



Knowledge Grid
International



Empowering Assets:

**Reliability, Safety,
Excellence Delivered**

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THE COMPANY

Knowledge Grid International

About us

Knowledge Grid International delivers maintenance management, asset management, and operational support services to asset-intensive industries, including Oil & Gas, Petrochemical, LNG, Water utilities, and Heavy engineering. We support clients in managing technical risk, improving asset performance, and maintaining safe, reliable operations.

Who we are

We have dedicated Technical Teams with broad knowledge, and extensive experience, in the design & operation of all sectors of the oil & gas, chemical-related process industries. Our knowledge and technology-based approach, our attention to client's needs, and our dedication to producing high quality deliverables enable us to provide focused, comprehensive and practical solutions to client's challenges. KGI also offers dedicated Seminars and Workshops for individual clients to improve Equipment Uptime and hence Effectiveness.

Industry Experience & Partnerships

KGI, with our main partner Knowledge Grid Academy (Oman) (KGA), and long standing relationships with both M2K UK Services for Reliability Services and Turnaco UK for Shutdowns and Turnaround Solutions, provides Maintenance Management and Consulting Services for Oil & Gas, Petrochemical, LNG and Heavy Engineering Industries. KGI works towards ISO 55001 – Asset Management and ISO 9001:2015 – Quality Management

SERVICE OVERVIEW

Core Service Portfolio

Integrated services and training supporting safe, reliable, and efficient operations

KGI delivers specialized services including Asset Data Management, Reliability Improvement Management, Maintenance & Integrity Management, Material Management, and Shutdowns & Turnarounds Management. These services support effective asset control, risk reduction, and safe, reliable operations. We also provide Operational Excellence Management services and Asset Management Training programmes, focused on improving operational efficiency and developing skilled teams to support safe and compliant operations.

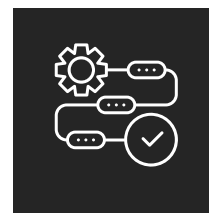
Reliability Improvement Management



Material Management



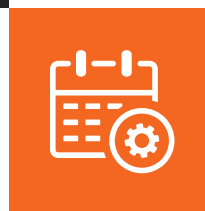
Operational Excellence Management



Asset Data Management Services



Maintenance & Integrity Management



Shutdowns & Turnarounds Management



Asset Management Training



SERVICES



ASSET DATA MANAGEMENT

Asset Data Management Services

Ensuring accurate, structured, and reliable asset information to support effective maintenance, safety, and operational decision-making.

KGI offers the following Asset Data Management Services:

- Asset Register Build
- Asset Data Cleansing & Restructuring
- As-Built Asset Verification
- SCE (Safety Critical Equipment) Identification
- Asset Management Training (Technical and Non-Technical)
- BOMs (Bills of Materials) Preparation

As-Built Asset Verification

KGI has specialised experience developing 'As-Built' through field physical verification. The data will be verified at field and will reflect the 'As-Built' status in the CMMS system and 'As-Built' drawings updates.

Bill of Materials (BOMs) Preparation

KGI can convert spares data from Vendors and Suppliers to BOMs and attach these to Equipment Tags. The spares interchangeability and criticalities are reviewed and the BOM / Spares / Material parameters set accordingly.

Asset Register Build

The asset register is a record of the equipment hierarchy and the assets that are in the facility. Each asset is listed with details of its make, model, size, capacity, serial no. and vendor details. A clean and complete Asset Register is the fundamental building block for planning and organizing maintenance activities in process industries with ERP (Enterprise Resource Planning) / CMMS (Computerised Maintenance Management System) and for ensuring Asset Integrity.

KGI provides Hierarchy build, Asset / Equipment Register build and preparing the technical information (Class Characteristics) for equipment. KGI can utilise software tools for building clean validated data and easy seamless data uploads to any CMMS (SAP, Maximo, Oracle, JD Edwards, etc).

Asset Data Cleansing and Restructuring

KGI provides asset data cleansing and restructuring services for any CMMS system (SAP, Maximo, Oracle, JD Edwards, etc), from hierarchy restructuring to equipment data modifications & changes in CMMS system. KGI can also conduct field verification and field data gathering.

Safety Critical Equipment (SCE) Identification

KGI have in-depth knowledge for the identification and implementation of SCEs & Performance Standards with their assurance measures & tasks.

Explosion Proof Equipment Register Build

KGI can provide EX equipment register build for new assets and the verification of existing register along with EX Inspection & Certification.



SERVICES



RELIABILITY IMPROVEMENT

Reliability Improvement Management

KGI have internationally recognized expertise in development and successful implementation of RCM methods. The personnel that KGI would dedicate to any assignment have specific experience in the application of RCM and Maintenance Excellence methods with numerous clients in the UK, Europe, Africa and the Middle East in these topics.

RCM is a sharp tool and is usually best applied in selected areas such as critical rotating equipment, rather than broadly across a facility. Correctly applied, RCM can lead to significant improvements in maintenance effectiveness, and often does so surprisingly quickly. However, as with any fundamental change management project, RCM is much more likely to succeed if proper attention is paid to thorough planning, how and by whom the analysis is performed, auditing and implementation.

The key elements of the planning process are as follows:

- Define the scope and boundaries of each system
- Define and wherever possible, quantify the objectives of each project (now state and desired end state)
- Estimate the amount of time (number of meetings) needed to review the equipment in each area. Identify participants (by title and by name), conduct a short awareness training for participants
- Plan date, time and location of meetings
- Plan audits of RCM recommendations
- Plan to implement the recommendations (maintenance tasks, design changes, changes to operating procedures).

KGI would achieve these objectives by providing an appropriate RCM Facilitator and RCM Discipline Engineers to present the optional training and RCM study. The RCM Facilitator will be linked to the Institute of Mechanical Engineers (IMechE) and British Standards Institute (BSI) on RCM, maintenance improvement, reliability and availability modelling. KGI team to deploy expertise to enable appropriate analyses to be carried out in-house ensuring competence development and reduced overall analysis cost. Following the training, KGI will provide Pilot Study facilitation support to develop maintenance strategies and tasks using RCM.

The Reliability Improvement Process (TRIP™)

The reliability of a plant or facility, or how long a period it runs before an unplanned stoppage, determines its performance. Process safety, environmental and cost performance all depend on it. It is thus a pivotal driver, which can be used to make significant business gains. Sustainable improvement requires a systematic and structured approach. KGI have developed 'The Reliability Improvement Process' (TRIP™), a staircase process (illustrated above) that will enable facilities to attain high levels of safety, product quality and production volumes, at the lowest sustainable operating cost.



Route Map for TRIP™

1. Up-to-date Asset Register - essential for planning and organising effective
2. maintenance.
3. Competent, motivated workforce; high HOTT (Hands-on Tool Time) ratio.
4. Failure Elimination and Threats program – Bad Actor Analysis; Pareto; MTO (Manage Threats and Opportunities); RCA / 5Ys.
5. Get The Basics Right – equipment ownership, housekeeping, cleaning, lubricating and first line maintenance by operators.
6. Robust Planning Process – top performers do 90% PM work.
7. Strong WPSE (Work Preparation, Scheduling & Execution) practice; everything in place to do right work at right time in most efficient and effective way.
8. High PM Compliance %age – volume of emergent work should be low.
9. Condition Based Maintenance – monitoring the health of equipment means detecting warning of a failure and predicting when to intervene.

TRIP™ is a collaborative effort between your asset management staff and us. Generally, all facilities do some things well and from this starting point, we help the client revamp their improvement process. TRIP™ compares local practices with proven best practices, identifies worthwhile improvement opportunities and devises "what to do and how to do it" solutions to exploit these opportunities. KGI have worldwide experience in implementing TRIP™ that will enable you to reach the ranks of top



SERVICES



MAINTENANCE & INTEGRITY

Maintenance & Integrity Management Support

Identify Safety Critical (SCE) equipment and incorporate Performance Standards with Assurance Measures.

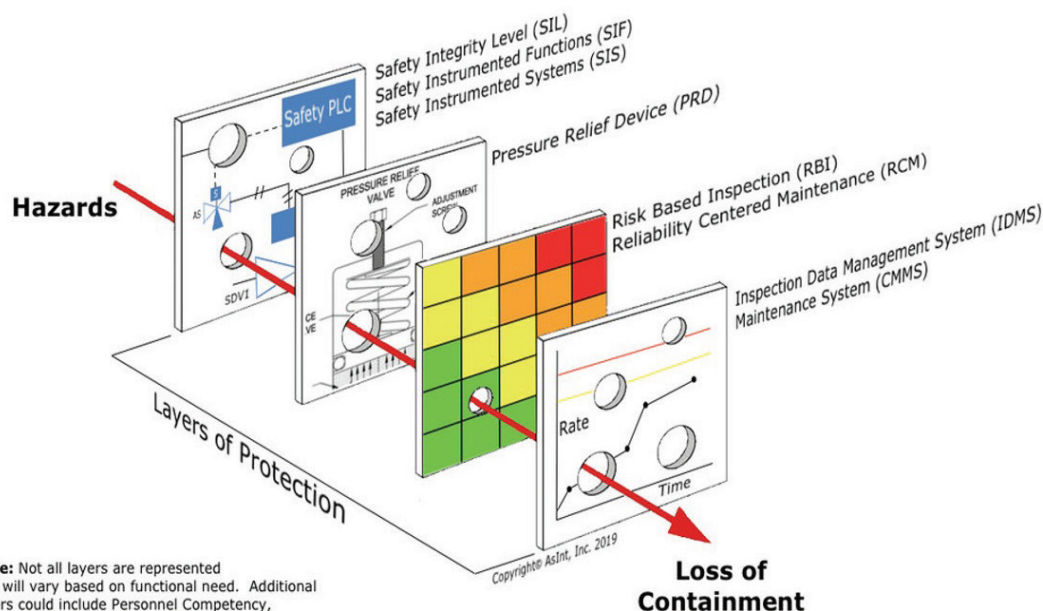
KGI provides Maintenance and Integrity Management support to facilities and equipment through concept, design, construction, commissioning, operations, and decommissioning phases structured approach. This will enable facilities to attain high levels of safety, product quality and production volumes, at the lowest sustainable operating cost.

The goal of M&I Management is to effectively manage assets in order to gain maximum value, profitability, and returns while safeguarding personnel and the environment. This incorporates design, maintenance, inspection, operations, and management concepts, since all these disciplines impact the integrity of infrastructure and equipment.

KGI provides specialists and engineering support in all areas of M&I Management, including design, process safety, mechanical integrity, inspection and maintenance, operational and process support, corrosion, and risk analysis to provide you with Total Quality Assurance.

Our experts have in-depth knowledge of the oil, gas, petrochemical, power, renewable energy, civil and infrastructure fields, providing Maintenance and Integrity Management solutions clients need to achieve productivity gains, while meeting safety and

Swiss Chese Model





SERVICES



MATERIAL MANAGEMENT

Materials / Spares / Inventory Management

Optimising spares and inventory to reduce downtime and improve operational efficiency

Do you really know how well you are managing your MRO Inventory? In our experience, from carrying many audits and training courses in MRO Management, most companies manage spares poorly, resulting in many duplicates, lack of converting from OEM to OPM parts and consequently, ineffective stocking levels and costs. There are many reasons for this, but it usually starts with poor submission of vendors recommended spare parts data, poor cataloguing and poor initial spares selection. Irrespective of the industry, whether it be Oil and Gas, Mining, Power, Food & Drink, Electronics, Semi-conductor Plants; all can improve spares management.

Statistics have shown that up to 50% of all unscheduled downtime is caused by missing parts. In addition, unnecessary parts can add an average of 15-20% to a companies operating costs. To manage this effectively, KGI have developed a comprehensive MRO Inventory Audit process, with six levels of review:

- Level 1** - Review catalogue data (part descriptions, part numbers, material group codes, duplicate analysis).
- Level 2** - Review stock balance, and inventory control parameters.
- Level 3** - Review BOMs.
- Level 4** - Comparison Analysis (a check for common items between different warehouses).
- Level 5** - Gap Analysis of your management practices and provide a qualitative assessment.
- Level 6** - Review in detail any written procedures in place.



SERVICES



SHUTDOWN & TURNAROUNDS

Shutdowns and Turnaround Management

Enhance your capability to deliver Turnarounds safely, efficiently and effectively

KGI supports to enhance your capability to deliver Turnarounds safely, efficiently and effectively striving to ensure Turnarounds and all planned production impacting activity is optimized and delivers business goals. Driving down risk/cost whilst maximizing operations efficiency, value and competitiveness.

Strategic Planning

Support to improve Strategic Planning to best meet or beat the in-year and outer-year business plan goals with forecasting accuracy.

What we bring

KGI have built our capability as Directors, senior leaders and consultants in major oil companies including Shell and BP working in Upstream, Downstream, LNG and Chemicals manufacturing. We will bring our expertise and demonstrated capability in:

- Delivering Top Quartile / Pacesetter Turnarounds in Downstream and Upstream and leverage our expertise in delivery and building sustainable capability in others.
- Turnaround process and methodology. We have our own Turnaround process, Assurance and Optimisation programmes that have been developed using our collective expertise, continuously improved and implemented to affect.
- Commercial, EPC management and contracting experience, combined with people and organisational management skills.
- Determining optimal technical solutions to scope opportunities/challenges from our experience as Technical Authorities.
- Project management, assurance, controls and experience in EPC delivery.
- Complex event management including project work driven events or Turnarounds that have, significant project scope.

Coaching & Mentoring

Enhance capability through coaching and mentoring, including process and organisational improvements.

Production Activity Support

Support to deliver optimised and predictable Turnarounds and other planned production impacting activity.

operation-al



SERVICES



OPERATIONAL EXCELLENCE

Operational Excellence Management

A management philosophy known as operational excellence seeks to maximize the value produced for stakeholders by continuously enhancing corporate procedures and systems.

Operational Excellence aims to achieve operational efficiency for clients by optimizing operations to ensure safety, environmental sustainability, and profitability.

Companies may continuously enhance their operations, save costs, boost efficiency, and ultimately succeed by implementing a culture

The fundamental principles of Operational Excellence include the following:

- 1. Focus on safety:** Safety is critical to operational excellence because it reduces risk and safeguards workers, contractors, and the environment. Constant improvement entails continuously evaluating and enhancing procedures to guarantee effectiveness and efficiency.
- 2. Lean management:** This involves reducing waste and streamlining operations to increase efficiency.
- 3. Collaborative culture:** Operational excellence requires a collaborative culture that values teamwork and shared responsibility for achieving functional objectives.
- 4. Leadership commitment:** Senior management must be committed to and supportive of operational excellence for it to be ingrained throughout the organization.

By adopting best practices from other industries, deploying technology, putting continuous improvement efforts in place, investing in staff training and development, and using data analytics for decision-making, businesses can increase the operational efficiency of their operations.

Why does Operational Efficiency Matter?

For several reasons, operational efficiency is critical to the success of operations in any clients industry.

Cost Reduction: Efficient operations lower costs by reducing waste, increasing resource utilization, and streamlining procedures. As a result, client's firms can increase their profitability and competitiveness by cutting costs.

Environmental and Safety Benefits: By lowering greenhouse gas emissions, waste production, and water use, efficient operations help reduce their adverse environmental effects. In addition, safe and effective functions minimize the possibility of accidents, safeguarding the community, workers, and the environment.

Regulatory Compliance: Efficient operations help oil and gas companies to comply with regulatory requirements and reduce the risk of non-compliance fines and penalties

Improved Reputation: Efficient operations help to improve a company's reputation by demonstrating a commitment to sustainability, safety, and ethical practices.

KGI can suggest on ways companies can improve operational efficiency, including:

Adopting best practices from other industries: Companies can learn from other industries to identify opportunities to improve operations and increase efficiency.

Leveraging technology to streamline processes: Technology can automate processes, reduce manual labor, and increase efficiency.

Implementing continuous improvement initiatives: Companies can continuously review and improve their processes to reduce waste, minimize downtime, and improve efficiency.

Investing in workforce training and development: Well-trained employees are essential for efficient operations. Therefore, companies should invest in their workforce to improve their knowledge, skills, and competencies.

Utilizing data analytics for decision-making: Data analytics can identify inefficiencies, monitor performance, and make data-driven decisions to improve operations. Operational efficiency is critical to the success of operations in any industry.



SERVICES



TRAINING

Asset Management and HSE Training

Knowledge Grid offer highly effective Technical Courses, Seminars, Workshops, and Education based on extensive Operational Experience. Our Principal Engineers are Local Sarawakian and also international recognised experts with extensive technical and practical knowledge of O&G, LNG, Water Utilities and Heavy Engineering for maintenance and reliability improvement for processes. We can also tailor course content specific to your process, facility or students, and are adept at addressing attendees' actual problems and concerns. Courses can be held either at your location or in one of our classrooms.

Code	Course Name	Duration
KG01	CMMS Introduction Training	2 Days
KG02	Tripod Beta Practitioner Training	2 / 3 Days
KG03	TAR (Shutdown) Training	3 Days
KG04	Lean Manager Training	3 Days
KG05	Root Cause Analysis Training	3 Days
KG06	Maintenance Planning and Scheduling Training	3 Days
KG07	Practical Reliability Engineering Training	5 Days
KG08	RCM and RCM Facilitation Training	4 Days
KG09	Authorised Gas Tester Training	1 Day
KG10	Basic Emergency First Aid Training	1 Day
KG11	Basic H2s Training	1 Day
KG12	Dropped Object Prevention Training	1 Day
KG13	Hazard Recognition Training Course	1 Day
KG14	HSE Training	1 Day
KG15	Introduction to Oil & Gas Training	1 Day
KG16	Leadership and Management Executive Training	3 Days
KG17	Leadership and Management Non-Executive Training	1 Day
KG18	Manual Handling Training	1 Day
KG19	Permit to Work Training	1 Day

CLIENTS WORLDWIDE



شركة تنمية نفط عمان
Petroleum Development Oman



هيئة الطرق والمواصلات
ROADS & TRANSPORT AUTHORITY



RioTinto



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