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The power of data. Optimized.

Optimization of Fluid Management in Aboveground Storage Tanks

November 12, 2015

Introduction

- Mike Murray, ATEK Access Technologies
  - Director of TankScan Sales
    - Four years in the field with tank users - waste oil generators and collectors, lube and fuel distributors, oil fields, and chemical storage
  - Formerly managed fuel cooperative with bulk storage sites
    - Over 20 years of experience in automotive repair business, used oil generator

Optimization of Fluid Management in ASTs

- There are over 18 million aboveground storage tanks (ASTs) in the US alone
  - Many different uses in several vertical markets
  - Multiple sizes and configurations

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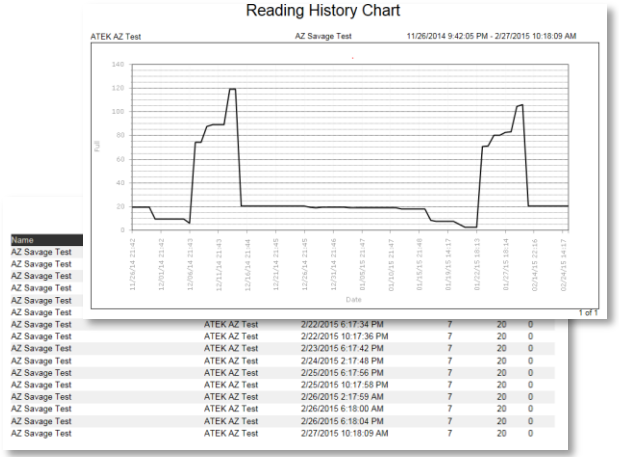
Optimization of Fluid Management in ASTs

- Three Issues Important to NORA Members
  - **Compliance**
  - Safety
  - Inventory management



Optimization of Fluid Management in ASTs

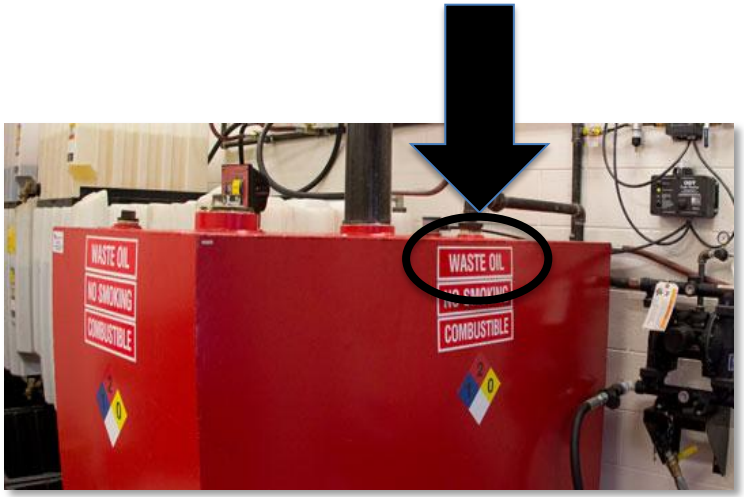
- Compliance
  - Goals for facilities with large amounts of oil
    - Prevent environmental damage
    - Avoid loss of product
    - Avoid civil law suits
    - Avoid costly clean up measures
  - Hazardous waste requirements
    - EPA
      - Comply with EPA's Spill Prevention Control and Countermeasure (SPCC) regulations
    - State and local regulations

Optimization of Fluid Management in ASTs

- Everyone Knows
  - EPA has several regulations that apply to used oil handling
    - Single walled ASTs should have secondary containment
      - Contains spills
      - Allows leaks to be easily detected
    - Containment must hold 110% of contents of largest AST
      - Must be impermeable to the materials being stored
    - Many states require the secondary containment interstitial space be checked regularly for leakage
      - Can be done manually, hand recorded for required record-keeping
      - Technology is available to automate both level measurement and interstitial space compliance

Optimization of Fluid Management in ASTs

- Less Well Known
  - Largest citation categories
    - Tanks marked incorrectly
      - Must be “Used Oil”
      - NOT “Waste Oil”
    - Incorrect paperwork
      - Annual reports
  - Help generators know the rules
    - Value-add service to generator accounts



Optimization of Fluid Management in ASTs

- Problem: Overfill Protection
  - Some states require for bulk storage tanks
- Technology Solutions
  - High level alarm
    - Can be electronic or manual
    - Only serve single function
  - Electronic tank monitor
    - Serves for both overfill protection and tank level
    - Tank levels can be checked before fills
    - Daily inventory records kept automatically

Optimization of Fluid Management in ASTs

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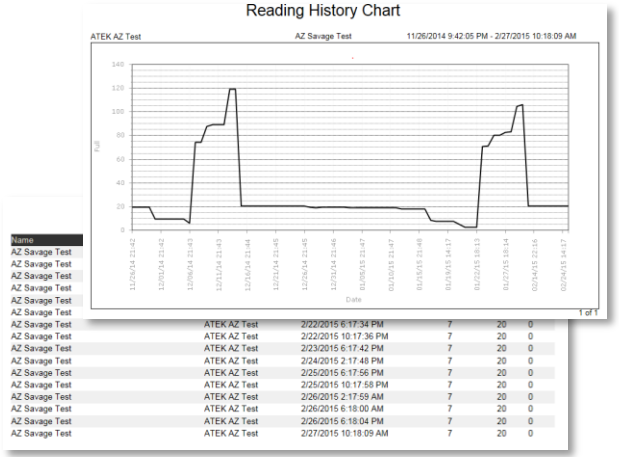

Name					
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AZ Savage Test	ATEK AZ Test	2/22/2015 10:17:36 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/23/2015 6:17:42 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/24/2015 2:17:48 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/25/2015 6:17:56 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/25/2015 10:17:58 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/26/2015 2:17:59 AM	7	20	0
AZ Savage Test	ATEK AZ Test	2/26/2015 6:18:00 AM	7	20	0
AZ Savage Test	ATEK AZ Test	2/26/2015 6:18:04 PM	7	20	0
AZ Savage Test	ATEK AZ Test	2/27/2015 10:18:09 AM	7	20	0

Optimization of Fluid Management in ASTs

- Safety
  - Many safety concerns in tank farms are due to manual tank measurement
    - Employees climbing tanks to measure them and falls occur
    - Inadvertently inhaling toxic fumes
    - Trips and falls when walking through crowded tank farms
  - Best practices
    - Mechanical, site or electronic tank gauges reduce risks
    - Keeping tank farm floor clean and dry

Criticality of Safety Measures

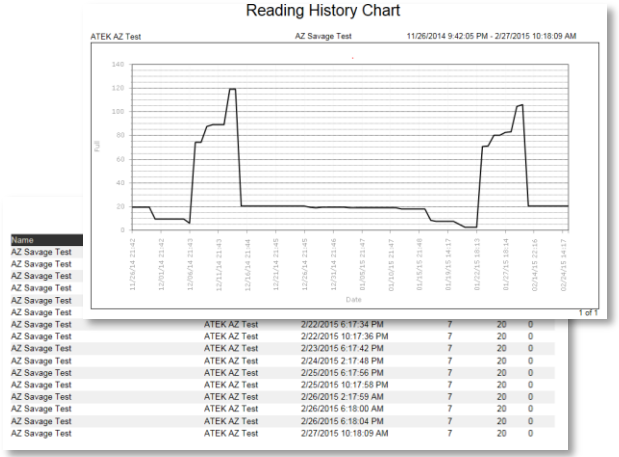
- True Story….
  - Deaths of 10 tank workers over last five years have haunting similarities
    - All in jobs requiring climbing on tanks and opening the hatch
    - All in remote locations operating alone
    - No known witnesses to deaths – all found laying on or around the tanks
    - Four of the workers involved in tank gauging, five others in sampling the tank contents
  - Causes were all initially ruled as natural, heart failure
    - Safety experts and government regulators are now acknowledging a pattern
    - Now focused on the possible role of hydrocarbon-based fumes
      - Can lead to quick asphyxiation when inhaled in large quantities
  - Government now sending out warnings
    - Many in the industry remain ignorant of possible risks
    - Recommending automating as many of the tasks as possible

Startling Photo

Plume of chemicals coming out of the top of a tank, taken with an infrared camera. *PHOTO: U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION*

Optimization of Fluid Management in ASTs

- Three Issues Important to NORA Members
  - Compliance
  - Safety
  - **Inventory management**



Optimization of Fluid Management in ASTs

- Inventory Management
  - Effective system benefits
    - Reduce shrinkage
    - Prevent billing or accounting errors
    - Make better business decisions
    - Automate compliance requirement reporting
  - Consistent and accurate system requirements
    - Daily inventory of product levels
    - Daily reconciliation of additions and extractions from ASTs
    - Efficient method of tracking and storage of the data
  - Technologies available to optimize best practices
    - Electronic tank monitoring with web-based portals for continual access
    - Back office or inventory management software
    - Data warehouse integration

Superior Lubricants Case Study

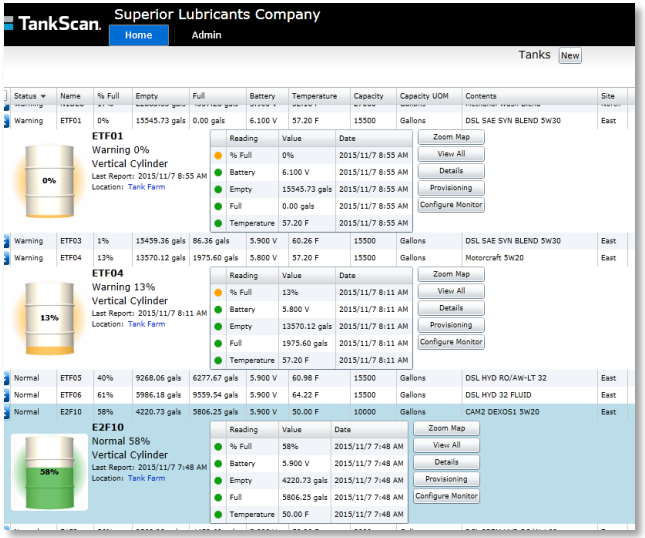
- Matt Gudorf, NORA Member and Chief Managing Officer of Superior Lubricants
- Three Locations
  - North Tonawanda, NY
  - Syracuse, NY
  - Kitchener, Ontario
- Reliance Fluid Technologies, Sister Company
  - Niagara Falls, NY

Superior Lubricants Case Study

- Problem: Compliance
  - New York State EPA Requirements
    - High level alarms on bulk storage tanks
      - Cost of $1,200 each plus installation
    - Recordkeeping of inventory levels
      - Manual method is time consuming and labor intensive
- Solution
  - The use of technology for automation
    - Installed wireless tank monitors
- Result
  - Satisfied EPA regulations
  - Inventory levels are automatically taken multiple times a day

Superior Lubricants Case Study

- Problem: Inventory Management
  - Previous method was manual
    - Time consuming and costly
    - Subject to inaccuracy and human error
    - Only performed weekly
      - Inefficiently hand written and faxed
- Solution
  - The use of technology
    - Web-based information platform
    - Real-time access to accurate inventory levels
- Result
  - Now have the ability to understand daily and monthly usage
    - Superior can purchase only enough to ensure just-in-time deliveries
    - Saves on inventory investment



Superior Lubricants Case Study

- Problem: Need for Cost Savings and Efficiencies
  - EPA regulations for high level alarms
    - $1,200 each plus install for 240 tanks across the organization ($288,000 plus installation)
    - Manual inventory overtime expense of $72 a week per location ($10,368 annually)
    - Inefficient and inaccurate inventory control methods
- Solution
  - Installation of wireless tank monitors
    - Addressed all three issues
- Result
  - Superior Lubricants and Reliant Fluid Technologies
    - Committed to installing monitors on all bulk tanks

Optimization of Fluid Management in ASTs

- Conclusion
  - Compliance, safety and inventory management are all important issues in ASTs
  - Must be part of overall business plan around AST management
  - The use of industry best practices and technology can help solve the challenges efficiently

Contact Info and Questions

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