

No-Kalt®

General Technical Data of Series 4000 NK

DLCP Equipment

Unblocking Longitudinal System for Production Columns



Production tubing totally blocked by crude heavy deposits.



High viscosity crude sample.



No-Kalt® thermal inductor.

Problem

High viscosity and/or high paraffin content in crude can make production very difficult or impossible due to the pumping and extraction difficulties generated by these situations.

For these situations, there is a new tool:

No-Kalt®
Series 4000 NK
Well thermal inductor

Primary Concept

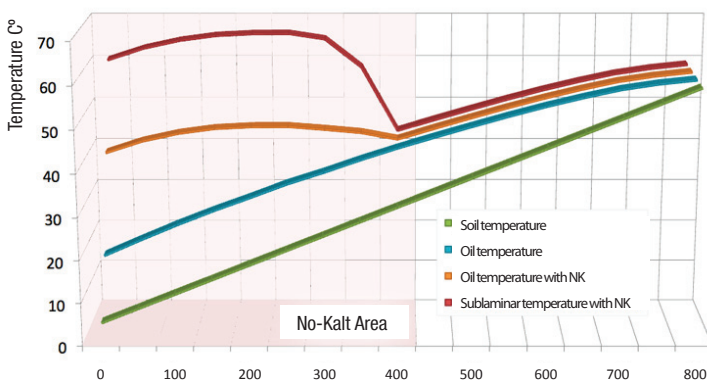
Although the basis of primary operation is the heat contribution, the equipment is based on a concept that is different from the simple heating of fluids.

The main objective in a viscous well is to warm up the walls of the tubing to obtain a hot laminated film on top of the internal surface thereof acting as lubricant. The temperature is high enough to generate a very low, peculiar viscosity, but not so high to produce oil coke or the separation of the lightest elements of the crude, thus avoiding unwanted side-effects.

This produces less counterpressure and higher speed of flow. In order to achieve this objective, the No-Kalt provides heat throughout the complete route of the production tubing that needs to be covered, not only in a specific way. The same process is performed in paraffin wells, in which the high temperature of the wall avoids the deposit of heavy molecules.

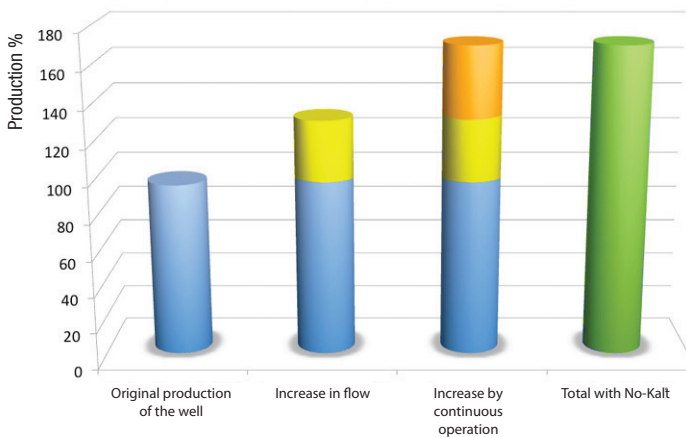
Comparative Temperature Chart

Equipment installed at a depth of 800 m.
Effect on flow and contact temperature.



Study

As can be observed in the chart, the sublaminar effect of increasing contact temperature is the benefit sought generated by No-Kalt®, as it obtains a concrete result with less energy consumption. The long term studied design is a key to reduce viscosity.



Production and Investment

The system increases production through two effects:

1- Flow increasing: Through viscosity or tamponage counterpressure reduction.

2- Continuous operation: Avoiding the effect of production decreasing as a result of a blocked or under repair well and results can be observed throughout the complete production of the well.

Final percentages shall depend on well characteristics and a mathematical infinite return could be generated if the well starts producing after being closed. This is the case of abandoned wells for extremely serious problems or variables. Interventions in complicated wells are also simplified.

The investment recovery period is less than 12 months in 98% of the observed cases.

Simple and Standard Equipment and Tools

Installed No-Kalt® System



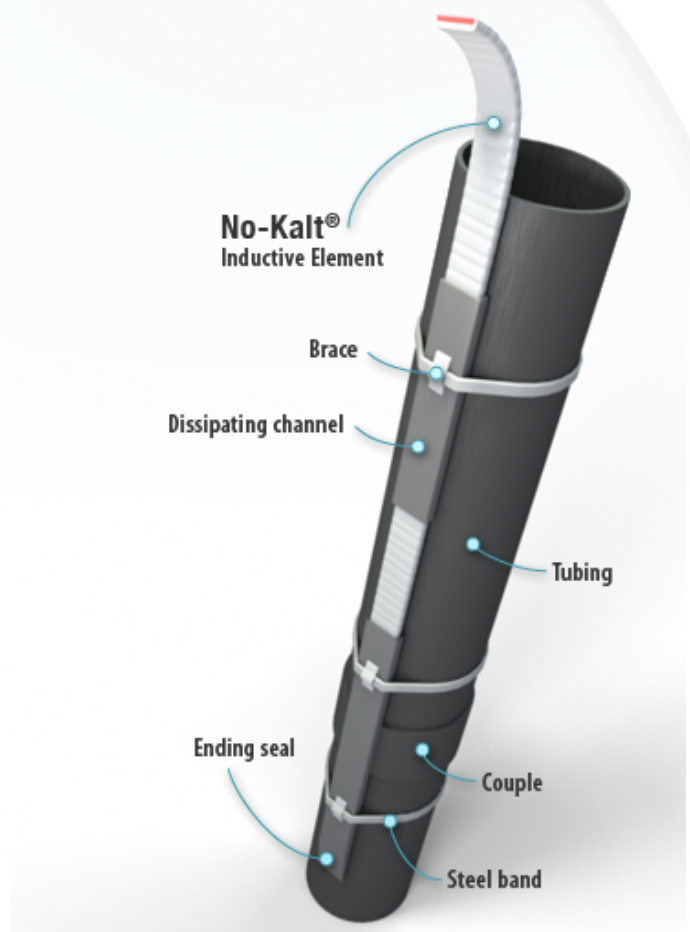
Field Preparation



Installation



Completed wellhead



Easy Installation

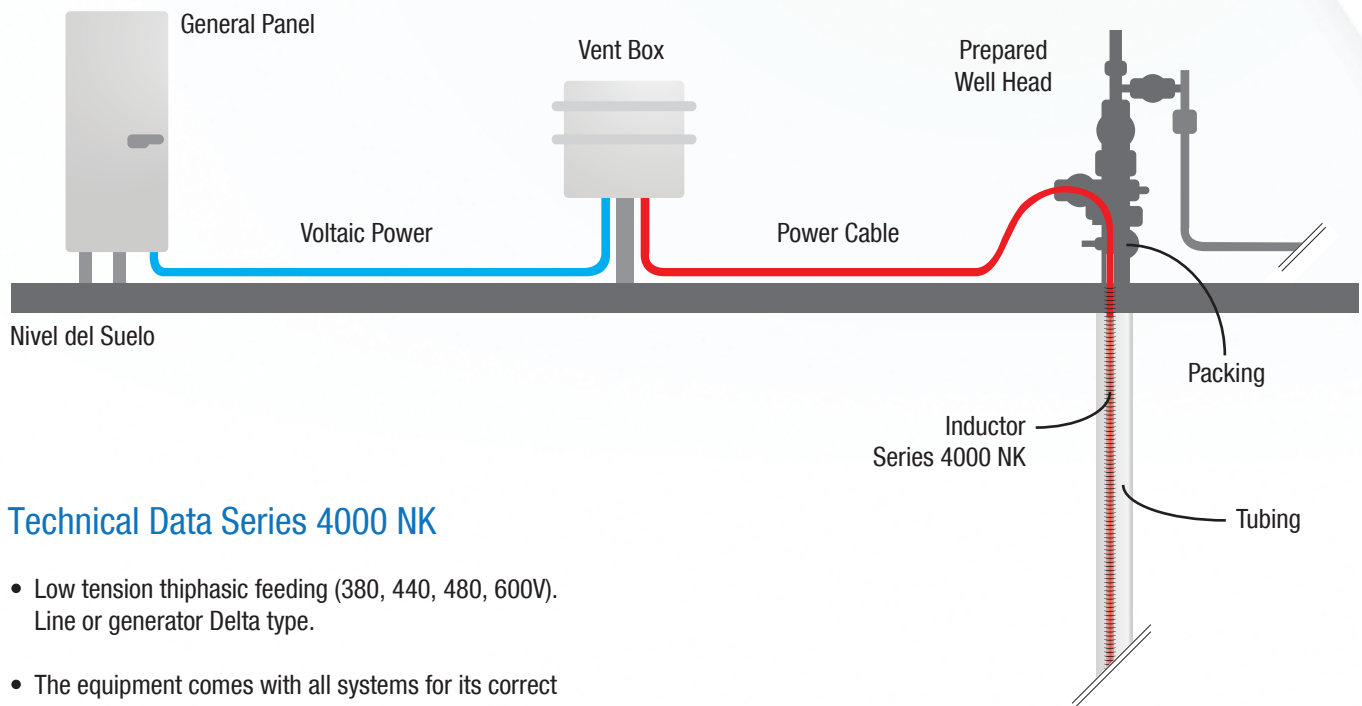
As can be observed, installation is simple and without inconveniences in a normal operation.

The Company's trained teams are available to perform any maneuvers needed.

The use of the No-Kalt System, does not require highly specialized actions or tools. The head of the well is normal according to the operating company standards, with a duct for the power cable and, as the case may be, a packer under the final seal to improve efficiency.

General Scheme

Connecting System



Technical Data Series 4000 NK

- Low tension thiphasic feeding (380, 440, 480, 600V). Line or generator Delta type.
- The equipment comes with all systems for its correct functioning based on the client's specifications.

Note: voltage may be different, but we recommend feeding with a tension that can be exchangeable with the zone's standard supply.

Technical Data NK Series 4000

NK Series 4000 can be operated in a wide range of situations regardless the design of the well.

- Natural or Surging Production
- Mechanical Pumping
- Progressive Cavities Pumping
- Pneumatic Pumping (natural or artificial gas lift)
- Electric Submersible Pumping
- Capilar use

Suggested Use Range

NK-Series 4000 can be installed by itself or in combination with compatible technologies (mentioned above) in wells with a raw production of up to 400 m³/day. In general, good candidates are wells of API 24 or less. The paraffin content is unlimited.

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