CLEAR-RUN
Advanced Tubular System



Technical Overview

Environmental regulations in several key Oil & Gas Industry provinces have restricted the use of traditional 'pipe dope' based OCTG processes. This situation, coupled with the dramatic reduction in wellbore & equipment contamination presented by use of emerging surface treatments, led to the development of the JFE Steel Clear-Run® Advanced Tubular System.

Key Features

From early 2001, Our technological development partners-Hunting Energy Services International, R.S. Clare & Co Ltd and MP(Eastern)Ltd have been working on the development and testing of Clear-Run®, the first commercially field proven Advanced Tubular System available to the Oil & Gas Industry, incorporating the following technical features;

- Zero Contamination of Down Hole Equipment from OCTG Pipe Dope
- Zero Well and Formation Contamination from OCTG Pipe Dope
- Controlled Make-Up and Breakout (without Dope) with High Galling Resistance
- Removal of Onshore and Offshore Thread Cleaning & Preparation Time/Cost
- Advanced, Connection Life-Cycle Corrosion Protection
- Minimised Residual Environmental Impact, Maximised Component Re-Cycling

Anti Galling

In traditional OCTG processes, copper plating of the box or couping end of the connection is used in conjunction with pipe dope on the threads to reduce the occurrence of galling at the make-up stage. Despite this, galling still remains a risk, often accounting for an unacceptable reject rate in the field.

The development programme of the Clear-Plate® anti galling technology was initially intended to produce a coating that would be more resistant to disruption by connection surface contact loads and pressures than traditional copper coating.

Early variants of the alloy coating showed impressive galling resistance and the product has now been further developed to enable repeated running without the need to use conventional API or "Green" dopes.

Extensive make and break testing has confirmed all aspects of the performance and reliability of the Advanced Tubular System. (see Clear-Run® Test Datasheet 01 – Anti-Gall Properties of Clear-Plate™)

Controlled Make-Up

Extensive laboratory and field testing of Clear-Run-CG® in conjunction with Clear-Plate® produced similar friction profiles to traditional copper / API dope combinations.
(see Clear-Run® Test Datasheet 03 – Make-up and Break-out Testing)

Corrosion Protection

The Clear-Run-CG® component of the system protects the pin threads and the Clear-Plate® electroplated alloy, in conjunction with Clear-Run-CG®, protects the box or coupling end. Used in combination, these technically advanced products provide levels of corrosion protection equivalent to in excess of traditional

copper/dope based processes without the need for cleaning or re-application prior to shipping from the pipe yard and running in hole.

Experience of long term storage up to 24 months have been gained on Clear-Run® prepared tubulars that were taken immediately from stock and run at the well site with no indication of corrosion (Q1 ‘ 04) (see Clear-Run® Case Study C01).

Improved Field Performance

In field tests and offshore running, removing the need for connection cleaning and dope application at the point of make-up increased the speed of deployment of tubular strings to the well by up to 20% (see Clear-Run® Case Study C01).

Laboratory and field testing has conclusively demonstrated Clear-Run’s resistance to petroleum-based solvents. The anti-gall performance of the Clear-Plate® coating, together with Clear-Run-CG® lubricant ensures a consistent make-up in circumstances such as base oil immersion when a traditional doped system would have severely deteriorated. (see Clear-Run® Test Datasheet T-05 Field Running Trials).

Connection Performance

Due to improvements in drilling technologies, the requirements placed on casing and tubing connections under combined loads of tension and compression, internal, external pressure and bending have become increasingly severe. The JFEBEAR™ premium connection was designed for use in such environments. JFEBEAR™ Clear-Run® has been successfully tested to a service envelope based on ISO 13679 CAL IV loads and pressures.

During testing of the Clear-Run® system components, the most severe of operating environments was simulated with no comprimise to connection integrity including:

- Connection threads and seals manufactured to extreme tolerances
- Application of Thermal Cycling with Combined Loading Trials
- Combined Pressure Test with Axial Loading to 95% pipe body VME.

(see Clear-Run® Test Datasheet T-05 Connection Load Testing to ISO 13679 Test Protocol).

Environmental Footprint

The overall Clear-Run® system dramatically reduces the environmental impact of OCTG operations. The removal of pipe dope from the process significantly reduces contamination of the workspace, well formation structures and the general land/sea environment.

With the JFE Steel Clear-Run® Advanced Tubular System, Clear-Run-CG® has achieved the best possible environmental performance under the UK Cefas rating system and complies with the requirements on the “yellow” rating under Norway’s adoption of the Harmonised Offshore Chemical Notification Format (HOCNF). (see Clear-Run® Test Datasheet T-04 Independent Environmental Impact Classification)

Health and Safety Performance

The JFE Steel Clear-Run® Advanced Tubular System has created a step-change in the way tubulars are prepared and run offshore. Clear-Run® improves safety and working conditions both onshore and offshore, reducing slip/trip potential and as a “no intervention” system reduces the potential for risks of other injuries when running.

With Clear-Run®, all the above health, safety and environmental benefits are realised whilst improving connection performance and downhole well conditions. (see Clear-Run® Test Datasheet T-08 Health and Safety Performance of Clear-Run®).