

CHAPTER 5

CONCLUSION

5.1 Summary

Nowadays, most of the control system operation in industries used PLC as a controller to control the process. It contain in the process control, transportation, domestic appliances, production lines and so on.

Using the PLC to control traffic light can reduce the used of hard-wired relays and other external components. PLC has an internal function such as timer and counter making it become sophisticated but simple in used. It also provides flexibility of control that based on the programming and can execute simple logic instruction which being used in ladder diagram.

An Intelligent Traffic Light that used the PLC to control a cross-junction has been successfully developed. The PLC program (ladder logic diagram) for implement the three mode of traffic light operation; Normal Mode, emergency Mode and Night Mode, have been designed completely and can be operated effectively together with the model of emergency sensor (switch) for the Emergency mode and the IR sensor circuit that has been developed especially for the Night mode..

All the testing of the response to incoming emergency vehicle, instant green light during the night and the normal mode of operation has been done successfully. It was repeatedly tested to operate for continuously long time. In past period, the system had been performing well without any error. As such, it can be concluded that the system performance is reliable to response to change on time regarding on traffic volume and approaching emergency vehicle as wished-for. The change from one mode to another is achieved automatically.

In summary, the aim of this project, which are to minimize the waiting time cars at intersection when the traffic volume are significantly low and to prevent the emergency car stuck at the cross-junction, are totally achieved including the objectives of project have been accomplish successfully.

5.2 Recommendation

This Intelligent Traffic Light had been successfully tested with the various input or situation. The result is very encouraged and justifies commencement of the following future development. It is therefore recommended that:

- The efficiency of the system should be tested regarding on actual road traffic light with real traffic sensors are installed. This is to guarantee the performance of the system is as expected and if there is any trouble encountered, some modification on the program and hardware could be made earlier to the real implementation.
- This system should be integrated with several traffic lights at different location. This integrated traffic light system will take into account the traffic volume, time, day and passing off the emergency vehicles. This may reduce the traffic jam happening.
- Frequently, failure of the traffic light system controller can causes the problem to the road uses. Therefore, it is recommended that the designer should consider this criterion in his design.
- The designer should be consider the type of sensors that used in the system developed, hence can reduce the cost of the system. The suggestion of emergency sensor is RF coding or IR coding transceiver.

5.3 Commercialization Potential

The PLC has been known as the controller that very durable and reliable. This was the reason why the PLC has been used mostly in traffic light as a controller. In this project, the traffic light have been developed also used the PLC as a main equipment. However this project was different compare to other common traffic light system because it has been design smartly by introducing of three mode of operation; Normal, Emergency and Night mode.

These three modes of operation give the special characteristics or features of traffic light which can present the solutions to the most problem of the common traffic light. Beside that, the designing of this project has emphasized the cost-effect aspect which produced the cheaper product without neglected the product quality indeed. So, for commercialization purpose, extremely believe that this intelligent, quality and cheaper product have high potential in market.

In addition this product is more users friendly because the I/O that has been used was less. This is because the LED external circuit that has been used in this project can reduce the output usage hence it is simple to install. Beside that, the PLC program (ladder diagram) that have been design are more systematic and short which make it more simple to upgrade the project in future. The project function also can be expanding to more interesting and modern application such as installing camera for monitoring the traffic flow or traffic offenses. Meaning that, it can help to minimize the number of accident cases in Malaysia.