

Containerized Water Treatment System Field Support

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Summary: This document describes the field services available from RODI Systems in support of its containerized brackish water, desalination, and waste water treatment systems. RODI has deployed equipment worldwide and has proven effective in supporting this equipment by various means. This includes startup and commissioning services, operator training, system troubleshooting, and scheduled maintenance services.

INTRODUCTION

The professionals at RODI Systems Corp. specialize in the design and construction of membrane-based water treatment systems. RODI has built its reputation around treatment of challenging feed waters such as oil field produced water, seawater, and contaminated brackish groundwater. The majority of the treatment systems designed and built by RODI have been portable, either trailer-mounted or built inside a general purpose, dry cargo shipping container.

RODI has been supporting clients in remote locations worldwide since 1995. We deploy service technicians from our facility in northwestern New Mexico to various locations around the world. We also provide technical support by means of qualified, well-trained subcontractors and distributors stationed in strategic locations around the world.

This document describes the services RODI provides in support of its containerized and portable water treatment systems. These services include startup and commissioning, operator training, troubleshooting, and scheduled maintenance.

STARTUP AND COMMISSIONING

Startup and commissioning services include:

Installation Assistance - RODI Systems generally does not install the equipment since local labor tends to be more cost-effective for the end user. RODI will, however, provide technical personnel on site during installation to insure that the system is installed properly and that all necessary support services are available (power, inlet feed pressure, waste disposal, etc.).

Pre-Startup Inspection - Prior to starting the system, RODI's technicians will ensure that no damage has taken place during shipment or installation. Our technicians will also check the installation to make sure that the equipment may be started and operated safely with no hazard to personnel or other ancillary equipment.

Actual Startup - RODI's technicians will start the equipment with the assistance of the local operators and ensure that all components are operating properly. Our technicians document all startup parameters for later use in data normalization.

Troubleshooting - After startup, our technicians will identify and correct any malfunctions in hardware or software which may affect the proper or safe operation of the system.

OPERATOR TRAINING

As part of the startup and commissioning process, RODI will provide training to the local operators. Training is specific to the equipment at the local site and includes the following topics:

System Theory - This is a brief overview covering the theory of operation of the entire treatment system.

System Operation - This covers the actual hands-on operation of the system. It includes a review of all alarms and remedies for alarm condition.

Data Analysis - This topic covers the importance of data logging and the need for proper evaluation of the data by various data normalization techniques. Operators are taught how to interpret the data and how to use the resulting information to remedy operational problems.

Maintenance - Operators are taught all necessary maintenance techniques including the proper techniques for membrane cleaning.

Proper and thorough training of the local operators is the best solution for providing effective on-going support. When properly trained and equipped with the necessary spare parts, local operators can correct the majority of problems with RODI's technical support via phone and email.

TROUBLESHOOTING

During the life of the equipment, problems will arise that require RODI's assistance in correcting. We can often correct problems by working with the local operator via phone or email. If necessary, RODI can deploy qualified technicians to the site generally within several days of being notified. If a larger number of systems are deployed in a specific area or region, RODI can arrange for a local qualified service technician to receive the necessary training to support the systems. Historically, RODI has experience in supporting systems located in North Africa, the Middle East, South America, Mexico, and the Caribbean.

SCHEDULED MAINTENANCE

The on-site technical support and training we offer for startup is designed to provide the local operators with sufficient knowledge to operate and maintain the system. Depending upon the operator's experience, many clients find it useful for a RODI technician to visit the site every three to six months for the first year of operation. After that, visits are typically made every twelve to eighteen

months. These visits provide an opportunity for the RODI technician to evaluate the manner in which the system is being operated and suggest any improvements to the operating and maintenance activities. They are usually scheduled at the time of a membrane cleaning procedure so the cleaning can be included in the evaluation.

CONCLUSION

On-going technical support is a key component in RODI Systems' product offering. We are experienced in supporting our products worldwide and find that excellent product support involves the following key elements:

- (1) Begin with a high quality system - By providing high quality and dependable hardware, the need for on-going onsite support is minimized.
- (2) Provide thorough operator training - Well-trained operators are able to correct most problems on their own or with RODI's support via phone or email.
- (3) Invest in a scheduled maintenance program - By scheduling periodic technician visits for maintenance and on-going training, end users can avoid costly last minute emergency call outs or downtime.

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