

# Reverse Flow Injection (RFI) System Down Hole Gas and Water Separation (DGWS)



The future of oil and gas production in North and South America is Water Management. Down Hole Injection's (DHI) water management technologies are cutting-edge and are the future for environmentally safe and economical oil and gas production.

The amount of economically recoverable gas reserves in North and South America can be increased through the use of Down Hole Gas and Water Separation (DGWS) Systems. Such systems as the Reverse Flow Injection (RFI), allow hydrocarbons to be physically separated from water in the same well bore while simultaneously injecting water into a suitable geologic zone below. That is, no water or water pressure is ever produced to the surface. Use of this system will reduce or eliminate most of the economic and environmental problems associated with water produced to the surface.

The RFI system simultaneously produces gas while separating and disposing of water in the same well bore down hole. This system offers many economic and environmental benefits.

## Eliminates Co-Produced Water at the Surface

No water lifting, treating, transportation or disposal costs

## Increases Recoverable Gas Reserves

Permits development of remote gas fields - Recoverable reserves increased

## Green Technology

The RFI system eliminates regulatory conflicts and does not contaminate the environment

## Zero Surface Injection Pressure

No surface spills - Eliminates surface/drinking water contamination

## Enables High Bottom Hole Injection Pressures

Superior to "Gravity-driven" Systems

## Reduced Rod and Tubing Scale/Corrosion

Rods operate in inhibited/lubricated fluid at all times

## Reverse Coning Benefits

Maintains in-situ gas/water separation for increased gas production

## Lower Torque Requirements

Less rod load/stress and power consumption

## Uses Conventional Equipment and Tools

Field-proven technology

## Lower Operating Costs

Maintenance and externality costs are decreased



Patents Pending

The RFI system is a DGWS process that is protected by a process patent and by two part patents that are all pending. DHI's below production disposal system is protected under process patent # US 5,425,416.

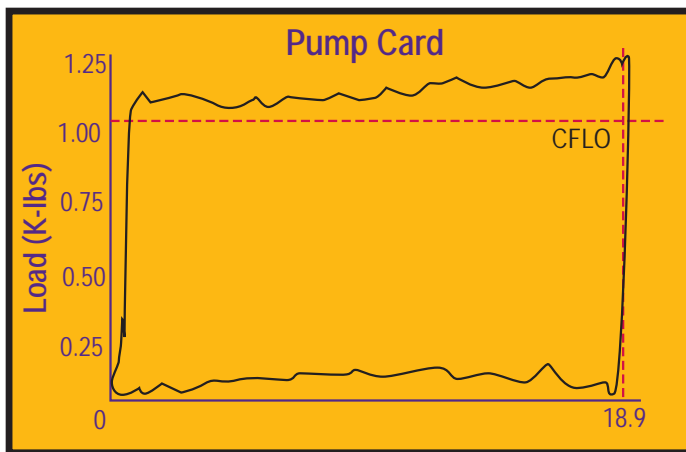
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## DGWS Monitoring and Control

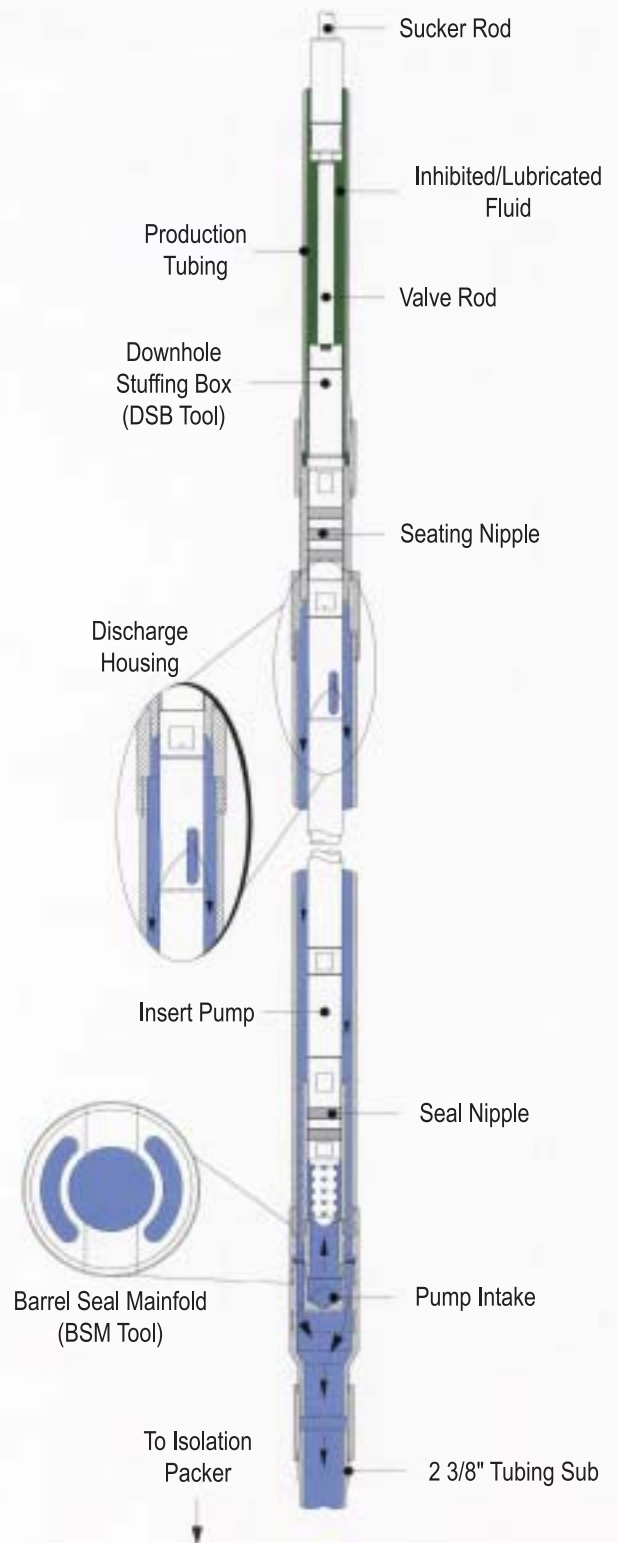
DHI has developed procedures that allow real-time analysis of bottom hole injection pressures and injection rates. These parameters, in turn, permit real-time optimization of DGWS system performance.

Performing accurate dynamometer and acoustic surveys provide the data required to determine the injection pressure and rate. Using the knowledge gained from the analysis of the data, DHI is able to correct inefficient operations and institute more efficient procedures, which will result in increased gas production, controlled injection pressure, lower operating costs, longer tool and equipment life.



## Quality Control and Manufacturing

Global demands and an increasingly competitive business environment in the oil and gas industry mean that technology providers such as DHI must always be ready to adapt to new situations. To enable this, DHI has implemented a series of Quality Management and Quality Assurance Standards that are employed to facilitate the worldwide inter-changeability of all DHI products and technology.



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