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Modernization Of Electrical Installation By Using Wireless Remote Control

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Abstract

Great benefits can be achieved by using wireless remote control in electrical wiring systems of buildings.

Probably the main advantage of this application is the drastic saving in wiring installations, which in turn will give higher reliability, safety and economy.

The idea of this application can be summarized in the following explanation. '' Instead off connecting each point of electrical system to individual switch by wires, a remote receiver can be situated in a place near to the point. The transmitter is used to operate the point remotely. The mains are connected to the receiver which will connect or disconnect the load as required. Many points can be connected to one receiver and can be operated by one or more transmitter.

تحديث التأسيسات ألكهربائية باستخدام ألسيطرة أللاسلكية عن بعد

الخلاصة

بالإمكان ألحصول على فوائد كثيرة باستخدام ألسيطرة أللاسلكية عن بعد في ألتأسيسات ألكهربائية في ألمباني.

أن ألفائدة ألأساسية لهذا ألتطبيق هو ألتوفير ألهائل في كمية ألأسلاك ألمستخدمة مما سينتج عنه فوائد اقتصادية كبيرة مع زيادة كبيرة في درجة ألأمان وألوثوقية.

ويمكن تلخيص فكرة ألبحث كما يلي: لنأخذ مصباحا مفردا كمثال لهذا التطبيق، فبدلا من ربط ألمصباح إلى ألمفتاح بواسطة ألأسلاك مباشرة يمكن تركيب جهاز استقبال مسيطر عليه عن بعد ويكون هذا المستقبل في مكان قريب من المصباح المراد السيطرة عليه .إن القدرة الكهربائية اللازمة لتشغيل المصباح سوف يتم توصيلها إلى المستقبل وعن طريقه يتم إيصالها أو قطعها عن المصباح حسب الأمر الصادر من جهاز ألإرسال أللاسلكي .ويمكن ربط نقاط عدة إلى جهاز استقبال واحد مسيطر عليه بواسطة جهاز إرسال لاسلكي واحد أو أكثر .

Introduction

Wireless remote control becoming popular these days, yet the applications of this nice facility stay limited in secondary services. For example, the remote opening and closing of car doors , or garage door and so on. Although these applications are useful there is no economical or safety benefit gained. This paper is a trial to

show how to make use of the wireless remote control technique in a vital field. This field is the electrical installations in buildings.

In this paper the advantages of using this technique were explained as sought idea of these applications, examples are given .

No doubt that this idea wills soon going to become standard worldwide because of the great benefits gained of its application. Thank for the modern

General Description of the System

Conventional System:

Fig.1 shows the conventional connection of six lamps to one fuse way meters or more.

Wireless System*:*

Fig.2 shows the basic principles of connecting wireless remote control for the lamps shown in Fig. 1.

Benefits of Using Wireless Control

Wireless control system will provide the following benefits over conventional system.

1. Drastic saving in wires .This is an obvious result of eliminating the need to

3. Obstacles in the way of wires from the point to the switch like doors, windows, air ducts etc., are no more providing any problem in electrical installation.

4. In case of fire, switching electricity off will be easier than that in conventional wiring system because the fire might prevent one from getting to the fixed switches.

5. In large area or multi – storey building like car garages or supermarkets, the wireless control will provide an efficient tool to control the lights, watching cameras, air – conditioning system, escalators and lifts etc.

6. Maintenance in case of fault in wiring is much easier in wireless system than that of conventional system.

7. Fire hazard because of heating up in wires will be less in wireless with a receiver which can operate many lighting points . Favorably the by the author.

In order to explain the electronic technology that makes such ideas practical.

An appendix had been included of suggested remote control that can be used in this application.

in which L indicates a lamp and S a switch. It is clear that each lamp need to be connected to the switch. The distance between lamp and switch could be 10 connect the switch to the point directly .The conduits, boxes and fitting are also reduced. Also it is possible to use many receivers in one building which can be controlled by one multi- channel transmitter.

2. Portable remote transmitter will provide high flexibility since this transmitter can be carried any where in the building.

system because the wires are shorter and not crowded in one conduit as it is the case in conventional system.

8. In schools or nurseries there will be no reachable switches by the children to play with or break. By this way it will possible to avoid the hazard of electric shock to the children and to keep the appliances safe from damage.

Suggested Examples of Using Wireless Control

Using Wireless Control in School:

In Fig. 3 a general layout of a school is shown. In order to explain the implementation of wireless remote control system, single classroom can be taken as example. Fig. 4 shows this application.

Each classroom can be provided

lights switched at single click from the transmitter. A transmitter can be

added to send a signal indicating that the load is switched on. The controlling trans-miter can be left in the administration room. Mobile control transmitter will give more reliability .The teacher of certain classroom can carry the transmitter with him so that he can switch the lights on or off as he wants. For example, the teacher wants to use overhead projector or computer data-show, then he need to switch the lights on or off frequently.

The distribution of load on the phases is a problem of wiring designers which is beyond the scope of this paper.

Using Wireless Control in at theater or Cinema Hall:

Probably this application is of the most benefit of this proposed system. This is because of the large dimensions of such halls and the need to control the lights frequently by the man sitting in the front normally. Fig.5 shows the idea of this application.

Conclusions

Engineers are always thinking to use advanced technology in practical application.Economy,Safety, Reliability, Maintainability and Beauty are behind all the trends of engineering ideas.

This paper presents an important application of wireless remote control. This application is genuine and of great benefit. The five goals mentioned above, namely Economy Safety, Reliability,Maintainability and Beauty are all fulfilled with the use of wireless remote control . However the benefit gained is not always the same for all sorts of buildings. For example if the system is used in a small house its benefit is not as when it is used in a multi–storey car park or in a big super- market.

No doubt at least one of the five benefits mentioned above can be obtained when using wireless remote control.

In general this application is to be used as simplex i.e. one way applications, but in some cases it is useful to use duplex application. For example if a motor is controlled remotely it is good idea to know whether it responds to the commands or not. In this case a transmitter in the load end can be fitted to send a signal that is received by a receiver in the control site.

The flexibility provided by wireless remote control makes it possible to put additional safety and logging facilities without fear of wiring complexity, additional cost and/or spoiling the decorations of the building.

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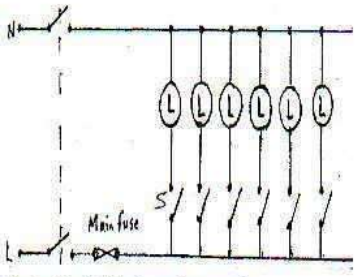

Fig. 1 Circuit of six lamps Connected in conventional way