INSTALLATION FOR THE „IN SITU" RECONDITIONING OF TRAM RAILS - CONSTRUCTIVE VERSION (Part 2)

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ABSTRACT

The driving and control installation of the mechanised equipment for tram rails reconditioning is specially important, too besides the mechanical part. The components of the reconditioning installations for rails are detailed from the execution point of view, too. The prescriptions stipulated in the Technical Book are respected.

1. INTRODUCTION

The driving and control installation of the mechanised equipment for tram rails reconditioning is specially important, too besides the mechanical part.

2. DRIVING AND CONTROL ELECTRICAL INSTALLATION – STRUCTURE

2.1. CONTROL PANEL

The main component of the driving electrical installation is the control panel (photo 3).

It is endowed with an alphanumerical display LCD type and seven "PUSH" type buttons.

Buttons

- o MOVEMENT/WELDING
- o FORWARD
- o LEFT
- o FAILURE
- o START/STOP
- o BACK
- o RIGHT

Photo 3

The automation installation consists in three working modes: MOVEMENT, WELDING and SERVICE.

In the self adjusting algorithm there interfere some coefficients that monitor the motor behaviour, the power electronic control part and the mechanical state of the welding installation. All the three components are included in the reaction loop. By exploiting the installation, in time, due to the ageing of the components (they are still running) there appears the necessity to adjust these coefficients to reflect the components state at the respective moment.

2.2. UC FACILITIES

The automation part was developed by using a UC as central element PIC16F877 type (photo 4). The most elements necessary for the process control are integrated on a single circuit as follows:
- a high performance CPU RISC type;
- a set of 35 instructions;
- 8Kx14 Flash type program memory;
- 368 x8 data memory;
- 256 x8 data memory EEPROM type (non-volatile);
- 14 intern sources/ extern for interrupting;
- 8 levels hard program;
- POR (Power –on Reset), PWRT, OST,WDT;
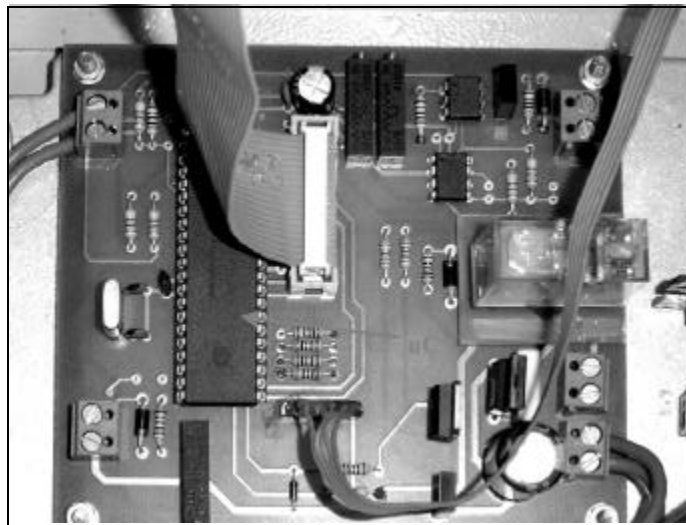
Photo 4

- supplying voltage in the range 2.5V…5.5V;
- Timer = of 8 bit;
- Timer 1 of 16 bit;
- Timer 2 of 8 bit with prescaler and postscaler;
- two 10 bit resolution PWM moduli;
- 10 bit ADC with multiplexabile inputs;
- SSP with SPI and 12 C;

- USART/SCI;
- parallel Slave Port 26 bit with RD control, WR and CS.

2.3. UC INTERFACE

In order to "read" the analogical values in the system all the A port pins are programmed as analogical inputs and are multiplexabile to CAN.
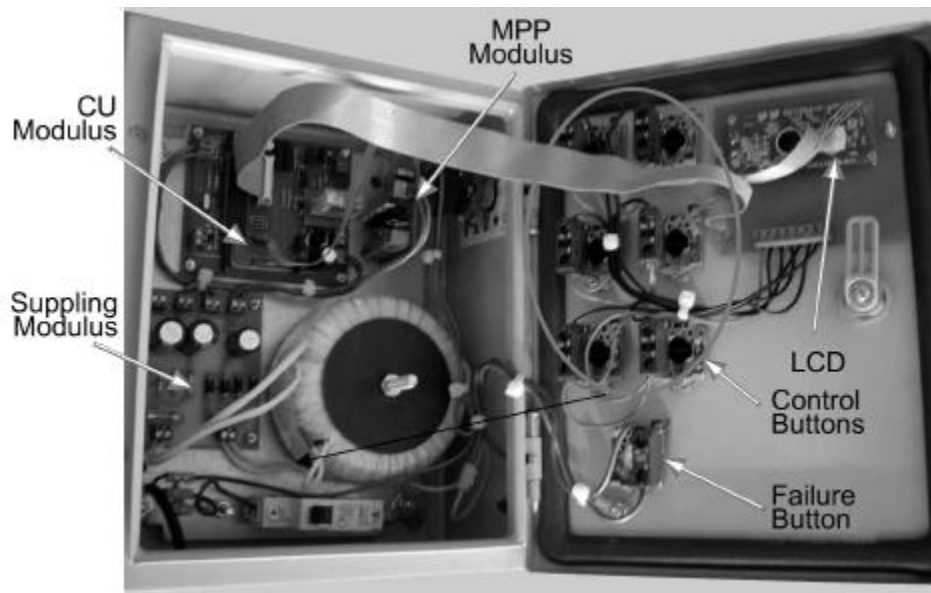

Photo 5

Photo 6

The execution and interconnecting details of the electronic moduli are presented in photo 5 and 6 and are in compliance with the prescriptions/ conditions stipulated in the base technical documentation and of the prescriptions, of the base technical documentation and of the Technical Book.

3. CONCLUSIONS

3.1. The components of the reconditioning installations for rails are detailed from the execution point of view, too.

3.2. The prescriptions stipulated in the Technical Book are respected.

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