



Training Case Study Regional  
Ministry of Electricity  
Kurdistan/Iraq



# Provision of Training Programs and Supply of Training Equipment – Regional Ministry of Electricity in Kurdistan in Iraq

## Project characteristics

### Client

- > Regional Ministry of Electricity of the Kurdistan Region – Iraq (MoE)
- > Loan from the Japan International Cooperation Agency (JICA)
- > Supervised by United Nations Development Program (UNDP)

### Consortium

- > Luthardt (Leader)
- > Roland Berger
- > Restrata

### Location

- > Iraq

### Duration

- > 2017-2018

### Scope of Work

- > **Lot A:** Development of training curricula and conduct of training programmes for technical staff of the MoE including training on generation, transmission, distribution, and safety with two (2) years contract period. The training courses are to be conducted at the central training center in Erbil, Iraq and at international well-equipped training facilities
- > **Lot B:** Supply of training and testing equipment to support the training program including furniture, office equipment /appliances and state-of-the-art electrical testing equipment for the central training center in Erbil and three testing laboratories in Erbil, Dohuk and Suleymaniyah



Flexibility and excellence of the German project team assured the success of in total 906 training days in Iraq and other countries



**118 different and unique trainings** are designed for **more than 1,300 trainees**

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With a course duration from one to ten weeks, **more than 900 training days** are organized

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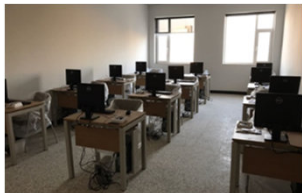
The project team hosted **261 trainees from all levels** of the ministry starting from engineers and accountants up to senior managers and director generals at international training locations outside of Iraq

Delivery of state-of-the-art electrical testing and training equipment leads to most modern training facilities in the region



More than 80 tons of training and testing equipment were delivered to 4 different training facilities

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Training facilities were equipped with more 260 IT-devices and 1,900 pieces of training furniture

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The project team installed and commissioned 253 different state-of-the-art electrical testing and training devices

We use an automated work plan and a learning management system to keep track of project and learning outcomes, respectively

Tools, processes and learnings



## Tools and processes

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- 1 Dynamic work plan (Excel)** that indicates the overall training program status, tasks and automatically generates a ToDo list to keep track of each step for each training
  - 2 Learning management system (Docebo)** that allows a remote prior learning assessment of every participant before the training and online assessments during the training
  - 3 Four step quality management** including pre-design, design, training feedback and training documentation
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## Learnings



- > A **high standardization** of teaching documents must also be ensured with different trainers
- > A **high quality and good structure** on training documents is appreciated by the participants
- > Trainings must be embedded in an attractive supporting program and the **basic needs** of the participants **have to be considered**
- > Long training sessions should include **company visits and practical exercises**
- > A **simple and clear English** language ensures the long-term success of the training among all participants, however, breaks for discussions in the mother tongue must be installed


















# Transmission sector – type and duration of trainings

## Type of courses (1/2)

Course description	Duration [days]	
Introduction to transmission system - planning and network augmentation		10
Introduction to transmission line - design, operation, maintenance and repair		10
Introduction to Substation - Design, Operation, Maintenance and Repair		10
Transmission System Standards		5
Substation and Associated Equipment Standards		5
33kV, 132kV & 400kV Transformer Specification, Installation Design, Maintenance and Testing Theory		5
132 kV Cable Specification, Installation Design, Maintenance and Testing Theory		5
33kV, 132kV & 400kV Transmission Line and Substation Equipment - Specification, Installation Design, Maintenance and Testing Theory		5
Insulation Co-ordination, Lightning Protection and Earthing System Design, Maintenance and Testing Theory		10
Transmission System Protection Schemes and Devices - Specification, Design, Maintenance and Testing Theory		10
Civil and structural engineering in a transmission environment		10
Substation Communication and Control Equipment - Specification, Design, Maintenance and Testing Theory		10
Transmission Network Switching and Operation		10
132kV Cable - Installation, Testing, Jointing and Termination		10



















# Transmission sector – type and duration of trainings

## Type of courses (2/2)

Course description	Duration [days]	
132kV Overhead Line insulator Testing and Replacement		5
Transmission Tower (and associated equipment) Inspection, testing, maintenance and Repair		10
Stringing, Jointing and Terminating Single and Multiple High Voltage Overhead Phase Conductors		10
Earthing System Testing		5
132kV & 400kV Transformer Testing, Maintenance and Repair		15
33kV, 132kV & 400kV Transformer Testing, Maintenance and repair		10
Protection Relay - Configuration and Testing		10
Substation Communication and Control Equipment Configuration and Testing		10
132kV GIS Switchgear Testing, Maintenance and Repair		10
132kV & 400kV Substation AIS Equipment Testing, Maintenance and Repair		5
Fibre and OPGW Splicing and Testing		5
DC System		15
Geographic Information System (GIS) Digitizing for Transmission Networks		15
PLS CADD Software		15
Review & approval of design & construct Contractors documentation and acceptance of new installations		10
Transmission System Technology and Bench Marking Review		5

# Distribution sector – type and duration of trainings






























## Type of courses (1/2)

Course description	Duration [days]	
Geographic Information System (GIS) Digitizing for Distribution Networks	 15	
Introduction to distribution line - design, operation, maintenance and repair	 10	
Distribution System Standards	 5	
Revenue Metering - Specification, Installation Design and testing theory	 3	
11 & 33 /0.4kV Transformer Specification, Installation Design, Maintenance and testing theory	 5	
11 & 33kV Cables Specification, Installation Design, Maintenance and testing theory	 5	
11 & 33kV Distribution Equipment - Specification, Installation Design, Maintenance and testing theory	 5	
Insulation Co-ordination, Lightning Protection and Earthing System Design, Maintenance and Testing Theory	 5	
Distribution System Protection Schemes and Devices Specification, Design, Maintenance and Testing Theory	 5	
Street Lighting Specification, Installation Design, Maintenance and Testing Theory and Practical	 5	
Electrical Design Standards for Buildings	 5	
Distribution Network Switching and Operation	 15	
Live Line Training	 10	
Meter (Revenue) Testing	 3	
11kV and 33kV Cable - Installation	 3	
11kV and 33kV Cable - Testing, Jointing and Termination	 10	
11kV and 33kV Overhead Line insulator Testing and Replacement	 10	











# Distribution sector – type and duration of trainings

## Type of courses (2/2)

Course description	Duration [days]	
Stringing, Jointing and Terminating Overhead Phase Conductors	 	10
Earthing System Testing	 	5
11KV & 33kV Transformer - Testing	 	5
11kV & 33kV Transformer - Maintenance and Repair	 	5
Protection Relay - Configuration and Testing	 	5
415V MCCB Testing	 	5
11kV and 33kV Switchgear -Testing	 	5
11kV and 33kV Switchgear -Maintenance and Repair	 	5
11kV & 33kV Distribution Equipment Testing	 	5
11KV & 33kV Distribution Equipment - Maintenance and Repair	 	5
Renewables Technologies - Overview	 	5
Customer Relations Management	 	2
Construction and Rehabilitation Works Planning	 	10
Distribution System Technology and Bench Marking Review	 	5

# Generation sector – type and duration of trainings

## Type of courses

Course description	Duration [days]	
Generation System Standards		10
Protection and Control System - Configuration and Testing		15
Hydro Generator - Electrical System - Testing and Maintenance		10
Hydro Generation Station - Ancillary Services - Operation Maintenance and Repair		10
Planning and Management of Major Overhaul and Maintenance Projects		5
Safety Management in a Hydro Generating Environment		5
Generation System Technology and Bench Marking Review		5

We are looking forward to exploring joint opportunities with you



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