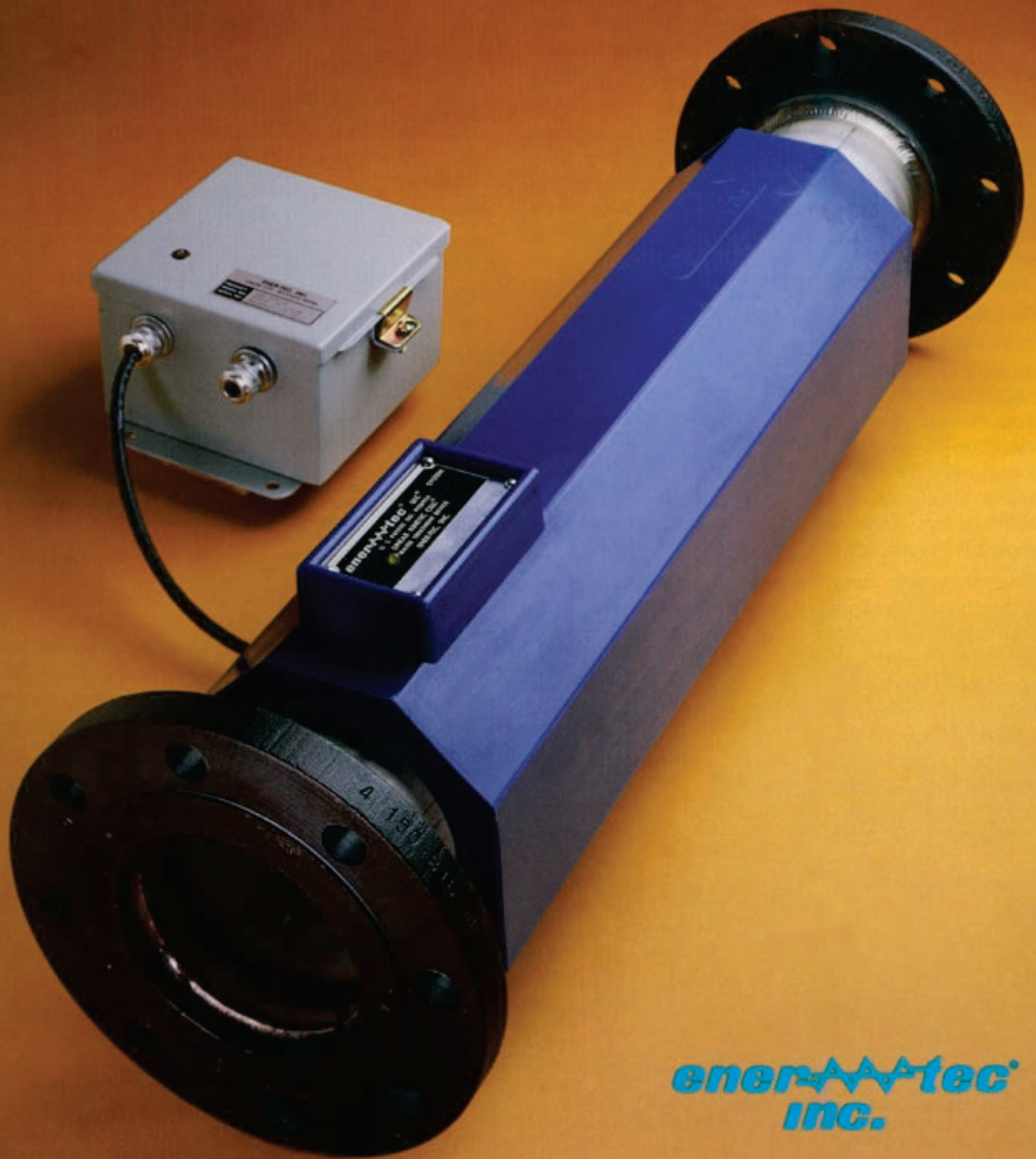


Linear Kinetic Cell

Paraffin Control System



ener⁺tec⁺
INC.

Electromagnetic Fluid Stabilization

A major problem in oil extraction and line transporting is the buildup of paraffin, restricting the flow. Production volumes are based on the amount of flow achieved through any given pipe line in a given amount of time. Hot oil, pigging, and chemicals have been the accepted means of controlling paraffin deposition in the past. Now, Ener-Tec introduces the Petro-Flow Electromagnetic Fluid Stabilization System which stabilizes the oil, keeping the paraffin in solution.

Oil, like water and other fluids, has a molecular structure which can be altered when exposed to an induction field. This electromagnetic bonding process stabilizes the paraffin molecule by bonding it to other molecules by electro-kinetic energy. This stabilization process (forming of a molecular bond) neutralizes the paraffin molecule, and it loses its ability to come out of solution and build up on the inner pipe surface.

When the Fluid Stabilization System is placed above ground, on the discharge of the well head, the fluid polarization has a reversing effect on the incoming oil from the well. This is due to the strong electromagnetic induction forces exerted on the carbon steel pipe. These forces realign the molecules within the carbon steel, as well as the oil, creating a molecular chain the entire length of the casing. This force is sufficient to keep the paraffin molecules in solution (suspension).

Electromagnetic induction energy is never contained within the length of the coil. Its effects through polarization can be measured in both directions for an infinite distance. An example of this law of physics is to place a short induction coil in the center of a long length of steel tubing. When the coil is energized, the entire length of tubing becomes magnetized.

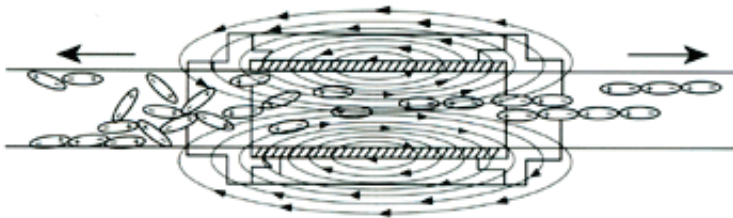


FIG. 1

FIG. 2

FIG. 3

Fig. 1 The molecules as they appear at random and clinging to the sides under normal conditions in untreated oil.

Fig. 2 The path of the flux field. This force creates the proper energy to polarize the molecules within the oil system.

Fig. 3 The molecules after they have been treated with the Ener-Tec system. The internal forces orient the positive and negative poles in such a way as to produce a molecular chain, resulting in polarization of the molecules the entire length of the carbon steel tube, up stream as well as down stream.

LABOR: The LKC System greatly reduces man hours by eliminating chemicals, pigging, and/or hot oiling to prevent the deposition of paraffin. The LKC System is self monitoring and requires no maintenance.

MEETS E.P.A. REQUIREMENTS: The LKC System does not require chemicals and meets EPA requirements.

U.L. & C.S.A. APPROVED: The LKC System is U.L. & C.S.A. approved and available in explosion-proof systems to meet all electrical codes.

OIL CHEMISTRY: API Gravity, pour point, cloud point, and temperatures are not factors in the operation of the equipment.

SAFETY: Safety is the most feared part of using chemical treatment in oil systems. There have been cases of severely burned hands, arms and faces of persons handling chemicals.

The LKC System requires no chemicals.

SPACE: The LKC System requires little room for installation since the entire cell is placed directly into the oil line.

CONTINUOUS TREATMENT: The LKC System operates automatically, 24 hours a day with no assistance.

NON-POLLUTING: The LKC System is non-polluting. All treatment is accomplished through Ener-Tec's induction process.

INSTALLATION: Installation of the LKC system requires a minimum of time and labor.

O.E.M. Services

Ener-Tec, Inc. maintains a qualified Engineering staff experienced in assisting Original Equipment Manufacturers with their problems. Design, prototype and testing is offered to determine the feasibility of the Linear Kinetic Cell use in conjunction with the O.E.M. equipment.

Technical Information:

LIQUIDS PASSING THROUGH THE LKC SYSTEM FLOW IN A LAMINAR FLOW PATTERN.

lam'inar flow', *Hydraulics, Mech.* the flow of a viscous fluid in which particles of the fluid move in parallel layers, each of which has a constant velocity but is in motion relative to its neighboring layers.



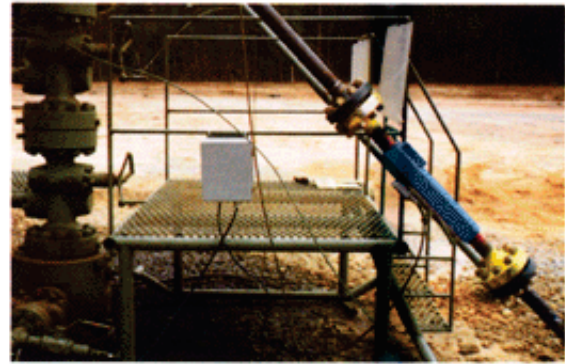
4" Kinetic Cell installed on a 4.7-mile pipeline, operator eliminated chemicals, disposal and maintenance, and reduced paraffin to a trace.



Pumping well in N. Louisiana, 2" tubing, paraffin formed at 500'. Daily chemical treatment, and hot oil once a week. Installed 2" Kinetic Cell at surface, eliminated chemicals, and hot oil once a month. In service for one year.



4" Kinetic Cell installed in 4" x 11-mile pipeline, operator eliminated chemicals, disposal of paraffin and reduced paraffin to 1/4 gallon and one pig run per week.



Flowing well in N. Louisiana, 5000 psi at surface, paraffin formed due to pressure & temperature drop. Installed 2" Kinetic cell, care is 2" N80 pup joint. Eliminated chemicals and paraffin in facilities, and 1.4-mile flow line to tank battery.



2" Kinetic Cell in 7-mile pipeline, operator eliminated chemicals and reduced pig runs and paraffin to a trace. In service for one year.



Operator installed a 4" Kinetic Cell.



Pumping well in S. Louisiana, 2" tubing, paraffin at 500' daily. Chemical treatment plus hot oil once a month. Installed a Kinetic Cell and eliminated all treatments. In service for nine months.



Pumping well in S. Louisiana, 2" tubing, continues paraffin solvent daily, plus hot oil every two weeks, paraffin formed a 900' down hole. Installed 2" Kinetic Cell at surface, eliminated chemicals and hot oil to once a month. In service for 18 months.

CUSTOMERS SERVED:

Arco Pipeline Co.
Chevron USA
Citgo Pipeline Co.
Diamond Shamrock Pipeline Co.
Exxon Pipeline Co.
Fina Pipeline Co.
Four Corners Pipeline Co.
Hadson Oil Co.
Marathon Oil Co.
Mobil Pipeline Co.
North Central Oil Co.
Permian Corp.
Shell Pipeline Co.
Transpetco Engineering, Inc.
Texaco U.S.A.

COMPANY CAPABILITY:

Design, engineering, fabrication, start-up and service are within the firm's qualifications. From the expression of a special customer requirement, to seeing equipment function properly in their plant, is our mission and commitment. Automatic fabrication and assembly equipment allows delivery of a quality product with little or no lead time. Quality control standards are met or exceeded in every system.

HISTORY:

Ener-Tec began its operation in the mid 1970's, manufacturing the Linear Kinetic Cell (R) for water treatment. Since that time it has grown and expanded its operation to be the leading manufacturer of non-chemical water treatment systems, serving a diversified market. Through the latest state-of-the-art technology, Ener-Tec has developed the Paraffin Control System for the prevention of paraffin deposition.

MARKET SERVED:

International marketing to nearly every country.



Operator was pigging a 4" 4-mile pipeline three times per week, getting a bbl to a bbl 1/2 of hard paraffin, which had to be disposed.



Results after four weeks with Kinetic Cell in service. Kinetic Cell has been in service for over three years.

U.S. Patent No. 4326954/Canadian Patent No. 1164929

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