

# iCAP

## INTELLIGENT CATHODIC PROTECTION SYSTEM



### Turn-key Solution for efficient pipeline operations

Pipelines are the most cost efficient means of transportation for natural gas, crude oil, petroleum products, water and many other chemicals. Due to continuous transportation of these fluids at high pressure, corrosion is inevitable. ICSA has designed products that help in detecting corrosion there by avoiding leakages.

For this purpose, it developed iCAP, which helps in detecting corrosion and identifying losses. iCAP is an innovative field compatible product with modular wireless embedded in real time. It monitors pipe line operations and notifies abnormalities on a real time basis. iCAP acquires data from several test lead points spread along the pipe lines, processes it on a real time basis and forecast rate of corrosion and abnormalities due to pilferages. All IPRs for this product are owned by the company. ICSA recently entered into a strategic tie-up with Oil India Ltd (OIL) for undertaking projects for implementation of iCAP.

# ICSA

An ISO 9001:2008 Company

*Empowering Energy Sector*

The general observations on conventional manual system are as follows:

- Errors in conventional measurement are inevitable due to external IR drops
- Midpoint voltage is measured once in a month
- Every TLP (Test Lead Point) voltage is measured once in 6 months
- TR unit voltages and currents are measured once in 10 days
- ON PSP readings are taken by Road/Helicopter once in 6 months
- ON/OFF PSP readings of entire pipeline are taken by road once in a year
- Synchronization problems are associated while measuring OFF PSPs
- Any deviation from established norms damages coating
- Improper potentials/deviations from established potential criteria enhance the corrosion problem that results into leakage and fire

The conventional manual measurement intervals are too long. Once corrosion process starts it increases exponentially. Therefore, real time monitoring with close intervals for all TLPs including TRs is essential for improving conventional CP efficiency and thereby reducing corrosion loss.

### **iCAP System :**

An innovative field compatible wireless embedded real time system comprising of ITUs, permanent reference cells, base station, and optional modules like ATR, OFF PSP, Soil resistivity interface etc. This modular system continuously monitors the pipeline operations and notifies the abnormalities, if any, in real time domain and initiates the warning.

The major objectives for use of iCAP system are as under:

- i) Continuously notifies in real time, the behavior of all test points of TLPs, drains and TR units.
- ii) eliminates the requirement of conventional measurements
- iii) eliminates the influence of external IR drops
- iv) Provides continuous information of all the test stations - thereby bringing in improvement on efficiency and safety over the conventional CP system
- Stray current behavior and rate of corrosion may be notified in real time, as an option.

### **Features :**

- A comprehensive solution for efficient pipeline operation
- Maintains the established norms, if any
- Improves pipeline life
- Notifies in real time the rate of corrosion/stray current behavior-optional
- Reduces measurement intervals to provide continuous information and improves safety
- Automatically controls the voltages and currents
- Error free measurements
- User friendly operating environment
- Real time data analysis and interpretation
- Integrated data transmissions using Optical/GSM/GPRS/CDMA and SRM/FSK
- Inbuilt warning facility
- Data acquisition through wireless handheld terminal
- Field compatible and economically viable
- Solutions are developed compatible to new and existing pipeline applications

## Benefits to the Industry :

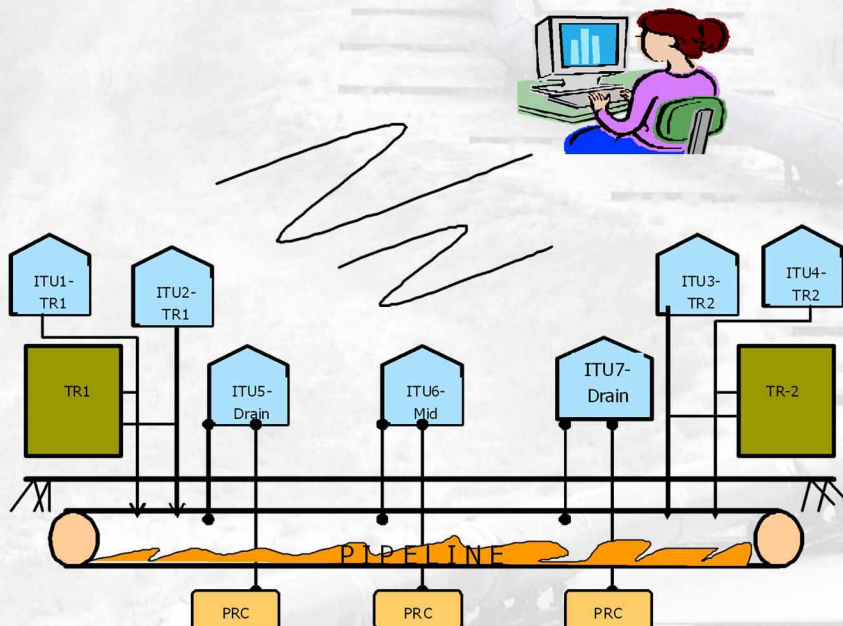
- Improves the life and safety of pipeline, notifies behavior of all test stations in real time. Facilitates better planning and execution of pipeline maintenance schedules, etc
- Eliminates requirement of conventional measurements. As a result, it saves expenses incurred on such measurements and avoids manpower requirement
- System helps in maintaining established norms to meet statutory requirements
- Industry normally incurs considerable amount of money for replacing each kilometer of corroded pipeline which is avoided using iCAP system
- System notifies behavior of stray current/rate of corrosion as an optional facility that helps in improving the overall life cycle of the pipeline

**iCAP systems is a unique field compatible solution to increase operational efficiency thereby enhancing overall life span of pipeline**

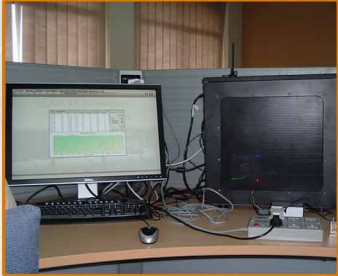
## Applications :

- Old and New Pipelines
- Storage Tanks
- Underground vessels
- Pontoons
- Foundation Re-Bars
- Off shore applications
- Water pipelines
- Towers
- Fertilizer Kilns

## iCAP System Block Diagram :



## Actual Field Photographs :



## Corporate Office :

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