National Innovation Foundation

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Utilities and General Machineries: Safety device to prevent damage to the motor of the electric pump

Shri Bharat Shrirang Kamble

Safety device to prevent damage to the motor of the electric pump

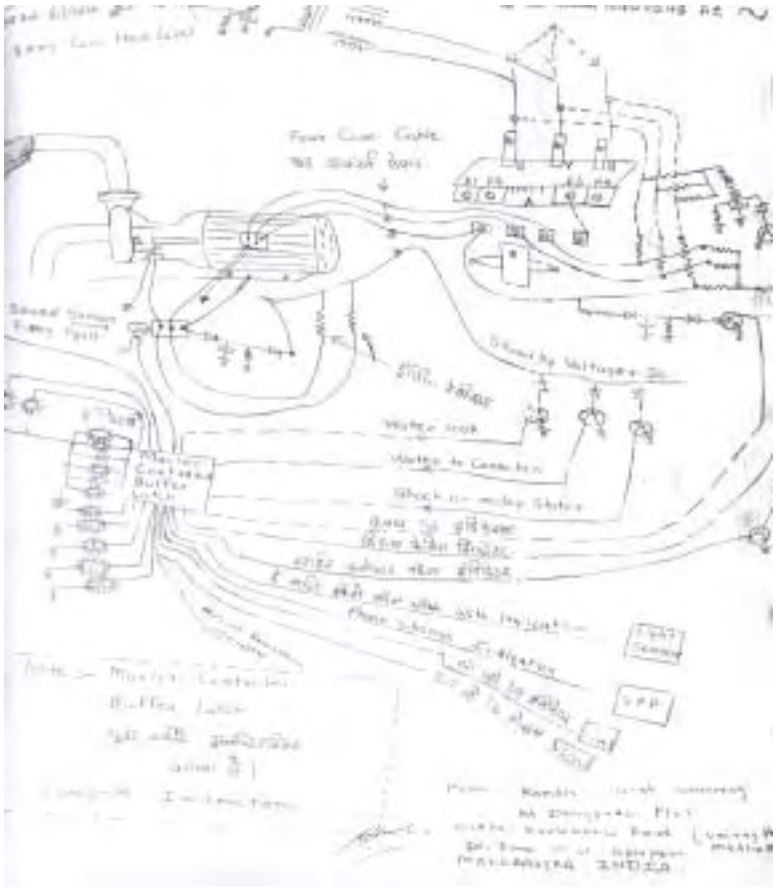
Excessive voltage fluctuation in electric supply is the curse that most of the rural people have to live with. Poor quality of the electric supply often leads to frequent or premature burn out of the coils of motors. None of the devices currently available in the market, such as single-phase preventors, earth-leakage circuit breakers, thermal relays, auto-start current regulators, overload-prevention relays etc., can avert the possibility of motor burn out completely.

The electronic circuit designed by Kamble attempts to provide a total protection to the motor as far as possible within a limited budget. It is specifically targeted at the motors meant for powering water pumps for agricultural applications. The circuit switches off the motor when any of the functional parameters gives rise to the possibility of burn out of the field coils. Some of the components used in the circuit are single-phase preventor, current sensor, overload timer, temperature sensor, voltage level sensor, day/night system, etc. Miniature pilot lamps light up to indicate the exact reason

Bharat Shrirang Kamble (48 years), is a talented electrician belonging to a poor family. He is a victim of polio and became physically handicapped at an early age. He has been interested in the study of physics since his childhood. He discontinued formal education after the tenth standard, but continued acquiring scientific knowledge through experimentation. His father worked as a driver and supported the quest of his polio-afflicted son by providing financial support to acquire items for experimentation. He gradually converted his hobby of experimenting with electronic gadgets into a profession and started repairing household gadgets. He became expert in repairing radio receivers. His workmanship was way ahead of his competitors. This knowledge about radio circuits gave him the confidence to proceed with other electronic circuits. He was ebbed on by local farmers to work on motor-protection circuits. Burn out of the field coils of electric motors was a long-standing problem of the local farmers. It was often due to excessive fluctuation in the voltage of the electric supply. Solutions available in the market were not effective enough. Frequent motor-burn out, has ruined economy of many a farmers because it often meant loss of the year's crop (if mishap happens at a critical crop growth stage).

Dhaygude plot, Sakhar karkhana Road, Vairag Barshi, District: Solapur, Maharashtra

for which the supply to a motor is tripped. By eliminating the particular fault, or by waiting till the fault automatically gets eliminated before restarting the motor, it is possible to eliminate motor burn out. Many farmers who have used the device and followed the instructions properly, have not faced problem of breakdown of their electric pump over past four or five years. The device can incorporate a log to record the operation of the pump and can help in regulating electricity use during periods of rationing. There are plans to introduce remote-control facility to the system so that an electrically operated pump can be controlled, sitting at home at a distance of even 10 km.



After several trials, he could arrive at the appropriate parameters and solved this problem. As the news spread, people started pouring in demanding the new gadget. Most of them were marginal farmers who could not afford to pay the full cost of the components going into the circuit. Consequently, the innovation has proved to be an economic burden to him but he has continued helping the people.

His wife is naturally unhappy with the state of affairs. She believes that it is more important to earn money and support the family; they have eight mouths to feed. Their elder son has had to discontinue the school and do odd jobs to help the family. Looking at their plight, one of his friends in the village Shri Dadarao Jungle Guruji' offered him a room which he had planned to use as a toilet. He was the first farmer who had recognised the talent of Mr. Kamble and assigned him the challenging job. Kamble has established his small electrical shop in the room.

He hopes that he would one day be able to convert his innovative circuit into wealth with the help of some philanthropic organization. Once this fructifies, he wants to accomplish two more of his dreams. One is the 'radar system' and the other is a 'raingun'. Kamble remains a good example of hope and enthusiasm that the spirit of innovation can bring to an economically poor and physically challenged person. GIAN (West) is taking up his technology for patenting and value addition.