



## MISSION IN THE PALESTINIAN TERRITORIES (WEST BANK)

April 18<sup>th</sup> – April 25<sup>th</sup>, 2014

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### 1- Missionaries, finances

- Jean DEPREZ, retired professor of Paris-Sud University, president of the association MedLink.
- Joëlle MAILLEFERT, professor at IUT CACHAN, Paris-Sud University.
- Jean-Louis BIANCHI, professor at Lycée Jules Ferry in Versailles and IUT CACHAN, Paris-Sud University.

This mission was supported by the Schneider Foundation, in the framework of the program “Supporting professional curricula in Palestinian universities” and by the Palestine Polytechnic University for the local expenses.

### 2- Context and objective of the mission

Reference: Mission in the Palestinian Territories, January 2014, Joëlle MAILLEFERT, Jean DEPREZ ([http://associationmedlink.com/cariboost\\_files/RPT\\_PAL\\_2014\\_01.pdf](http://associationmedlink.com/cariboost_files/RPT_PAL_2014_01.pdf)).

The project “Supporting professional curricula in Palestine Polytechnic University” has been approved by the Schneider Foundation, PPU and MedLink. It consists in 3 phases of equipment and training of trainers in the fields of Industrial Automation and Electric Energy Distribution. The agreement of phase 1 has been signed by all partners in September 2013. A grant of 46 000 € has been received by MedLink from the Schneider Foundation, to support the equipment and the training sessions of phase 1, i.e. upgrading automation lab1.

In January 2014, 3 “production lines” ( Modicon PLC and digital and analog interfaces controlling an elevator or a surface treatment cell or a 5-axis manipulator) have been successfully installed and tested by 9 trainees during a 35 hours training workshop based on the “Local Control of Automated Systems”.

The objective of this mission is the installation and the test of the remaining equipment (HMI touch screen, remote I/O interface, AC motor speed controller, motorized operational parts, CANOpen and Modbus TCP-IP networks) and to train the academic staff during a 35 hours workshop “Networking PLCs and SCADA Software”

### 3- Agenda of the mission

**Friday 18<sup>th</sup> afternoon:** Flight AF1620 Paris-TelAviv, Transfer (taxi) to Hebron

**Saturday 19<sup>th</sup>:** Test of the equipment, installation of the software VijeoDesigner 6.1 and VideoCitect 7.3. Wiring and test of the CANOpen network.

**Sunday 20<sup>th</sup> to Thursday 24<sup>th</sup> morning:** workshop (35 hours over 4.5 days)

**Thursday 24<sup>th</sup> afternoon:** transfer to Jerusalem.

**Friday 25<sup>th</sup>:** Meeting with Ibrahim SHAWAN (Schneider Palestine). Meeting in the French Consulate. Transfer to Ben Gourion Airport (taxi), Flight AF1621 Tel-Aviv Paris.

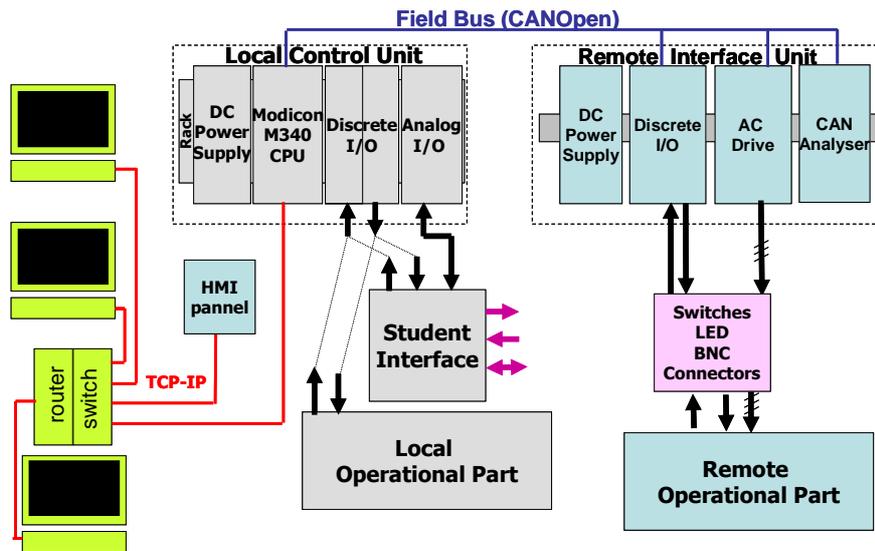
### 4- Installation of equipment and training “Networking PLCs and SCADA software

#### 4-1 Installation and test of the equipment used during the training

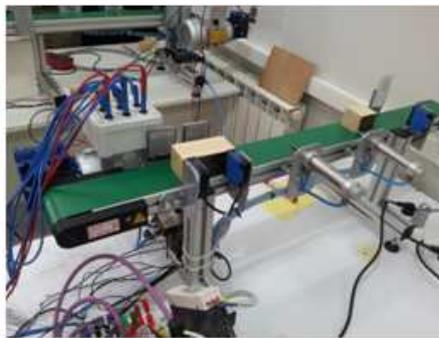
The following equipment, funded by the Schneider Foundation, has been tested, in connection with the equipment – 3 Local Control Units, 3 Student Interfaces and 3 Local Operational Parts – installed and tested during the training workshop1:

- 3 Remote Interface Units (OTB remote I/O interface + ATV AC motor drive + connection interfaces + CAN analyser) defined by MedLink and integrated by ADVANtech
- 3 Remote Operative Parts (2 conveyors, 1 asynchronous motor bench), chosen by MedLink, designed and built by Schneider Electric and equipped with sensors and actuators by PPU (Mekawi IRHAIZ).

- 3 HMI touch screen MAGELIS panels
- 3 TCP-IP switch/routers



Remote Interface Unit



Conveyor



AC Motor bench

As for workshop1, the integration and the realization of the equipment by ADVANtech were well done, within the specifications. The test programs developed by MedLink using simulation in France were directly operational. The CANOpen remote interface equipment and the CANOpen network itself were fully ready for use before the beginning of the training workshop.

Some modifications have been introduced concerning the wiring of the sensors introduced by PPU to equip the conveyors. They had not been tested with the remote interface where they are supposed to be connected to it... But we found in the laboratory the additional components needed to solve the problem.

We advised Mekawi to find, after the workshop, more adapted sensors.

We noticed (and fixed) a bad wiring of the output connector of the AC motor of one of the conveyor. We will communicate this information to Schneider Electric.

We didn't face any specific problem concerning the installation and setting up of the Ethernet TCP-IP network connecting PLC, HMI and 2 PCs through a switch/Router.

Concerning the software (Vijeo Designer, Vijeo Citect, Wireshark and CANAnalyser), the only problem was that, in spite of our repeated requests for 6 licenses of Vijeo Designer, the software was not provided by Schneider-Palestine/Israel to PPU). We have installed licenses given by Schneider-France to MedLink...

As it was decided at the end of workshop 1, we have build in IUT CACHAN, and brought with us, 15 multi-wire connection cables and 3 connection boxes to replace the rigid cables between the Local Control Unit and the Student Interface or the Local Operational Part. They have to be tested by PPU after the workshop, to take into account some modifications referring to the previous wiring.

## 4-2 Training workshop 2: "PLCs networking and SCADA Software"

The workshop has been prepared in PPU by Mekawi IRHAIS, manager of the new automation laboratory.

The following program (35 hours) has been established after discussion with the participants:

- Day #1
  - Set up of a local TCP-IP network
  - Touch screen (Magelis HMISTU665)
  - Vijeo Designer
- Day #2:
  - Local supervision
  - SCADA software Vijeo Citect
- Day #3:
  - CANOpen field bus – remote I/O (OTB1CODM9LP)
  - CANOpen remote control of AC drive (ATV312H075M2 + conveyers MD1AMP002 or induction motor bench MD1AA529)
- Day #4:
  - Mini project: supervision of a local and/or remote operative part
- Day #5:
  - Remote supervision (port forwarding).

- Seven trainees from PPU have followed the training. All of them had participated previously to workshop 1. One of the participants of workshop1 didn't attempt this session.
- According to our suggestion, PPU has invited to the workshop Neda HANTASH. She is supervisor of the Industrial Automation Lab in PTU, she participated to the training workshop in Bethlehem (January 2012) and she is concerned by using Schneider CANOpen remote I/O and ATV, available in PTU.
- Rifat SHARAWI, from ADVANtech has attended most of the training sessions.

The subjects treated in this training are very wide and the software Vijeo Designer and Vijeo Citect are extremely powerful. So, concerning the theory, we have focused only on the basis and we have chosen functionalities of the software directly transposable to the equipment of the laboratory.



Among the nine participants, one has clearly a methodological and technical level higher than the others. A second one has also good capabilities, but with less global view and methodology. Three of them completed a large part of the practice without big problems. Three have still some difficulties, in spite of their active participation. The last one was visibly submerged by the topics. This was already the case for workshop 1.

For all of them, except one, maybe two, one reason of their difficulties results of the lack of methodology to make a test or to develop a simple project from specifications to production, including documentation.

One other point is that, during the practices, they often follow the procedures that we propose without really trying to understand the meaning of these procedures...

## 5- Conclusion

The end of this workshop is, concerning the MedLink partnership, the end of the phase 1 of the project with PPU. All the equipment is installed and works well.

The two training sessions have reached the objective to teach how to use it to the academic staff designed by PPU for this project. 70 training hours over 2 weeks allowed us to introduce all the necessary methodology and technics to practice with the hardware and the software. But this knowledge is very volatile and the trainees have to practice very often in the lab if they want to appropriate themselves the equipment to use it efficiently with students. The more the lab will be used by trainers, the more they will be qualified and the more this lab will be efficient.

As it is mentioned in the MoU for phase 1, Medlink is ready to help, if necessary, to the design of curricula involving this Automation lab at any levels and for any targets.

We have asked to Raed AMRO, Dean of the College of Engineering, to send us an evaluation from PPU of the work done by MedLink in the Automation Lab.

**It is now up to PPU to make this laboratory available for the maximum number of students, from any colleges, diploma programs or vocational training education programs dealing with Industrial Automation.**

We would like to emphasize the very good organization of the two workshops by the manager of the new automation laboratory, Mekawi IRHAIS. We also enjoyed the team spirit of most of the participants and, which is not usual, their involvement in the production of documents which will be the trace of this training workshop.

The phase 2 of the program with PPU, concerning the equipment of the Electrical Energy Distribution lab, is delayed for different reasons:

- we didn't get the quotation of the equipment from Schneider Israel/Palestine
- a mission for installation and training in July is not suitable (Ramadan)
- we have not yet identified a qualified person to follow the project in PPU

We are waiting information from Raed AMRO (PPU) and Ibrahim SHAWAN (Schneider) to go ahead. A mission could be planed in November 2014...

We have had discussions with Neda HANTASH, supervisor of the Industrial Automation Lab in PTU-Khadorie (Tulkarm). According to a previous proposal written by MedLink in 2012 to upgrade this lab, we have defined with her the suitable equipment. A proposal will be submit to the Schneider Foundation by PTU and MedLink in the following months.

We would like to thank our Palestinian colleagues for their professional and private warm welcomes. As often during our missions, we have had the pleasure to be received in their families and share very good moments.

Finally, we thank our partners – Schneider Foundation, Schneider Electric, French Consulate in Jerusalem, Advantech, IUT Cachan - Paris Sud University – for their trust and financial, logistical, technical or pedagogical supports.

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