

Kiln Tracker®

Hydro Kiln System

USER GUIDE

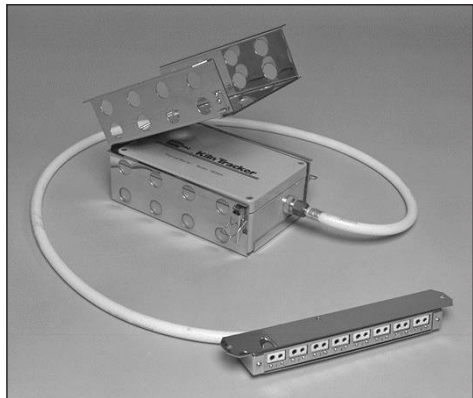


THE DataPac® Hydro Kiln System is designed to use a Tpaq21 10-channel data logger to monitor ware temperatures in kilns that use water as the effective seal beneath the kiln car. Unlike normal kiln applications, the ‘thermal’ barrier in which the logger is held is designed to protect it from moisture rather than from heat – and, as the process is of relatively low temperature, the logger can be of non-high-temperature-type using rechargeable batteries.

For use of telemetry with the system, to watch data-collection in real time, see the *Quick Reference Guide: Setting Up Telemetry in a Hydro Kiln*.

Hardware

The barrier for this system is a lightweight, watertight enclosure that houses the logger. It is held firmly in position below the level of the water in the kiln by a hinged stainless-steel barrier-holder. This



can be held in position by a mild-steel mounting plate, which is tack-welded to the underside of the car. Studs, welded to the mounting plate, give a certain amount of height adjustment to the barrier-holder, ensuring that the barrier can always be positioned below the water-level in the kiln. Alternatively, the barrier-holder can be secured with G-clamps to the I-beams on the underside of the kiln car (but above the level of the car’s skirt).

Ten type-K thermocouple input sockets are mounted in a bar that is set remote from the barrier and always above the kiln water-level, ensuring that water does not enter the sockets causing corrosion and poor contact. Having the sockets located remotely allows the barrier to be positioned near the front of the kiln car where it is quickly accessed from beneath the kiln-car skirt; the logger can then be retrieved as soon as the car exits the kiln and is out of the water, rather than having to wait until it has reached the maintenance pit. A mild-steel fixing plate is also provided to fit the thermocouple socket bar to the underside of the car.

A flexible, stainless-steel braided cable, made up of 10 pairs of type-K extension leads, connects the thermocouple socket bar to the logger. This cable is 2.5 m/8 ft long, covered by waterproof plastic tubing.

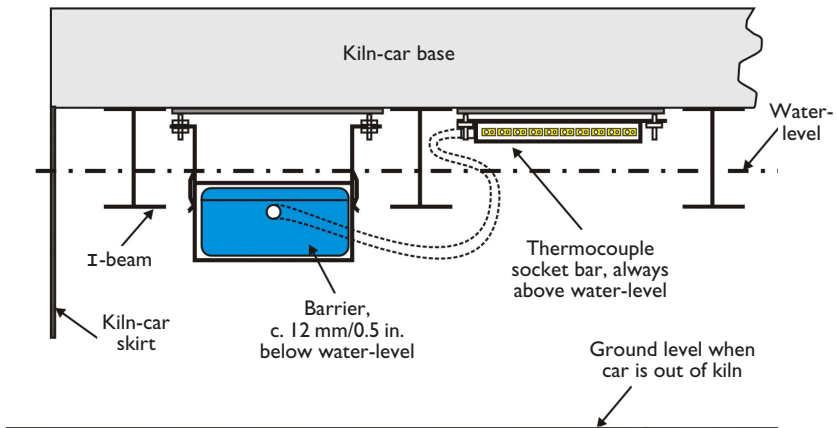
Fitting the Barrier and Thermocouple Sockets to the Kiln Car

1. Locate the stainless-steel barrier-holder and its mounting plate on the underside of the kiln car (see diagram). This should be clear of any pusher gear and, for ease of access, as near as possible to the side of the car and where there is enough clearance between the ground and the car's skirt to remove the barrier. There should also be sufficient clearance at the sides and front of the barrier-holder to release the catches and remove the barrier.

No part of the system should be below the level of the kiln-car skirt.

2. Tack-weld the mounting plate to the underside of the car and fit the barrier-holder to it. Adjust the back nuts on the studs so that the top of the barrier, when in place in the barrier-holder, is a minimum 12 mm/0.5 in. below the water-level in the kiln, then tighten the lock-nuts.
3. Locate the thermocouple socket bar about 150 mm/6 in. from the barrier (see diagram). Weld the bar's fixing plate to the underside of the car and tighten the back nuts to the base of the studs.

The thermocouple socket bar must be above the water-level.

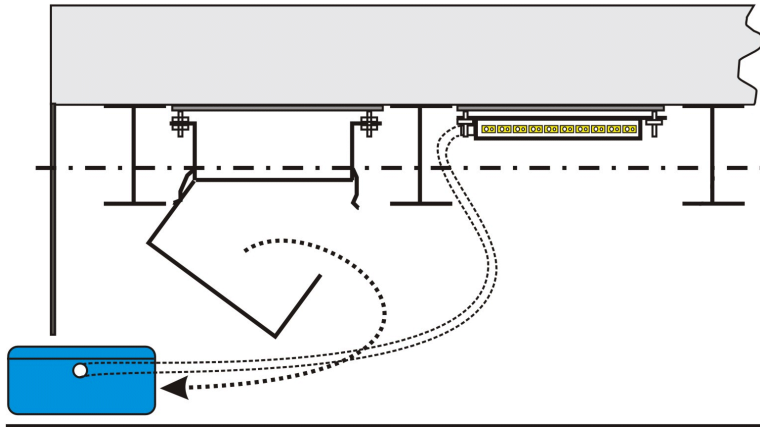


Installation of Hyrdo Kiln barrier under the kiln car, seen from the side.

4. Fit the thermocouple socket bar to its fixing plate and tighten the locknuts. The bar should now be just clear of the kiln-car base but above water-level.

Before fitting the barrier-holder or thermocouple socket bar, smear the studs and fixing plate with a waterproof grease to prevent corrosion.

5. There should be enough connecting cable to allow the barrier to be removed from its holder and taken to a position just outside the kiln car for installing the logger. During use, coil any excess cable and position this above the barrier in the upper part of the holder.



Barrier being removed: unhook catch on barrier-holder, and slide barrier out below kiln-car skirt.

Operation

The Hydro Kiln system is used in basically the same manner as the standard Kiln Tracker system, the difference being that the barrier is completely underwater instead of being in still air. There is thus no need for any kind of insulation or heat-sink within the barrier, though the following must always be observed:

- The barrier must always run completely submerged below the water in the kiln.
- Barrier and thermocouple assemblies are designed to run through a process where the drying and firing operations are integral, i.e. within the same kiln. This is normal for this type of kiln.

WARNING

Do not run the system through a separate drying process that does not have a water seal. If there is a dryer or pre-heater prior to the kiln, a special thermal barrier may be required; contact Datapaq for advice.

For information on use of the logger and thermocouples, etc., see the *Tpaq21 Data Logger User Manual* and the *Kiln Tracker General System User Manual*.

Install the logger in the barrier as follows:

1. Loosen the catches on the barrier-holder, and let the lower half of the tray hinge down to expose the barrier.
2. Remove the barrier and slide it out beneath the kiln-car skirt.
3. Loosen the four screws in the corners of the barrier, and remove its watertight lid.
4. Reset the logger, test the thermocouples (see 'Troubleshooting' in the *Tpaq21 Data Logger User Manual*), and connect the logger to the thermocouple socket bar.
5. Carefully wipe the mating faces of the barrier's lid, ensuring that the sealing gasket is completely clean and free from dust.
6. Replace the lid and secure the screws evenly; do not overtighten.
7. Place the barrier in its holder, raise the lower half of the holder, and secure the holder's side-catches with the pins provided. The system is now ready to run.

Full details on using the system's Insight software are contained entirely within its online Help system: access this by clicking Help, and then Contents, on Insight's main menu.

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