



Phone operated switch

Mechanical/Electronics

National Second

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Background

Born in 1979, Prem Singh, a prolific innovator from Haryana, has made a phone operated On/Off switch, which can operate any electrical device remotely, thereby enabling optimal use of the device and electricity.

Being a youngster in a family is always a privilege; one can usually get away with mischief. Second youngest of six siblings, Prem was no exception to this rule. He was a very naughty child. His mother used to tie a rope to his shirt and secure it so that he did not run away. She was as not worried about him getting into mischief as about getting hurt in the process. However, Prem always found ways to untie the rope and slip away to play with his friends and then come back and sit down quietly after retying the rope.

The seeds of his multiple innovations were sown at a young age when he skipped school to tinker around in his elder brother's electronic repair shop.

Tinkering with ICs, circuitry and electronic components, he began to mend small gadgets such as

radios by himself. By class six, he had already devised many equipments including a mini radio station with a range of up to two kilometers radius.

Setting up his own workshop in 1992, at age 14, he continued innovating and independently started developing circuits and product assemblies. By this time, he had dropped out of school as he was fully immersed in his journey of innovations.

Since he was always busy at work, he did not interact much with fellow villagers. They considered him crazy. For many years, Prem went around various colleges, institutions and organizations trying to explain his innovations and seeking support. He faced indifference, ridicule instead of appreciation, but he always put up a brave front, and with or without support he never let go of his dream of innovating gadgets. By 1996, when stories of his innovations started reaching people through newspapers, they began to acknowledge his skills and talents. There were some in whom the appreciation transformed into jealousy.

He spent the following few years in laboriously building a multi functional electronic robot called "BSF

Robot", which could move independently or be remote controlled. It had many features including ability to transmit images using video cameras to TV screens. Emergency search & rescue teams as well as defence forces could use this robot. This innovation got him the National award from National Innovation Foundation in December 2002 and he stepped into the big league.

The list of Prem Singh's innovations is as interesting and impressive as his personality. Some of his notable works include a hand operated dynamo for radios to work without batteries, heartbeat amplifier to send patient's heartbeat signals to a remotely located doctor, anti-collision device for trains, bomb disposal kit, salt regulation meter, cycle rickshaw operated mobile battery charger, automatic tea maker with alarm, automatic water level indicator and a wireless cable TV system for broadcasting audio-visual programmes without linking cables between houses.

He is one innovator who designs what appeals to him and in his own words, "*Main kabhi market ke liye product nahi banata. Main wahi innovations karta hu jis se ki logon ka bhala ho sake. Kuch*

innovations market ke liye achche ho sakte hain lekin samaj ke liye sabhi achche hain. Kisi bhi cheez ko banana mushkil nahi hai. Chahiye bas ek jazba kuch alag kar dikhane ka aur ek nazar jo kamiyon ko pehchaan sake”

As early as 2002, when the concept of mobile telephony was not widespread in India, he had the vision to deploy it as a means to work as a “remote” to control devices from long distances.

Genesis

Coming from an agricultural area, Prem observed the difficulty of farmers faced at night being when they had to go far from home to faraway fields to switch on or off the pump used to water the fields.

The farmer also needs to know, sitting at home, if the power supply is on at the pumping station so that he can decide whether to switch it on or cut it off if it is running.

The mobile phone operated switch he has designed, addresses all these requirements by enabling farmers to know the electricity status and remotely switch the pump as required, from the comfort of his home and that too without spending any money.

Innovation

The mobile phone operated switch is an instrument with an attached mobile phone and modified circuit, which can toggle a device between switch-off and switch-on conditions and also be used as a conduit to know the status of a remote operating device.

In addition, it allows only authorized users using the specific mobile number to operate the system. It can operate the switch from far off places using GSM/CDMA network. No call/SMS charges are applicable as the control functions by the phone ring. The switch can operate devices ranging from 100W to 1000KW and from 1.5V to 11,000V AC/DC.

The scope of this mobile remote operated device is immense in areas ranging from home appliances (managing devices at home such as microwaves), security (controlling access to buildings) to transportation (controlling car door locks) to industrial applications (such as remotely monitoring equipment in chemical plants.), etc.

The memory in the mobile attached to the switch ensures that the switch will remain in the functional state as dictated by the designated mobile unless it is changed

The device is a retrofittable kit made up of amplifier, electronic counter, switching unit, relay switch, power supply and timer circuits, which give signal to the mobile phone’s inbuilt PCB and completes the operation. The electronic counter counts the number of rings, takes appropriate action according to device status and sends specific signal to the user. In addition, the gadget is able to inform the user whether the device has been switched on/off or the electricity is there or not through a feedback signal.



Infra red and FM operated switches have been available in the market since long and were primarily used by the military. Telephone operated switches are also available in the market². ONGC (Nazira, Assam) has installed one such system to keep a check over pumps’ functioning. Recently Nirma Labs (Ahmedabad, Gujarat) students have also come up with a SMS operated switch.

A patent search for similar devices yielded the following relevant patents. A system and method for communicating with a remote location to monitor the device, the system includes a calling transceiver, a central transceiver, and a satellite described in US Patent 5,588,038 dated 24 Dec. 1996. A secure entry system, which uses radio transmissions to communicate with locks, keys, and related components throughout the system US Patent: 6,072,402. dated 6 July 2000 and a method and a device for utilization of mobile radio telephones for surveillance and/or control purposes (US Patent:

¹ Well, honestly, I have never been inspired by the market. I design only those products that I feel will make the life of thousands of people easier. Some of the products may be market friendly but all of them are human friendly. It is not difficult to develop anything. What you require is the desire to do things differently and also the eye to detect the faults.



GSM/GPS-based comfort and security devices for vehicles. <http://www.vellemanusa.com/us/enu/product/list?id=342514> lists many devices, which facilitate remote operation. A remote control system, which does not require authorization from network operators, as there is no connection to the telephone line, is available at http://store.qkits.com/shopping/basket.cfm?Product_ID=284. This kit makes it possible to turn up to three devices on or off over the telephone.

7,031,665. 18th April 2006).

(Managing devices at home such as microwaves), security (controlling access to buildings) to transportation (controlling car door locks) to industrial applications (such as remotely monitoring equipment in chemical plants, *etc.*)

Currently, standardization of the design is under process to use standardized components including suitable mobile phones /circuitry and reduce cost to suit rural markets.

Variants of this system are also being developed suiting multiple applications under urban and lifestyle categories. The provisional patent has been filed for this application.

² Remote Control via Mobil GSM Phone system with LDR application and GSM SMS on/off systems exist in art. (www.apogeekits.com/remotecontrolviacellphone.htm).

Remote control by cell phone kit is available at www.neropoulos.com. One can stop and begin an electrically driven irrigatory group from distance with this remote control appliance.

<http://www.oskando.ee/eng/products> mentions about a