



#### **About Us**

Rahrovan Asia Energy & Industry Company is an Iranian-based first-class supplier on the international market which is dedicated to delivering world-class design, manufacture and installation of loading and unloading systems for marine, road and rail tankers. Our ability to design and build custom loading arms puts us in a class that stands alone. If you dream up a loading arm, we can design and construct it.

Established in 2011 (1390), Rahrovan Asia Energy & Industry Company is one of the fastest growing & leading global designers and manufacturers of marine loading arm and related products in the world. In fact, we are a leader in the field of packaged solutions which combines high quality manufacturing with the widest available portfolio to give customers assurance of quality and integrity.

We are not the only fluid-handling equipment provider, but the only one with many differences. For example, Rahrovan Asia Industry & Energy Company is the only fluid-handling company with local factory support and in-house machining, welding, X-ray, assembly, testing and packaging capabilities. We are also the only company that will never walk away until all expectations are met or exceeded. Why? Because we are a manufacturing company who is customer-focused with our core beliefs being Quality, Safety and Service.

Along with our ISO 9001, ISO14001 and QHSAS 18001 certifications, we have an experienced team of design engineers, project management, sales and support staff all based on our factory along with our team of installation/service engineers we offer a level of lifecycle support and expertise unrivalled within the industry.

With a world-wide network of trained technicians, agents, distributors and representatives, it is our aim to provide our customers with superior service, ensuring successful installation and long-term operation of the systems and products supplied. Hence If you have a need to loading arms, you'd better work with a company who knows the product, the problems, the safety requirements and, most importantly, the solution. You also need that company to treat you fairly and efficiently. Rahrovan Asia Energy & Industry Company is the company you need.

#### **Vision & Mission**

Our vision is supported by a relentless drive of every individual at Rahrovan Asia Energy & Industry Company. We are united by one single purpose: to bring together the scope, know-how and determination to transform our clients' project economics.

Rahrovan Asia Energy & Industry Co. mission is to help protect people and the environment, and enhance business performance by proving a comprehensive array of innovative solutions, including loading systems, rail and transport tank truck equipment, integrated flexible piping and secondary containment sumps, valves, fittings, underground and above ground storage tank equipment, spill containers, overfill prevention devices, swivels, breakaways, and fueling nozzles for virtually all fuel types, including gasoline, diesel, alternative fuels, LPG, Hydrogen and CNG.

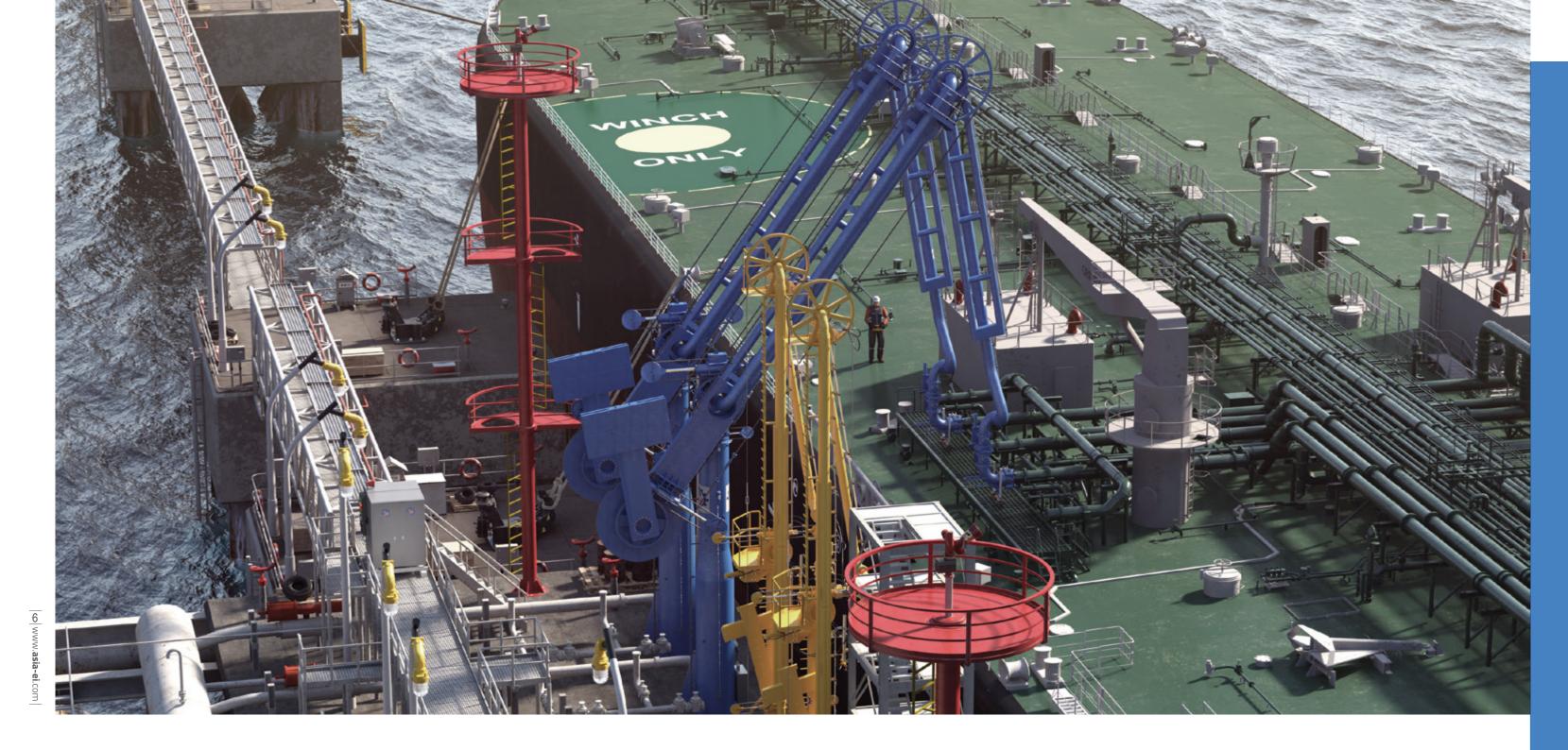




#### **Our Values**

At Rahrovan Asia Energy & Industry Company our values are at the heart of everything we do. They define our aspirations and the company we want to be. They are the key drivers that guide our behaviors and attitudes in a distinctly way.

- **Safety:** We will not compromise on health, safety and security. In fact, we will always strive to exceed the highest standards of safety in all our products and everything we do.
- Integrity: We apply the highest ethical standards in everything we do. By always treating our customers, suppliers and people respectfully and fairly, we will create mutual respect and sustainable business.
- Quality: We deliver the highest quality in everything we do.
- Respect: We treat everyone honestly, fairly, and courteously.
- Sustainability: We act responsibly, always considering our impact on the planet, people, and communities in which we operate.
- Innovation: Innovation permeates the way we conduct our business, from technology development to customer experience. We always strive to improve our products, our organization and our people.
- Passion: We are passionate about what we do and how we develop products to enable cleaner energy to communities around the globe.



#### What Makes Us Different?

- Marine Loading arms of Rahrovan Asia Energy & Industry Co. require minimal maintenance and all product seals can be replaced without scaffolding or dismantling the loading arm itself.
- For a solution to be impressive, every detail in it has to be just right. Our marine & land loading arms meet that standard and surpass it: Not only do the parts all fit together seamlessly, but each component optimizes the entire solution.
- With our products, you get fully featured loading arms, including complete loading systems, that supply the commodity that you and we value the most: success.
- These loading systems are manufactured to the latest requirements of international standards and major oil companies.
- Our single counterweight balance system enables both hydraulically and manually operated arms to be maneuvered easily and safely, saving both time and manpower.
- We offer customized solutions for our clients' real needs and problems.
- We bring innovation, technology and vast knowledge of port equipment together, which enables us to offer a reliable, high-quality selection of products.
- With the turnkey hiring modality, we offer our clients the possibility of enjoying the benefits of delegating all management of your projects to our team, guaranteeing perfect coordination and eliminating cost hikes due to diversification of roles.
- When you use our products, you can count on unparalleled performance and a global service approach.
- All our equipment is manufactured fully in compliance with applicable codes & standards.
- Expedited deliveries for high priority projects is a specialty.

### What You Can Expect When You Order Our System

- Supervised installation
- Electrical and hydraulic commissioning
- Regular inspections
- Reliable maintenance
- High-quality general overhauls
- Fast repairs
- Operator friendly
- Genuine spare parts









#### **SUPERIOR QUALITY**

The superior quality of our products deserves an equal quality of servicing and periodical inspection.

#### OPTIMAL CARE

Our specialists carry out maintenance using optimal care of all products in our range.

#### **ACCESS TO ALL DATA**

As manufacturer, we have full access to all technical data.

#### **QUICK EXCHANGE**

Worn or damaged parts can be exchanged quickly for which we stock a large range of spare parts.

#### **MODIFICATIONS**

Any modifications can be carried out for the equipment when required.

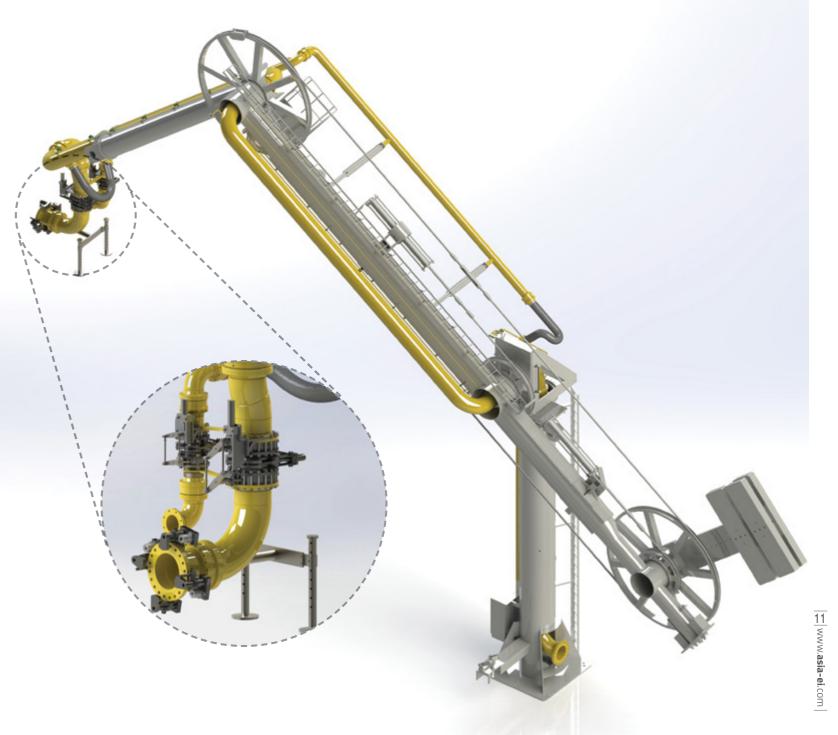
#### SERVICE

Service activities can be carried out on site or in our modern service premises, naturally depending on the nature of the job.

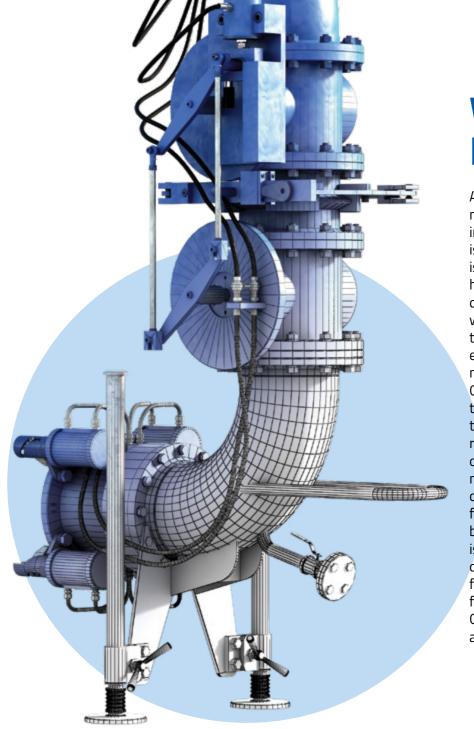
#### **COST REDUCTION**

Using our services on a regular basis will lead to substantial reduction of maintenance and running costs reduction of unscheduled production stops.









#### We Respect Innovation, **Design & Quality**

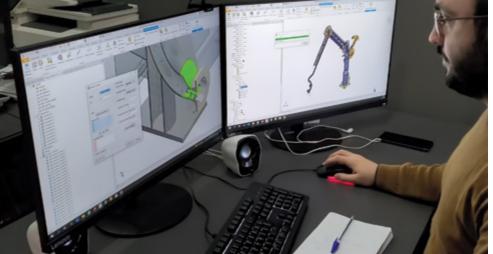
As a relative new brand in the international evolution in the sector, while our own market, we have to work hard on our R&D department means we can lead image. One of the most important parts that evolution and immediately share the is to be different then what the market knowledge internally, thereby offering is offering. To achieve this goal, you have to listen a lot and that's what we That's why our clients respect our did! In this regard, over the past years, competence and industry knowledge, but we have assembled an extraordinary they also come to us because they trust team of talented engineers with great that we will always drive innovation. In experience in maritime equipment and fact, Innovation has always been a part new technologies.

and up-to-date on changes and the largest 24/7 service crew in the world.

fast, advanced service to our clients. of Rahrovan Asia Energy & Industry Our engineers are able to challenge and Company's culture. Through innovation, translate your ideas to the reality. In our technologies power projects through this context, a strong design team and the seemingly impossible to support reliable production process, decades industry jobs. Through innovation, we've of experience, and continuous quality transformed project economics with management with all the necessary highly integrated business models and certificates, are convincing arguments services. Through innovation, we will for loading arms from our company. And continue to define a new way forward. because practically every loading arm Hence, we differentiate ourselves by is approved with the customer present not only delivering high end products during the factory acceptance test at our but a customer solution. This results factory's own testing facility, our testing in minimal costs and investments. Our facility is now known in many countries. marine loading arms are designed with Our professional team is highly qualified minimal CAPEX and OPEX. All supported by







Marine loading arms are made up of several sections of pipe, connected by swivel joints. The section on the shore side of the 'apex' of the loading arm is known as the inboard arm and the section on the tanker side of the 'apex' is known as the outboard section.

Marine loading arms are flexible enough to accommodate any movement of the vessel during loading/discharging. These hydraulically operated marine loading arms are fitted with emergency release couplings and emergency release system and support faster and safety loading/unloading requirement.

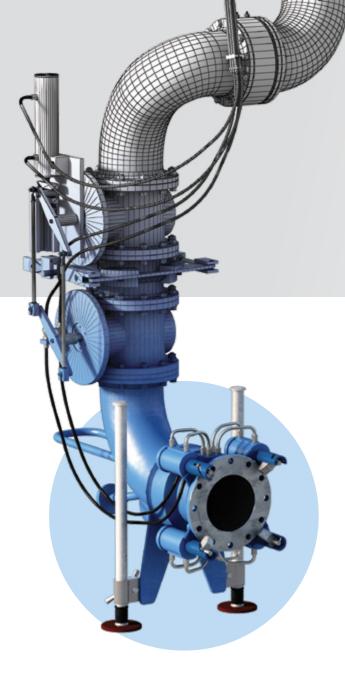
All Rahrovan Asia Energy & Industry Company arms, including manually operated models, can be provided with a virtually Non-Spill Emergency Release System. This ensures, that, in the event of an emergency, the liquid and vapor lines are both sealed after disconnection. Once the emergency sequence commences, the arm automatically rises and returns to its parked position, allowing for immediate departure of the tanker if necessary.





#### Emergency Release Coupling (ERC)

ERC of Rahrovan Asia Energy & Industry Co. is part of our company range of Emergency Safety Systems (ESS), designed to provide best possible safety in fluid loading/unloading when using Marine Loading Arms. The ERC provides a fully automatic, safe and spillage free disconnection of the Loading Arm from the ship should the limits of the safe working envelope of the arm be exceeded. The ERC features a simple single cylinder design that provides a high level of intrinsic safety, field-proven in many Marine Loading Arm applications. Our Emergency Safety Systems, and specifically the ERC, are known as 'workhorses' in the fluid transfer industry providing powerful performance with little or no maintenance.



#### Swivel Joints: Absolute Leak-Free Design

The swivel joint is the heart of loading arm. In fact, swivel joints have been used in the processing industry for a long time. The use of swivel joints in metal loading arms became critical because of the extraordinarily high bending and axial load combination, due to the reach of the loading arm and wind forces. In this regards, Rahrovan Asia Energy & Industry Company swivel joints are developed to withstand all these loads without leaking. In fact, leakage and regular maintenance is something which is unknown with our company swivel joints. Why? Because by using our swivel joints, it is possible to make all kinds of flexible connections using rigid pipes instead of using hoses.

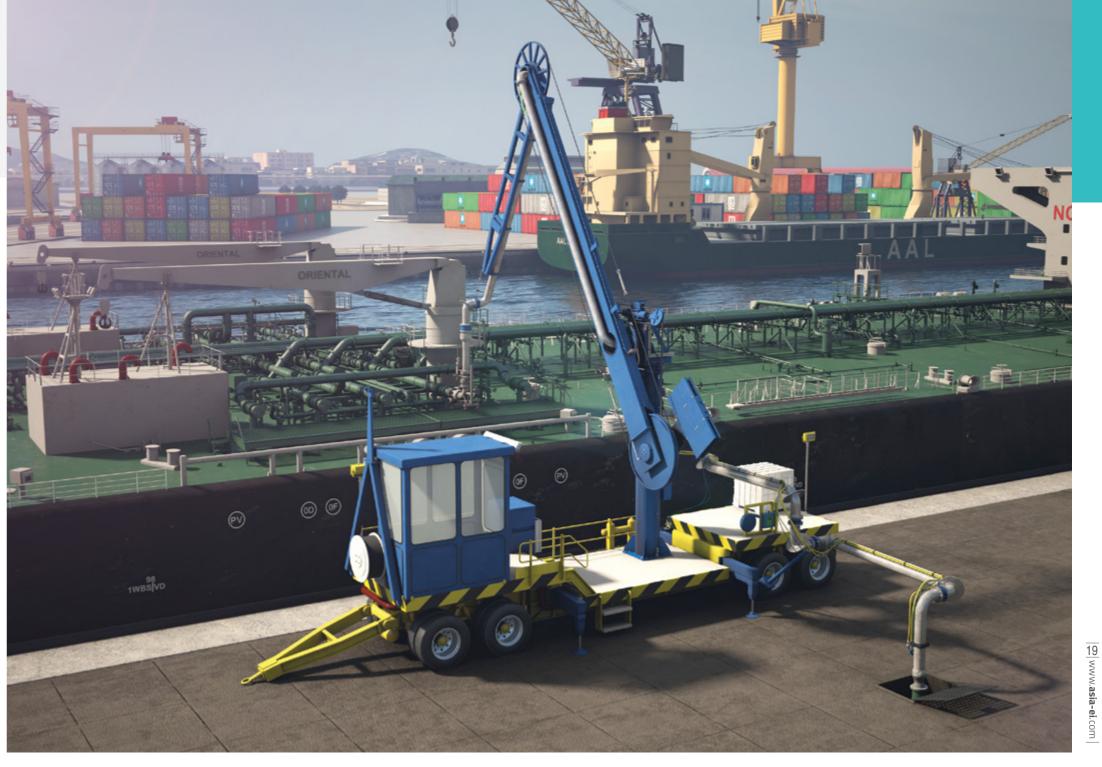
With this knowledge and expertise, Rahrovan Asia Energy & Industry Company designed a swivel joint that is vacuum resistant. This assures significantly less downtime, higher efficiency of the loading arms, less maintenance expenses, higher life time expectancy and minimum leakage. That's why our swivel joints have Zero Emission.



Mobile marine loading arms are used for multi-purpose berths, The mobile marine loading arm is composed of two parts: the outer arm connected to the ship and the inner arm connected with the ground pipeline. Its mobile operation ensures that all loading facilities can be removed from the workplace after the loading and unloading are completed. Therefore, the space can be saved for other operations. We have designed and produced this mobile marine loading arm based on the using environment and customers' special requirements.







#### **Quick Release Hooks**

In Oil and Gas Terminals, the use of Quick load tensions and audible and visual alarms Release Hooks to moor vessels during cargo can also be incorporated into the hooks. handling is recommended by OCIMF (Oil Docking aid system provides protection of Companies International Marine Forum), as the jetty infrastructure during approach they form the basis of a safe mooring system. of the vessel to the berth. Experience has In addition to the hooks, the instrumentation shown that controlling the speed of impact to monitor and control the speed of approach of the vessel on to the fenders to a safe of a vessel during berthing (especially during level prevents damage to the berth. Once contact with the jetty), the drift-off of the the vessel is safely moored to the berth vessel whilst moored during cargo transfer, the system will monitor any drift-off of the the tensions in the mooring lines, the vessel and provide warning to the operators. status of each hook, and the meteorological The system uses 2 eye-safe laser units and oceanographic conditions, can all be installed on the jetty and aimed perpendicular incorporated to provide a fully integrated to the berthing line. These measure the safe mooring and monitoring system.

As stated above, the basis of a safe mooring using an inbuilt timer to calculate the speeds. system is the quick release hook. The The relative angle of the vessel to the berth is Rahrovan Asia Energy & Industry company also calculated, and the data displayed in the quick release hooks have been designed to monitoring room and on the display board. provide full mechanical protection to the Rahrovan Asia Energy & Industry company release mechanisms and to incorporate load are one of the unique companies who are monitoring.

of 25 tons to 200 tons in single-hook, double-management systems using in-house hook, triple-hook and Quadruple-hook cases. facilities as listed below: Each hook is proof tested to 125% of its rated • Design and manufacture quick release load, and the release mechanism is tested at hooks full load rating at our own test facility.

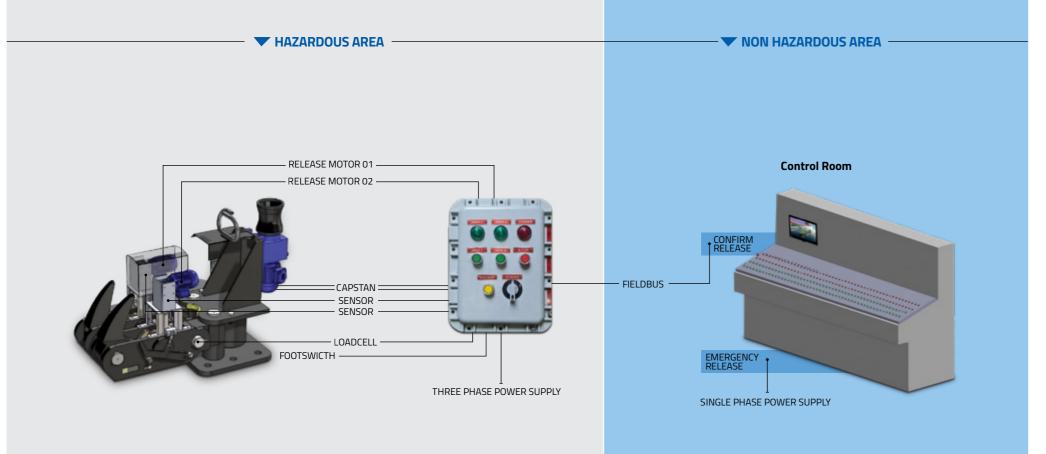
If remote release is incorporated, the hooks load/tension monitoring can be released from a remote location generally the control room or jetty office - as Moreover, this company provides customized well as by activating a button on the hook software packages to provide full system motor starter enclosure mounted on the rear specification requirements. of the hook. Local displays of the mooring

distances of the bow and stern from the jetty able to design, manufacture, supply, install Hooks made by this company from tonnages and commission complete integrated jetty

- Design and manufacture hook sensors for
- Design and manufacture docking aid system

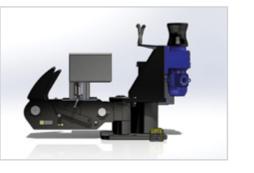




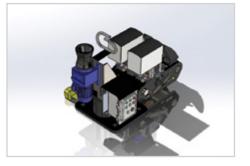


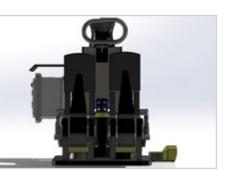












# Smart Fire Fighting System

Fire fighters extinguish fires to protect lives and to avoid destruction of property and environment in the oil and gas terminals. In the manual approach, an operator uses a remote control to find the fire event area and set firefighting towers to the event manually. It makes a delay in the fire extinguishing with less accuracy. Rahrovan Asia Energy & Industry company team designed and implemented a smart firefighting system based on close-range photogrammetry, image processing, and GPS technologies. First, we install at least four high resolution image cameras near the loading area on the firefighting towers bodies and make them stable. The cameras need to be calibrated, so some targets must be placed with full coverage in the area. 3D ground coordinates of the targets achieve by GPS RTK receivers. The installed cameras take shots of the targets and after camera calibration process by targets coordinates, seven parameters of the cameras are calculated.

If there is a fire event while loading material in the area, the installed infrared cameras detect it and the audible alarms are beeped. At the moment, the image cameras begin to take images every second. After that, the images processed by image processing techniques in the monitoring room and the fire body is detected in every image. Moreover, the 2D gravity center coordinates of the fire in the images are calculated. With close range photogrammetry, these coordinates are converted to 3D ground coordinates. Now, the firefighting towers shoot water or foam to the calculated 3D coordinates of the fire area to extinguish it. This process is carried out accurately and quickly.

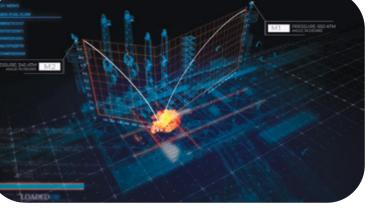












### Remote Control Elevated Monitor

Electric Actuated Remote Control Monitors are designed to be mounted at elevated positions for fixed applications. They have a programmable oscillation capability for automatic operations, switches on a consolidated control panel. In addition, manual operation can also be accomplished locally through the use of hand-wheels. Foam concentrate can be proportioned at the nozzle through the use of a jet ratio controller and atmospheric concentrate storage tank. They are ideal high volume discharge devises of water and foam solutions for mitigating fire, flammable or toxic chemical vapour and other hazards to protect refineries, chemical processing areas, ship loading docks, etc.

The big range of monitors and the possibility to select from a variety of mountable nozzles provide flexibility and enhance performance to achieve effective fire protection for high risk areas. Remotecontrolled monitors allow a targeted firefighting operation in confined spaces and can be used for extinguishing agents like water and low-expansion foam.

To fully utilize the range of potential offered by remote-controlled monitors for firefighting, introducing a programmable (PLC) control system with state of the art communication facilities is mandatory. This allows the connection with automatic fire detection systems and fire alarm control panels also for very large and complex facilities. The response times are as fast as known from present automatic firefighting systems.





#### **Fire Monitor Tower**

Monitor Towers are structural equipment used to increase the coverage area of firefighting monitors to approach a fire from a certain height above ground for example marine terminals, loading bays or storage tank farms where it is necessary to pass over high obstacles to reach the fire source. The challenge starts here since; the construction should stand by itself, be resistance to wind and seismic activities, handle reaction forces caused by the monitor and externally house all platforms, access ladders, conduit pipes etc. externally and should carry firefighting water/solution up to the extremity of the construction where the firefighting monitor is installed. Monitor towers, are usually constructed from Structural carbon steel materials. Standard monitors are designed according to Euro Code standard series of EN 1990, 1991, 1993 and etc.

Steel constructions are classified according to several aspects such as consequence class, service category and materials used. Monitor towers are subject to strict design and construction regulations according to the new European regulations, designed and produced in conformity with EN 1090-1 and EN 1090-1 with a CE mark and notified body's number.



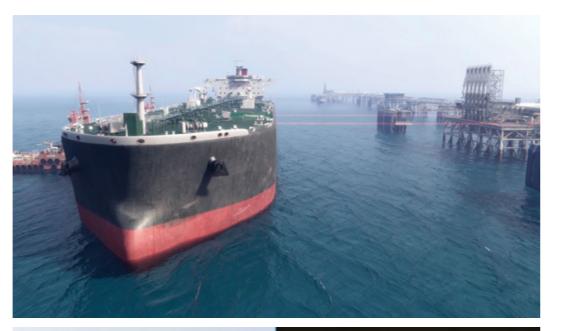
#### LMS: Load Monitoring System (LMS) for QRH

The Load Monitoring System (LMS) is a system that shows continuous measurement of the load on the quick release hooks. The quick release hooks are equipped with a load cell, to measure the mooring loads on the separate hooks.

Visualization, history of the mooring loads and the alarms set by the client, are integrated in our software platform. Once a vessel is moored to the dolphin, the actual load value of each load cell will be sent to the monitoring software. The online dashboard shows the data of the load on each line and when the maximum load limits are exceeded, the operators will be warned immediately.

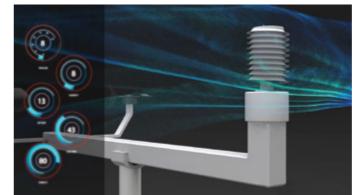
#### **DAS:** Docking Aid System

Docking Aid System(DAS) is a compact, easily installed docking system. It continuously measures the ship distance to the fender line to produce the speed, distance and longitudinal angle for use in real-time by the pilot and operations personnel. This improves the safety and efficiency of port and terminal operations.

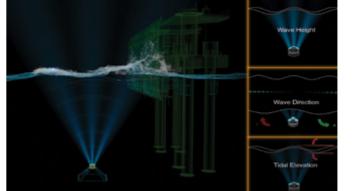
















#### **EMS:**Environmental Monitoring System

The Environmental Monitoring System (EMS) measures and records meteorological & oceanographical data from various sensors. With Environmental Monitoring System data you can predict ship behaviour which creates a safer berthing operation. Pilots and marine personnel can use the actual data and trends to make proper decisions.

#### **PPU:** Portable Pager Unit

PPU is a pilot's tool that assists the local pilot in the safe navigation of the piloted vessel. It does this by incorporating a range of navigation sensors with an electronic chart and display. information can include tidal and depth ,...

information when this information is provided locally and any other information that is specific for a particular port. Typically PPUs can be set up quickly on the Bridge with simple deployment of the navigation antennas and interfaces. Most connect using wireless technology to a personal computer (PC) / laptop or tablet positioned where the Pilot normally navigates. Connection may also be made to the ship's AIS to allow display of other ships and navigational aids that have AIS capability.

#### **CMS:** Central Monitoring System

Central Monitoring System (CMS) enables your personnel to receive up to date information from the berthing and mooring process. This provides histogram trends for vessels and has ship's data stored centrally

With many years of experience of loading arm design, installation, inspection and all-in servicing, we can provide the following services:

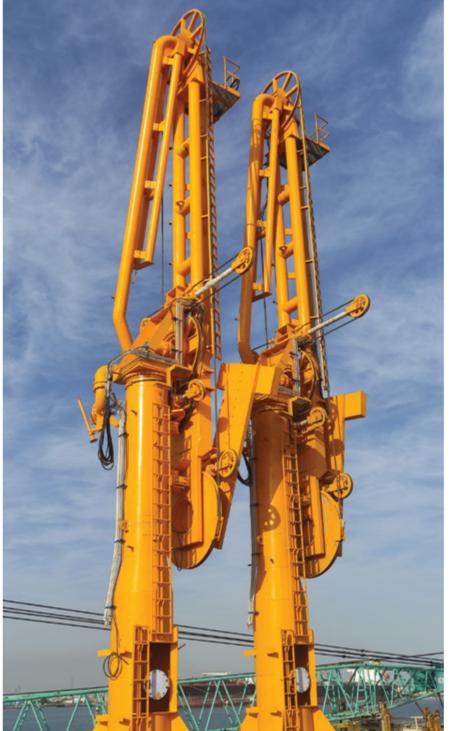
### Installation Supervision & Commissioning

Installation is the first step for the loading arm in the field, during this phase it is important to ensure your equipment is installed correctly and safely. Correct and safe installation will make the final result far easier to use and have been found to directly affect the life expectancy of the items.

It's extremely important to ensure your equipment is installed safely, in a timely manner and at the lowest cost. Our highly trained engineers are available anywhere in the world to supervise this vital part of executing your project. Once the equipment is safely installed, our engineers carry out pre-determined safety checks prior to commissioning the equipment. These checks and procedures are followed to ensure that the equipment is safe and ready for use.

Our dedicated and experienced installation team are available to meet your needs globally. They have all necessary certification and experience to take away any concerns you may have about installing equipment that you are not familiar with. This becomes especially important when installing packaged systems involving a number of items that have to move independently by in coordination with each other.

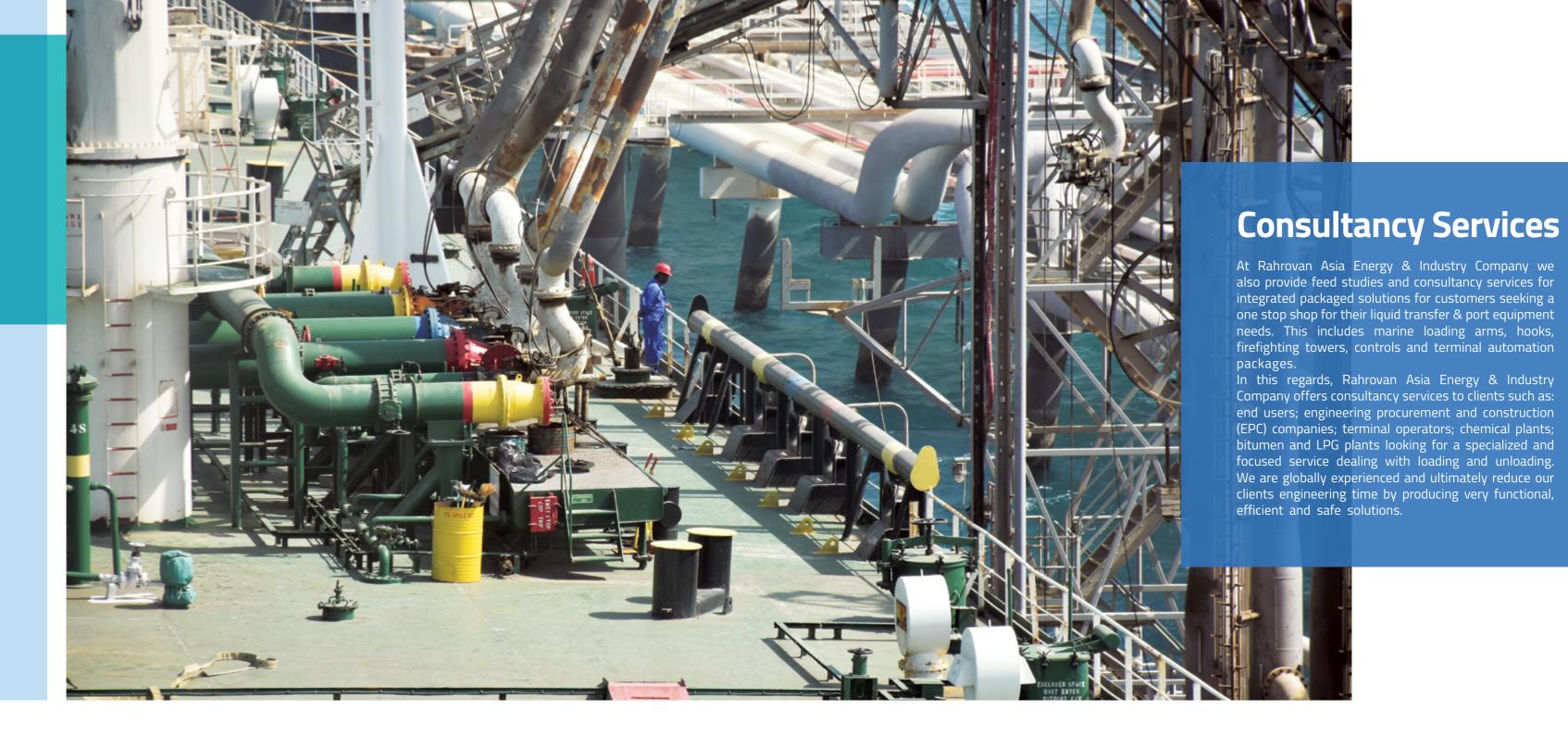






### Refurbishment Products such as our larger coastal re

Products such as our larger coastal marine loading arms may, during their lifetime, require a complete overhaul. Our engineers will visit your site, review your requirements and prepare a detailed report and quotation for a complete overhaul. Where loading operations have not altered much, this can be a cost-effective way to extend the life of your plant and equipment.



### Preventative Maintenance Inspection (PMI)

The catastrophic failure of equipment, regardless of age and duty is always a major inconvenience. This can range from an O-ring to a pump. Whichever it is, the client is faced with unplanned downtime and the need to make hasty repairs to get the facility up and running again. So often these short-term fixes have a short term life span and failure is most likely to occur sooner rather than later.

Rahrovan Asia Energy & Industry Company understands the importance of your loading arms to remain a reliable operation for your business. Loading arm preventative maintenance is a critical aspect in maintaining of all types of loading arms. Why? Because preventive maintenance inspections can reveal any current or projected problems with your systems such as seals beginning to weep or seize. We will focus on the performance of the loading arms and how we can maximize the lifespan of your systems.

Our company can, by developing maintenance schedules to suit you, reduce the potentials for breakdowns and failures. Our company Service aims to provide lifetime care and assured support to new purchases and existing systems. The customer will have complete trust in our ability to give a low life cost for their systems.

To ensure your loading arms remain dependable, our company offers annual maintenance contract services to your unique sizes, application and environments. To maximize the life of your systems and keep them working efficiently and effectively, we highly recommend periodic inspections by qualified personnel.

Rahrovan Asia Energy & Industry Company has a team of experienced specialists who can work with your personnel to carry out these inspections. These are an ideal way of highlighting any current or projected problems with your systems. We are aware that many times equipment has been customized to your specific needs and we have the knowledge required to work with these products.

Our technically trained personnel can carry these PM's out or train your people on how to do them in the future. Our team is experienced in all aspects of top and bottom loading arms, including design, manufacturing, routine maintenance and refurbishing. In addition, safety is our top priority that is why we train our employees in safe work practices.







#### **After Sale Services**

At Rahrovan Asia Energy & Industry Company we are passionate about supporting all our customers throughout the life of the equipment, we call it Global Lifecycle Support. With our dedicated team of in-house and on-site engineers, we provide technical support, preventative maintenance, inspections, emergency call out facility and much more, you can be assured that we will be there when you need us.

In fact, when you buy equipment from Rahrovan Asia Energy & Industry Company, you're entering into a long-term relationship that will add value to your process whilst ensuring the safety of your operators and plant. Having your equipment supported in the field by our highly experienced and trained technicians, will provide peace of mind and will ultimately extend the life of the product increasing your return on investment and reducing the cost of ownership. In fact, from basic services to total care packages, we proactively help our customers increase their return on investment in terms of longevity, safety and performance. We have a team of globally-based customer service representatives and field engineering technicians ready to offer assistance when required.

Don't forget, keeping your loading arms in good shape is paramount to reducing the total cost of ownership. To achieve that you need to make sure that all the needed maintenance works are conducted on time. We can help you to keep track of the condition of your loading arm to keep making the most of your equipment for longer. In this regard, a team of highly qualified technicians and engineers set up, test and maintain all of our company installations.

Since this company grew very steady, we now have very good service engineers who are able to provide optimal and 24/7 worldwide call out service. This is a huge advantage when you buy our products, because we are able to always provide the necessary service when needed.





### **Environmental Policy**

The management and all who work at Rahrovan Asia Energy & Industry company, are committed to caring for the environment and the prevention of pollution. The organization ensures that all its activities (within the defined scope) are carried out in conformance with the relevant environmental legislation and other requirements (environmental aspects) to which the organization subscribes. The organization seeks to minimize waste, promote recycling, reduce energy consumption, reduce harmful emissions and, where possible, to work with suppliers and customers on practical environmental programs.

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### We Promise You a Successful Partnership

Working with us means for you: Ideas, expertise and commitment in a transparent and goal-oriented project management. For this purpose, we provide you a team of experts specifically tailored to your project. This team, focuses exclusively on your projects and assignments. Thus, you can always contact an expert, who can make quick decisions and provide information on detailed queries. We do this because we want to earn our customers Trust. But for doing this, first we listen to our customers, and then go the extra distance to provide the best and most appropriate services possible. Second, we continue to invest in our company with aggressive initiatives such as global integration of our technologies and employee training. So we are prepared to face tomorrow's challenges and best serve our customers inside the country. Doing what is right today while keeping our eye on the future, is what keeps Rahrovan Asia Energy & Industry company moving forward in a positive direction. The high level of technical expertise, focusing on the modern advanced technologies, enables our company to offer interesting solutions for the industry. You can contact us today to find out how you can benefit from our comprehensive services. For more information, please feel free to give us a call. We will never leave you alone.

#### Our Clients



























#### Contact Us



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