



Caltex VARTECH™ Industrial System Cleaner Helps Restore Gas Turbines, Saving \$80K+ In Annual Maintenance Costs*



Chevron North America Exploration Production Company, Tahiti Field, Gulf of Mexico

The Situation

Chevron operates a massive spar floating platform in the Tahiti Field, one of the largest oilfields in the Gulf of Mexico. The Tahiti spar floating platform sits in 4,100 feet of water, 190 miles south of New Orleans, where summer temperatures regularly hover from 90-100°F. The platform operates 24/7 and in 2019, net daily production averaged 51,000 barrels of crude oil and 22 million cubic feet of natural gas.

The Chevron Tahiti spar floating platform is powered by two Solar Titan 130 gas turbines, each coupled with a generator. Together, these generator sets deliver 24,000 kW of electricity to the spar floating platform. Loss of this electricity would shut down the operation, halting hydrocarbon production. Thus, a third generator set is on standby and a diesel generator is available for emergency backup.

The oil headers in the generator sets were consistently running hot and triggering high-temperature alarms. The team of engineers and maintenance operators who maintain the systems tried to remedy the situation by changing filtration practices and making mechanical modifications. Their efforts produced no sustainable drop in operating temperature.

Knowing that high temperatures can promote varnish formation, which can hinder oil cooler efficiency and allow more heat buildup, the team decided to test a well-known industrial system cleaner in one of the generator sets.

A fluid servicing company was contracted at a cost of \$40,000 to add the system cleaner to the in-service oil. Within thirty minutes, the differential pressure of the filter increased to a critical level.

The operations team replaced the filter and the problem quickly repeated. Differential pressure increased six more times during the cleaning process, requiring a filter

change each time. At \$200 per filter, the operation incurred \$1,200 in unexpected costs. After running the cleaning process for 24 hours, the system finally stabilized.

Differential pressure is the difference between the oil pressure entering and exiting the filter. If the oil pressure entering is greater than the exiting pressure, the filter is clogging. As the differential pressure increases, the filter can clog to the point that oil flow stops or pressure is not sufficient to continue lubricating and cooling the machinery resulting in unplanned shutdown or damage.

The industrial system cleaner was kept in the system for two days then drained along with the used in-service oil. To avoid incompatibility issues between the cleaner and new incoming oil, a system flush was performed as recommended by the manufacturer of the system cleaner.

This entire effort was a temporary fix. A year later oil header temperatures began to rise again, and the operations team determined that major measures would be necessary. The plan entailed removing the oil cooler and transporting it onshore for reconditioning or replacement at a cost of \$20,000. Once the clean oil cooler was put back in service, it would perform only four months before header temperatures began to rise again. Thus, cleaning these coolers three to four times per year would cost about \$80,000*.

VARTECH™ Industrial System Cleaner (ISC) Helps Provide a Solution

Facing an endless cycle of high temperatures and high costs, the operations team decided to look for a better option. The solution they found began with using Caltex VARTECH™ ISC.



VARTECH ISC was added to the in-service oil in one of the gas turbine generator sets. Within 30 minutes, the oil header temperature dropped 8°F. After 90 minutes, the temperature dropped another 7°F and stabilized. The temperature was now below the critical range and system alarms stopped.

Because the other system cleaner caused filter clogging, the operations team had plenty of new filters on standby just in case. The team was pleased to discover that VARTECH ISC did not cause critical differential pressures. Aside from the initial filter change prior to the cleaning cycle, no additional filter replacements were necessary.

Since VARTECH ISC is compatible with Caltex turbine and compressor oils, concerns of incompatibility between the cleaner and turbine oil were mitigated. The cleaner and oil were later drained, and the equipment was refilled with Caltex GST Advantage™ RO (formerly GST® Premium XL).

“Using VARTECH (Industrial System Cleaner) avoids excess maintenance costs, reduces our safety exposure and our environmental risk by not having to remove our equipment and send it in for reconditioning. When we put VARTECH into our turbine (system) we were just getting ready to change out the unit. Now that we know that it works, and we can keep our lube oil header temps safely within spec, we need to clean our other unit. Send me some drums of cleaner!”

— Tray Geeslin, Chevron Rotating Equipment Lead

The operations team was so impressed with the varnish removal performance of VARTECH ISC, it requested more product to clean the other turbine systems on the spar floating platform.

The operations team felt confident that the holistic approach of using VARTECH ISC to clean varnish from the system and prepare it for fresh oil and then refilling with GST Advantage RO would be a lasting solution to help control varnish and maintain peak performance, reliability and productivity.

STEEL PLATES FROM OIL COOLER



BEFORE CLEANING: Varnish film



AFTER CLEANING: Varnish film cleaned using VARTECH ISC

Results

More than \$81,000* in this field test was saved by avoiding the following maintenance costs:

APPROXIMATE ANNUAL MAINTENANCE COSTS

OIL COOLERS	Refurbish or Replace at \$20,000 per oil cooler x four times per year	\$80,000
FILTERS	Replacement at \$200 per filter x six times per cleaning with well-known system cleaner	\$1,200
TOTAL BUDGET IMPACT		\$81,200

It has been more than a year since employing Caltex’s holistic clean-and-control solution at Tahiti spar platform using VARTECH Industrial System Cleaner and GST Advantage RO. There have been no high temperature alarms triggering premature system shutdowns.

Run Better Longer

Caltex Lubricants has developed advanced expertise, premium lubricants and targeted programs for a broad array of industries, to help our customers’ equipment and operations Run Better Longer. Find out more at www.caltex.com

*The OEM identified herein did not participate in this field test and the results of this field test should not be construed as an endorsement by them. Always follow OEM recommendations. Consult your Chevron representative for more information. ©2020 Chevron. All rights reserved. All trademarks are property of Chevron Intellectual Property LLC or their respective owners.