Development of an instrumented interface for access control to the Ing. Antonio M. Amor refinery

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Introduction

Relation of LabVIEW in the implementation of the control In its theoretical conception, the realization and implementation, as well as the design of the interface made in NI LabVIEW software with the purpose of involving the access control system to the refinery simulating the card that drives the mechanism to operate the entrance door of the workers, this does not present great difficulty, but the requirement to integrate the set of operations can solve a complex problem, requiring careful planning and a radical change in the mentality and training of users.

The trusted employees or workers have access cards to the refinery. As time has gone by, the number of workers' cards has decreased, which has led to everyone using the same entry card, so the project seeks to reproduce these cards to personalize access for each user, as well as to register them during certain working hours.

The realization of this control system offers a convincing The implementation of this control system provides a convincing alternative solution to various problems and technological improvements for industries such as access and registration of their workers. Such control systems have many advantages. For example, they use the available space more efficiently for access, keep a log of incoming and outgoing workers electronically for quick filtering or searching. Automated warehouses are the most efficient solution for the movement and management of materials in a fully controlled environment, taking into account that it must be designed as a whole, where each partial solution must be fully integrated into the overall environment. Another aspect to consider is the characteristics of the internal products to be transported, from small storage boxes to large structures designed for heavy weights. All solutions must guarantee a flow speed in line with the desired productivity, high precision in all movements and the necessary flexibility to adapt the installation to the needs. Vehicle warehouses must be adequately sized, easy to access, comfortable to use and above all safe. Therefore, these systems must consider the optimization of space, time and use of resources.

Materials and methods

The implementation of this interface proceeded in the design of NI LabVIEW for this communication with the device which is shown in Figure 1 to configure the port to be used, as well as the type of connection to be had in this case will be via ethernet cable.
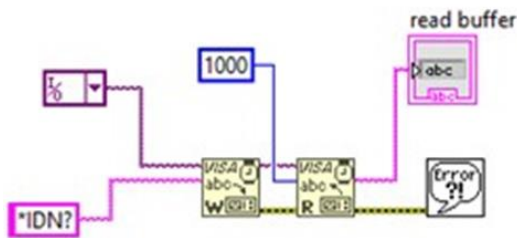

Figure 1 LabVIEW code diagram for connection to the device

Initially, we proceeded to make the record for the case of each type of employee, as shown in Figure 2 for the record of employee type, we began by designing the case box for this specific, the login name of the user was attached, as well as the password this will be a simulated test by default, as well as adding a string box for the unit, location, place. Next, everything is adjusted in an array to be able to display it on the registration screen.
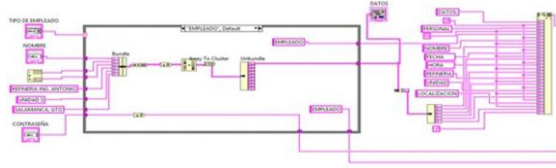

Figure 2 LabVIEW Code Diagram for employee type registration in LabVIEW

Subsequently, the same process was carried out, but now for the trusted employee, the same case archetype was used, only the password and user type were changed, as shown in figure 3.

Figure 3 LabVIEW code diagram for trusted personnel type registration

Next, we proceeded to perform the internal registration and the Boolean comparison of the relation between the card entry code and the comparison of the true access code in the code, as shown in figure 4.

Figure 4 LabVIEW code diagram of the creation of data and record stored in an address as well as the comparison of passwords

Results and discussion

- The interface task for user registration was achieved.

- The feasibility of eliminating the card using hard-wired logic from a pin-out of the Axes TMC device was very viable.

- The input power supply for the relay activation was taken into account as well as the corresponding power supply for the device that would contain the interface.

- The personalization of the cards for each type of user will be achieved, so that not one card will be used for all the employees of the plant and a more adequate control will be carried out.

- The method for the realization and completion of the interface was optimal and will be instigated in the future.

Conclusions

- It was concluded that the programming of the control interface is very optimal all thanks to the design and ease that comes from the NI LabVIEW software meets all expectations, also the Axess TMC brand device provides a versatility in the management of this and the convenience of installation.

- The LabVIEW application meets both functional and aesthetic specifications. The program allows to control the access of each type of personnel according to the user card, as well as the internal entry code.

- An output of the relay device was taken advantage of to be able to do more the supplanting of the card that was added, only a wired logic was taken into account for this realization.

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