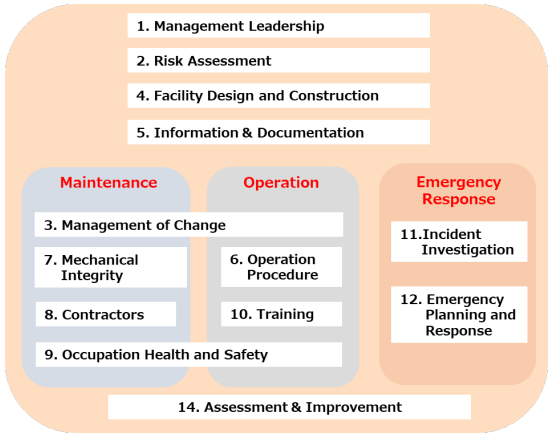
Technical Assistance & Training

Return to OE Service menu

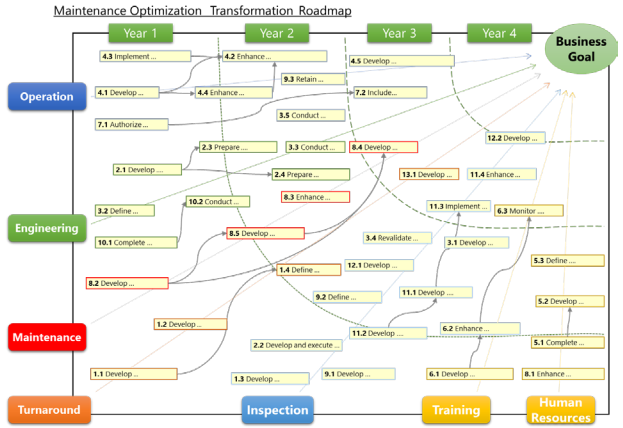
Service Menu

Over the past several decades, JGC Group has conducted various engineer training programs and technical assistance programs at plant sites and remote locations. Many of our clients have achieved considerable improvements in their employee skills and plant operations which significantly contribute to the profitability and efficiency of their business.

- Technical Assistance Service
  - Onsite Assistance (Residential/On-call)
  - Asset & Operation Due Diligence
  - OPEX Assessment
  - Strategic Operational Improvement Assistance
- Training Service
  - Training and Competency Management Services



Asset & Operation Management Framework



Strategic Maintenance Optimization Road Map

Onsite Assistance

Technical Seminars and Training Class

Operational Excellence Services

Technical Assistance & Training

Onsite Assistance (Residential/On-call)

Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

Onsite Assistance (Residential/On-call)

Do you have any of these issues?

☹ **Lack of experienced engineers and technicians**
☹ **Need specific expertise**
☹ **Need technical problem-solving teams when in trouble**

Our Solutions

- Dispatch customized teams, experts, and operation and maintenance staff to the operation site to meet the client's needs.
- Select the most suitable resources from JGC network for client's situation over a long period of time or even within a short period of time.
- The dispatched teams and crew will work as an integrated resource with client's operating organization, or work as an independent task force team.

Onsite Assistance (Residential/On-call)

Return to Technical Assistance & Training menu

Our Approach

Understand Client Needs or Issues

- Shortage of Engineers and Technicians
- Reinforcement Needs
- Specific Technical issues

Propose Best Teams and Candidates

- Job Description
- Role and Responsibility
- Duration (long-tern/short-term)

Service Agreement

Options:

1. **Combination with Operational Excellence services**
2. **Troubleshooting by Experts in Global Operating Center**

Mobilize Team or Personnel

Our Strengths

- A wide variety of global human resources networks allow flexible use of experienced and knowledgeable experts
- Cooperation with specialized teams at headquarters with expertise from various EPC and Operational Excellence services
- Stand by various experts who can solve problems quickly

Our Experiences

30+

Years in Global Market

Middle East
North Africa
West Africa
Southeast Asia

Various Type of Facilities

Gas Processing
Oil Producing
FPSO
Integrated Water, Steam, Power Plant, etc.

Operational Excellence Services

Technical Assistance & Training

Asset & Operation Due Diligence

Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

Asset & Operation Due Diligence

Do you have any of these issues?

☹ **Considering investment for operating assets**

☹ **Audit for operation and maintenance of operating assets**

Focus Areas

- ***Facility design and construction*** in accordance with recognized and generally accepted engineering practices
- Implementation of ***Process Hazard Analysis***
- Established ***Operation Manual***
  - ✓ Startup and Shutdown
  - ✓ Normal operations
  - ✓ Emergency Operations
- Deployment of ***safe work practices***
- ***Written procedures*** for maintenance, inspections and testing
- Rigorous ***quality assurance*** systems
- ***Training and competency*** management system

Asset & Operation Management Framework

1. Management Leadership
2. Risk Assessment
4. Facility Design and Construction
5. Information & Documentation

Maintenance

3. Management of Change
7. Mechanical Integrity
8. Contractors
9. Occupation Health and Safety

Operation

6. Operation Procedure
10. Training

Emergency Response

11. Incident Investigation
12. Emergency Planning and Response

14. Assessment & Improvement

Asset & Operation Due Diligence

Return to Technical Assistance & Training menu

Example of JGC's PSM Assessment Checklist

No.	Requirement	Guideline for Compliance	Observation	Opportunities / Comments
5.0	*In accordance with the schedule set forth in [paragraph 3.1] of this section,* the employer shall complete a compilation of written process safety information before conducting any process hazard analysis required by the standard. The compilation of written process safety information is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This process safety information shall include information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process and information pertaining to the equipment in the process.	1. A procedure to manage PSI defined in the paragraph 2.1 through 2.3 should be developed. - Information applicable as PSI should be clearly defined in the procedure. - Management process of PSI, including roles & responsibilities of owners should be developed. - PSI should be periodically updated according to Management of Change processes. *(Refer to Element-10)*		
5.1	Information pertaining to the hazards of the highly hazardous chemicals in the process. The information shall consist of at least the following: i. ii. iii. iv. Reactivity data; v. Corrosivity data; vi. Thermal and chemical stability data; and vii. Hazardous effects of inadvertent mixing of different materials that could foreseeably occur. Note: Safety data sheets meeting the requirements of 29 CFR 1910.1200(g) may be used to comply with this requirement to the extent they contain the information required by this subparagraph.	1. P... g: ... and ... gienists *TLV : Threshold Limit Value* *TWA : Time Weighted Average* *STEL : Short Term Exposure Limit* *TLV-C : Threshold Limit Value Ceiling* *IDLH : Immediately Dangerous to Life or Health* 2. Material Safety Data Sheet (MSDS) should be used to include the information. - All MSDS should be supplied from manufacturers and compiled. 3. When a contractor brings highly hazardous chemicals to the plant then the contractor shall show MSDS to the employer and obtain approval.		
5.2	Information pertaining to the technology of the process.	1. Most of technology information should be developed during the EPC phase and delivered from the EPC contractor.		

Observations found during the interview will be described in this column.

Guidelines to conform to OSHA requirements as per JGC's knowledge and experiences

Requirements of OSHA 1910.119

Improvement opportunities identified during the interview will be described in this column.

Element 5: Information & Documentation

Our Strengths

- Extensive, worldwide EPC project and maintenance experiences
- Experience in investment for operating assets
- Professional Operation & Maintenance Engineer Teams
- Asset & Operation Management (AOM) system based on OSHA PSM
- Experience in Due Diligence (DD) and audits for operating plants.

Our Experiences

O&M Due Diligence **3+ Cases**

Audits for O&M **5+ Cases**

Operational Excellence Services

Technical Assistance & Training

OPEX Assessment

Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

OPEX Assessment

Do you have any of these issues?

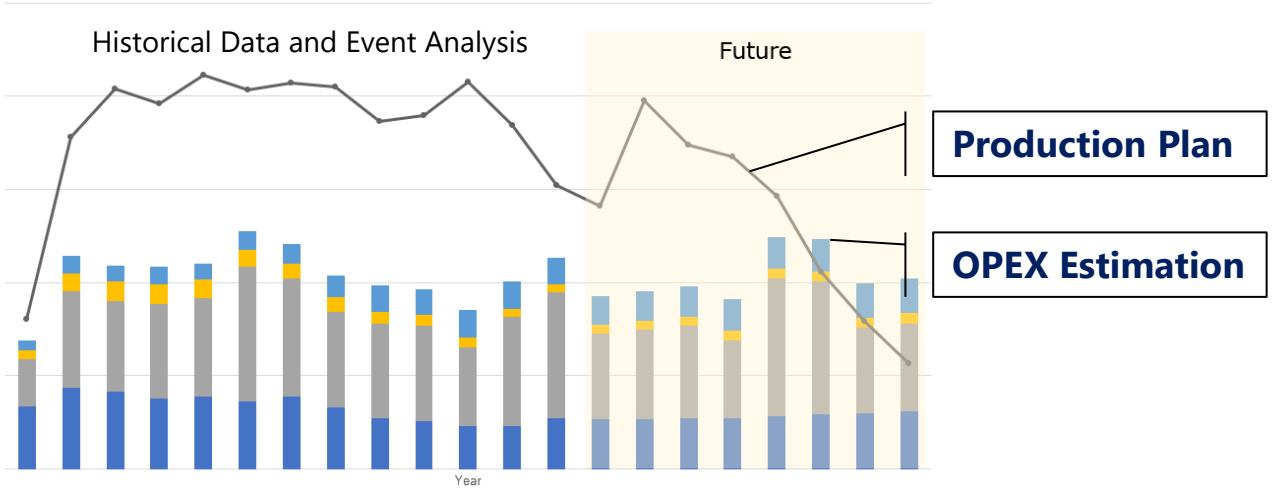
☹ **Estimating OPEX to assess the feasibility at business planning phase**

☹ **Verifying future OPEX in operation phase**

☹ **Identifying improvement opportunities on operation and maintenance costs**

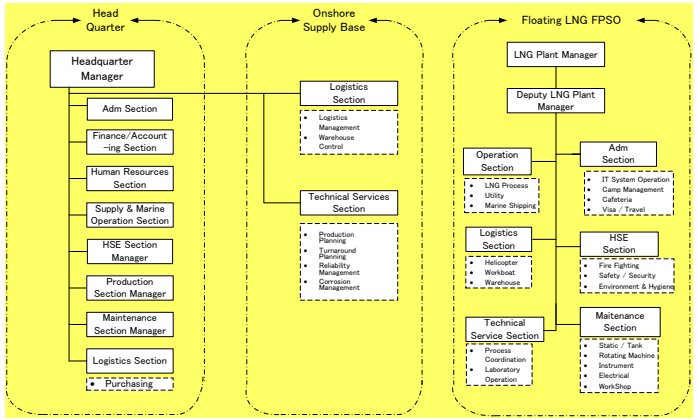
Our Solution

- Estimate or Assess OPEX by experts who understand the processes and regions at business planning phase
- Analyze historical OPEX data from the operation phase
- Conduct a case study to identify the optimized OPEX in either of the above cases



OPEX Estimation based on Production Plan

O&M Strategy Development as the basis of OPEX (e.g., Organization Chart)



OPEX Assessment

Return to Technical Assistance & Training menu

Workflow & Results

Business Planning Phase

Business Case and Plant Concept Check	OPEX Item Definition	O&M Strategy Definition	OPEX Item Estimation	Case Study for Optimization
• County • Plant Type • Production Plan • Schedule • Local Conditions • etc.	• Personnel • Maintenance • Chemical • Fuels • Insurance • Training • etc.	• Organization and Working System • Operation Strategy • Maintenance Strategy • Logistics Strategy • Training Strategy • etc.	• Estimation by O&M Experts and Cost Engineers	• Case Studies with optional O&M Strategy

Operation Phase

Business Case and Plant Concept Check	Historical Data Check	OPEX Item Estimation	GAP Analysis	Case Study for Optimization
• County • Plant Type • Production Plan • Schedule • Local Conditions • etc.	• Past OPEX Review • Past Operation Result Review • Past Maintenance Event review • Future OPEX plan review (if available)	• Estimation by O&M Experts and Cost Engineers	• Identification of GAP between JGC estimated OPEX and Client given future OPEX	• Case Studies with optional O&M Strategy

Our Strengths

- Assess using the latest cost information accumulated through plant EPC projects worldwide
- Estimate by experts with plant process, operation and maintenance knowledge
- Provide output tailored to client needs and business phases
- Advise improvement opportunities by experts

Our Experiences

10+

Projects in 10 years

Various Type of Facilities

Gas Processing
LNG Terminal
Onshore LNG
FLNG
FPSO, etc.

Operational Excellence Services

Technical Assistance & Training

Strategic Operational Improvement Assistance

Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

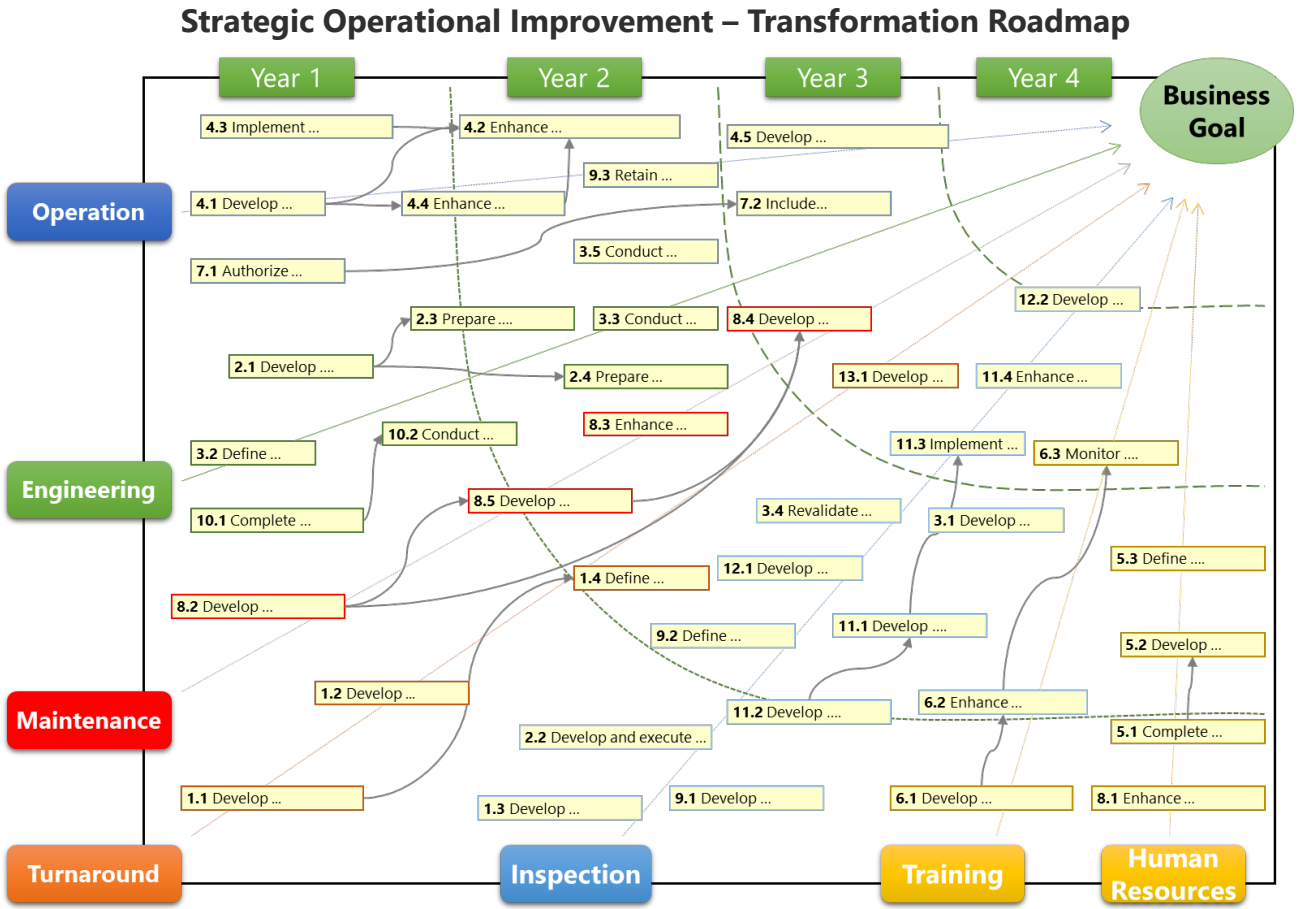
Strategic Operational Improvement Assistance

Do you have any of these issues?

☹ **Increasing Unplanned Plant Outages**
☹ **Increasing Maintenance Costs along with Age**
☹ **Lack of Experienced Maintenance Staff**
☹ **Representing Improvements Visually**

Solution

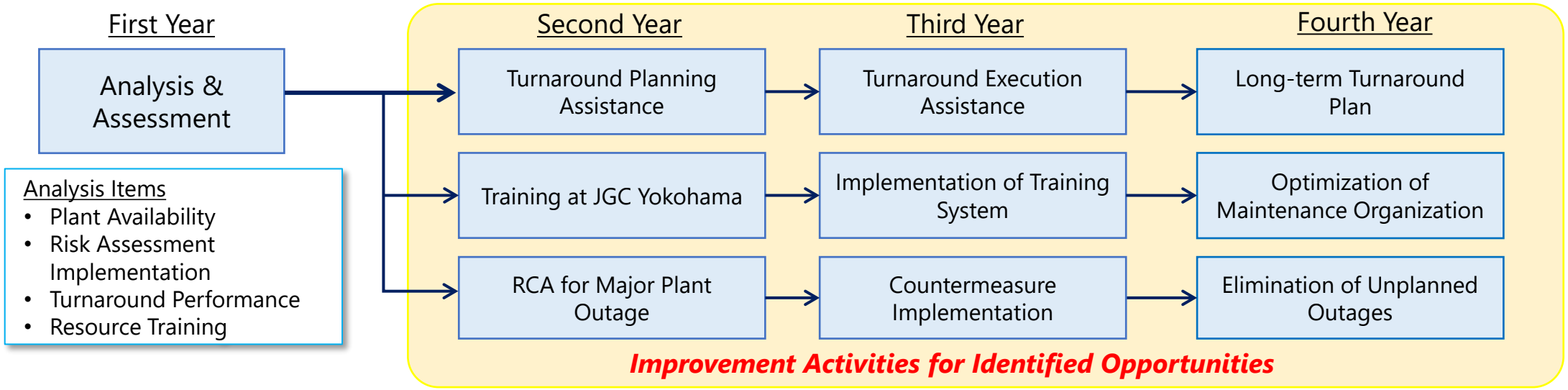
- SWOT Analysis of operation and maintenance organization
- Middle and long-term operation and maintenance plan including turnaround plan
- Setting Key Performance Indicators (KPI)
- Root Cause Analysis (RCA) for equipment failure and countermeasure development
- Training focusing on younger staff and skill/knowledge transfer from experienced staff



Strategic Operational Improvement Assistance

Return to Technical Assistance & Training menu

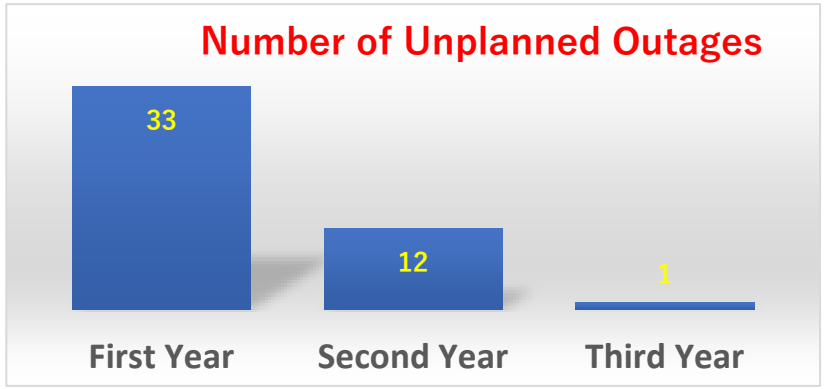
Long-Term Strategic Operational Improvement Assistance Program



Our Strengths

- Professional Operation and Maintenance Engineer Teams
- Global resources
- Practical application of Risk Based Work Selection process such as RCM and RBI
- Rigorous turnround readiness review methodology
- Many experiences in turnaround planning
- Engineering tools and experienced analytical staff for RCA

Our Experiences Chemical Plant Case in Indonesia



Operational Excellence Services

Technical Assistance & Training

Training and Competency Management Services

Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

Training and Competency Management Services

Do you have any of these issues?

- ☹ **Catching up to the latest technical trends**
- ☹ **Refreshing knowledge on essential technical matters**
- ☹ **Specific training linked to technical issues**
  (e.g., troubleshooting, performance improvement)
- ☹ **Struggling to fill gap between actual and required skill set**

Training Services

- Organize a tailor-made training program
  (e.g., Asset Management, Process Safety Management, TA Management, Plant Life Extension, etc.)
- Deliver training courses and seminars (at site or on-line)
- Implement competency management program
- Dispatch experts to site;
  - ➢ for hands-on training
  - ➢ for troubleshooting and performance evaluation with follow-up technical sessions

Training and Competency Management Services

Key Categories / Themes for Technical Training

Engineering & Project	Operation & Maintenance
P&ID	Process Safety Management
Hydraulic Design	Reliability, Availability, Maintainability (RAM)
Process Engineering	Reliability-Centered Maintenance
Dynamic Simulation Technology	Risk-Based Inspection
Plant Safety Design and Risk Management	Plant Life Extension Program
HAZOP	Fitness for Service
Material Selection	Simulation Technology for Plant Troubleshooting (CFD)
Piping Engineering	Turnaround Management
Pressure Vessel, Exchangers and Tanks	Computerized Maintenance Management System
Energy Efficiency Improvement	Computerized Inspection Management System
Pump and Compressor	
Instrument Engineering	
Safety Instrumented Systems	
Electrical Engineering	
Civil Engineering	
Welding Technology	
Paint Technology	
Corrosion under Insulation	
Latest Non-Destructive Testing Technology	
Vibration Control	
Mechanical Handling	
Commissioning	
Operations Readiness & Assurance	

Our Strengths

- Professional Engineering Experts run our Training Services.
- Training programs are updated in line with latest technical trends and are applicable to actual implementation.
- In association with and funded by Japanese governmental support, such as JCCP (Japan Cooperation Center, Petroleum).
- Continuous follow-up and support are provided by our overseas affiliates and local partners.

Our Experiences

Technical seminars — **20+ in past 5 years**

Trainees — **500+ in past 5 years**

Case Study : Customized Training for FCC Unit Reliability Improvement

Return to Technical Assistance & Training menu

Background:

A refinery in Southeast Asia was struggling with stable operation of RFCC unit from the start after EPC project

Attendees:

Maintenance and inspection departments and technical service departments at the plant site and headquarters

Objective:

To share information on various problems that occur in RFCC, analysis methods to solve them, and technical advice from refractory vendors.

Workshops are also held to share examples of problems encountered in their RFCC and to discuss how to plan the next turnaround maintenance.

Reference Services

Process Safety Management Seminar - JGC Headquarter 2016 for E&P Company in Japan

Plant Life Cycle Management Seminar - JGC Headquarter 2017 for E&P Company in Japan

Process Safety Management Seminar - Online 2021 for E&P Company in Japan

FCC Unit Integrity & Reliability Improvement Seminar– Online 2022 for Refinery in Middle East

FCC Unit Integrity & Reliability Improvement Seminar– Online 2023 for a Refinery in Southeast Asia

O&M Engineering Training – JGC Headquarter 2023 for a Petrochemical Plant in Middle East

FCC Unit Integrity & Reliability Improvement Seminar– Online 2024 for Refinery in South America

Examples of customized training programs

Material Degradation and Remaining Life Assessment (Day 1)

1. FCC Unit Process Overview
2. Material Selection and Degradation
3. Remaining Life Assessment Methodologies
4. Experience of Material Degradation and Current Issue (by Client)

Corrosion Management and Inspection Data Management (Day 2)

1. Corrosion Management Program
2. Corrosion Under Insulation
3. Inspection Data Management System
4. Corrosion Management Program and Improvement Plan (by Client)
5. Workshop - Corrosion Management Program (All members)

Fitness for Service and Major Replacement Work (Day 3)

1. Fitness for Service Technology
2. Major Replacement Work
3. Advanced Repair Technology
4. Past Experiences and Future Plans (by Client)
5. Workshop – Major Replacement and Repair Planning and Execution (All members)

Reliability of Critical Mechanical Components (Day 4)

1. Refractory (Vendor)
2. Expansion Joint (Vendor)
3. GRP Piping
4. Future Actions and Wrap Up (All members)