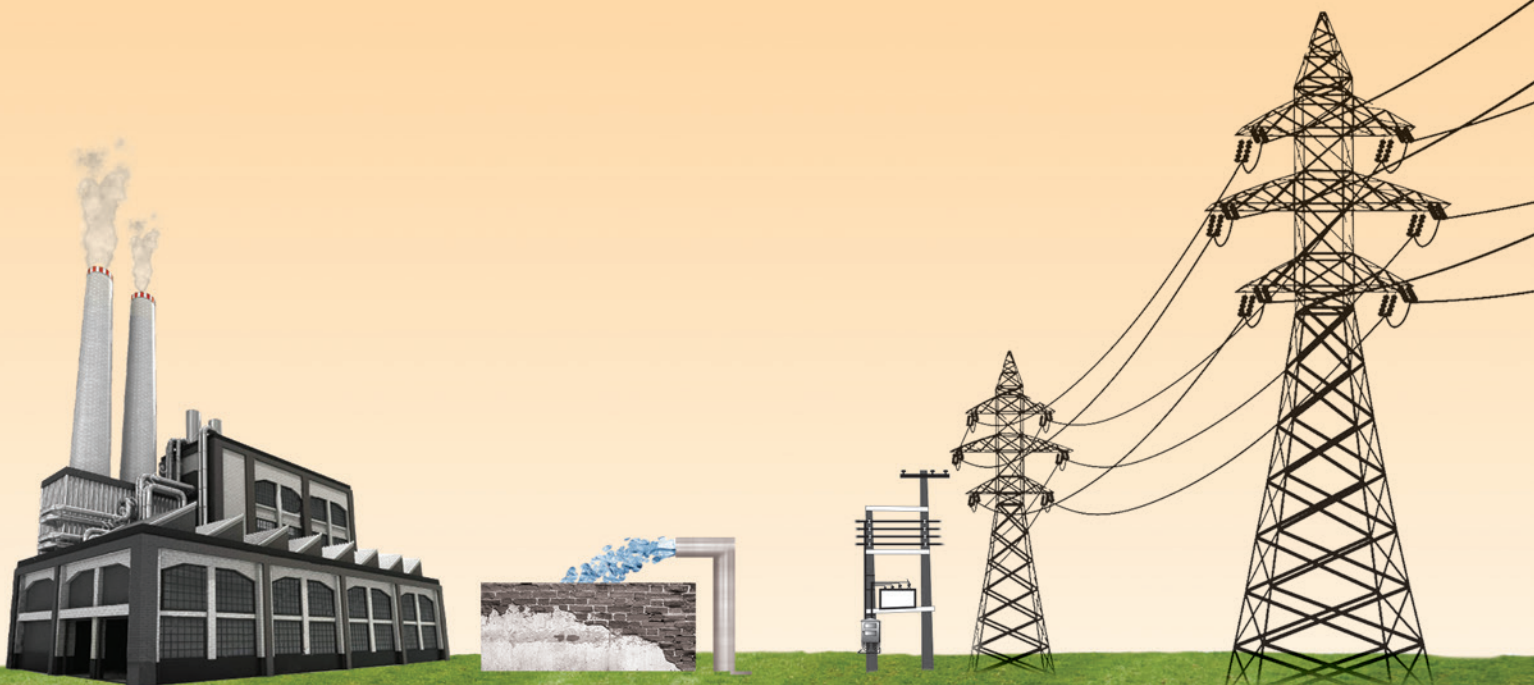




AMI PROJECT for MEPCO & PESCO

The largest smart metering project in South Asia implemented in MEPCO and PESCO to cater to the residential, agricultural (tube-wells), small industrial and public sector consumers





ENERGY SECTOR OF PAKISTAN

Pakistan has been agitated with energy crisis for the last few years. The energy sector is beset by a host of issues and shortcomings. These include technical and non-technical losses that mainly constitute electricity pilferage, inefficient distribution system and poor energy management. The prevailing power losses adversely affect

the utilities' profitability and consequently the quality of services. Moreover, the cumulative revenue loss due to these losses accounts for millions of rupees annually in Pakistan.

To overcome these problems different stakeholders in the power sector have been actively seeking and investing in opportunities to reduce electricity losses, optimize consumption, improve customer support services and modernizing the electricity metering & billing operations using the latest technology in energy management and metering.

To deal with such problems, efficient and smart technologies are needed that are designed and customized keeping in view the local requirements and the international standards. A one-size-fits-all solution will not work in this market as its

dynamics are quite unique.

Foreseeing this scenario, MicroTech had been spending substantial amount of resources into research and development of the smart technologies. This has eventually led us to develop a comprehensive portfolio of smart metering solutions for both local and global energy markets. These innovative solutions have allowed us to successfully implement multiple smart metering projects impacting the lives of hundreds of thousands of people. One such example is the AMI project for MEPCO and PESCO implemented in two of the major utilities of Pakistan.









AMI PROJECT FOR MEPCO & PESCO

AMI Project for MEPCO & PESCO is the USAID funded largest smart metering project in South Asia implemented in two of the major utilities of Pakistan to cater to the residential, agricultural (tube-wells), small industrial and public sector consumers. The project aims to reduce distribution losses and modernize the electricity metering and billing operations. In these two separate AMI networks more than 50,000 smart energy meters have been deployed. The major objectives of this project were to introduce AMI system in order to:

- Reduce technical & distribution losses
- Enhance load control and load management
- Provide automated consumption data for monthly billing and monitoring
- Improve revenue collection

Project Overview

In order to improve DISCO's performance in terms of reduction in losses, improvement in revenues, customer services and to modernize the billing system, MTI implemented a comprehensive and customized end-to-end solution that was in line with the unique customer requirements. The solution is equipped with a number of advanced features that are distinctive to local energy sector such as;

					
DEMAND SIDE LOAD MANAGEMENT	Customized Reporting	Automated Consumption Data	Reduced Technical & Distribution Losses	Improved Revenue Collection	Critical Alarms & Events

For this project, MTI devised and delivered a complete GSM/ GPRS based end-to-end AMI system. The key component comprise Smart Energy Meters (3-Phase Whole Current & LT/HT), Meter Data Collector (MTI Smart Eye MDC) Software, End User Reporting Interface (MTI Galaxy), along with Installation and Implementation Services on more than 50,000 metering nodes. The smart metering rollout was carried out on residential, agricultural (tube-wells), small industrial and public sector con-

sumers having an allocated load of 20kW and above. Moreover, the scope of this project was not limited to energy meters and backend software but also includes communication & hosting services and 3rd party hardware & software. The deployed AMI network was integrated with both utilities' billing systems. In order to achieve this integration different utility business processes and commercial procedures were incorporated into the system. This integration has automated and

streamlined the utility business processes, minimizing human intervention and reducing errors and operational expenditures. Both the utilities are reaping the benefits of the system by utilizing different reports for analysis purpose such as

- Meter Reading List
- Abnormal Billing (High/Low Consumption)
- Excess/ Less Units Charged Report (Exceeding MDI)
- Critical Alarm Report

- Unbalanced Load Report
- Mute Details
- B-3 Independent Feeder Losses Report
- Over/ Under Voltage Report
- Total Energy Consumption Report

Notifications of critical alarms and events are generated through the system and immediately sent to relevant personnel through email/ SMS of pertinent DISCO for immediate response.

The unprecedented advantages of this automated system have resulted in an increase in billing efficiency, revenue streams and at the same time decrease in Aggregate Technical & Commercial (ATC) losses and operational expenditures. This project is acting as a stepping stone for the launch of future AMI projects in Pakistan.



LIAISING WITH DIFFERENT DEPARTMENTS

The utility operations were streamlined in coordination with the following departments

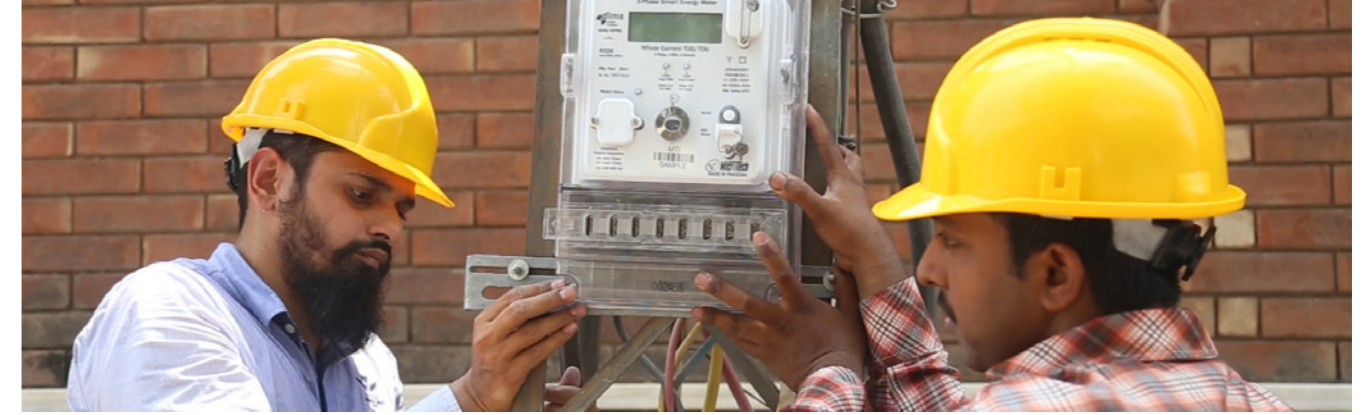
- Metering & Testing (M&T)
- IT
- Accounts & Finance
- Operations
- Commercial
- Customer Services

SOLUTION TYPE	MDC IMPLEMENTATION	SYSTEM INTEGRATION
<ul style="list-style-type: none"> • GSM/ GPRS based smart metering solution • Remote connection/ disconnection 	<ul style="list-style-type: none"> • Deployed separate AMI networks for MEPCO & PESCO ➤ Implemented MDCs for 100,000 meters, scalable up to 500,000 meters 	<ul style="list-style-type: none"> • Meters integrated into the billing system • Streamlined and automated the utility operations ➤ Meter Change Order (MCO) ➤ Disconnection Order (DCO)/ Reconnection Order (RCO)

Implementation

The project implementation methodology was responsibly designed to make it a success story. MTI has a dedicated Service Division for the implementation of complex AMI networks. MTI AMI field implementation cell has the resources to provide AMI network and backend solution implementation services and offers outstanding customer support to achieve winning results.

For this project more than 50,000 smart energy meters have been deployed in both DISCOs in a limited period of 6 months along with IT infrastructure, NOC establishment and network management system. Dedicated regional offices were established in MEPCO and PESCO to mobilize our implementation teams to cover the installation of meters in geographically distant areas.



More than 70 field installation teams were employed keeping in view the vast scope of the project and stringent timelines. MTI utilized an in-housed developed specialized tool, Asset Deployment & Management Suit (ADMS). This Real Time Project Tracking Tool facilitated in live tracking, feedback and project

status updates which allowed different management tiers to deploy and gauge the progress of assets. It also helped planning, monitoring and managing field network deployments by using a GIS based automatic mechanism for progress tracking utilizing dashboard views and progress graphs.

Capacity Building

AMI Project for MEPCO & PESCO was the first large scale deployment in Pakistan, therefore, comprehensive trainings were required, so that the utilities personnel could effectively use the system and get maximum benefit from it. In order to do so, multiple capacity building sessions/ trainings were delivered in each phase of project execution in MEPCO & PESCO.

These targeted training sessions have helped DISCOs improve the skill set re-

quired to realize the intrinsic value of deployed AMI networks. In both DSICOs more than 500 employees have been fully trained and enabled to further improve the skill set of other employees.

These trainings were specially designed keeping in view the complexity of the system and capabilities of end-users to achieve desired objectives and purpose. Both interactive presentations and hands-on trainings were part of these sessions.

The trainings ranged from system overview to train the trainer trainings. Following trainings were imparted during the course of project execution.

- AMI System Overview Training
- AMI System Operations Training
- Meter Configuration Training
- System Administration Training
- Train the Trainer Training



AMI System Overview Training (PESCO)



System Administration Training



AMI System Operations Training



Meter Configuration Training



Project Benefits

This AMI system resulted in remarkable improvement in MEPCO and PESCO revenues and helped increase overall efficiency of the system. The load control & management feature has resulted in a noteworthy enhancement in recoveries of both the utilities. The key benefits of the solution are segregated into two distinct categories as listed below:

Quantifiable Solution Benefits

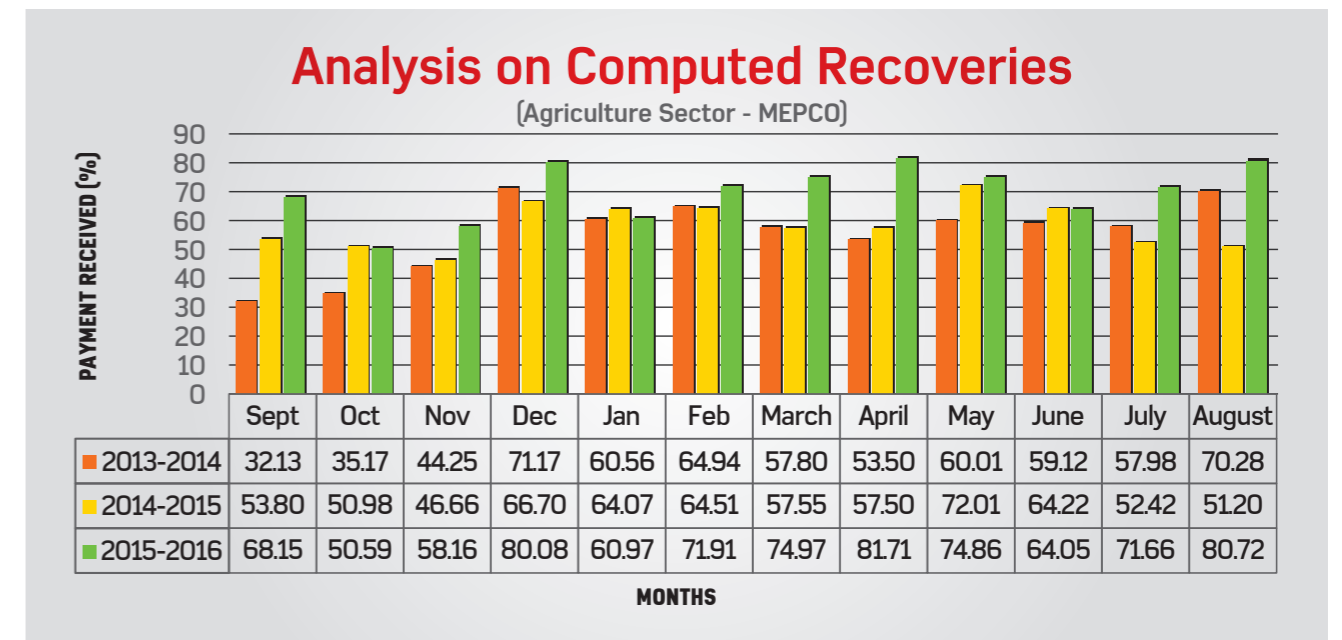
Administrative Benefits

Quantifiable Solution Benefits

A detailed analysis on computed recoveries of agriculture sector of MEPCO was conducted to remark the advantages of deployed AMI system. The agriculture sector of MEPCO was considered to be lagging behind compared to all other sectors. The analysis shows that a substantial upward shift in recoveries was witnessed after the system became operational compared to previous years. The utility company is reaping net benefits worth millions of rupees annually.



Approximately 1940 million Rs. (11.23% aggregate inc.) have been recovered in year 2015-2016 from the agricultural sector of MEPCO

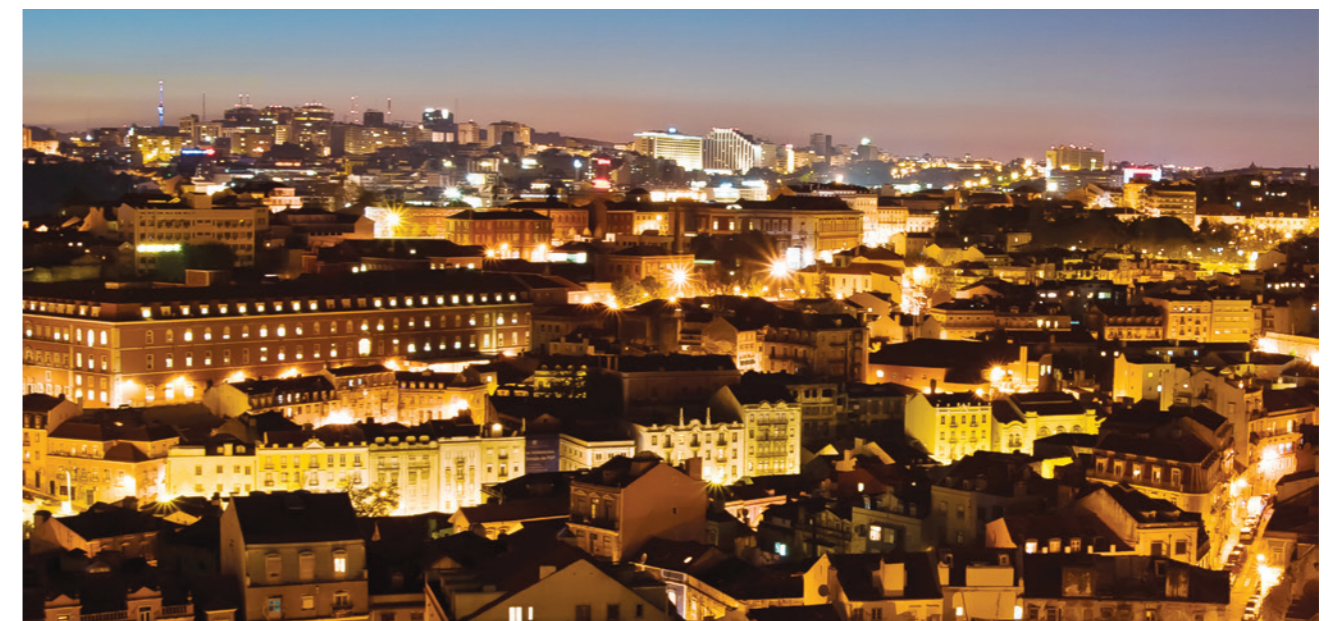


The graph above provides a year-on-year comparison of computed recoveries considering monthly receivables against the number of units billed and actual payment received from the consumers. It can be observed that there has been an outstanding improvement in recoveries compared to previous years as indicated by green bars.

Administrative Benefits

The major administrative benefits of the AMI system are as follows

- On time availability of billing data
- Improved governance due to availability of real data
- Prevention of human intervention and error
- Improved Customer Services
 - Accurate billing
 - Timely correction of supply faults
 - Timely intimation of tampering attempts





Plot # 2, Street # 2 Attari Industrial Estate, 18 KM. Ferozpur Road, Lahore, Pakistan.
PABX: +92-42-35990015, Tel: +92-42-35924781-4, Fax: +92-42-35924780
Email: marketing.info@mtlimited.com,
Web: www.mtlimited.com