

# Engineering Horizons

Company Profile

## Table of Contents

1. About Engineering Horizons
2. Message from the CEO
3. Business Model
  - 3.1 Subsurface & Surface Consultancy Services
    - 3.1.1 Petroleum Production Engineering
    - 3.1.2 Artificial Lift
    - 3.1.3 Reservoir Engineering
    - 3.1.4 Digital Oilfield
    - 3.1.5 Corrosion Engineering
    - 3.1.6 Electrical/Electronic and Controls System Engineering
  - 3.2 Digital Transformation Technology / Solution Provider
  - 3.3 Authorised Product Distributors
  - 3.4 Wellsite and field services
  - 3.5 Shipping and logistics
  - 3.6 Training and mentoring
4. Contact Details

## 1. About Engineering Horizons

Engineering Horizons is an established company defining advanced technical solutions for clients globally, the company was originally formed in 2008 as an Offshore company in the Seychelles, more recently in 2019 the company has established the Iraq registered entity that allows us direct access to the lucrative Iraqi market.

The company has access to a number of extremely talented and industry recognised individuals that allows Engineering Horizons to provide a truly world class service. While we do not own our own products, our strengths are in harnessing the best of the technologies available on the market and apply these in the best way to obtain the most optimal of solutions for our clients.

We have worked in the following countries:

- \* Italy
- \* UK
- \* Egypt
- \* Libya
- \* Angola
- \* Turkey
- \* Jordan
- \* Iraq
- \* UAE

## 2. Message from the CEO

Our goal is to achieve technical excellence for our clients and customers, this can only be achieved through our people. Pushing the technological boundaries is achieved through having motivated and skilled staff.

Our industry is moving more and more into the digital space, with digital oilfield technology, automation, big data and data science taking over, we want to ensure that our clients stay ahead of the competition.

### **3. Business Model**

Engineering Horizons is an international upstream oil and gas services company providing technical expertise and cost-effective technology solutions to clients globally. We have internationally experienced culturally diverse and highly skilled team of professionals who are determined to provide innovative and efficient solutions to our clients and help them to achieve their objectives.

Our core business has been consultancy and training which have proved to be extremely important and valuable to obtain our recognised status, trust in clients and recognition for our capabilities. Our move into the middle east through the opening of our Iraqi entity has been a key step forward to further open new avenues for the business including Digital and Technology deployments as well as sale of Quality Products.

Our strategy is to have key partnerships and relations with world class suppliers that can provide us with the products that are unique within the industry to allow us to provide the most appropriate technology solutions for our clients.

### 3.1 Subsurface & Surface Consultancy Services

#### 3.1.1 Petroleum Production Engineering

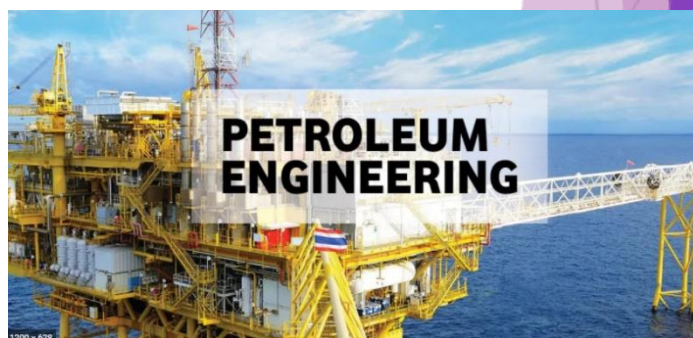
Our production engineers use the latest technology and software alongside extensive experience-based knowledge. We have worldwide experience of different production systems, onshore, offshore, deepwater, HPHT to support optimization of your asset value.

Our technical team can carry out a vast array of Production Engineering tasks including:

- Production monitoring and reporting
- Inflow and Outflow performance management
- Surface facility constraints management and debottlenecking
- Surveillance and logging campaigns
- Completion design
- Intervention design and execution
- Water shut offs; various techniques
- Waterflood management
- Dumpflooding techniques
- Produced water reinjection
- Metering and crude quality control
- Production Chemistry - Scale and corrosion monitoring and control
- Water in oil management
- Flow Assurance

#### Production engineering techniques

- Produce the limit reviews; reservoir, well, facility, export
- Well performance reviews
- Reservoir performance reviews
- Facility performance reviews
- Artificial lift selection
- Performance management of artificial lift such as ESP's
- Nodal analysis modelling of the entire system; Reservoir to Export
- Alarming and notification on high value assets (well)
- Surveillance by Exception
- Mathematical algorithms
- Trending and analytics of big data

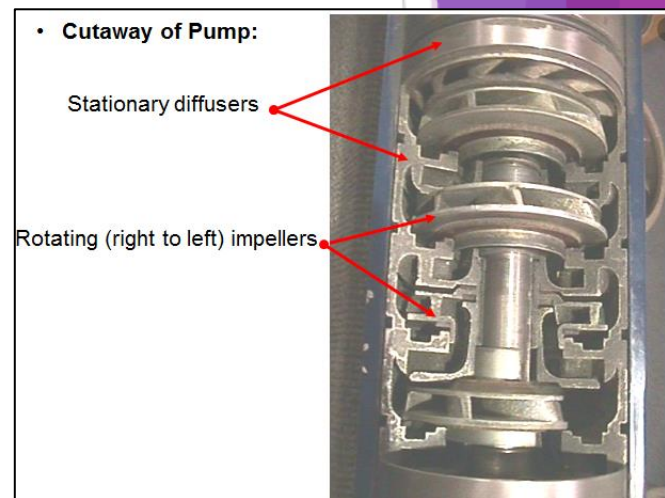


### 3.1.2 Artificial Lift

Our artificial lift engineers use the latest technology and software alongside extensive experience-based knowledge. We have worldwide experience of different field settings, onshore, offshore, desert, jungle, deepwater as well as HPHT to support optimization of your asset value.

Our technical team can carry out a vast array of Artificial Lift tasks including:

- Artificial lift selection and system design
- Well by well detailed design and equipment selection
- Deployment support during installation supervision
- Vendor selection and stack up test support
- Continuous of intermittent gas Lift
- ESP's including CT, and wireline deployment
- Sucker-rod pumps
- Reciprocating and jet hydraulic pumping systems
- Plunger lift
- Progressive cavity pumps (PCP)
- Post deployment monitoring and optimisation
- Trouble shooting
- Post failure analysis
- Operating guidelines and procedures
- Continuous improvement protocols



#### Artificial lift specialties

- Electrical Submersible Pump's
  - Design taking into account all reservoir parameters, well construction details and facility constraints both at present and future forecasting
  - Power generation and effects of harmonics on motor/pump performance and run life
  - Reservoir fluids description and characterization to determine viscosity effects, density changes with WC and flood fronts, waxing, asphaltenes, scales, corrosivity
  - Procedures for optimal ESP operations to maximum ESP run life, including soft start and operating within the ESP operating limits
- Gas lift
  - Gas lift complete system design and optimisation including the gas lift network and compressor system
  - Dynamic gas lift modelling and simulation to simulate well and flowline unloading

Procedures for startup, unloading and steady state operations of the gas lift system

### 3.1.3 Reservoir Engineering

Our reservoir engineers use the latest technology and software alongside extensive experience-based knowledge. We have worldwide experience of different geological settings and drainage mechanisms to support optimization of your asset value.

Our technical team can carry out a vast array of Reservoir Engineering tasks including:

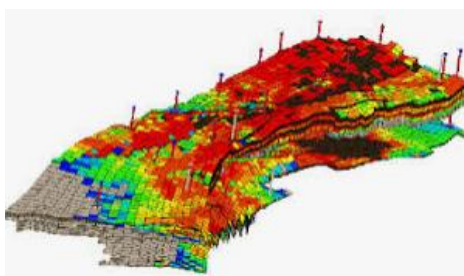
- Classical reservoir engineering
- Numerical reservoir modeling
- Production forecasting
- Decline curve analysis
- Welltest design and interpretation using advanced PTA
- SCAL & RCAL core analysis
- Development planning, optimal well placement for vertical, deviated and horizontal wells
- Reservoir fluid analysis (PVT) including equation of state, flow assurance
- Well design optimization
- Economic modelling
- Reserves evaluation to SEC standard

#### Reservoir engineering for conventional reservoirs

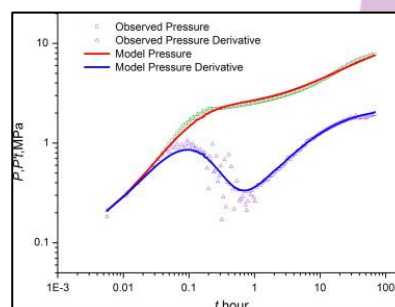
- Reservoir simulation for depletion, waterflooding, thermal recovery, miscible flooding EOR
- Classical reservoir engineering (material balance, fractional flow, well testing)
- Historical performance analysis to identify infill drilling targets (vertical and horizontal wells)
- Health check of current reservoir performance and recommendations going forward
- Integrated reservoir studies
- Comprehensive clastic, carbonate and fractured reservoir models
- QC and validation for static geological models prior to dynamic modelling.

#### Reservoir engineering for unconventional reservoirs

- Production analysis of horizontal multi-staged fractured wells
- Review to determine optimal treatment parameters for horizontal multi-stage fractured wells
- Production type curve determination for evaluation and prospecting
- Detailed modelling of all aspects of well performance (from fracture placement to production)



November 2020





### 3.1.4 Digital Oilfield

Our digital oilfield engineers use the latest technology, both hardware and software alongside extensive experience-based knowledge. We are one of the few companies in the world that have the experience and capability to deploy a full turnkey Digital Oilfield product.

Our technical team can offer bespoke and customized Digital Oilfield to meet the client's needs:

- Full review of any current systems that the client already has in place and suggestions to the client for improvements that may add value to their business
- Instrumentation at the well sites, remote sites such as manifolds and processing facilities
- Communication links for remote sites to be connected back to the data centre
- Real-time data filtering and data cleaning to ensure useful data is stored within the historian
- Working with the client to deliver a non-real-time data database that captures all the relevant information in an organized and structured manner for easy accessibility
- Relevant PI historian structuring with back-up system where necessary and tag allocations
- Global database structure that allows all relevant non-real-time data to be captured and stored such that it can be easily accessed as necessary by the DOF software
- Relevant reservoir, well and facility models to ensure the integrated model accurately represents the true system behaviour
- Implementation of standard and bespoke workflows that allows production to be monitored and controlled through triggers, alarms and flags for improvement
- Reporting and forecasting using the models, data analytics, artificial intelligence and machine learning
- Building a monitoring centre to allow the client to adequately monitor the production system with trained personnel
- Organisational capability improvement through training, mentoring and coaching

#### Digital Oilfield benefits

- Monitor and control production and reduce production system losses
- Utilisation of all of the data that has been captured through expensive surveillance campaigns
- Understanding and determination of the system limits and issues
- Opportunity generation through optimisation
- Reduce system component failures such as ESP's through rigorous monitoring and automated workflows

Increase the workforce efficiency by focusing staff on the most important and relevant events, e.g. identification of ceased wells post shutdown start ups

### 3.1.5 Corrosion Engineering

Corrosion is a major concern in the petroleum industry due to the costly implication of loss of production, and impact on safety and environment. Corrosion is a major life limiting degradation process for production facilities such as wells, pipelines & piping, static & rotating equipment, process vessels, storage tanks, etc.). In many oil & gas production plants, the corrosion problem is increased due to aging facilities, reservoir souring, increasing water cut, inadequate maintenance, and lack/poor anti-corrosion systems.

Our team of experienced corrosion professionals is dedicated to provide specialist services to assets owners to enhance the integrity of oil & gas production facilities to ensure safe and cost effective operations and to protect the environment. We strive to partner with our clients so that we can provide them with expert knowledge, techniques and tools needed to mitigate corrosion and avoid premature failures, unplanned shutdowns and loss of production.

We offer a range of corrosion services, including:

- Corrosion consultancy
- Corrosion engineering design/specifications
- Protective coatings
- Materials selection
- Chemical treatment
- Cathodic protection
- Corrosion monitoring
- Failure investigations
- Corrosion Prediction and modelling
- Corrosion Management Strategy
- Review of designs, reports and specifications



We utilise our specialist knowledge and experience to deliver innovative and appropriate corrosion solutions to every sector of the oil & gas industry, upstream, midstream and downstream, where corrosion pose a risk to company assets, employees and public safety and the environment.

In addition to the above services, we provide training courses that are tailored to the specific requirements of the client. These can be presented at the client's premises anywhere in the world.

### 3.1.6 Electrical/Electronic and Controls System Engineering

Our technical team can carry out a vast array of Electrical & Controls Engineering tasks including:

- PCB design and development including re-design and remanufacture of obsolete boards
- Component level PCB investigation and repair of obsolete and existing boards
- Subsea Electronics Module (SEM) hardware fault investigations
- Investigation of Combined Power & Signal (CPS) communications system faults
- Rapid prototyping utilising FDM 3D printing technologies
- Master Control Station (MCS) functionality and obsolescence management
- Electrical Power Unit (EPU) functionality and obsolescence management
- Topside control systems design
- Topside to subsurface communication investigations and analysis
- Electrical / Electronic failure analysis
- Development and implementation of Industrial PC's
- Environmental Stress Screening (ESS) of electronic modules in accordance with API
- First Article Build (FAB) process of electronic systems
- Decommissioning of redundant control systems

#### Electrical / Electronic and Controls Engineering Capabilities

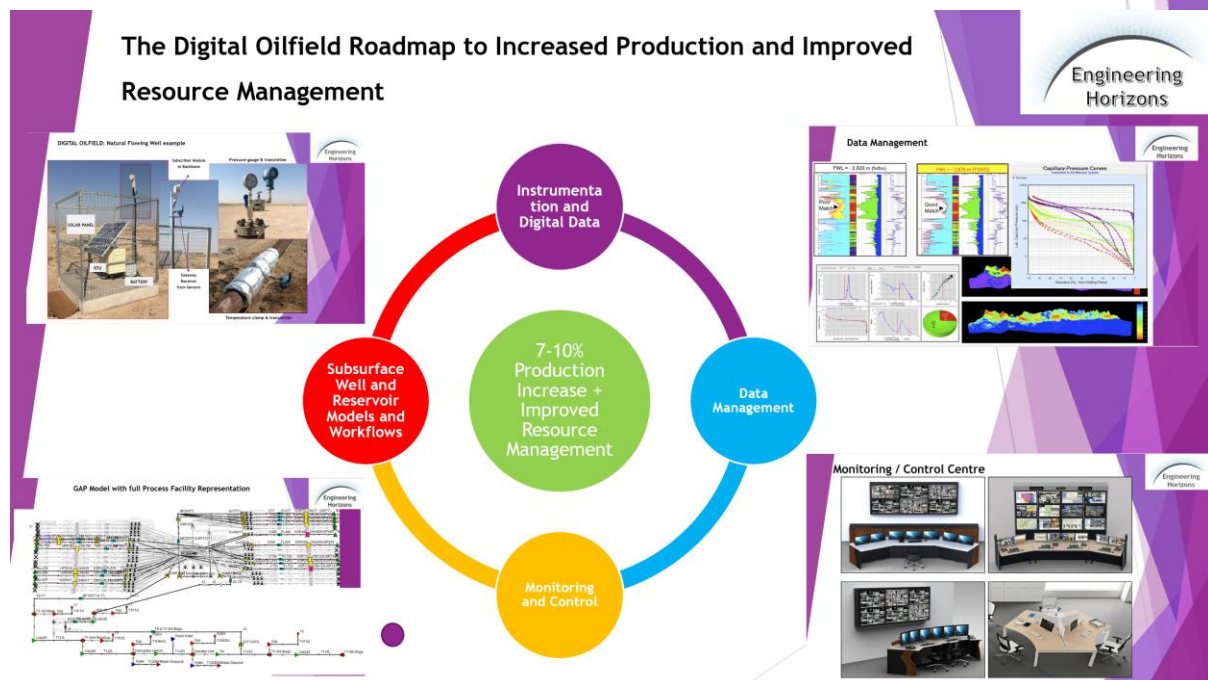
- Frequency analysis utilising function generators and oscilloscopes to generate bode plots of filter circuits used within umbilical simulators for signal attenuation of topside and subsea modems within the test environment.
- Analysis of failed equipment within the manufacturing environment and running 8D investigations with clients, vendors and suppliers to perform full Root Cause Analysis (RCA) of the failure within the device, including, but not limited to cross sectional analysis of failed components such as transistors.
- TCP/IP and Modbus network infrastructure design, setup, maintenance and scalability utilised in the development of projects to create systems which can interface with existing Distributed Computing Systems (DCS) and plant technologies on site.
- Documentation and design upgrades to existing electronic and test systems to the latest ISO / API criteria.
- Investigation of test bay communications issues and Bit Error Rate (BER) communications failures during subsea module testing and creation of documentation detailing the issues and how they are to be addressed.

### 3.2 Digital Transformation Technology / Solution Provider

The deployment of the Digital Oilfield Solution involves several components: the installation of the instrumentation and connectivity system; a data management platform for both real-time and adhoc data; the development of engineering models and workflows; an Exception-Based Surveillance engine (EBS) and a friendly user interface integrating the entire system.

Optimization and Automation of tasks and routines that Petroleum Engineers normally execute can now be done through engineering workflows. These workflows are executed at specified time intervals. This increases the accuracy and reliability of the routines as real-time data is used to feed the calculations.

Surveillance by Exception: The principal behind Surveillance by Exception is that important information is brought to the users attention ahead of less important data. Due to the large size and number of wells in most oilfields, implementing surveillance by exception is a key feature. Indeed this becomes more important with many hundreds of wells producing and injecting continuously.





### 3.3 Authorised Product Distributors

The supply and sale of world class products is key ensuring our customers can achieve the desired performance and targets that they set. We ensure that we offer the most appropriate products at the best prices to our clients. Our ethos is to ensure that the products are 'fit for purpose' and achieve all the requirements set by the client. We do not recommend or push products from specific vendors or suppliers, our goal is to put the client's needs 'first'.



### 3.4 Wellsite and field services

We have fully trained local staff that are ready to execute various services including surveying, product installation, servicing and maintenance. We offer world class service at affordable prices, the Iraqi market has changed, and price does matter, so let us take care of your assets.



### 3.5 Shipping and logistics

Shipping your products to Iraq can be a worrisome and a laborious task, we at Engineering Horizons have the knowhow, and the local knowledge to ensure your goods are delivered safely and in a timely fashion. We take care of your shipments and we have all the necessary documentation including Iraqi Importers card, importers licence and CMC licence to ensure that whatever you need to ship, we can manage it.



### 3.6 Training and Mentoring

Engineering Horizons offers training courses in many disciplines within the petroleum engineering domain. The courses (theoretical and/or practical) are held by petroleum engineering experts with strong academic basis and years of experience in oil and gas industry. In addition to the standard available courses, we can also run other Oil & Gas related courses on demand. We also have standing agreements with global training companies and we can call upon their expertise for courses that we do not normally run internally.



#### 4 Contact Information

Website: [www.eng-horizons.com](http://www.eng-horizons.com)

Email: [info@eng-horizons.com](mailto:info@eng-horizons.com)

Telephone: +964 773 708 7842

LinkedIn: [www.linkedin.com/company/engineering-horizons](https://www.linkedin.com/company/engineering-horizons)