Pre-wired U-Pillar makes installation safe and easy

The most vulnerable point in any network supply of electricity to a house is the pit or pillar providing the connection and solutions that have been developed over many years to make them safe.

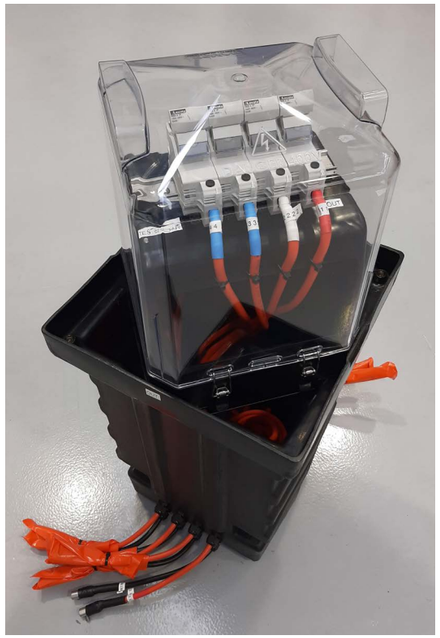
The introduction of underground pits helped eliminate safety risks from vehicle and above ground damage while water ingress protection on key components provided protection underground to ensure continuity of supply.

Today, a new pillar designed by Hiko Power Engineering has taken a different approach to underground protection by bringing the electrical safety advantages of an above-ground pillar to a below-ground installation.

The pre-assembled U-Pillar is an underground pillar designed to encase the fuse gear in a submersible and protective air pocket and remain just as electrically safe as if it were installed above ground, says Hiko general manager, Geoffrey Sullivan.

He says the entire U-Pillar also creates an arc ignition protection zone, making it safer for installation and servicing.

Additional safety is provided by mounting the fuse carriers in a self-contained, pre-wired stand that can be lifted out above the ground for easy connection, livening and maintenance access to the dry fuse gear. This insulated raised stand is covered by a transparent, airtight, insulated bell enclosure which latches to the stand and traps all the air needed to keep the electrical connections dry, even when the pillar is completely submerged. It is secured in place with a vandal-resistant locking bar.



The transparent U-Pillar bell enclosure creates a permanent airpocket to protect the fusegear from water ingress

Geoffrey Sullivan

Network connection

Hiko general manager, Geoffrey Sullivan, says after five years of development the range of U-Pillars designed and manufactured by Hiko Power Engineering solved many of the risks inherent in pits and pillars and the maintenance issues that arise.

Hundreds of U-Pillars have already been installed across New Zealand, says Sullivan, and Hiko is providing local and webinar training in U-Pillar wiring to help electricians and inspectors gain the advantages of quicker, easier and safer installations while maintaining the integrity of distribution networks.

For the network company field service partners, installing a U-Pillar is as easy as plug-and-play because it is pre-wired. The steel-reinforced lid does not even have to be removed until it is time to do the insulation tests.

U-Pillars come with a 4-core tail to connect to the network with a branch joint or with separated cores using in-line shear-bolts sealed with heat-shrink tube.

Service connection

On the service side, connecting to the U-Pillar is just as simple. Out-going cable tails are provided for each of the three power options in the standard-sized pillar. Whether the 6 x 63 amp, 4 x 100 amp or 3 x 160 amp option is utilised, the black outer-case dimensions are the same across the range.

Hiko's northern account manager, Hitesh Bhikabhai, says electricians need only leave enough extra mains cable in the trench from the house to connect to the out-going tails.

"There is no need to cut any holes in the pillar for conduit or cables because the pre-wired tails take care of everything required to safely connect the mains cable to the pillar."

"Depending on each network's requirements for connecting to boundary pillars, all the electrician or authorised livening inspector has to do is connect the mains cable to the pre-wired tails and proceed to the final connection and testing at the fuse carriers."

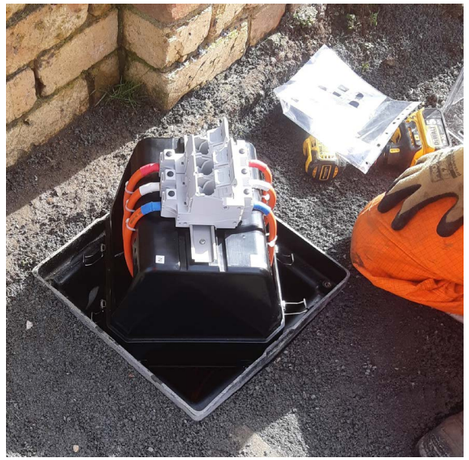
Bhikabhai says to ensure that the final terminations are correct, the multiple customer-side tails are paired (phase and neutral) and protected in a secured orange bag. The pairs are also pre-labelled with identification and phase colour coding that matches the fuse carriers mounted in the stand inside the U-Pillar.

Final connection and livening

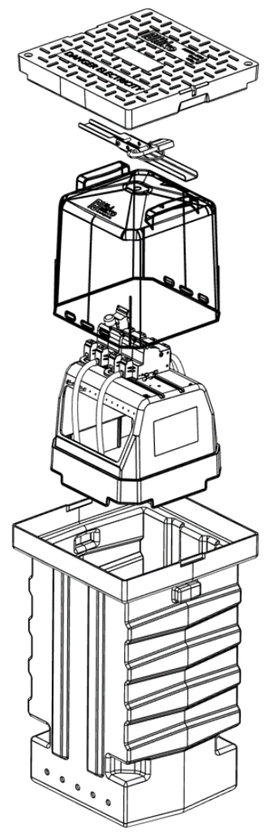
When the tails in and out have been connected, there has still been no need to open the U-Pillar, yet it is now wired from the street to the house other than the final connection at the fuse carriers.

To lift the lid and complete the final connection, two M8 torx screws have to be removed. While every pillar is supplied with manufacturer's instructions for a safe and correct installation, a QR code on the removable locking bar provides instant online access to this guidance.

Once the lid is removed the retention bar can be unlocked and the fuse-carrying stand can be lifted out, turned 45 degrees and then set down on the internal base provided for the lid for easy above-ground work.



All service and maintenance work on a U-Pillar can be carried out safely above ground



Hiko supplies the U-Pillar as a complete pre-wired assembly to allow the fuse stand to be lifted out for easy access

Bhikabhai is now providing advice and training for inspectors and electricians on U-Pillar installations and says the next stage is vital for accurate testing.

"As usual, testing is carried out before connecting the outgoing phase supply to the fuse holder using an instrument with a low impedance function (LoZ). This takes away any effect of the meter itself, especially if condensation is present under the bell.

"This will prevent a false ghost-voltage reading to allow work to continue safely. Once testing is satisfactorily completed, an authorised livening inspector can remove the protective cable caps and terminate the cables. The U-Pillar is then ready for fuse insertion and livening."

Hiko development and engineering manager, John Spence, says condensation on the underside of the transparent bell is normal and any prolonged condensation eventually runs down the side of the bell or down grooves in the sloping base of the stand.

"The Bell also provides a vital safety function as part of the arc initiation protected zone we have designed into the U-Pillar. To maintain this safety zone, holes must not be made in the bell, pit or lid. Every aspect of the pillar design contributes to the safety performance, so any modification of the safety critical components such as the bell, the lid, structural supports or sealing components is simply not necessary, no matter how well-intentioned it might be."

Spence says the glanded cable tails are complete with shear-bolts for ease of connection and, because they are integral to the UPillar's IP4X rating for the arc initiation containment, they cannot be cut or removed.

Builder's temporary supply

If the U-Pillar is to be used initially as a builder's temporary supply, Hitesh Bhikabhai says the shear-bolts must be removed from the inline connectors and replaced with replaceable grub screws to fix the temporary BTS cabling.

"Once the BTS has served its function, you can then wire the U-Pillar as the permanent supply by removing the temporary grub screws and inserting the original bolts in the shear-bolt connectors. By winding the heads of the bolts off with an Allen key, you will ensure a perfect connection which you then must seal using heat-shrink with an adhesive internal layer to waterproof the connection."

Increased pillar range

Geoffrey Sullivan says the patent-pending U-Pillar has been designed and manufactured by the Hiko Power Engineering team in Christchurch as the next step in safer power reticulation to homes.

Until last year, Hiko Power Engineering was known as Hamer Power Engineering, a specialist supplier of power engineering solutions that formed in 1938 and has manufactured Bowthorpe products in Christchurch since 1952. Hiko also supplies Langmatz underground distribution pillars with Class D lids for motorways, polycarbonate equipment cabinets, and LV distribution and transformer frames.

Sullivan says Hiko's experience in customising pillars for individual lines companies has enabled it to develop the new U-Pillar as an advanced solution for all New Zealand network companies, with international enquiries arriving from countries prone to flooding. ■

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