

# Precision Dynamics, Inc.

Worldwide Leader in Scale Removal Products



Presented to ExxonMobil  
2011



# Precision Dynamics, Inc.

## Company Highlights

- Began business in 1990.
- Family owned and operated.
- Corporate office and manufacturing plant located in Burleson, Texas, USA.
- Introduced Dynamic Descaler<sup>®</sup> in 2003.
- Products sold worldwide.
- Website: [www.dynamicdescaler.com](http://www.dynamicdescaler.com).



# Here's What We'll Cover

- ❑ Scale – the problem.
- ❑ The Solution – ***Dynamic Descaler***
  - ❑ Applications
  - ❑ Key Features
  - ❑ Major Customers

# What is Scale?

- Scale is a coating or precipitate deposited on surfaces that are in contact with hard water.
- Water that contains carbonates or bicarbonates of calcium or iron oxide is especially likely to cause scale.
- When water is heated or evaporation takes place, scale minerals precipitate layers of rocklike deposits inside pipes, water heaters, equipment, and on fixtures and glassware.
- While most common scale is a result of calcium carbonate, other combinations of ions commonly found in water offer a variety of scale.

# Illustration—Heat Exchangers

- Scale deposits reduce efficiency by insulating the heat transfer surfaces.
- Scale deposits restrict water flow
- Piping and heat exchanger tubes become plugged.
- Ignoring scale can
  - Lead to the destruction and possible failure of heat exchanger tubes.
  - Process contamination can also occur



SCALE BUILD-UP



AFTER CLEANING WITH  
DYNAMIC DESCALER

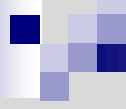
# Conventional Methods for Removing Scale

- Liquid Descalers
- Roding
- High Pressure Steam
- Scrapping
- High Pressure Water Jet
- Replacing Equipment



# ***Dynamic Descaler***®

The Solution to Scaling



***Dynamic Descaler***® is the trade name for a liquid descaler that rapidly dissolves all water scale and calcium carbonate and removes mud, rust (iron oxide), and other non-soluble sedimentation deposits safely and effectively.

# Key Features of *Dynamic Descaler*®

- **Easy to use** – no need to disassemble equipment.
- **Powerful detergents and penetrating agents.**
- **Economical** – less costly than other options.
- **Fast** – equipment is cleaned within a few hours.

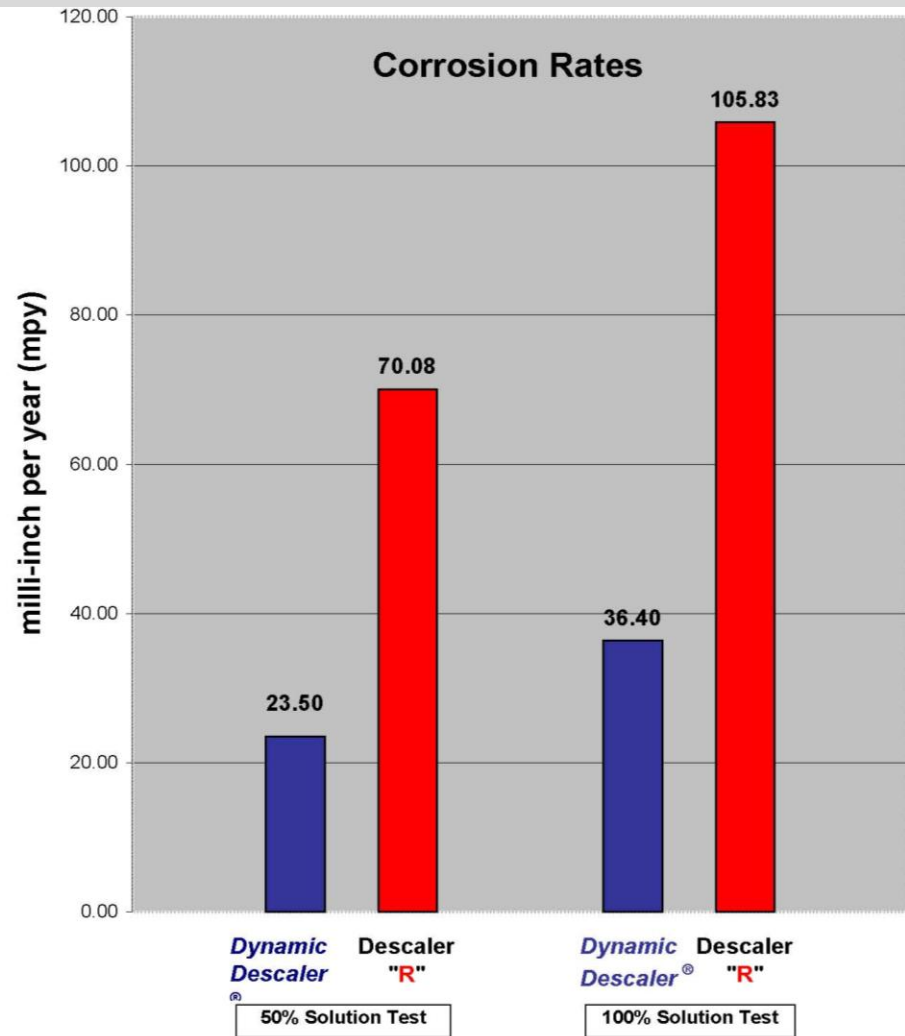


# Key Features of *Dynamic Descaler*®

- **Biodegradable** - will not harm the environment.
- **NSF Approved**
- **Safe** – will not harm workers.



***Dynamic Descaler***®  
has the lowest  
corrosion rate of  
any liquid descaler



Results of corrosion tests\* done on Dynamic Descaler and another leading descaler by an independent lab in October 2006.

***Don't be fooled by a company's claim that their descaler is "noncorrosive."***

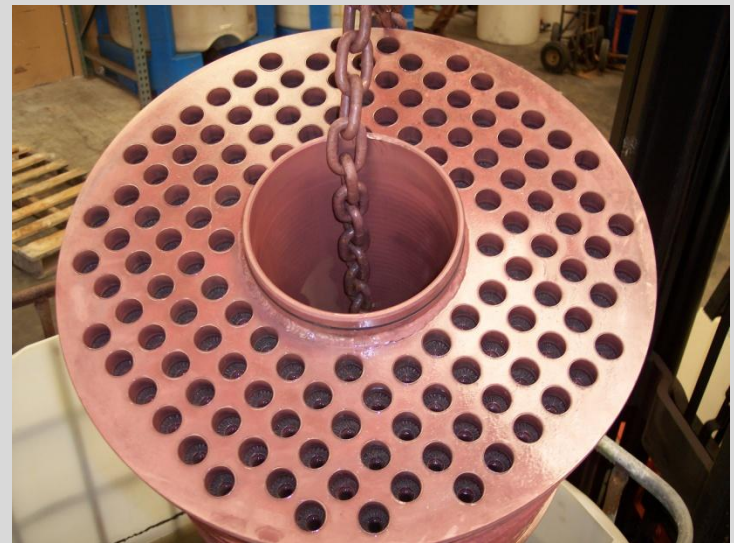
\* Tests performed at 101 F w/ low flow; 90/10 copper alloy; exposure time - 5 hours

# ***Dynamic Descaler***®—

## **The Bottom Line**

Saves time and money—

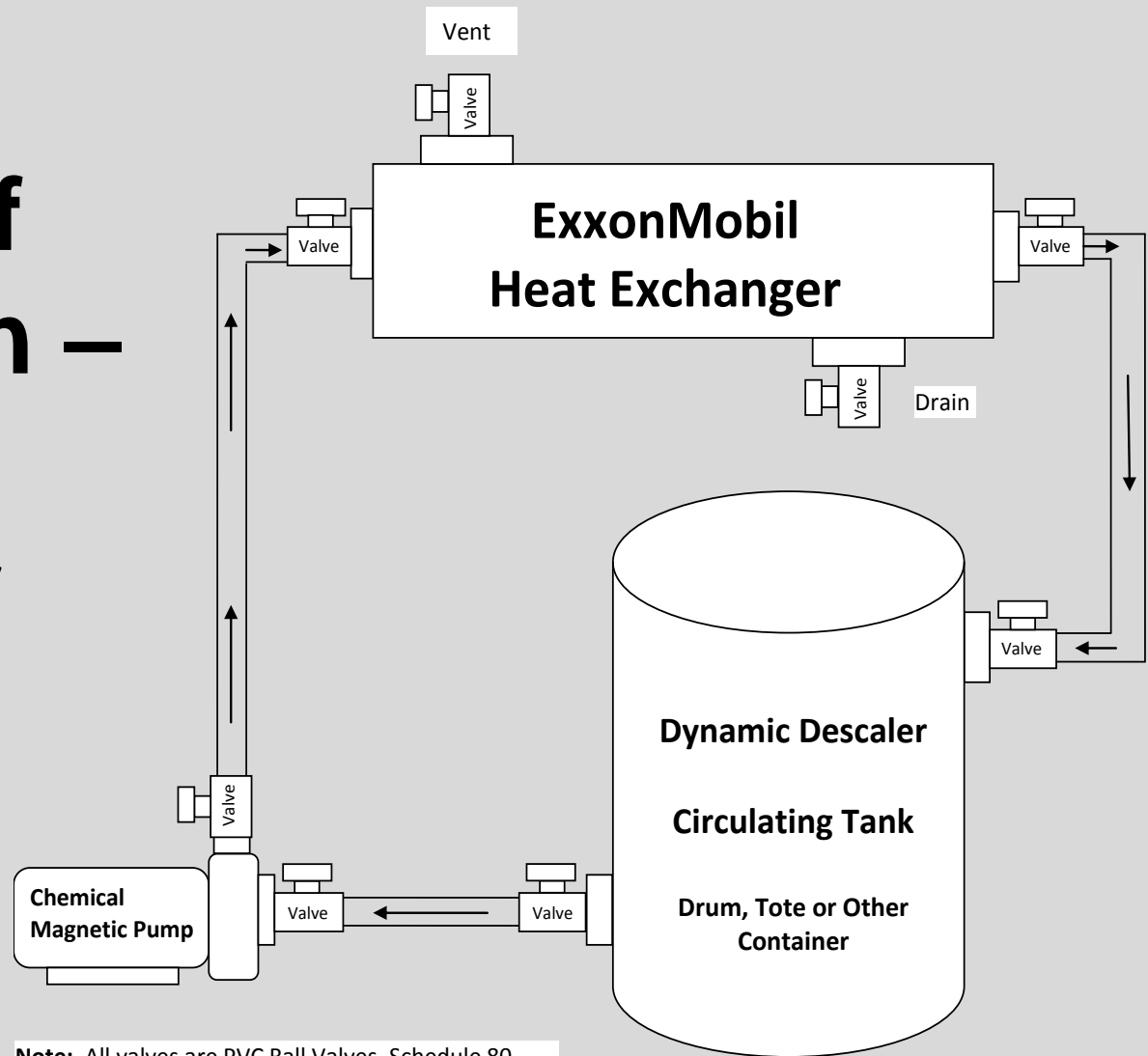
- Prevents costly shutdowns
- Prevents expensive repairs
- Reduces energy and operational costs
- Extends the lifespan of equipment



# Before and After *Dynamic Descaler*



# Example of Application – Heat Exchanger



# ExxonMobil—Joliet Refinery, Illinois

## Dynamic Descaler Cleaning Procedures

Prepared for: ExxonMobil Joliet Refinery, Joliet, IL

Dynamic Descaler®

### ANTHRACITE FILTER Cleaning with Dynamic Descaler® (57-M-206A)

1. Bypass the Filter from operation.
2. Drain all water (if any) from the Filter. Water has a pH of around 7.0 and if water remains in the filter, that water could be a higher pH than the normal 7.0 pH. You want to discharge the higher pH water so the Dynamic Descaler will be more effective. (I'll explain before cleaning).
3. Determine where you want to connect the Inlet/Discharge Hose. We recommend the Inlet Hose be connected to the bottom of the filter and the Discharge Hose to the top of the Filter. You want to fill the Filter with Dynamic Descaler from the bottom to the top. On top of Filter discharge, install a valve with a Poly Camlock fitting. Bottom and top connections should have Poly Camlock fittings.
4. Make sure you have the proper Circulating Pump and the Proper Size. Preferably, the Pump should be constructed of Poly Material, or a pump compatible for a low concentration of acid. Inlet and outlet should have Poly Camlock fittings. SEE PHOTO
5. Have a circulating container, or use the 330-gallon tote that contains the Dynamic Descaler. The Discharge Hose from the top of the Filter should be placed on top of the 330-gallon tote's 6" lid. (Secure Discharge Hose to the 330-gallon tote so it will not come out of the tote.) SEE PHOTO
6. The Inlet Hose from the bottom of the Filter should be connected to the 2" valve on the bottom of the 330-gallon tote. The 2" valve on the bottom of the tote should have a 2" Poly Camlock fitting. SEE PHOTO
7. After connecting the Inlet/Discharge hoses from the Filter to the 330-gallon tote, check the pH of the Dynamic Descaler. The pH should read around .2 to .7 pH.
8. After testing the pH, start pumping the Dynamic Descaler into the Filter. Start by using a mixture of 50% water/ 50% Dynamic Descaler. You'll have to experiment for the best results.
9. After 30 minutes of circulating the Dynamic Descaler in the Filter, check the pH level. If the pH is around 3 to 4 pH, add more Dynamic Descaler into the 330-gallon tote container. The pH should go down to about 1 or 1.5 pH, maybe lower. If the pH stays at 1 to 1.5 pH, do not add more Dynamic Descaler to the 330-gallon tote container. Check the pH every 30 to 45 minutes and repeat procedures if needed.
10. Reverse the flow only if the pH does not rise after 2 hours. Instead of pumping the Dynamic Descaler in the bottom of the Filter, pump the Dynamic Descaler into the top of the Filter and discharge from the bottom of the Filter. As the Dynamic Descaler dissolves the Lime or Calcium build-up in the Filter, a gas could build up preventing the Dynamic Descaler from reaching the top of the Filter. Therefore, reversing the flow will make sure that all of the Filter area is properly cleaned.
11. Once the Filter is clean, drain the entire wasted product into a container.
12. Flush the Filter with water for 1 hour or more. This will remove the remaining Dynamic Descaler and sediments.

Precision Dynamics, Inc. 2/19/2007

Questions? Contact David Guttery @ 817-447-9898

Prepared for: ExxonMobil Joliet Refinery, Joliet, IL

Dynamic Descaler®

Procedure # 4



Procedure # 5



Procedure # 6

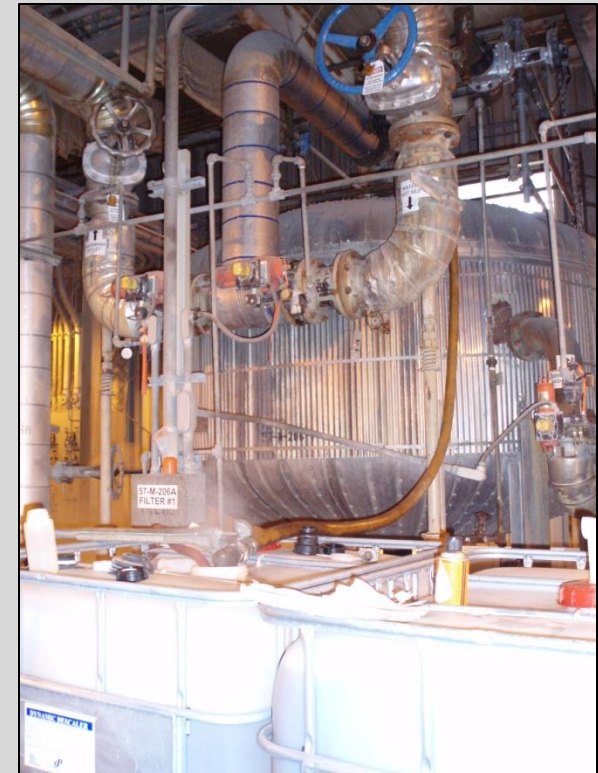


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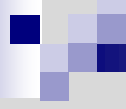
# ExxonMobil—Joliet Refinery, Illinois

## *Dynamic Descaler* Cleaning On-Site Photos



# Industries that Use *Dynamic Descaler*® —

- Paper Mills
- Refineries
- Navies
  - U.S.
  - British
  - Australian
- Automotive Plants
- HVAC
- Tire and Rubber Plants
- Petrochemical Plants



**Other Liquid Descalers Manufactured  
by Precision Dynamics, Inc.**

***Descale 518***

***Aqua Safe Descaler***

# Descale 518

- Specially formulated for stainless steel applications.
- Ideal for stainless steel holding tanks, reservoirs, heat exchangers, condensers, and other stainless steel equipment.

**Before**



**After cleaning with *Descale 518***



# Aqua Safe Descaler

- Certified by NSF to NSF/ANSI Standard 60
- Ideal for water heat exchangers, tankless hot water heaters, coolers, pumps, boilers, compressors, condensers, extruders, molds, cooling towers, furnaces, water piping systems and other water side heat exchange surfaces.



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