulation
- Large Input Voltage Working Range
- Input Voltage 155-490 VAC 3 Phase
- Output Voltage 380 VAC ± 2%
- Maintenance Free

4 POWER SOLUTIONS FOR TELECOM & INFORMATION TECHNOLOGY

Rectifiers

Our power systems for telecom equipments are best suited to diverse industrial needs and have become the first choice of customers in telecom sectors. Our rectifiers systems ensure high power density and operating efficiency to significantly reduce operating costs. Allowing a high degree of flexibility, our rectifier systems feature horizontal or vertical mounting, universal AC inputs and scalability for future growth.

Applications:
- Core Telecom Sites
- Switch Central
- Radio Base Stations
- Central Office
- Broadband Nodes

Common Features:
- State-of-the-art System Controller with Self-Guided Operations
- Simple Network Management Protocol (SNMP) and Web Compatible
- Sophisticated Management Features
- Rugged Designs
**RENEWABLE ENERGY SOLUTIONS | Harnessing the Power of Nature**

Solar Power Solutions

Makkays offers an extensive range of solar solutions ranging from small to large stand alone/off grid systems. Designed to utilise every ray of light and maximise power output, our solar solutions deliver outstanding return on investment. Equipped with energy conserving equipments and high efficiency mono and polycrystalline solar panels that exceed life of more than 25 years, our solar solutions are the optimal choice that can operate in some of the harshest environments.

Features:
- Rugged Design for Durable Operation
- Easy to Install and Operate
- Less Maintenance Required
- Reliable Operation in any Condition
- Modular Design Allows for Easy Upgradation of System

**SERVICE LEVEL AGREEMENTS**

Makkays is committed and determined to provide the support and service that our clients require through a highly competent support structure assisted by dedicated teams nationwide. We have adopted service level agreements (SLA) as a part of our quality service initiatives which testifies our strong commitment in delivering customer satisfaction. Our SLAs are established on our agreements with clients for solutions designing & integration based on their requirements and 24/7 backup support under all circumstances.

**OUR SERVICE LEVEL AGREEMENT FEATURES**

**Expert Technical Resources**

Our specialised and experienced dedicated technical staff is available to provide support against UPS & LC systems with expert opinions on electrical issues such as generator supply, wiring & commercial supply problems.

**Nationwide Presence**

Fully furnished power labs and teams for support in all major cities of Pakistan.
- Islamabad
- Lahore
- Karachi
- Peshawar
- Faisalabad
- Multan

**Zero Downtime**

Availability of our backup units ensures zero downtime at customer’s site.

**24x7 Agile Support**

Complaints are responded within 24 hours, nationwide, round the clock throughout the year.

**Complaint Management System**

Our analytics based complaint management system efficiently maintains complete clientele support history & periodically shares it with the stakeholders.
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