

THE LEAK DETECTION SPECIALISTS

# LEAK DETECTION AND REPAIR RECENT ENHANCEMENTS

PRESENTED BY

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ENSERVE ENGINEERING SERVICES



# SERVICES PORTFOLIO

- VALVE REPAIR – MANUAL , SAFETY AND CONTROL
- IN SITU REPAIRS – ON LINE, IN LINE, TREVITESTING
- LEAK DETECTION AND REPAIR (LDAR) SERVICES
- MANUFACTURE OF BALL, BUTTERFLY AND CHECK VALVES – IPV BRAND



# PRODUCT & SERVICES PORTFOLIO MIDDLE EAST

- LEAK DETECTION AND REPAIR
- VALVE REPAIR – MANUAL , SAFETY AND CONTROL – 2015

**LOCAL AGENT IN KUWAIT - NAPESCO**



# CURRENT LDAR CONTRACTS

- **Sasol International – LDAR Services since 1999**
- **Natref refinery - Valve repair services since 1993**
- **Natref refinery – LDAR Services since 2004**
- **Shell BP – Pump seal monitoring program since 2009**
- **Dow Chemicals – LDAR Services since 2007**
- **PetroSA – LDAR Services since 2008**
- **KNPC - 3 year LDAR contract 2013 - 2016**



# SEEING IS BELIEVING

**METHANE LEAK  
12000 PPM**



# MOTIVATION FOR IMPLIMENTING A LDAR PROGRAM

- **REDUCE THE RISK OF FIRE**
- **REDUCE PRODUCT LOSS**
- **REDUCE NEGATIVE ENVIRONMENTAL IMPACT**
- **COMPLY WITH LEGISLATION**

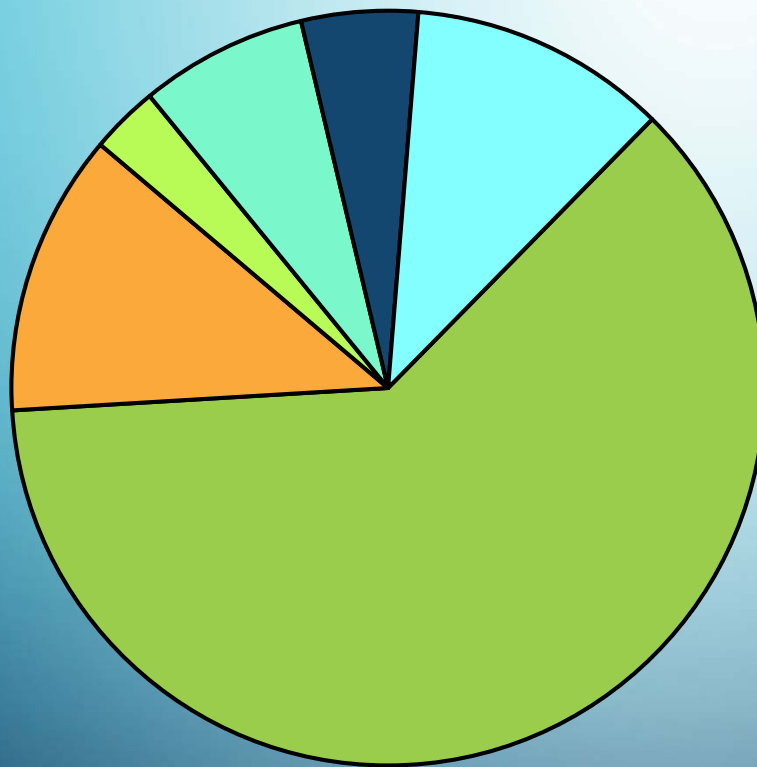


# TYPICAL REFINERY INVENTORY

- **Components to be monitored**
  - 130 000 valves
  - 325 000 connectors
  - 1 000 pump seals
  - 100 compressor seals
  - 3 000 vents



# TYPICAL LEAK SOURCE DISTRIBUTION



- Valves 60%
- Flange/Heatexchanger 12%
- Relief Valve 3%
- Drains 7%
- Compressors 8%
- Pumps 11%



# INITIAL METHODOLOGY

- TAG EACH POTENTIAL LEAKING COMPONENT
- USE A SNIFFER TO CHECK EACH COMPONENT
- RECORD DATA MANUALLY USING A CLIPBOARD
- CAPTURE THE DATA MANUALLY AND STORE IN A DATABASE
- PROVIDE CUSTOMER WITH THE DATA IN SPREADSHEET FORMAT



# CURRENT DATA COLLECTION METHODOLOGY

- ALL UNIT, STREAM & STREAM COMPOSITIONS AND CORRECTION FACTORS PRE LOADED ONTO A TABLET
- PHOTOS ARE **AUTOMATICALLY** LINKED TO THE JOB CARD
- JOB CARD CREATED DURING SURVEY NOT AFTERWARDS
- DATA CAPTURE ERRORS AND TAMPERING ELIMINATED
- CLIPBOARDS ELIMINATED



# FUTURE DEVELOPMENTS

- DATA CAPTURED USING A TABLET
- DATA COLLECTED ON SITE TO BE POSITION STAMPED – GPS TECHNOLOGY
- DATA TO BE SUPERIMPOSED ON A GOOGLE OR BENTLEY NEVADA PLATFORM
- DATA TO BE AVAILABLE IN GRAPHIC FORMAT IN REAL TIME



# ADVANTAGES OF A TABLET DATABASE INTERFACE

- LEAKAGE HISTORY AVAILABLE TO REPAIR TEAM DURING SURVEY.
- PHOTOGRAPH AND VIDEO OF LEAK LINKED TO LEAK DETAIL
- REPAIR DETAIL CAPTURED DURING REPAIR PROCESS.
- DATA CAPTURE EFFORT MINIMIZED.
- LOCATION OF LEAK ACCURATELY RECORDED – PHOTO



# DATA CAPTURE SCREEN

SITE OPERATOR SURVEY

PLANT DESCRIPTION

Site: Mina Al Ahmandi ✓

Area: 02 ✓

Unit Number: 02 ✓

Unit Name:  
Category:

Drawing Number: 1702.52-2.00-002-F ✓

Physical/Specific Location: D/S from Control Valve

Stream Number: NHC-006-G ✓

System: From TK 505

Equipment Location: 1m south

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# LEAK DETECTION EQUIPMENT

- FLIR GF 320 ARE CURRENTLY UTILISED
- ABLE TO DETECT A COMPREHENSIVE LIST OF HYDROCARBONS
- INTEGRAL VIDEO & STILL PHOTO FACILITY.
- ON BOARD LED DISPLAY. NOT NECESSARY TO VIEW LEAKS THROUGH THE LENSE.
- LIGHTWEIGHT
- EASY TO USE



# LEAK QUANTIFICATION

- **GMI 512 – DUAL SENSOR CELL**
- **ATEX APPROVED – CLASS I DIV I**
- **LIGHTWEIGHT – 1.7KG**
- **3 OPERATION RANGES:**
- **CATALYTIC REACTION CELL – PPM**
- **THERMAL CONDUCTIVITY CELL - LEL & %GAS**



# ORIGINAL LEAK REPAIR PHILOSOPHY

- REPAIR ONLY THE LEAKS THAT LEGISLATION REQUIRES YOU TO REPAIR.
- REPAIR LEAKS THAT COULD CAUSE A FIRE
- DON'T WORRY ABOUT THE SMALL LEAKS??????





# CURRENT LEAK REPAIR PHILOSOPHY

- REPAIR ALL THE LEAKS NO MATTER HOW SMALL.
- A SMALL LEAK WILL ALMOST ALWAYS BECOME A BIG LEAK WITH TIME
- IT IS ALWAYS EASIER TO REPAIR A LEAK WHILE SMALL
- MOST SMALL LEAKS CAN BE REPAIRED ON LINE AT THE FRACTION OF THE COST
- LARGER LEAKS ALMOST ALWAYS REQUIRE AN OUTAGE
- REPAIRING OF ALL LEAKS AS SOON AS THEY ARE DETECTED CAN REDUCE REPAIR COSTS BY UP TO 70%
- A LEAK IS UNPREDICTABLE – IT CAN INCREASE IN MAGNITUDE OVERNIGHT AND CAUSE A PLANT OUTAGE



# CONCLUSION

**Enserve is competent and committed to improve the overall safety and well being of your operation by:**

- **Identifying all of the leaks before they cause plant outages**
- **Quantifying the extent of the leaks**
- **Assisting in repairing the leaks safely and cost effectively.**





**THANK YOU FOR YOUR INTEREST**

**Questions?**