Integrated Asset Management – Technical Guidance



Generating more value from the physical assets of our customers

thyssenkrupp Industrial Solutions' Integrated Asset Management (IAM) portfolio is designed to generate more value from the physical assets of its customers in chemical industry. This involves unlocking the untapped value and implementing new value enhancing solutions. This is achieved through better performance, for longer life and at an optimum cost.

IAM technical guidance service is designed for customers who have an identified gap in their asset management organization, processes or performance. This gap may have been identified by the customers themselves, or during a Plant Assessment by tklS or another consultant or introduced knowingly by the customer for a purpose.

For IAM technical guidance, a team of thyssenkrupp asset management specialists is deputed permanently at customer's plant, typically for a period of one to two years. This team engages in various functions related to the management, engineering and supervision function of asset management. This team is suitably backed up by technology, process and equipment specialists on need basis.

The permanently deployed team can be organized along with the customer's asset management organization in following arrangements:

- Parallel to customer's organization: Customer has its own asset management organization covering all the four layers of management, engineering, supervision and execution. thyssenkrupp deputes a team which is positioned and functions parallel to certain, predefined positions to strengthen those functions or train the personnel in the customer's organization.
- Embedded in to the customer's organization: Customer identifies
 or decides to have gaps in its own organization. Those positions
 and functions, in management, engineering and supervision
 layers, are occupied and performed by thyssenkrupp specialists.
 These positions are subsequently taken over by the customer's
 personnel in due course of time or phased out, as the case may
 he.
- Leading & managing the customer's organization: The customer may decide to have, on its own or through another contractor, an organization for supervision (partially or fully) and execution of asset management functions

thyssenkrupp will provide the organization for management, engineering and supervision (if required) functions. In this case, the customer's own or hired organization reports to and is managed by thyssenkrupp's organization deployed at site.

 Task based deployment: A team of specialists from thyssenkrupp is deployed to customer's location to implement, roll out and provide training for a specific solution. For example, CMMS implementation or optimization, materials management process optimization, maintenance management, process optimization, competence development program etc.

One important goal of IAM technical guidance service is to develop the customer's asset management organization to eventually manage, execute, control and improve the asset management functions in a self-dependent manner.

Service advantages

- Better performance, longer life, reduced risks at optimum costs
- Improved/high safety, reliability, availability, productivity, life and efficiency of physical assets
- Higher returns on capital employed



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360° Service

Service solutions throughout the entire life cycle of your plant





Parts & supply management

We are the experts when it comes to the supply with spare and wear parts for your plant – over the entire lifetime, at the right time and with the right quality.

Spare parts supply

- All spare parts and components for your asset in OEM quality
- · Always state of the art technology with guaranteed functionality
- Attractive frame contracts and supply agreements

Wear parts solutions

- Development of wear parts according to your requirements
- Individual solutions in regards of quality and performance
- Innovative wear parts concepts

Advanced parts solutions

- Engineering and manufacturing of individual spare parts
- Continuous further development of spare parts and components in order to increase the performance of your plant
- Spare and wear parts for plants genuinely not developed by thyssenkrupp



Field services

We offer you local assistance when it comes to overhauling spare and wear parts, or when maintenance and servicing is needed.

Technical inspections

- Forward-looking inspections of machines and components
 Repairs and field support
- Fulltime site support and advice after handover of equipment
- Fault identification and emergency repair of components
- Installation and dismantling
- · Equipment adjustments and alignments



Revamps & outages

Over the course of time, demands change. In order to meet these changed demands, we offer you custom-tailored revamp solutions.

Analysis, engineering and manufacturing

- · Plant status and environmental analysis and assessment
- Feasibility studies
- · Basic, front-end and detail engineering
- Manufacturing of individual equipment

Plant improvements

- · Custom-tailored revamps and retrofitting solutions
- Debottlenecking through capacity extensions
- Efficiency enhancement through modernization and upgrades
- Emission reduction
- Safety and integrity upgrades
- Reliability improvement

Revamps execution up to EPC

- Execution of complex revamp and outage projects
- Execution of EPC revamps projects
- Custom-tailored risk and profit sharing models

Turnaround management

Management of plant turnarounds



Asset management

We offer you a holistic asset management approach in order to reduce the overall operating expenses of your plant.

Consulting

- · Evaluation and assessment of effectiveness and efficiency
- Process mapping and gap analysis
- Derivation and supervision of improvement measures

Technical guidance

- Implementation of improvement measures
- · Technical improvement of existing machines and components
- Strategic analysis and future planning
- Improvement of processes and procedures

Operation & maintenance contracts

- Complete or partial take-over of maintenance and/or operations activities
- One-stop operation and maintenance solutions including (optional) parts and consumables
- Custom-tailored business models focusing on a win-win situation

Operator & maintenance training courses

- Customer training for all areas of thyssenkrupp portfolio
- Utilization of product experts within thyssenkrupp's qlobal network