

## **Focus: Technology for Ageing Assets – Facilities, Pipeline, Subsea**

*Improved Solutions Sought For Issues Relating to Ageing Assets*

### ***Aims***

This is an open invitation to any organisation from any sector seeking partners and funding for innovative technologies in the oil and gas industry to submit high quality proposals for research, development and / or field trial of potential solutions that will help in dealing with issues relating to ageing assets.

### ***Ageing Assets specific areas of interest:***

- Materials
- Extended Life
- Asset Integrity
- Full Life Cycle Design
- Corrosion Under Insulation
- Environmental Concerns

### ***Justification***

ITF members, major operating and service companies in the oil and gas sector, met recently at an international ITF Technology Challenge Workshop (TCW) and explicitly identified the current shared challenges they are facing across the industry in the area of ageing assets but focused on facilities, pipeline and subsea.

### ***Who Should Respond***

The invitation is open to all relevant industry sectors and all credible entities, from small and medium sized enterprises, to academic and research institutions, to large industry players alike.

### ***Benefits of Participation***

- Funding: Up to 100% funding is potentially available for any stage of the research, development and demonstration cycle.
- IP Protection: A proven confidential, collaborative and standard contractual process
- Exposure and validated applications for your scientific and technological expertise

- Access to the key global players in the oil and gas sector

### ***How to Participate***

Your contact points and outline method for submitting a proposal are provided in this document but you can immediately learn how to submit a proposal by going to our website <http://www.oil-itf.com/index/submit-a-proposal>

Alternatively you can ring us and talk to one of our analysts about your idea, +44 (0)1224 222410.

## Ageing Asset Workshop- Facilities, Subsea, Pipeline Challenges

The prime areas of concern have been identified by ITF members as follows:

- Materials
- Extended Life
- Asset Integrity
- Full Life Cycle Design
- Corrosion Under Insulation
- Environmental Concerns

### Ensuring Materials Integrity

The ageing infrastructure of offshore and onshore installations presents the industry with a constant and growing challenge. Ageing is, in general, characterised by deterioration which, in the severe operational environment offshore, can be significant with serious consequences for installation integrity if not managed properly

Increasing maturity of asset management based on fundamental materials research to predict the lifetime of current and future materials is crucial for the industry.

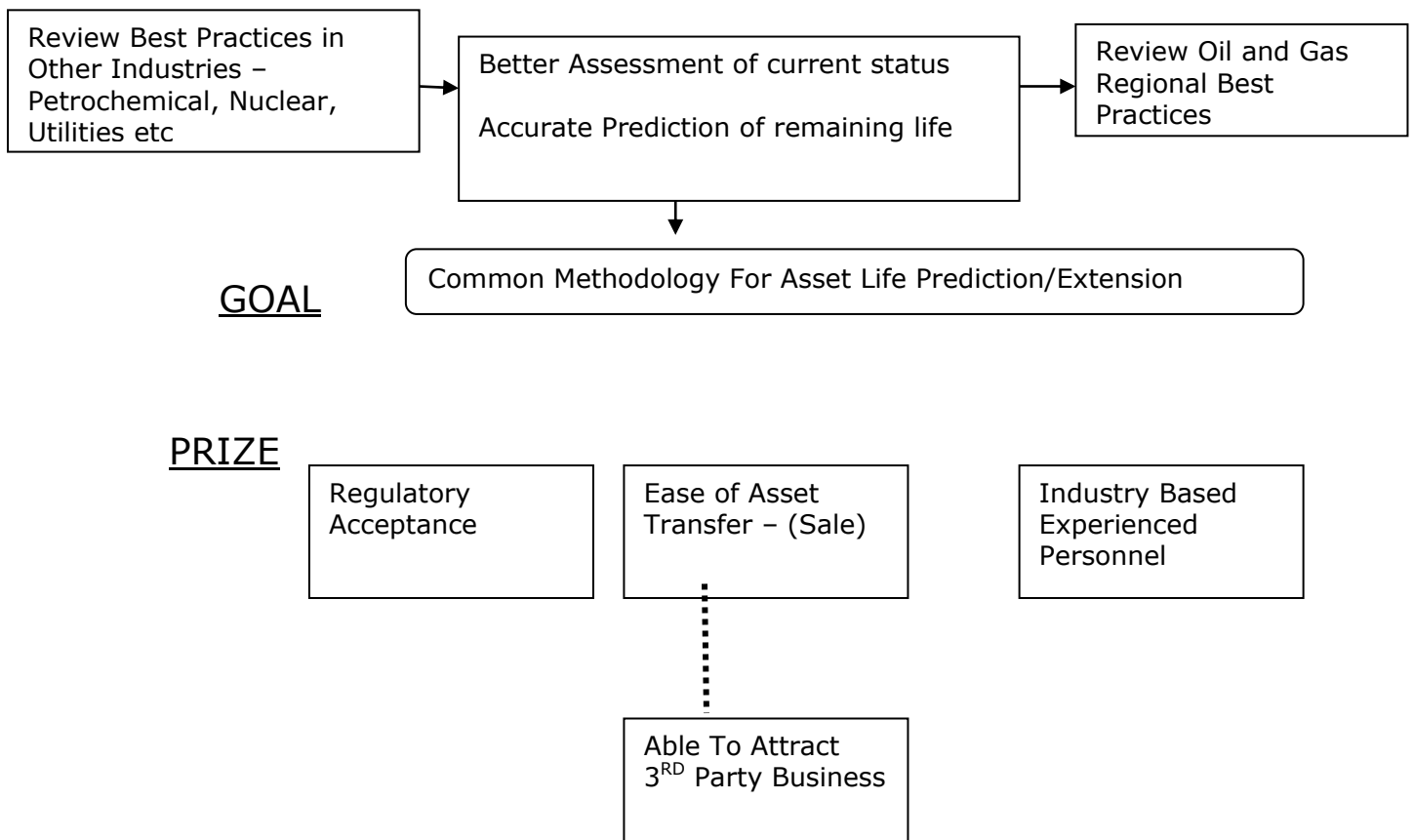
The industry has some exciting challenges ahead that need the support of materials research and technology. The challenge for the industry is how they ensure that the material technology required at the available to required timescales. The scope covers pipeline, subsea and facilities.

### The challenges

In particular the industry is seeking new ideas in the following areas:

- **Better understanding of the performance of materials in changing environments**
  - *Fluid compatibility and its effect on material life (elastomers)*
- **Detection and monitoring**
  - *Prediction and monitoring of coating breakdowns*
  - *Detecting coating disbondment prior to onset of corrosion*
  - *Detection management of stress corrosion cracking*
  - *Lower cost condition monitoring*
- **Establish High Level Guidelines to provide a way to manage/mitigate impacts of process changes on existing materials**
  - *Change from sweet to sour service*
  - *Impact of reservoir souring on carbon steels*
  - *Understanding where well fluid changes will affect material performance in future*

- **Establish common methodology for asset life extension**
  - *Better assessments of current status*
  - *Predictability of asset life – materials, operating conditions, and the ability to make adjustments from historical performance*
  - *Structural/Jacket Analysis*
  - *Applying full lifecycle design "FLCD" principles in maximising remaining life of existing assets*



## Ensuring Extended Life for Asset

Life extension assessment is a distinct activity which has only recently been formally recognised by the offshore industry, largely due to the recent introduction of regulatory requirements and the new ISO standards for offshore structures, ISO 19900 and ISO 19902. However, whilst the ISO 19900 series of standards provides a good basis for the assessment of life extension, the standards are still evolving.

### The challenges

In particular the industry is seeking new ideas in the following areas:

- **Best Engineering Practice**
  - *Replace, Repair, Re-use – Decision based on remaining asset life*
  - *Accuracy of fatigue and fatigue predictions (less conservative but more accurate)*
  - *Too many global standards – Need common understanding of best practices*

- **Failed grouting issues**
  - *Impact of failed groutings with regards to structural fatigue*

## Managing Asset Integrity

There are more than 6700 platforms in operations around the world. On average, 30% have been in operation for more than 20 years and many of these are operating beyond their original design. Asset integrity entails making sure an asset can perform its required function effectively and safely. Three areas are integral to effective structural integrity management: inspection, change management and advanced analysis/integrity assessment.

Another key issue is obsolescence. Components of older plant might become obsolete, leading to replacement parts becoming unavailable, requiring the use of alternative replacement components and a thorough associated safety review.

### The challenges

In particular the industry is seeking new ideas in the following areas:

- **Understanding data management issues**
  - *Data curation – legacy data held on obsolete software systems (transfer from an old system to new system)*
  - *Define a standard approach for data logging/storage requirements (with a minimum standard) and format available (compatible with current technology)*
  - *Produce standard industry approach to make engineering data available when original equipment manufacturer (OEM) declares equipment/system obsolete*
  - *Formalise corporate standard for knowledge management – requirement within safety case legislation.*
- **Controlling obsolescence**
  - *Managing software safety and integrity – legacy software is hard to assess and update*
  - *How to effectively manage component obsolescence*
  - *Providing upgrades to obsolete subsea control systems*
- **Qualification and application of repair methodologies for pipeline and facilities**
  - *Defining the life of a temporary repair*
  - *Define process for greater acceptance of composite repairs*
  - *Optimised repair solutions*

## Ensuring Full Life Cycle Design

The industry is under intense pressure. Compliance with increasingly stringent health, safety and environmental regulations is mandatory. New facilities must be brought online faster and more economically. Ageing infrastructure must be upgraded and modernized with minimal service interruptions.

To overcome these challenges, a significant change from past culture, processes, management and organisational concepts is mandatory and has to be carefully balanced.

## The challenges

In particular the industry is seeking new ideas in the following areas:

- **Small kit prediction modelling for pipeline and facilities**
  - *Risk Base Inspection RBI – Data set for small "Kit" for general industry use*
- **Platform energy modelling**
  - *How to effectively predict the energy usage requirement of new and existing offshore and onshore infrastructure.*

## Understanding Corrosion Under Insulation

Corrosion Under Insulation (CUI) is a multi-billion dollar problem that destroys expensive industrial infrastructure. It also causes continuous scheduled manufacturing plant and facility downtime in order to conduct inspections for failure and also unexpected downtime when equipment failure occurs.

## The challenges

In particular the industry is seeking new ideas in the following areas:

- **Deep sea insulation repair system**
  - *Provide an effective mechanism for repairing insulation and corrosion (particularly subsea)*
- **CUI Prediction**
  - *Better predictability of corrosion growth under insulation*

Scope should cover the following:

- Any pipeline with coatings
- Offshore and onshore
- Subsea systems
- Internal and external inspection
- All coatings
- Corrosion, metal loss etc
- Existing capabilities, gaps and opportunities
- Early detection to prevent corrosion

## Dealing With Environmental Concerns

In the highly regulated environment in which many asset owners operate, costs are driven high by stringent requirements in terms of service performance, safety legislation and environmental concerns. It is therefore important to determine these costs to enable planning of cost-effective asset replacement.

## The challenges

In particular the industry is seeking new ideas in the following areas:

- **Fluid change out (a common approach)**
  - *For example: Freon for gas dew pointing and also industry wide collaboration*

## ITF's Role & Approach

**The Industry Technology Facilitator (ITF)** is a not for profit organisation owned by, and with access to funds from major oil and gas operating and service companies that comprise its membership. ITF has an impressive track record in delivering finance to help develop new initiatives for oil and gas technologies from early stage joint industry projects (JIPs) through to field trials and commercialisation. Since 1999, ITF has supported over **150** projects worth more than **£50 million** in funding. ITF's key objectives are to identify technology needs, foster innovation and facilitate the development and implementation of new technologies.

A fundamental element of ITF's role as an internationally recognised champion for facilitating research, development and deployment of technology innovation within the upstream oil and gas industry is to engage with key industry sources. ITF uses a proven process, working in collaborative participation with both its Members and industry to identify technology needs and potential solutions.

**The ITF process**, illustrated below as a step-by-step course of actions, endeavours to bridge the gap between the industry's large global players and development community with the ultimate aim of implementing new technology solutions:

**STEP 1** - Understand and Identify Technology Needs

**STEP 2** - Engage the Development Community / Invite Proposals

**STEP 3** - Evaluate Proposal Submissions

**STEP 4** - Secure Funding

**STEP 5** - Assist the Launch of JIPs

**STEP 6** - Facilitate the Implementation of Technologies

ITF has contractual confidentiality arrangements with all its Members and will enter into a parallel agreement with all developers submitting proposal applications. Proposals will be submitted to our Members only for the purpose for which they are provided, i.e. assessment for funding support and implementation.

Proposals submitted under this Theme will be reviewed for financial sponsorship by **all ITF Members** therefore this is an excellent opportunity to gain a global audience in



seeking support for your technology. The focus of all ITF themes is to identify technologies which bring clear benefits to sponsors but which require assistance in **research, development, and / or field trial.**

For details of ITF's full Portfolio of Members, please visit our Website - [www.oil-itf.com](http://www.oil-itf.com)

## ***Technology Challenge Timeline***

The ITF Technology Challenge follows a staged timeline from the initial workshop through to launch of successful projects. The following list of tasks describes the key milestones and their associated date:

- Programme Start: Technology Challenge Workshop    Mar 2011
- Call for Proposals Issued    May 2011
- ***Deadline for Receipt of Proposals***    ***29 July 2011***
- Publish to Members for Review    Aug 2011
- Member Review and Voting    Sep 2011
- Technical Clarification Meeting    Oct 2011
- Members finalise commitment to sponsor    Nov 2011

## Process for Submitting a Proposal

### 1. Register Interest with ITF

Register your interest as early as possible by sending an email to Anthony Onukwu at [a.onukwu@oil-itf.com](mailto:a.onukwu@oil-itf.com)

### 2. Visit the ITF Website - [www.oil-itf.com](http://www.oil-itf.com)

On the ITF Home page, click on the “How to Submit a Proposal” button or follow [this link](#) to access all the information required to submit a proposal.

### 3. Read the ‘Project Application Guidance’ Document

This document is available to view or download from the ‘ITF Downloads’ / ‘Proposal Submission’ section of the ITF Website. Reading this document prior to submitting a proposal is essential. If you require further clarification or are unsure if your proposal is suitable for submission, please call ITF (Contact Information below).

### 4. Download and Complete the ‘Project Application Form’

This form is available to download from the ‘ITF Downloads’ / ‘Proposal Submission’ section of the ITF Website.

### 5. Download and Complete the ‘Project Presentation Template’

This template is available to download from the ‘ITF Downloads’ / ‘Proposal Submission’ section of the ITF Website.

### 6. Email the Completed ‘Project Application Form’ and ‘Project Presentation Template’ to ITF

Email the Completed ‘Project Application Form’ in Microsoft Word format (not PDF) and the ‘Project Presentation Template’ in Microsoft PowerPoint format (not PDF) to Anthony Onukwu at [a.onukwu@oil-itf.com](mailto:a.onukwu@oil-itf.com) by **no later than 29 July 2011**. Proposals received after this date may not be processed.

## *Qualifying Technologies*

In order to qualify for potential sponsorship, technologies submitted in response to this Call for Proposals must:

- be applicable to at least one of the identified requirements/challenges
- be novel or innovative
- demonstrate a clear business case for support
- have a clear and demonstrable path to commercialisation and implementation

**Note:** Proposals submitted to any other ITF Call in the past nine months or any previously unsuccessful applications should not be resubmitted without first consulting ITF (contact information provided later in this document).

## *Qualifying Organisations*

Proposals are invited from any organisation including SME's, academia, research institutions, large organisations, consortiums or alliances. Proposals may be submitted by a national or international organisation, and equal opportunities will be extended to all proposers. Please keep in mind however that should your proposal be taken forward, you will be required to participate in meetings and make presentations to interested parties in the UK and in the English language (teleconference and video conference are acceptable).

## ITF Contact Information

If you would like to discuss any matters related to this call or any other issue related to ITF, please contact any of the following people:

***Technology challenge manager and primary contact point for this Call:***

**Anthony Onukwu - ITF Technology Analyst**

Email: [a.onukwu@oil-itf.com](mailto:a.onukwu@oil-itf.com)

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Other members of team available for your support:

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For more information on ITF please visit the ITF Website - [www.oil-itf.com](http://www.oil-itf.com)