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The Passenger Emergency Alarm Signal Device (PEASD)

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ABSTRACTThe traveller emergency warning device is provided between the main brake pipe and also the alarm chain. once the alarm chain is pulled, the LED placed beside the lever and outside the coach gets turned ON. gas pressure from the Brake pipe is ventilated out through the choke provided within the traveller emergency alarm valve. because of the unexpected call gas pressure [brake pressure] from the brake pipe within the system, the flowing indicator within the Locomotive deflects from its traditional position and conjointly provides hooting signal. By this, the driving force involves realize the call BP within the formation and he applies the brakes to prevent the train. It consists of a pilot valve which may be operated by propulsion the lever by the traveller Emergency Alarm Signal Device (PEASD) is manually pilot operated vent valve. it's operated through mechanical force exerted by propulsion the alarm chain provided within the coaches for emergency use.

KEYWORDS: PEASD, LED, SPDT, Emergence system, Indian Railways.

I. INTRODUCTION

Passenger Emergency warning device is provided on the coaches to be used by motion passengers just in case of emergency. The train is stopped by pull the lever. previously two traveller Emergency Alarm Signal Devices were provided on the coaches that are located at either facet of 1 finish wall of the coach. currently just one PEASD is fitted on the top wall of the coach.

Passenger emergency alarm system consists of two components:

1. Passenger Emergency Alarm Signal Device (PEASD).
2. Passenger Emergency Alarm Valve (PEAV).

These two components in combination give an indication by reducing BP pressure to the Loco pilot and Guard that some passenger is in need to stop the train. The indication is transmitted from the coach in the form of reduction in BP in BP Gauge when the passenger pulls the chain

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II. EXISTING SYSTEM

In old alarm system the pulling chains were fixed in very high positions. The chains are connected with iron without any grips. Maintenance of INTEGRAL COACH FACTORY (ICF) coaches and Passenger Emergency Alarm Signal Device (PEASD) system needs to be replaced after use of several years. Lack of acknowledgement when the chain is pulled. ICF coaches are lesser in length and over weighted. In old alarm PEASD system the acknowledgements are not provided by the Indian government railways.

III. PROPOSED SYSTEM

Whenever the chain is pulled the instant acknowledgement is shown by the Light Emitting Diode (LED) near the pull handle and in out side of the coach also having one LED for pilot acknowledgement. The handle is made up of stain less steel and easy to pull when the emergency situation comes. In our proposed system, Emergency break application in the event of Anti-collision device (ACD). Pull handles are located on both the entrance walls of the passenger compartment and also lavatories. In our proposed system LED lights added to the coaches for getting acknowledgement when the chain is pulled. Our proposed system combined with wheel side protection which is used to make count on wheel's rotation by using speed sensors.

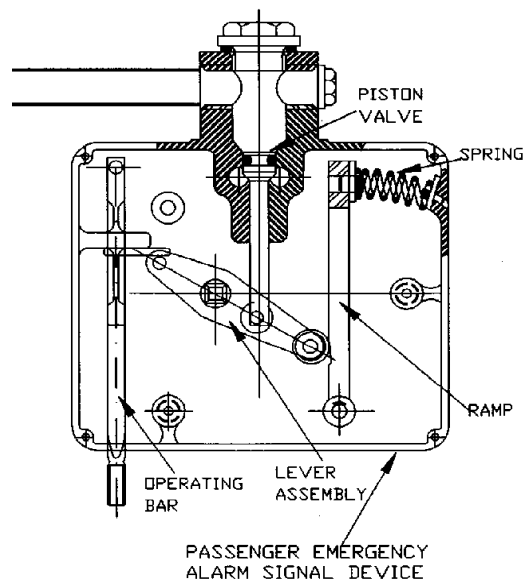


Fig.1. Proposed System of PEASD

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IV. FLOW CHART

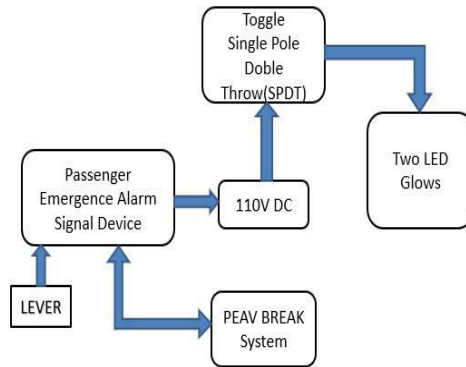


Fig.2 Flow Chart Of PEASD

The flow chart outline which appeared in above Fig.2 that speaks to a work process of PEASD system.

V. BLOCK DIAGRAM

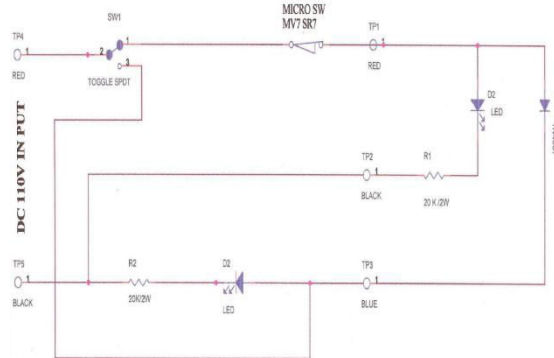


Fig.3 Passenger Emergency Alarm Signal Device

VI. WORKING

Whenever chain is pulled to stop the train, the rocker arm provided in PEASD slides and actuate the pilot valve to open the atmospheric hole, as a result the BP pressure is reduced in Passenger Emergency Alarm Signal Device (PEASD). The air which is available at the brake pipe chamber at the top of the piston is also made available at the top of the pilot valve of PEASD. When the lever is pulled the LED's placed beside the lever and back of the outer coach turns on. The rocker arm which is connected to the single pole double throw (SPDT) toggled switch turns on the LED's with 110v DC supply. This fast venting of pressure creates reduction of pressure in BP pipe of the said coach & brakes take place to stop the train. As we shown in the proposed system fig.1 two LEDs are connected with 110V Direct Current (DC) whenever the rocker arm turns up LED circuit gets activated. The life time of the LED Circuit is Better and the in some situation when the reverse flow of the current approaches the LED Circuit Diode will prevent the LED circuit.

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WP813SRC-D

- * The Super Bright Red source color devices are made with Gallium Aluminium Arsenide Red LED
- * Electrostatic discharge and power surge could damage the LEDs.
- * It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
- * All devices, equipment and machineries must be electrically grounded.

APPLICATION

- z Status indicator
- z Illuminator
- z Signage applications
- z Decorative and entertainment lighting
- z Commercial and residential architectural lighting

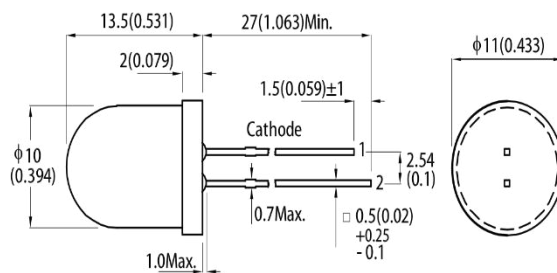


Fig.4 Dimension Of WP813SRC-D

VII. EXPERIMENTAL SETUP



Fig. 5 PEASD with LED acknowledgement

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VIII. EXPERIMENTAL RESULTS

The above Fig.5 shows the experimental setup of the PEASD system with LED acknowledgement. When the passenger pulls the lever he can get the acknowledgement by the LED light glows beside the lever and the loco pilot also get the acknowledgement from the LED present outside the coach. Here the experimental result can explain it.

IX. FUTURE SCOPE

In future after adjustments should be possible, in next certain years Microcontrollers can change the alarm system to make an instant acknowledgement direct through wireless without any physical and mechanical components.

X. LITERATURE SURVEY

1) Emergency communicates with the guard and driver of the train by Indian government.

Chain-pulling is that the act of actuation a twine that activates the train's emergency brakes to prevent a train, whether or not for a real emergency or (often) illicitly for somebody to urge on or off the train on the Indian Railways network. misappropriated chain-pulling may be a significant issue on Indian Railways; wherever miscreants do thus to form forced stops close to their destination, that delays trains. Penalties for misuse of this facility embrace a fine of Rs. 1,000 and/or imprisonment up to 1 year. In a trial to boost the service, former President of Asian country Dr. A. P. J. Abdul Kalam planned associate alternate methodology whereby a rider in associate emergency communicates with the guard and driver of the train.

2) Bell Alarm connected on the roof of the train to the locomotive by United Kingdom Government.

Emergency brakes were introduced within the uk by the Regulation of Railways Act 1868. Section twenty two declared, "All trains traveling a distance of over twenty miles no end ar to be supplied with a method of communication between the passengers and therefore the servants of the corporate to blame of the train".

3)A Communicating signal handle on the inside bulkhead by United States Of America Government.

In the USA, AN emergency stop twine isn't used. Any visible twine running among the body of a railcar would are what was referred to as the "communicating cord". This was a technique of signaling the engine operator (known within the America because the "engineer"). not like alternative countries, it absolutely was ne'er supposed to be used by passengers. It had its own code of signals, kind of like engine whistle signals. Drivers receiving AN uncommon, or unrecognizable, human action signal may stop the train, maybe as a "normal stop" or AN "emergency application", at their discretion.

4)standard air-braking system by Russian Government.

In Russian trains there's sometimes Associate in Nursing hand brake referred to as a "stop valve". In electricals and alternative trains it's sometimes situated close to the doors, and generally within the middle of the

coach additionally. A stop valve sometimes encompasses a distinctive red handle. Turning the handle down (anti-clockwise) by concerning ninety degrees causes gas brakes to interact, thanks to pressure loss within the normal air-braking system.

5) Implementation or retrofitted to avoid the problem experienced at the S-Bahn Rhine-Neckar. By German Government.

In Germany, rider vehicles “must have simply visible and accessible parking brake handles”. [4] it's allowed that the parking brake will be reset, [5] on S-Bahn vehicles (i.e. categories 420, 423, 425, 480 or 481) it's allowed to solely lead to a show once used outside of platforms.

XI. CONCLUSION

The design of passenger emergency alarm signal device is successfully developed using structured design principles. The design steps as described provides a clear vision for the design engineers to proceed during the redesign/design process. The model has increased the compactness of the emergency alarm system and reduced the number of parts. This model needs less maintenance and as the parts are not exposed to atmospheric conditions, it is not affected by the corrosion. The LED system which provides in the PEASD system make the system more compact and quick response.

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