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COMPANY PROFILE

THIS Group :

Total Hazardous and Integrated Solutions Ltd
Total Hazardous and Integrated Solutions Co Ltd
THIS Services (TH) Co Ltd

HazMat Engineering

Mercury Decontamination

Dynamic Waste Management

Decommissioning Support Services

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ABBREVIATIONS

THIS	Total Hazardous and Integrated Solutions
MMP	Mercury Management Plan
WMP	Waste Management Plan
TCLP	Toxicity Characteristic Leaching Procedure
HDF	Hazardous Decontamination Facility
BOSIET	Basic Offshore Safety Induction and Emergency Training
COSHH	Control of Substances Hazardous to Health
IOC	International Oil Company
MIST	Minimum Industry Safety Training
NOC	National Oil Company
NORM	Naturally Occurring Radioactive Material
TENORM	Technologically Enhanced NORM
LSA	Low Specific Activity
OSHA	Occupational Safety and Health Administration
RPO	Radiation Protection Officer
CSE	Confined Space Entry
HEFU	High Energy Flushing Unit
HEFT /-E /-P	High Energy Flushing Tank / –Equipment / –Pipe
VOC	Volatile Organic Compounds
ETP	Effluent Treatment Plant
LEL	Lower Explosive Limit
COD	Chemical Oxygen Demand

1. HISTORY

Total Hazardous and Integrated Solutions [**THIS**] was established as an independent company in 2013 providing quality specialized mercury-related project support and solutions to the Oil & Gas, Petrochemical and Marine industries.

THIS offers a focused range of Services, Chemical Technology and Products in support of our customers throughout the world and has recently secured several contracts for provision of Mercury Management Services both offshore and onshore, across SE Asia.

THIS was founded and developed upon military-grade chemical decontamination practices and methodology building upon this with internal and third-party Research and Development to further evolve chemical technologies, analytical methods, proprietary equipment and decontamination applications. This evolution has enabled **THIS** to earn its place at the forefront of Industrial Mercury Management and Decontamination, as well as developing complimentary capabilities to manage other toxic and hazardous contaminants.

Since its foundation in 2013, **THIS** has significantly expanded its presence using internationally recognised experts in the provision of industry and application-related services with focus on Mercury Management including; mercury decontamination, waste treatment, biological monitoring, hazmat surveys and incident investigation, analysis, training and assessment, with a considerable portfolio of global projects in addition to SE Asia based consultancy work.

In 2019, **THIS** acquired **Premier Oilfield Services Co Ltd** (Thai company originally established in 1998) a decontamination and waste management service provider, to form **THIS Services (TH) Co Ltd**.

In 2023, **THIS** created an alliance with **Radiation Professionals Australia Pty Ltd (RPA)** (an Australian company originally established in 2019) a radiation management service provider, to create an optimised service capability for the major operators as they began the decommissioning of their subsea assets. This included the setup of a full-scale onshore decontamination facility in a metal recyclers purpose-built yard to include the chemical and high-pressure water jetting decontamination of decommissioned assets including Xmas trees, wellheads, PLEMs, manifolds, rigid pipeline, flexible flow lines and other ancillaries.

As the success of the alliance grew so did the relationship and in 2024 **THIS** became a shareholder in **RPA**.

The **RPA** and **THIS** Group (**RTG**) has since setup its own licensed yard in Western Australia for the decontamination of tubulars and temporary storage of NORM waste.

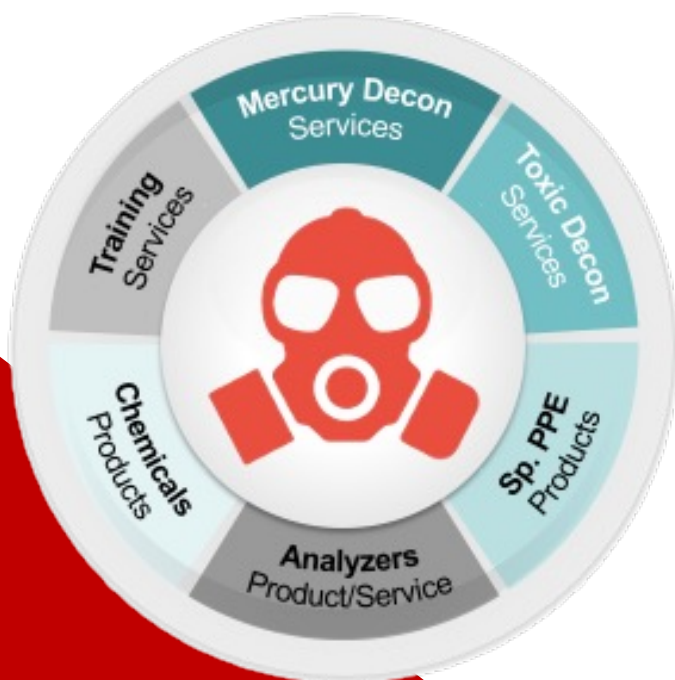
THIS has a over 25 years of history working in hazardous waste management and our founding principal has 30+ years of experience, knowledge and expertise, enabling us to provide a highly professional and truly dynamic service that is focused on ensuring our customers satisfaction by providing safe, efficient, cost-effective working practices throughout all our activities.

2. ACCREDITATION & QUALITY

Since its expansion of the Group into Australia, The Group has attained a centralized and optimised International Standards accreditation system that includes ISO 14001 / 9001 / 45001 for the provision of all our HazMat Products and Services.

In all aspects of its business, **THIS** relentlessly pursues professional excellence, and we recognise that this is only achievable and maintained by:

- Employing experienced and competent personnel who have a commitment to continual improvement in order to provide the highest quality of service to our clients.
- Meeting, and exceeding, client performance expectations with a thorough understanding of client regulatory requirements, extensive work planning and continual communication.
- Using a proactive, dynamic management system that produces real-time responses to changes in legislation, standards and procedures to ensure that information and services provided to clients are current.



3. SAFETY

Safety is at the core of all **THIS**' activities and the organisation employs a 360-degree culture of safety whenever and wherever work is taking place, whether in our own facility, at clients' onshore site or offshore installations, domestic or international. HSE leadership comes from above, but the true story comes from the ground up, and that is where we continuously strive to learn and improve.

Staff safety training is crucial, and is pursued from a holistic perspective, using both internal and third-party training courses (for example, mercury decontamination, manual handling, fire training, confined space entry, semi-automated tank cleaning) to equip **THIS** personnel with a robust and comprehensive skill set. Training is fully documented and traceable through **THIS** training records and quality management system.

THIS ensures that all safety requirements of a given task or project are met through an exhaustive process of Risk Analysis, JSA and definition of methods and procedures, further weighed against all applicable legislation and regulations.

All personnel performing on-site work hold appropriate certification, examples including BOSIET, offshore medical certification Radiation Protection Officer (RPO) and Confined Space Entry (CSE), while personnel directly undertaking mercury-related tasks are also subject to pre- and post-project biological screening for mercury in urine and blood. **THIS** takes a proactive approach to all aspects of HSE, constantly performing dynamic risk assessments to ensure all work activities are being carried out as safely and environmentally sympathetically as possible.



Mercury decontamination of process equipment

4. DECONTAMINATION FACILITIES

THIS operates its own licensed, Hazardous Decontamination Facility [HDF] in Rayong, Thailand. The HDF is an environmentally sealed, integrated chemical cleaning & recycling facility, facilitating transportation, segregation, classification, neutralization, volume reduction and encapsulation prior to managing final disposal of solid and liquid wastes using licensed facilities.

THIS service provision includes Full COC (Chain of Custody) documentation in compliance with OSHA, ISO, Pollution Control Dept., DIW (Dept. of Industrial Works), DMF (Dept. of Mineral Fuels) Regulations and Best Practice.

Services Provided

Include (but are not limited to):

- Fully licensed transportation of contaminated materials and hazardous waste
- Decontamination of mercury, arsenic and NORM from carbon steel, steel alloys and sealing materials
- Surface cleaning and decontamination of mercury, arsenic, NORM and hydrocarbons from process systems, intelligent PIG systems, tools and equipment
- Removal and final disposal of marine growth from decommissioned subsea assets
- Marine growth odour suppression systems
- Sample coring and cold-cutting for screening and verification pre- and post-decontamination
- On-site laboratory for QA/QC, efficacy monitoring and optimisation of decontamination chemicals
- Compliance assessment of waste streams pre- and post- neutralization, filtration and/or stabilisation

Protective Systems – Indoor decontamination bay, fixed toxic vapour (VOC, H₂S, SO₂, Benzene, etc.), built-in drain and sump vapour extraction, fixed Mercury vapour perimeter monitoring system, third-party monitored groundwater wells.

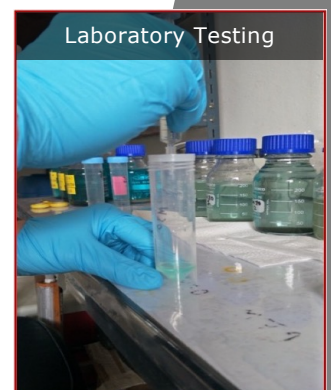


Environmental Protection Systems

The facility has several protection systems in place including;

Yard Construction – 6,000 sqm fully concreted with reinforcement and dual impervious layer, closed walls, bund and kerb isolation.

Drainage and Rainwater Runoff – 3-phase API closed drain sumps pre- and post- filter monitoring sonde points w. overflow capture via underground double-walled storage tank (77,000L).



Decontamination Systems



Decontamination Bay – Reinforced concrete floor, drain sump and perimeter walls with dual impervious layers and a high molecular weight polyethylene (HMWP) protective shielding.

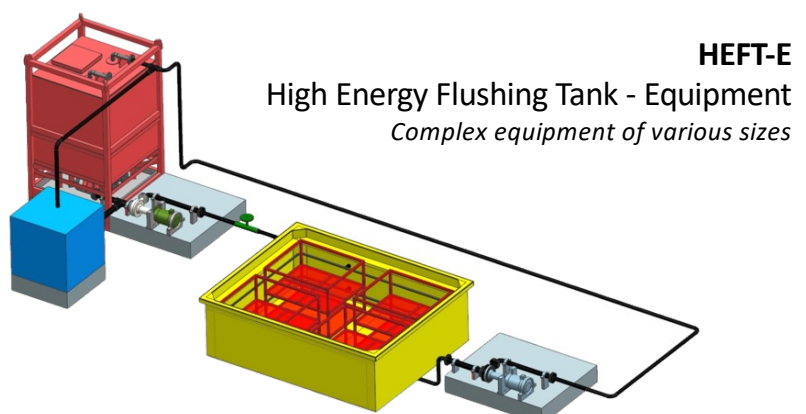
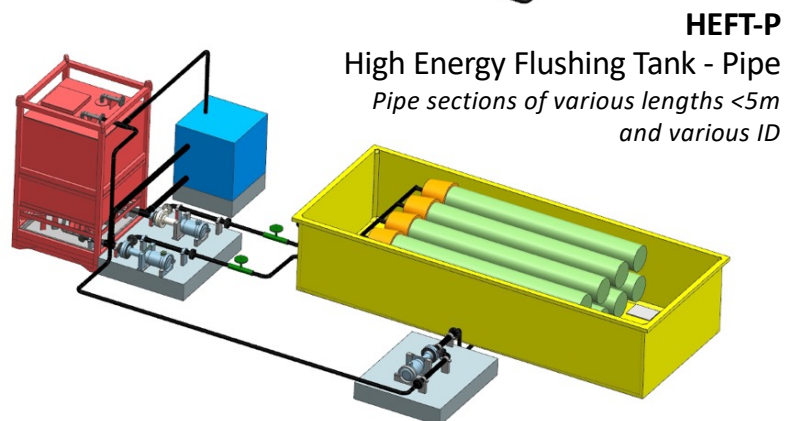
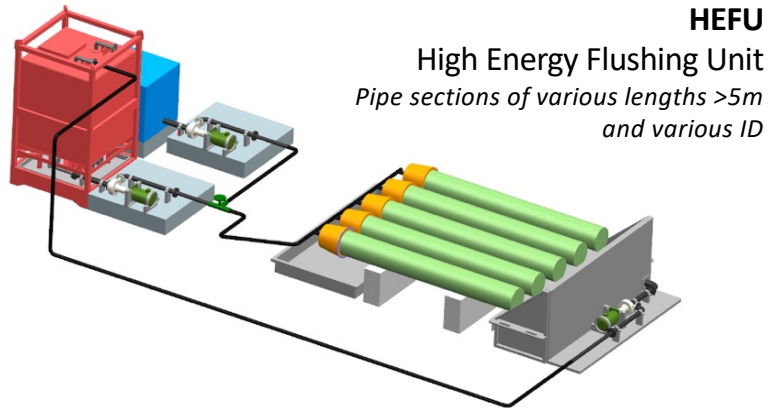
Fitted with custom-made chemical splashproof perimeter curtains, vapour-control system comprising floor, drain and ceiling vacuums and a closed drain sump.



Marine Growth & Pipe Coating Removal – Ultra-High Pressure (UHP) water blasting of pipe protection layers prior to decontamination and disposal by smelter, including concrete-weight, 3LLP and splash zone coatings.

HEF- Decontamination Units – Proprietary closed-loop circulatory systems for the chemical decontamination of process equipment or decommissioned assets.

These systems enable a factory-process type approach to the safe and quick decontamination of mercury, hydrocarbons and other contaminants from multiple sections of piping or tubulars regardless of ID or length and complex equipment.



Closed-loop decontamination of gas drier unit



Disassembly and decontamination of Intelligent PIG tool



Mercury assessment of BOP

5. DECONTAMINATION CAPABILITIES

Produced natural gas and oil always contains some non-hydrocarbon components and trace elements. These components may be considered as contaminants or impurities and some constituents only become more evident in the later stages of production, as the reservoir is depleted. These can be corrosive or cause processing upsets, resulting in a requirement for special engineering solutions in the process systems. Others may be an environmental pollutant, highly toxic or pose a serious health risk to personnel. Even at trace concentrations some impurities can cause significant implications for producers.

Mercury Decontamination

THIS provides decontamination solutions for most hazardous contaminants but have become globally recognized as experts in the decontamination of mercury in hydrocarbon process systems (gas, gas condensate, crude oil, produced water and particulate), high value specialist equipment and support ancillaries as well as the complete decontamination of decommissioned assets prior to recycle and/or disposal including subsea pipelines, platforms, marine vessels and FSO/FPSO tanker facilities.

MerCure

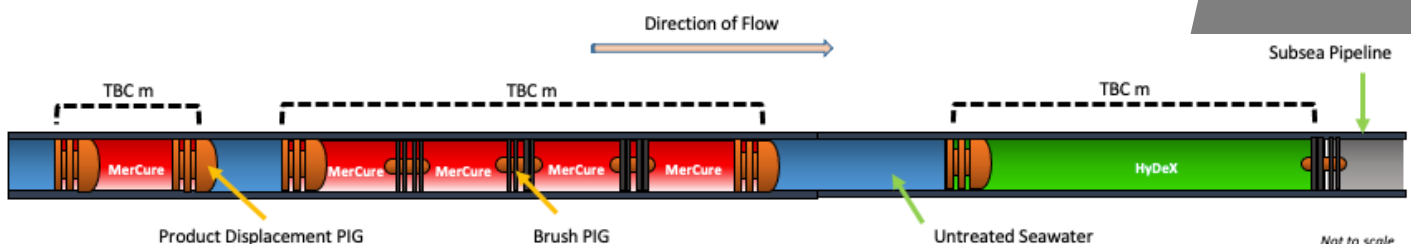
THIS has developed a Trade Secret formula (**MerCure**) for the complete desorption and

decontamination of mercury from carbon steel matrices. The **MerCure** chemical is currently the only known formula that has been independently proven to be 100% effective. **MerCure** is a complex acid-based decontamination chemical which has the ability to breakup scale, capturing both elemental and compound mercury (Hg). Its inherent properties help to draw chemisorbed Hg from steel and scale, sequestering it in a non-soluble form to prevent it from re-depositing. The conversion is irreversible and stable up to 300-350°C, so will not breakdown, re-vapourise or become bioavailable as is custom with other chemical applications.

Decontamination Services

include (but are not limited to):

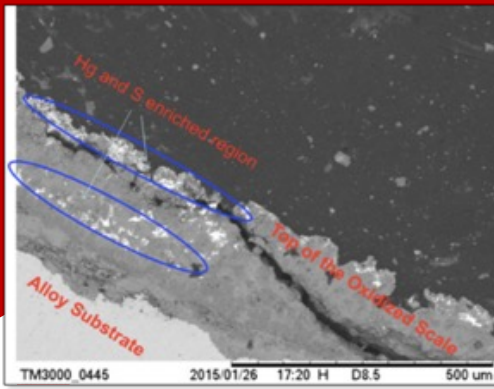
- Full desorption and decontamination of mercury from carbon steel
- Decontamination of mercury, arsenic and NORM from other steels, alloys and sealing materials
- Rapid toxic vapour suppression/elimination in work environments, spill sites, during hot work activities, storage tanks and process system maintenance scopes (during turnaround and shutdown) including LEL, H₂S, CO₂, VOC, BTEX and mercury
- Surface cleaning and decontamination of mercury, arsenic, NORM and hydrocarbons from process systems, catalyst units, intelligent PIG systems, tools and equipment
- Decontamination of sensitive systems and materials e.g. aluminium “cold box” heat exchangers, X-mas trees, tubing, downhole equipment, gas compressors, etc.
- In-situ deactivation of pyrophoric scale and polymers
- HazMat decontamination and demolition of decommissioned assets
- In-situ decontamination of subsea pipelines prior to repurpose or abandonment
- Cost effective decontamination of FSO/FPSO tankers prior to Green Recycle



Example of In-situ subsea pipeline decontamination using **MerCure**

MerCure & MerCure PG

MerCure chemical is applied as a circulatory flush or HP impingement using standard chemical pumping packages and has been repeatedly shown in independent laboratory and client in-house workshop testing to reduce Hg levels, in the % range, to levels non-detectable by pXRF (<LOD*) within a matter of hours.



Mercury trapped in loose and bound scale

MerCure PG gel has a very similar make up and principle to **MerCure** but has been further engineered as a gel specifically to work in contaminated environments where the mercury is primarily entrained in open surface areas such as flare boom structures or in 'shadow' areas of floors, walls, etc., that may obstruct the HP impingement application of the **MerCure** chemical.

Applied using HP cleaning lances, handheld spray units or manually by brush, the gel is allowed to sit for a pre-determined contact time before being washed off with water. A separate gel breaker is not required. The waste fluid is then captured, neutralised and reduced in the same way as the **MerCure** chemical, to minimise final waste volumes.

Decontamination Solutions

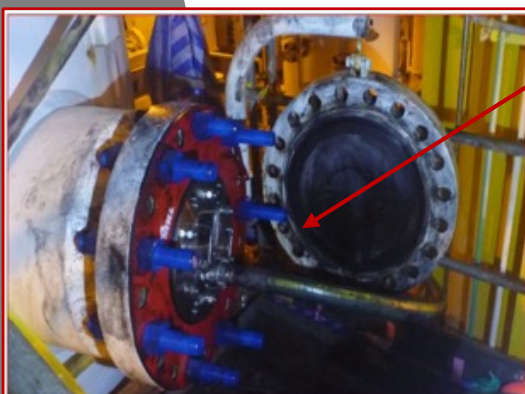
THIS has engineered and perfected several methods in order to optimise the application of our mercury desorption and removal technology to guarantee that we achieve FULL decontamination. When **THIS** talks about FULL decontamination we mean exactly that, removal of ALL elemental mercury and mercury compounds from all materials, to non-detectable levels*.

*ND (Non-Detectable) using a Handheld pXRF Analyser = safe for hot work and/or disposal by smelter

THIS' decontamination capabilities can be applied across several scenarios including, but not limited to; tank/vessel cleaning, platform decontamination, onshore & offshore decommissioning, infield and subsea pipelines (in-situ), high value tools and assets, site remediation, FSO/FPSO and others.

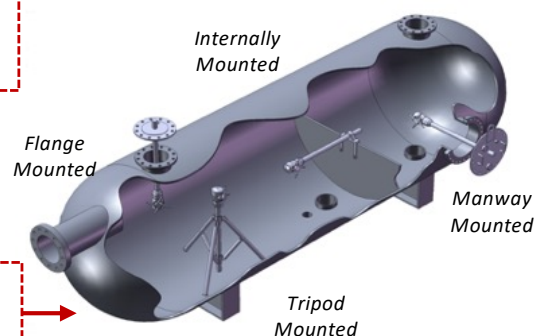
Further decontamination capabilities include a wide range of toxic and hazardous contaminants including, but not limited to; H₂S (hydrogen sulphide), rapid degassing/LEL elimination, pyrophoric deactivation, sludge and hydrocarbon deposits, paraffinic/ashphaltene wax, marine growth, marine growth odour suppression, radiation (LSA/NORM/TENORM), scale deposition, sulphur/iron-reducing bacteria (SRB/IRB) and others.

THIS' decontamination methods are engineered for ease of application, optimised chemical usage and as such are mostly automated or semi-automated on a closed-loop basis, ensuring that personnel safety and environmental protection remain prerequisite to any project requirement.



HP Impingement Hg decontamination using **MerCure**

HP Impingement capabilities for pressure vessels



Manual applications have also been researched to ensure an optimised, safe and effective approach is maintained.

5. DECONTAMINATION CAPABILITIES (cont.)

Performance and Repeatability

THIS elevates decontamination to a different level from other companies in that we can guarantee the complete removal of contaminants, and in particular, mercury and its compounds from carbon steel (and other materials), as opposed to the chemical cleaning and removal of 'free' contaminants that are relatively easy to remove.

THIS has subjected its **MerCure** chemical and **MerCure PG** gel technologies to extensive 3rd-party testing and analysis which considers intended applications, methodologies, contact time, chemical activity, material matrices, system temperatures, other contaminants, chemical loading, chemical saturation, reusability, performance repeatability, stability, shelf life, waste minimisation and even final waste disposal.

As a direct result of the afore-mentioned attributes of the **MerCure** in comparison to other chemistries a 3rd-party Certificate of Performance has been received and is available upon request.

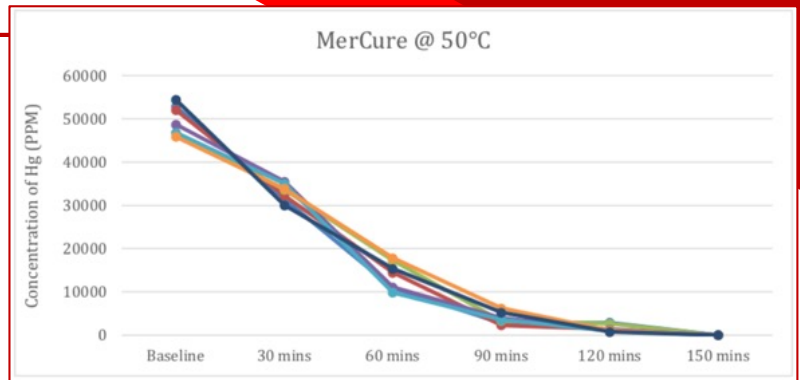
Mercury Management

THIS has been an industry leader in driving a wider understanding that the three major areas for concern resulting from the presence of mercury

- I. environmental pollution, including the potential for worker exposure and safety
- II. corrosion (LME, Liquid Metal Embrittlement) and asset integrity
- III. poisoning of catalysts

As such, **THIS** was the first to the design and implement a custom-made **Mercury Management Plan (MMP)** in 2002-2004, providing the customer with the relevant, proven and effective practices and procedures, specific to their own requirements and systems. This plan is generated upon conclusion of a detailed gap analysis, procedural review, on-site chemistry analysis, biological assessment and hazmat surveys.

Upon completion of the MMP the client is presented with hard copies and e-copies of an internally-branded reference manual complete with live data links, non-bias commercial supply links, references, custom-made training for client personnel (considering the various levels of responsibility and work scopes) as well as proactive periodic updates on domestic and international regulations, procedures and technologies.



Performance of Mercury desorption and decontamination chemical - **MerCure**



High-concentration decontamination of Mercury (Hg) from Multi-stage Subsea Pump prior to maintenance

Closed-loop circulatory decontamination of Mercury (Hg) from Gas Compressor Skid prior to return shipment overseas

6. WASTE MANAGEMENT & MINIMISATION

THIS Filtration (FAR) Systems

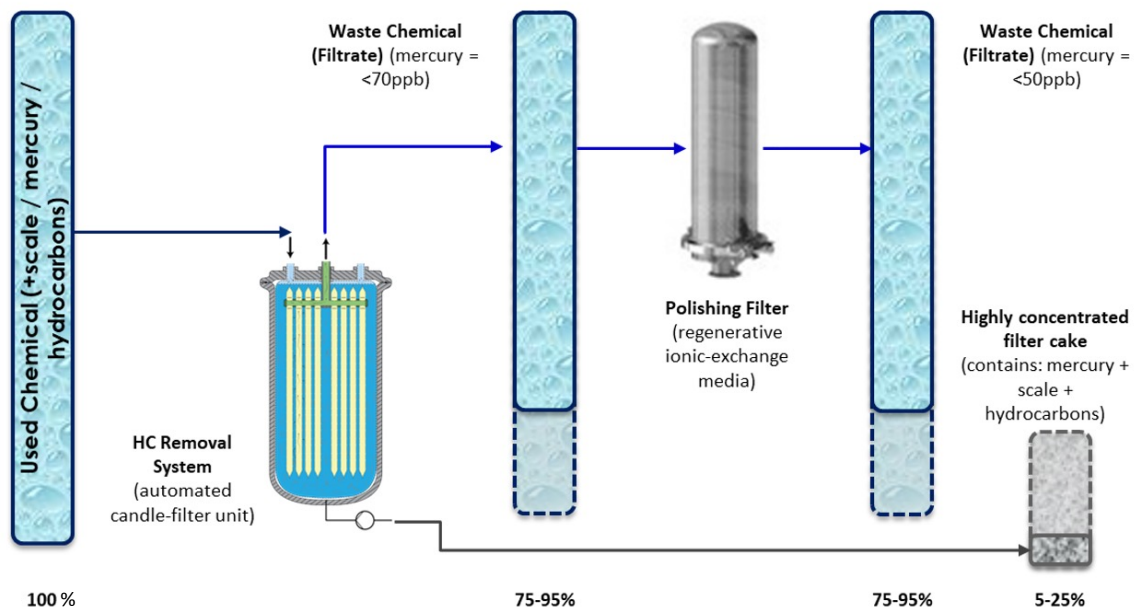
THIS prides themselves on their ability to not only perform full and non-detrimental decontamination of mercury and other contaminants from steel and other materials, but also in providing a waste management service that is tailored to each client and remains focused on the volume reduction of high-cost waste streams.

THIS has designed portable skid mounted Filtration and Volume Reduction (FAR) systems specifically engineered to reduce the amount of contaminated waste for final disposal for each of the three key areas where large volumes of waste are created.

- I. Rainwater (runoff)
- II. Chemical waste
- III. Oily contaminated water (potable / seawater)

Medium	THIS Filter Type	THIS ID	Filter System				Disposal Hg Solids	Fluid Disposal PRIMARY	Fluid Disposal ALTERNATIVE
Rainwater Runoff	Polishing	FAR-RW	Oil Water Separator	Coalescer Filter	Ion Exchange	Particulate	n/a	Discharge to Drain	n/a
Oily Water	Separator	FAR-OW	Oil Water Separator	-	Ion Exchange	Particulate	HARRIS > Retort	Discharge to Drain	HARRIS
Chemical	Particulate	FAR-CH	-	Coalescer Filter	Ion Exchange	Particulate	HARRIS > Retort	Kiln	HARRIS

THIS proprietary FAR systems dramatically reduce final waste volumes by capturing the hazardous elements of the waste as a low-volume concentrated solid medium, leaving the majority as a liquid filtrate which can be assigned to a non-hazardous waste stream.

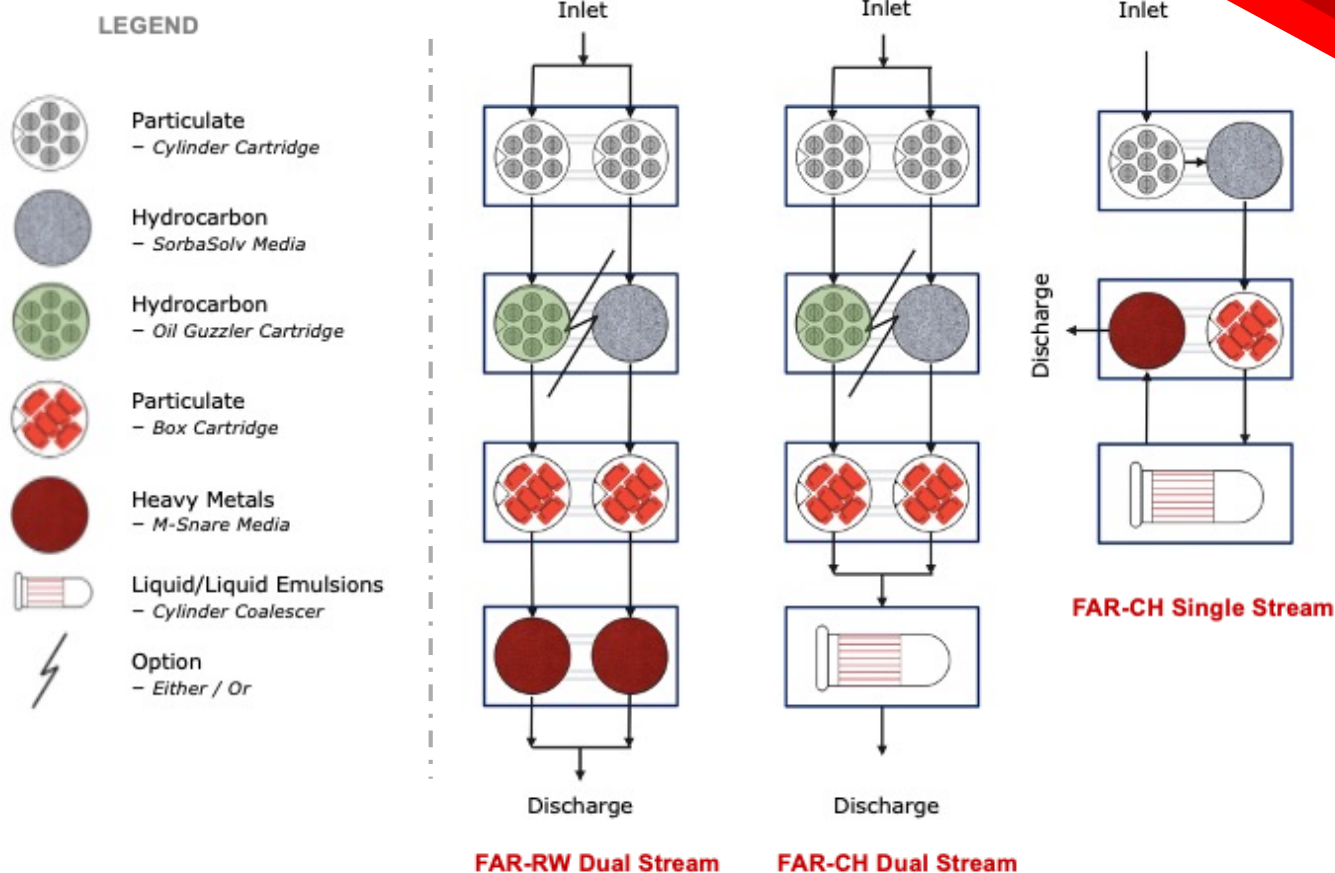


THIS semi-automated Filtration and Reduction (FAR) System removes suspended solid impurities from the contaminated fluid stream by either, or a combination of the following methods (depending on the contaminants) to create a filtration medium:

- I. Bonding them to a filter aid additive to create inert particulates (e.g. granular, dust, etc.)
- II. Chemically pre-treated, converting them into a compound particulate (e.g. salt)
- III. Adsorption/absorption by reactive medium (e.g. Impregnated GAC, Regenerative Ion-Exchange)

FAR Filtration Configurations

Examples of Scope Configurations



FAR-RW (Rainwater)

It is unnecessary to capture volumes of rainwater for third-party disposal from:

- I. Bunded storage areas for contaminated materials
- II. Bunded dismantling area or yard
- III. Bunded decontamination areas

A modular filtration unit optimised to remove low levels of hydrocarbon and particulate contamination while also further “polishing” heavy metals from the waste stream, online prior to discharge.

The “polished” rainwater is then safe for drain discharge and/or can be used in the facility for cleaning and water blasting activities. The contaminants are disposed of separately along with the filter media.

The system is connected directly into the main drainage channel of any storage yard, laydown area or facility and includes sample capture and analytical sensors both upstream and downstream of the system’s filters to monitor the performance of the filter media and verify the compliance of the unit discharge.

The system can also incorporate bulk rainwater capture tanks that automatically hold large volumes of water during flash floods and then returns them to the filter unit at the correct rate to ensure the proper filtration is performed prior to discharge.

The semi-automated FAR-RW System can potentially reduce the rainwater runoff waste volume by as much as 99%.

FAR-CH (Chemical)

THIS has developed a Filtration and Reduction (FAR) system that enables the inline filtration of particulate and contaminants from the **MerCure** chemical, without detriment to the chemical. This re-stabilizes the chemical enabling it to be stored and reused where required.

A modular filtration unit optimised to remove low levels of hydrocarbon and slurry contamination associated with the

use of chemicals pre- and post- neutralisation while also further “polishing” any captured heavy metals from the waste stream, online prior to discharge.

The system is connected directly into the waste storage tanks and includes sample capture and analytical sensors both upstream and downstream of the system’s filters to monitor the performance of the filter media and verify the compliance of the unit discharge.

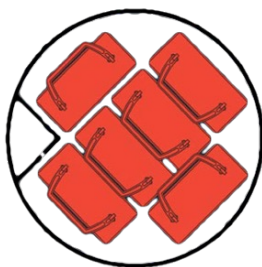
The FAR-CH system is modular with interchangeable filter seating and can be configured for either;

- I. The active **MerCure** chemical, or
- II. The spent **MerCure** after it has been pH neutralised

**FAR-CH Filtration Stages**

- I. Initial particulate filter stage will remove the bulk of the scale, rust, and other debris from the fluid stream
- II. Secondary stage hydrocarbon removal will ensure downstream filters can function correctly.
 - a. Absorbent hydrophobic media is used for neutralised **MerCure**
 - b. Absorbent cartridges are used for active **MerCure**
- III. Tertiary stage is a combination of ultra-filtration and/or ion exchange media to enable “polishing” of the fluid and removal of heavy metals.
- IV. A filter coalescer stage, which can be used pre- or post- “polishing” stage depending on the upstream filtration performance to remove any remaining hydrocarbon contents, typically down to <15ppm prior to discharge or disposal

Box filters provide a superior surface area coverage per filter unit



By design the system can be reconfigured onsite, to optimize the filtration output, dependent on the sample analysis results at each stage. This includes the ability to run dual stages in parallel for maximum throughput or even switching over to a series configuration to increase filter retention times or re-filter, where required.

This also allows the isolation of single vessels to replace filters or troubleshoot without taking the rest of the system offline.

Once decontamination is complete the spent decontamination chemicals are captured, analysed, and pre-treated with a pH-neutralising additive/filter aid which enhances the mercury extraction process, the “polished” water is then safe for drain discharge and/or can be used in the facility for cleaning and water blasting activities. The contaminants are disposed of separately along with the filter media.

6. WASTE MANAGEMENT & MINIMISATION (Cont.)

FAR-OW (Oily Water)

Capturing volumes of oily water for third-party disposal is both logistically difficult and expensive. This is especially the case for seawater which creates additional complications for onshore disposal. This includes oily water from;

- I. Contaminated process equipment and piping sections
- II. FPSO/FSO tanks and
- III. Flooded pipelines

The FAR-OW is a modular filtration unit optimised to remove high levels of hydrocarbon and particulate contamination while also further “polishing” heavy metals from the waste stream, online prior to discharge.

The FAR-OW system can be connected in in-line or to the waste storage tanks and includes sample capture and analytical sensors both upstream and downstream of the system’s filters and oil separation unit to monitor the performance of the filter media and verify the compliance of the unit discharge.

The filtered water is further “polished” to remove any trace heavy metals making it safe for drain discharge or reuse in the facility for cleaning and water blasting activities for fresh water and in the case of seawater safe for overboard discharge.

The **THIS** FAR-OW can meet or better the following criteria for disposal of produced water:

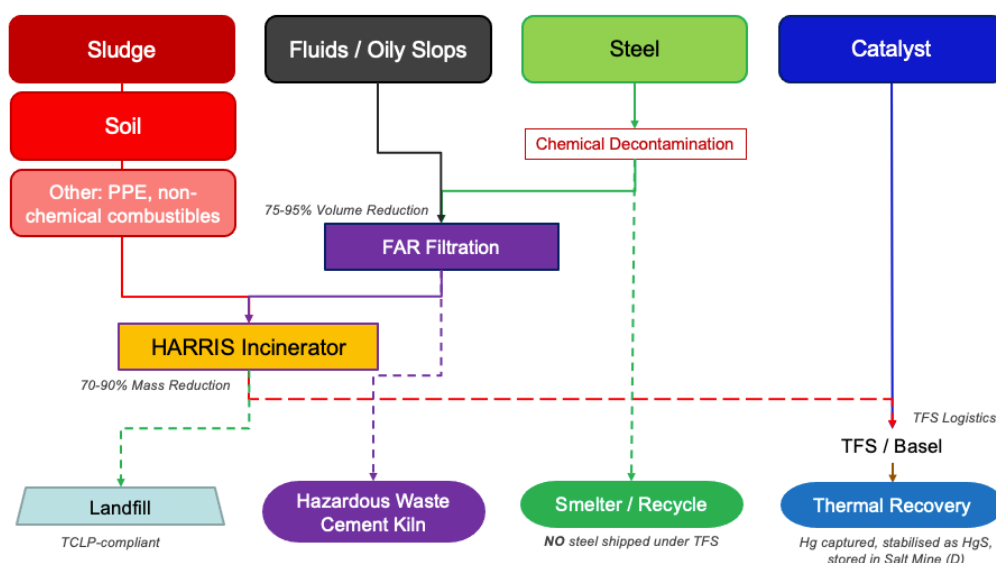
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|-------------------|-----------|
| I. TPH | < 15 ppm |
| II. Hg (Mercury) | < 50 ppb |
| III. As (Arsenic) | < 250 ppb |

The contaminants are disposed of separately along with the filter media.

The semi-automated FAR-OW System can be configured to potentially reduce liquid sludge waste volume by up to 50-90%, depending on the hydrocarbon content.

Dynamic Waste Management

THIS prides themselves on their ability to not only perform FULL decontamination of mercury and other contaminants from steel and other materials, but also in providing a waste management service that is tailored to each client and remains focused on the volume reduction of high-cost waste streams.



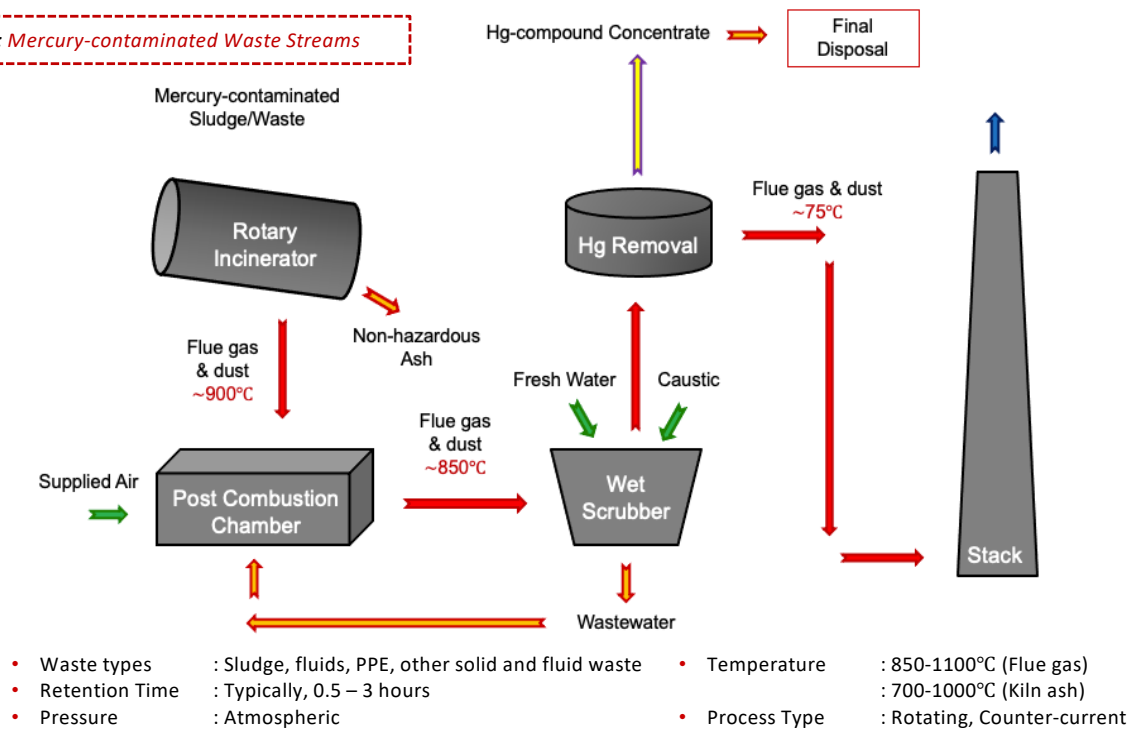
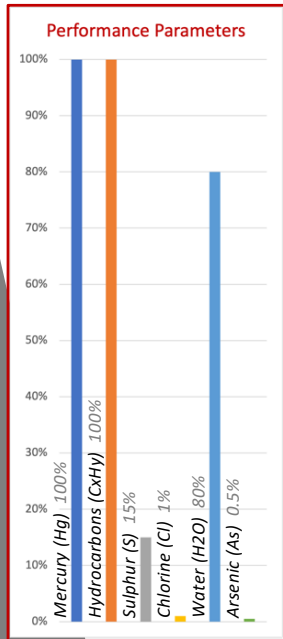
By understanding the different types of contaminants and the resulting waste streams **THIS** has engineered several processes that enable us to reduce the waste volume as much as possible prior to disposal.

Rotary Incinerators

THIS provides an innovative and cost-effective thermal treatment process to reduce the total volume of contaminated mass normally subject to high-cost treatment by thermal retorts.

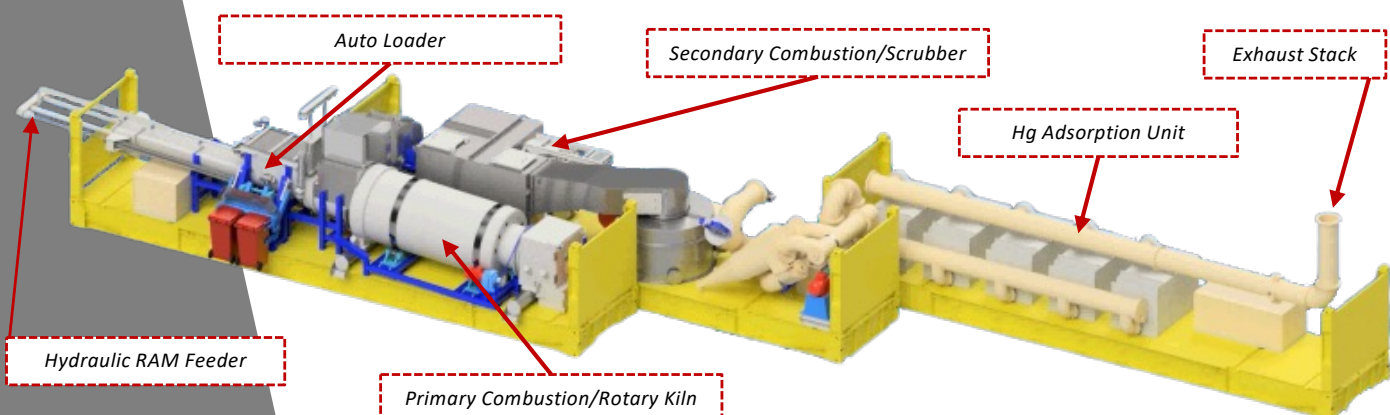
The **THIS** solution is a closed-loop continuous process counter-current rotary incinerator system specially customized for toxic and hazardous waste such as hydrocarbon sludge, fluids, PPE, scale, etc. Each unit is engineered for the target contaminants such as mercury, NORM and PFAS-containing AFFF (Aqueous Film Forming Foams) fire fighting foams.

HARRIS Configuration : Mercury-contaminated Waste Streams



The **THIS HAZARDOUS Relocatable Rotary Incinerator System (HARRIS)** is a semi-modular and relocatable system (3x 40ft ISO containers), fully automated with remote and Continuous Emission Monitoring (CEM) of emissions and waste byproducts.

Each 1.5MW system processes 6-10 MT/day with minimum manpower required. The specially designed internal adsorption filters and wet scrubbers remove and concentrate the target contaminate for ultimate disposal by retort.



The **HARRIS** Incinerator can effectively reduce the total mass requiring treatment by retort by 90 -95%. This solution is unique to **THIS** Group.

7. BESPOKE TREATMENT SOLUTIONS

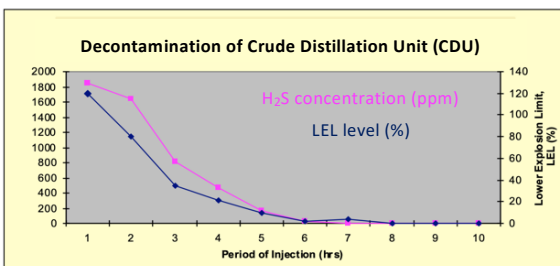
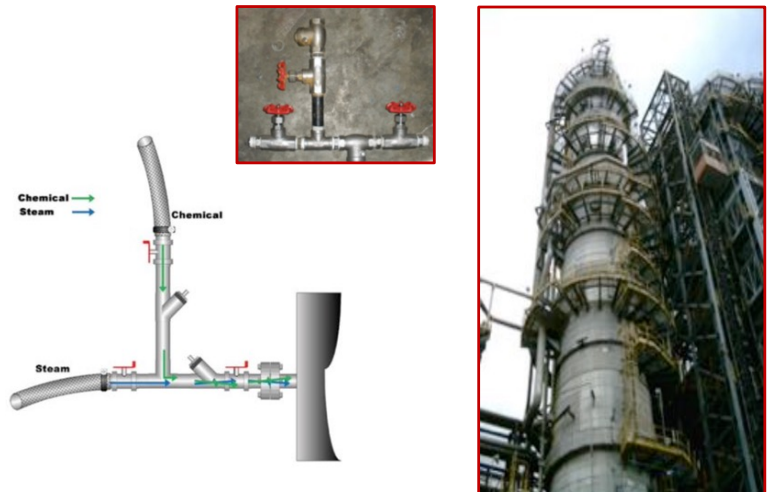
Rapid Hydrocarbon Decontamination

THIS has been performing the hydrocarbon decontamination of onshore and offshore process facilities since 2005 and when applied, as engineered, will not only remove all toxic hydrocarbon-borne hazards i.e. LEL, VOC, Benzene, H₂S and CO₂, it will also breakdown hydrocarbon sludge and deposits and will fully deactivate pyrophoric scale. The resulting waste is very low COD for ETP acceptance.

By injecting our non-corrosive, biodegradable surfactant and vapour suppression chemical into the process facilities standard steam purge cycle, at multiple injection points, simultaneously.

The chemical is injected neat, directly into the steam injection points, using standard 'T'-manifolds at a fixed rate and contaminant levels are monitored and recorded every 30 mins until they are within acceptance criteria.

The steam is used a carrier / dispersal agent and is not required to heat the chemical. The chemical will work at any temperature.



To-date, every facility that has used this method during the purge phase of the facility shutdown have achieved a gas-free, LEL-free status in <12 hours. A HUGE time saving from a process that normally takes days to complete.

FAR-PI (Process Inline)

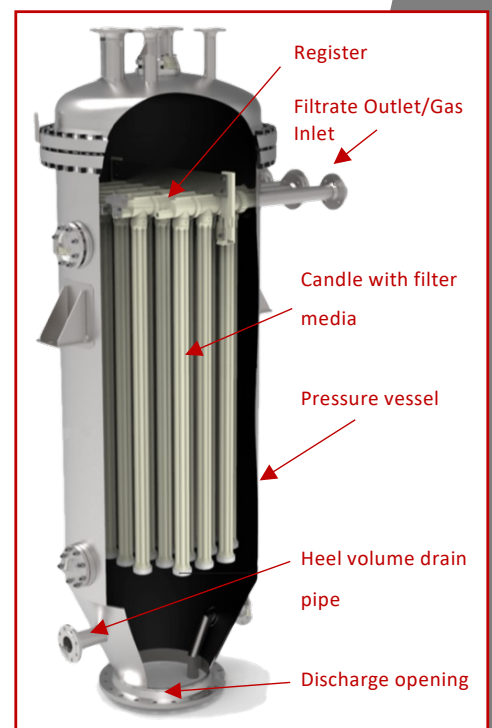
THIS FAR-PI system can perform the fully automated inline filtration of inorganic contaminants including Hg and As from process systems and transportation pipelines to protect downstream process and storage systems, achieving particulate removal >0.5µm.

The system uses an inert additive to bind with suspended solids and smaller particulate contaminants in order to increase the size of the particulates, enabling them to be easily filtered from the stream. Other particulates such as sand, scale, etc. are removed as normal.

The FAR-PI is designed to operate on a 100% duty, fully automated sequence operation and does not require any filter cartridges to function. The system is flexible enough to handle process upsets and cycle fluctuations.

The filtered solids are discharged as a dry powder medium or as a slurry depending on the filtrate, source medium and/or cycle parameters. With this method the filter is self-cleaning.

THIS FAR-PI system compliments and supports catalyst beds and drier media by significantly reducing other contaminants those systems are not designed to remove (e.g., compounds, other species). The potential of contaminants moving further downstream to poison catalysts or create sludge in slops is dramatically reduced.

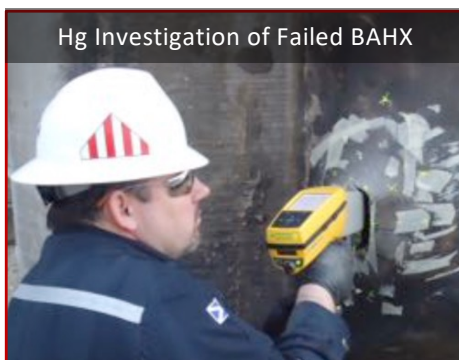


8. SPECIALIST SERVICES

HazMat Investigation & Surveys

Occasionally there are incidents, accidents or catastrophic events that could be attributed to the presence of one or more contaminants and during the Accident/Incident investigation process the nature and extent of this contribution to the event must be determined using on-site analysis and determination where possible.

Additional investigative analysis may require that samples are captured for off-site laboratory or third-party testing. **THIS** can support to ensure that sampling is completed without damage or degradation of the sample which can occasionally result from incompatible or incorrect sampling practices or locations, sampling equipment, packaging or shipping.



HazMat Training

THIS offers a wide variety of HazMat training courses. The training division has gone to great lengths to ensure that the courses it provides are current, informative, easy to understand, and relevant to the intended parties and their respective position, responsibility and work scope.

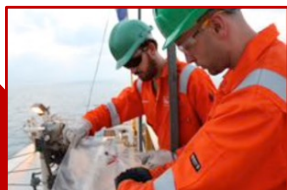


Courses are designed to cover differing levels of expertise and include both whiteboard instruction and physical interaction to ensure maximum uptake and retention, complete with a final quiz/assessment. Training courses created for third party training institutes or exclusively for customers also include fully editable training materials for future use and are generated under AIWT Certificate IV Training and Assessment accreditation.

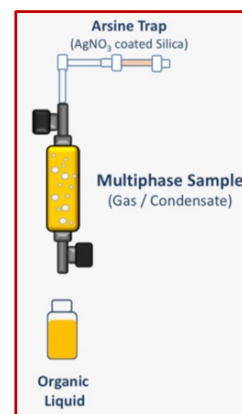
On-Site Mercury Analysis

THIS' analytical and on-site chemists have extensive experience conducting cross plant mercury surveys, giving clients a clear picture of mercury partitioning, accumulation and losses across a process. Monitoring of mercury removal bed performance and prediction of bed life is also a service regularly conducted for global market leaders.

THIS' can provide the service onsite in accordance with ISO 6978 (modified) (ASTM D5954) for gases, ASTM D7623 (modified) for hydrocarbon liquids and EPA 7473 (modified) for aqueous samples (including methanol, amine and glycols).



Onsite speciation of mercury is also available.



- Mercury in gases and produced liquids at offshore installations
- Mercury mass balance across gas and oil processing plants
- Mercury in produced fluids during well testing
- Mercury removal bed performance
- Trace element analysis
- Phase dynamics
- Radionuclides

9. ADDITIONAL SERVICES

Additional support capabilities include:

- Analysis, removal, decontamination, detection and monitoring, specialist PPE, handling and disposal of radionuclide-contaminated (NORM, TENORM & LSA) scale and sludge waste streams
- Desorption, decontamination and vapour suppression chemicals
- Production treatment chemicals (H_2S , Wax, EOR)
- Non-acidic & Amphoteric descaling chemicals (Sulphates, Sulphides, Oxides, Carbonates, etc.)
- Waste treatment products (heavy metals, hydrocarbons, radiation, bacteria, medical)
- Site bioremediation and bioaugmentation
- Mercury vapour analysers (fixed and portable)
- Handheld pXRF analysers with polynomial calibration to proprietary 'Hg in Scale' standards (for optimum accuracy)
- Hydrogen Sulphide ultra-low (ppb) level vapour analysers (fixed and portable)
- Single and Multi-gas detectors and monitors
- Radiation survey and contamination meters
- Portable 4-stage breathing air filtration systems (incl. built-in CO & O_2 monitors)
- Specialist PPE (vapour-proof masks, passive toxic vapour detector badges)
- Water analysis kits (heavy metals, bacteria)
- Marine Growth and Asbestos Abatement

10. ENGINEERED SOLUTIONS / R&D

With its focus on the successful decontamination, removal, treatment and protection of assets and personnel from the hazards of mercury **THIS** continues to carry out extensive Research and Development studies, both independently and by commission, in support of our goals.

THIS have investigated and assessed chemical decontamination compatibility, efficacy and efficiency for the in-field applications e.g. mercury decontamination of subsea pipelines (in-situ), rapid decontamination of production platforms, pressure vessels and FPSO/FSO tankers, as well as establishing performance parameters for encapsulation, solidification and amalgamation agents, personal protective equipment (PPE), steam applications, atomisation and dispersal technologies as well determining comparative algorithms of field and lab-based analytical techniques and methods.

With the support and backing of our analytical chemists and partners as well as analytical unit manufacturers (e.g. Skyray, Olympus, Oxford Instruments, Rigaku, among many others), **THIS** can design, implement and audit a wide variety of studies on behalf of or in conjunction with clients, universities and/or projects.

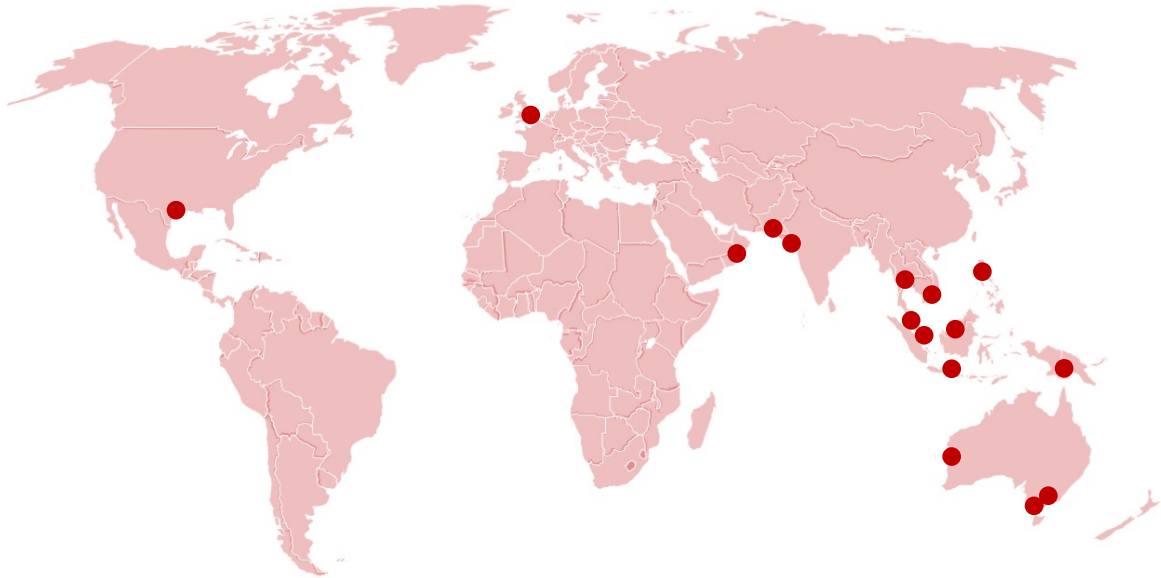


11. CLIENTS & COUNTRIES OF OPERATION

The client list of **THIS** includes independent, state and International oil and gas companies, national oil and gas companies, crude oil refining companies, environmental consultancies, monitoring companies and agencies, oil industry service companies and specialised chemical manufacturers and suppliers. **THIS** also performs work for and alongside, independent consultants and research institutions.

Below is a summary of locations where **THIS** have completed projects (offshore and onshore):

Central Asia	- Pakistan, India
Middle East	- Oman
Far East	- Malaysia, Indonesia, Thailand, Vietnam, Brunei, Philippines, Singapore
Australasia	- Australia, Papua New Guinea
N. America	- USA
Europe	- United Kingdom



12. CONTACT DETAILS

If you have any questions on the services that **THIS** can offer, please do not hesitate to contact us. For many of our services we have information sheets that discuss and describe bespoke subject matter and analytical applications in detail; please contact us if you would like to receive any additional information about a specific service.

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