# SENERGY LTD

## Sustainability Intelligently Synergised

*Engineering consultancy synergising sustainable solutions at the intersection of energy, water & health — enabled by AI*

London, UK · www.senergyltd.uk · hp@senergyltd.uk

| 25+ yrs | $250M+ | $70M+ | World 1st | 150+ |
|---|---|---|---|---|
| E&P expertise | value shifted in negotiations | cost savings delivered | offshore CCS project | papers & 2 books |

### OUR GREEN SERVICE PILLARS

**G lobal Oil & Gas Excellence**

Reservoir engineering · Well integrity · FDP · CCS · M&A

**R esilient Water Solutions**

Industrial water treatment · Smart infrastructure · Digital water · Reuse systems

**E nergy Sustainability & Renewables**

Net Zero roadmaps · Hydrogen · Solar/Wind/Geothermal · CCUS · Decarbonisation

**E merging Medical Innovations**

MedTech advisory · Wearable MMG · Cross-sector technology transfer

**N ext-Gen AI & Digitalisation**

Bespoke AI agents · Reservoir ML · Predictive maintenance · Data platforms

**T raining & Capability Building**

Industry courses · SPE/EAGE/IPTC delivery · Executive briefings · Academia links

# ABOUT SENERGY LTD

*Sustainability Intelligently Synergised · senergyltd.uk*

## Mission & Philosophy

### Engineering the Sustainability & Net Zero Transition

Delivering innovative, impactful, environmentally responsible strategies that address the world's most pressing challenges while fostering long-term value for clients and communities.

### Efficiency Empowered by AI

AI-powered tools integrated across operations to automate tasks, optimise workflows, enhance decision-making and unlock new efficiency levels. Cofounders were publishing AI-driven reservoir simulation breakthroughs (SPE 201693, SPE 202459) before the current AI hype.

### Bridging Businesses & Technology Synergies

Deliberate effort to bridge the gap between business objectives and technological capabilities — ensuring technology directly supports and drives strategic goals, not just enables them.

### Client-Centric Innovation & Ethical Responsibility

Co-creating customised, scalable solutions with clients while upholding the highest standards of integrity, safety, and inclusivity across all stakeholder groups.

## Our Leadership Team

### Dr R. Masoudi

**Industry Shaper · Advisor**

25+ years global technical mastery in O&G, CCUS & Digital. Led world's first offshore CCS project. SPE Distinguished Lecturer. Chairman SPE APRTAC. Visiting Prof: Imperial College, Adelaide, UTP Malaysia. 150+ papers, 2 books.

### Dr K. Nourafkan

**Industry Leader**

Turned geological complexities into valuable assets across 25+ global fields. $500M+ portfolio secured. $70M+ cost savings. 100% UKCS drilling success. Kashagan carbonate characterisation. 5 languages.

### Dr H. Parvizi

**Industry Catalyst**

Reservoir challenges converted to strategic assets. $250M+ value shifted via unitisation. Raised $600M+ investment. 7-partner JV operations. Tool-agnostic simulation expert. Executive MBA bridges technical and boardroom.

### Dr N. G. Arekhloo

**MedTech Pioneer · Biomedical Engineering**

Pioneering wearable muscle magnetomyography innovations. Translates cutting-edge technology into patient care improvements. Bridges clinical medicine and engineering at Senergy's MedTech frontier.

### Dr A. Ikder

**EDI Champion · Research & Education**

Champions systemic change tackling attainment gaps and inclusion barriers in education globally. Translates research into actionable EDI strategies. Drives Senergy's inclusive and sustainable values into practice.

01

# Integrated Reservoir Engineering & Field Development Planning

SENERGY LTD

*Reservoir Engineering · Geoscience · Simulation · FDP*

O&G Excellence

## Client Challenge

Complex multi-phase reservoirs — deepwater, HPHT, tight gas, carbonates, oil rims, high $CO_2$ — are chronically underdeveloped. Inadequate FDPs built without geological nuance, integrated facility modelling or rigorous volumetrics destroy value before a well is drilled. Missed pay zones, unmodelled compartments and suboptimal well placement routinely cost operators hundreds of millions.

## Senergy's Approach

Senergy delivers integrated FDP formulation combining PhD-level geological characterisation, stochastic geomodelling, advanced reservoir simulation (Eclipse, tNavigator, INTERSECT — tool-agnostic), full-facility integrated asset modelling, and rigorous P10–P50–P90 probabilistic volumetrics. 50+ reservoir studies and FDPs across North Sea, Middle East, Malaysia, SE Asia and Africa. Subsurface–surface integration prevents facility bottlenecks. 100% drilling success on complex UKCS low-relief structures. $30M+ saved on single African offshore FDP revision.

## Estimated Impact

**50+ FDPs**
delivered across 4 continents

**100%**
drilling success on complex UKCS structures

**$30M+**
saved — single offshore FDP revision

**£30–100M**
facility cost savings via integrated modelling

*Integrated subsurface-to-surface FDP prevents the most common source of upstream value destruction: plans built in isolation from geology, wells or facilities.*

## Why Senergy vs Competitors

SLB/Halliburton deploy standardised simulation workflows with large rotating teams. Woodmac/IHS provide macro benchmarks without subsurface model-building. Senergy provides owner-side geological storytelling, fit-for-purpose modelling philosophy and FDPs structured to gain regulator, NOC and partner approval — a combination unavailable from any single large firm.

02

# IOR / EOR Strategy & Hydrocarbon Recovery Improvement

SENERGY LTD

*Mature Fields · IOR/EOR · Production Optimisation · Brownfield*

O&G Excellence

## Client Challenge

Declining mature fields with Recovery Factors 5–15% below regional benchmarks are the single largest source of stranded value in operators' portfolios. Most lack a clear IOR/EOR roadmap, investment ranking framework or technology selection process — arresting decline requires both strategy and field-level execution simultaneously.

## Senergy's Approach

Senergy leads industry-wide IOR/EOR road-mapping with proven field delivery: WAG, secondary injection, polymer EOR (Kraken), waterflood optimisation (Magnus North Sea; Algeria 50,000 bopd onshore, 110 wells), horizontal wells with ICD/AICD, infill drilling campaigns, and data-analytics-driven Recovery Factor benchmarking. Managed 18+ North Sea fields simultaneously, diagnosing bypassed pay and designing workover programmes. One well identified by Senergy became an operator's single highest-producing well.

## Estimated Impact

**2B boe**

IOR opportunities identified across portfolios

**500+ MMSTB**

matured from 2C to 2P categories

**40+ MMSTB**

reserve addition — East/West Belumut fields alone

**5–15%**

production uplift typical on mature assets

*Structured IOR intervention converts stranded decline into booked reserves — with proven delivery across the North Sea, SE Asia and North Africa.*

## Why Senergy vs Competitors

Baker Hughes and SLB sell IOR/EOR equipment and services with an inherent technology push bias. Woodmac/Rystad produce decline benchmarks. Senergy built the industry-wide benchmarking methodology, sets recovery targets, selects technology independently AND leads field implementation — with no vendor bias and full operator-side accountability.

03

# CCS / CCUS, High $CO_2$ Field Monetisation & Net Zero Strategy

SENERGY LTD

*CCS · CCUS · High $CO_2$ · Net Zero · Energy Transition · Decarbonisation*

Energy & CCS

## Client Challenge

High-$CO_2$ fields (>30% $CO_2$) are commercially unviable under conventional development. Operators face stranded gas reserves, escalating ESG pressure and imminent carbon regulation with no credible pathway to monetise assets or meet Net Zero targets without sacrificing production economics. Senergy's GREEN Energy Sustainability & Renewables pillar addresses this end-to-end.

## Senergy's Approach

Senergy personally developed PETRONAS CCS SRMS and GHG monitoring guidelines. Led Kasawari M1 — world's first offshore high-$CO_2$ CCS injection project (2025, 5Mt/year) — and Lang Lebah-Golok CCS (2027, 2.5Mt/year). Leads Thistle/Magnus North Sea CCS (estimated 100Mt storage scope). Advises IOGP CCS taskforce UK on MMV standards. Developed Sullom Voe Terminal decarbonisation, Green Hydrogen and Wind Turbine projects. Full CCUS value chain: site selection, storage ADP, $CO_2$ sequestration, saline aquifer injection, $CO_2$-EOR. Hydrogen (green/blue) and renewable energy technical advisory.

## Estimated Impact

**5 Mt/yr**

$CO_2$ injection — Kasawari M1 (world first, 2025)

**2.5 Mt/yr**

$CO_2$ injection — Lang Lebah-Golok (2027)

**~100 Mt**

$CO_2$ storage scope — Thistle/Magnus, North Sea

**IOGP Board**

CCS standards & MMV advisory committee, UK

*Unlocks billions in stranded gas reserves while establishing operator as a credible Net Zero leader — ahead of the carbon regulatory curve and ESG investor scrutiny.*

## Why Senergy vs Competitors

SLB/Halliburton provide CCS engineering execution. EREC/Woodmac offer market analysis only. Senergy personally authored the regulatory frameworks, led the world's first-of-kind offshore CCS project AND sits on the IOGP standards committee — bridging policy authorship, technical design and commercial structuring in a way no single service company can replicate.

04

# Next-Gen AI, Data Analytics & Digital Transformation for E&P

SENERGY LTD

*AI Agents · Machine Learning · Data Analytics · Digital · Subsurface Automation*

AI & Digital

## Client Challenge

The energy sector faces a 'data deluge.' Petabytes of seismic, well and operational data overwhelm human capacity. Traditional analysis is too slow for complex reservoir management, energy transition decisions and operational efficiency — the industry needs intelligence, not just more software. Senergy's Next-Gen AI & Digitalisation GREEN pillar addresses this directly.

## Senergy's Approach

Senergy deploys bespoke AI Agents — systems that perceive, reason, decide and act: automated geological interpretation, real-time drilling parameter optimisation, autonomous pipeline monitoring, predictive maintenance. Enterprise AI platforms built and governed inside 50,000-person NOC at scale. Cofounders published AI-driven reservoir simulation breakthroughs (SPE 201693, SPE 202459) before the current AI hype. Proven: history-matched a mature field with 200 wells and 60+ layers using ML where conventional simulators failed. ERM AI, Core AI, AMiR Web, Integrated Resource Funnel platforms deployed.

## Estimated Impact

**20K+ bbl/d**

incremental production from digital surveillance

**200 wells**

mature field history-matched by ML (conv. methods failed)

**40–60%**

manual review cycle time reduction

**940+ citations**

Google Scholar — AI/analytics published research

*Senergy's AI is not theoretical: physically-grounded, domain-expert-led, and bespoke to your specific geological and operational reality — not a black-box generic tool.*

## Why Senergy vs Competitors

IHS/Woodmac offer data products. SLB's Delfi platform sells enterprise software with vendor lock-in. Generic AI firms lack domain depth. Senergy built and governed live AI platforms inside major NOCs AND publishes the underlying research — deep domain expertise first, AI second, ensuring solutions are practically applicable rather than technically impressive but operationally useless.

05

# Business Development, M&A Technical Due Diligence & Portfolio Growth

SENERGY LTD

*Business Development · M&A · Licensing · Asset Valuation · PSC Negotiation*

O&G / BD

## Client Challenge

Operators routinely overpay for assets due to vendor-inflated reserves estimates, hidden subsurface risk and inadequate technical due diligence. Simultaneously, high-value acquisition opportunities are lost when technical presentations fail to convey geological confidence to investment committees or when deal structures are not engineered to protect capital.

## Senergy's Approach

Senergy delivers full-cycle BD with red-flag-first technical DD: secured a $500M+ multi-asset North Sea portfolio at discounted price with risk-mitigated deal structure; enforced mandatory advanced seismic processing as contractual condition. Led EnQuest portfolio acquisitions across Malaysia (Balingian, SK8, D35-D21-J4, PM6-12 PSCs), Vietnam, Brunei and Indonesia — contributing to ~100% share price growth over two years and ~130% production increase from the June 2026 Malaysia deal. Evaluated and ranked 50+ upstream opportunities in Middle East & Africa. Secured UKCS blocks in the 32nd and 33rd Licensing Rounds. Raised $600M+ from financial investors.

## Estimated Impact

**$500M+**

North Sea portfolio secured at discounted price

**~100%**

EnQuest share price growth enabled (2 years)

**~130%**

production increase — Malaysia transformational deal

**$600M+**

raised from financial investors for O&G projects

*Full-cycle BD turns deal announcements into tangible share price and reserve book events — not just technical recommendations delivered after the fact.*

## Why Senergy vs Competitors

IHS/Woodmac/Rystad provide market screening databases. SLB/Halliburton provide technical services without strategic portfolio framing. Academic advisors lack commercial accountability. Senergy provides owner-side, commercially-aware subsurface DD that directly shapes deal terms, negotiating protections and post-acquisition development plans — as proven practitioners who have delivered these outcomes.

06

# Unitisation, Cross-Border ITP & Strategic Commercial Negotiation

SENERGY LTD

*Unitisation · ITP · Re-determination · JV Management · Commercial Negotiation*

O&G / Commercial

## Client Challenge

Cross-border and cross-ownership reservoir development stalls when technical arguments fail to translate into commercial outcomes. Unitisation negotiations directly determine how hundreds of millions in value are split between parties. Operators entering these without a dedicated technical-commercial advocate — who understands both subsurface and legal-commercial levers — are systematically disadvantaged.

## Senergy's Approach

Senergy developed a novel Gas-Initially-in-Place (GIIP) evaluation methodology in one documented unitisation dispute, reinterpreting seismic and well data to prove a larger share of gas volume under the client's acreage — shifting over $250M in value to the client's side. Leads cross-border ITP and re-determination negotiations for 5+ deepwater fields. Manages multi-partner JV operations (7-partner JV, North Africa's largest oilfield). Combines reservoir modelling, equity determination and commercial structuring into a single coherent negotiation position presented at executive and regulatory levels.

## Estimated Impact

**$250M+**

value shift secured via novel GIIP methodology

**5+ fields**

cross-border ITP & re-determination negotiations led

**7 partners**

JV operations coordinated on major N. Africa asset

**£100–200M**

typical value at stake in Senergy-led negotiations

*Technical credibility combined with commercial strategy turns unitisation from a cost centre into a value creation event — documented at $250M+ scale.*

## Why Senergy vs Competitors

Law firms negotiate without subsurface depth. SLB/Halliburton provide technical data but rarely lead negotiations. Large consultancies rotate teams and lose coherence of message. Senergy provides rare combination: deep reservoir credibility trusted by all parties AND commercial negotiation experience — with documented $250M+ outcomes as evidence, and the same person in the room from analysis to agreement.

07

# Complex Well Design, Drilling Engineering & Well Integrity

SENERGY LTD

*Full-Cycle Well Delivery · ERD · HPHT · SIMOPS · Barrier Assurance · P&A*

Drilling & Wells

## Client Challenge

Deepwater, ERD, HPHT and tight gas wells require multi-discipline integration of pore pressure prediction, geomechanics, casing design, completion strategy and well integrity assurance — where any failure leads to costly sidetracks, incidents or integrity breaches that dwarf the original engineering budget. Standard vendor programmes routinely over-specify or miss the specific hazards of each well.

## Senergy's Approach

Senergy delivers integrated full-cycle well delivery from concept selection through close-out. Developed pore-pressure predictive tool for Tolmount HPHT gas field (E.ON/Premier Oil) enabling drilling without incident. ERD well delivered safely at 85° inclination. Designed multistage hydraulic frac programmes for tight gas. Embeds well integrity barrier design across all phases — 100% compliance track record, zero well integrity failures on managed programmes. Executed SIMOPS with 4 active producers simultaneously, zero production downtime. Proven rapid troubleshooting: 9 days saved via agile trajectory decision during stuck-pipe incident.

## Estimated Impact

**0**

well integrity failures — 100% compliance record

**0 downtime**

production loss during SIMOPS execution

**~£1–2M**

saved per sidetrack averted via robust early design

**9 days**

saved by rapid troubleshooting during stuck-pipe incident

*A single well integrity failure or sidetrack costs more than the entire advisory engagement. Prevention at design stage delivers the highest-return investment in any drilling programme.*

## Why Senergy vs Competitors

SLB and Halliburton offer integrated well engineering at scale but with standardised, often over-specified designs and hierarchical escalation chains. Baker Hughes offers P&A execution, not strategy. Senergy's lean expert team provides deep multi-phase well expertise, single-point-of-integration accountability and decision autonomy that resolves issues in real time rather than days of escalation.

08

# Resilient Water Solutions & Sustainable Resource Management

SENERGY LTD

*Industrial Water · Municipal Water · Water Reuse · Digital Water · Resource Recovery*

O&G / Water

## Client Challenge

Industrial and municipal operators face converging pressures: tightening environmental regulations on wastewater discharge, aging water infrastructure, water scarcity risks, and the growing need to recover resources from waste streams. Generic water management approaches lack the engineering rigour and cross-sector insight needed for complex industrial challenges. This is Senergy's 'R' in GREEN.

## Senergy's Approach

Senergy applies rigorous engineering and advanced analytics to critical water challenges: designing and optimising industrial wastewater treatment solutions drawing on cross-sector O&G insights; advising municipalities on resource management and smart infrastructure; pioneering water reuse and resource recovery systems. AI-powered digital water solutions enhance efficiency, monitoring and network optimisation. Research into biomedical applications (e.g. water in healthcare contexts) feeds cross-sector innovation through the GREEN Technology Hub.

## Estimated Impact

**Cross-sector**

O&G engineering insights applied to water treatment

**AI-powered**

digital water monitoring and network optimisation

**Resource**

recovery & water reuse systems designed

**Smart infra**

municipal water advisory and asset management

*Water and energy are inseparable in the energy transition — Senergy's cross-sector engineering depth delivers water solutions that generic water firms simply cannot replicate.*

## Why Senergy vs Competitors

Generic water engineering firms lack O&G cross-sector insight. Digital water platform vendors lack engineering depth. Large environmental consultancies add overhead without bespoke solutions. Senergy applies the same rigorous engineering, data analytics and AI capability that solves billion-dollar reservoir problems to the water sector — delivering bespoke, efficiency-driven solutions at a fraction of large-firm cost.

09

# Emerging Medical Innovations & Equity, Diversity & Inclusion

SENERGY LTD

*MedTech · Wearable Technology · Biomedical Engineering · EDI · Sustainable Communities*

MedTech & EDI

## Client Challenge

Two of the most complex challenges facing organisations today are: (1) harnessing fast-paced MedTech innovation — where engineering rigour, regulatory navigation and clinical insight must converge — and (2) building genuinely inclusive organisations and communities, where systemic barriers to equity persist despite best intentions. Senergy's 'E' (Emerging Medical) and cross-cutting EDI capability address both.

## Senergy's Approach

Senergy's MedTech practice pioneers wearable muscle magnetomyography (MMG) innovations for patient care, led by a former Medical Doctor pursuing a PhD in engineering. Technology assessment, data analytics, operational consulting and complex technical standards navigation are applied to support MedTech firms. Active cross-sector technology transfer from O&G to healthcare is scouted through the GREEN Technology Hub. Senergy's EDI Champion leads evidence-based research into attainment gaps, inclusion barriers and systemic educational disparities — translating findings into actionable strategies for clients and communities globally.

## Estimated Impact

**Wearable MMG**

cutting-edge technology for patient care improvement

**MD + PhD**

medical-engineering integration at senior level

**Cross-sector**

O&G to MedTech technology transfer via GREEN Hub

**Global EDI**

research across UK and international educational systems

*The intersection of engineering and medicine — and of technical excellence and social equity — is where Senergy uniquely operates, driving innovation that is both sustainable and inclusive.*

## Why Senergy vs Competitors

MedTech accelerators lack engineering rigour. Engineering firms lack clinical credibility. EDI consultants often deliver process without measurable impact. Senergy brings a rare combination: a practising engineer-MD bridging both domains, and an EDI researcher committed to evidence-based, actionable outcomes — not performative compliance.

10

# Technical Training, Knowledge Transfer & GREEN Technology Hub

SENERGY LTD

*Training · Capability Building · SPE/EAGE/IPTC · Technology Hub · Validation · Commercialisation*

Training & GTH

## Client Challenge

Rapid workforce transitions — ageing experts, energy pivot, talent drain — leave organisations with institutional knowledge gaps threatening operational safety and decision quality. Simultaneously, promising technologies fail to reach commercial scale due to inadequate validation, branding and route-to-market support. Both challenges require a structured, practitioner-led ecosystem — not generic training or passive technology listings.

## Senergy's Approach

Senergy's Strategic Training Programs bridge knowledge gaps for O&G and broader energy professionals: delivered by globally recognised leaders at SPE, EAGE, IPTC, and via executive briefings and extended courses. SPE Distinguished Lecturer, SPE Board Member. Adjunct Professor at Imperial College, Adelaide University and UTP Malaysia. Supervised 40+ MSc/PhD students. 150+ papers and 2 books. 50+ keynote/panel appearances globally. 5 languages across 10+ countries. The GREEN Technology Hub provides a three-stage commercialisation pathway for technology partners: Validation → Branding → Commercialisation — attracting investment and marketing products at scale.

## Estimated Impact

**40+**

MSc & PhD students supervised

**150+ papers**

& 2 books — 940+ Google Scholar citations

**3 stages**

Validation → Branding → Commercialisation (GTH)

**5 languages**

training delivered across 10+ countries

*One senior practitioner developing 40+ engineers creates compounding capability value. The GREEN Technology Hub converts promising innovations into commercial realities — closing the valley of death between R&D and market.*

## Why Senergy vs Competitors

SLB/Halliburton offer software-specific training with vendor bias. Academic institutions lack commercial context. Technology transfer agencies lack domain depth. Senergy delivers operator-grade, multi-basin training with published academic rigour AND a structured commercialisation ecosystem for technology partners — the only firm that does both simultaneously.

# Why Senergy Ltd?

*"Sustainability Intelligently Synergised" — the only integrated advisory practice spanning reservoir to boardroom, geology to governance, O&G to renewables, subsurface to CCS, and engineering to AI.*

| Competitor | Core Strength | What Senergy adds that they cannot |
|---|---|---|
| SLB | Technology tools & software platforms | Independent operator-side advisory · No vendor bias · Governance authority · Commercial strategy |
| Halliburton / BH | Engineering & drilling execution | Portfolio framing · M&A DD · Cross-border ITP negotiation · CCS policy authorship · World-first delivery |
| Woodmac / IHS / Rystad | Market data & external benchmarks | Internal implementation · Live committee governance · Subsurface model-building · Field delivery |
| EREC | Energy transition macro analysis | Reservoir & CCS technical execution · Regulatory framework authorship · World-first project delivery |
| Law / Finance firms | Legal & financial structuring | Deep subsurface credibility in negotiations · Technical DD · Reservoir modelling · Well integrity |
| AI / Digital vendors | Generic software & platforms | Physically-grounded domain expertise · Bespoke AI agents · SPE-published research · No black-box |
| Academics / UTP | Research rigour & published theory | Commercial accountability · 25+ yrs field delivery · Boardroom advisory · SPE Board authority |

**✓ Full-Cycle E&P** | **✓ Vendor-Agnostic** | **✓ World-First CCS** | **✓ $250M+ Negotiation Record**

**✓ AI Bespoke Agents** | **✓ GREEN: Energy + Water + Health + AI** | **✓ SPE Board Authority** | **✓ London-Based, Global Delivery**

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