



Wireless Valve Position Monitoring, Diagnostics and Predictive Maintenance through ISA100

ISA100 End Users Conference / Houston TX

29 June 2016

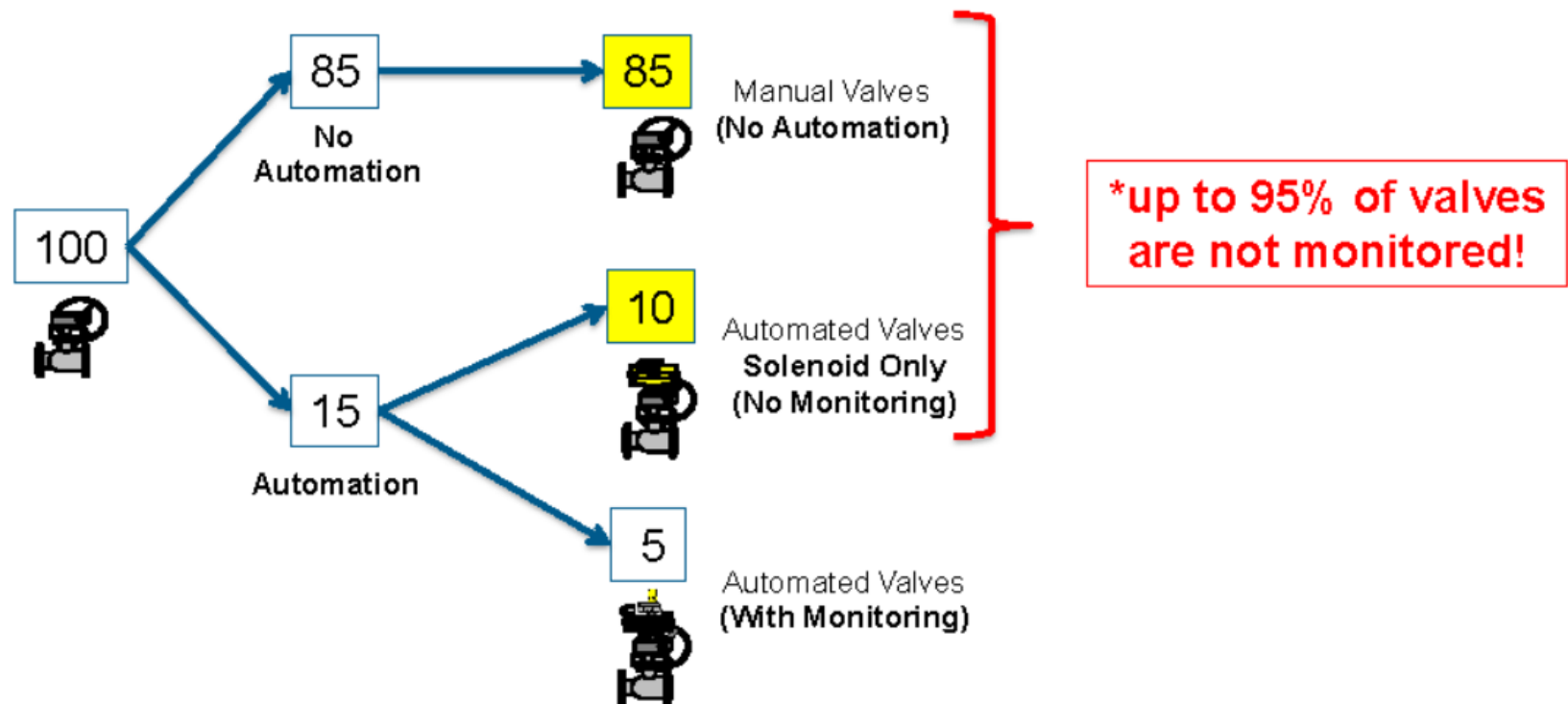
Presented by Israel Radomsky



The Eltav Company

- **Company stage – sales and implementation**
- **Development, production, sales and support of wireless valve monitoring and diagnostics solutions**
- **Products with ISA100 and ZigBee Protocols.**
- **Member of ISA100 standard committee.**
- **ZigBee in production; ISA100 scheduled release end 2016.**
- **ISA100 product in collaboration with major System Company.**
- **Located in Ranana Israel**
- **Founded in 2006.**
- **Acquired by Rotork in November 2015.**

Typical Industrial Application of Valves



Main reason is cost: data suggests \$2K to \$5K per valve
(Wires, Cable Trays, Cabinets, I/Os, Installation...)

**Ratio may vary depending on process and application*

Process Industry Valves Operation Challenges

**90% of Valves in the process industries are not monitored
due to high TCO costs**



Process Failure



- 1. Reduced yield**
- 2. Prone for human errors**
- 3. Health, Safety and Environmental events**
- 4. Inferior or expensive maintenance strategies**
- 5. Compliancy with emerging regulations**



Wireless monitoring is here!



The Wireless Valve Monitoring Device (VD)

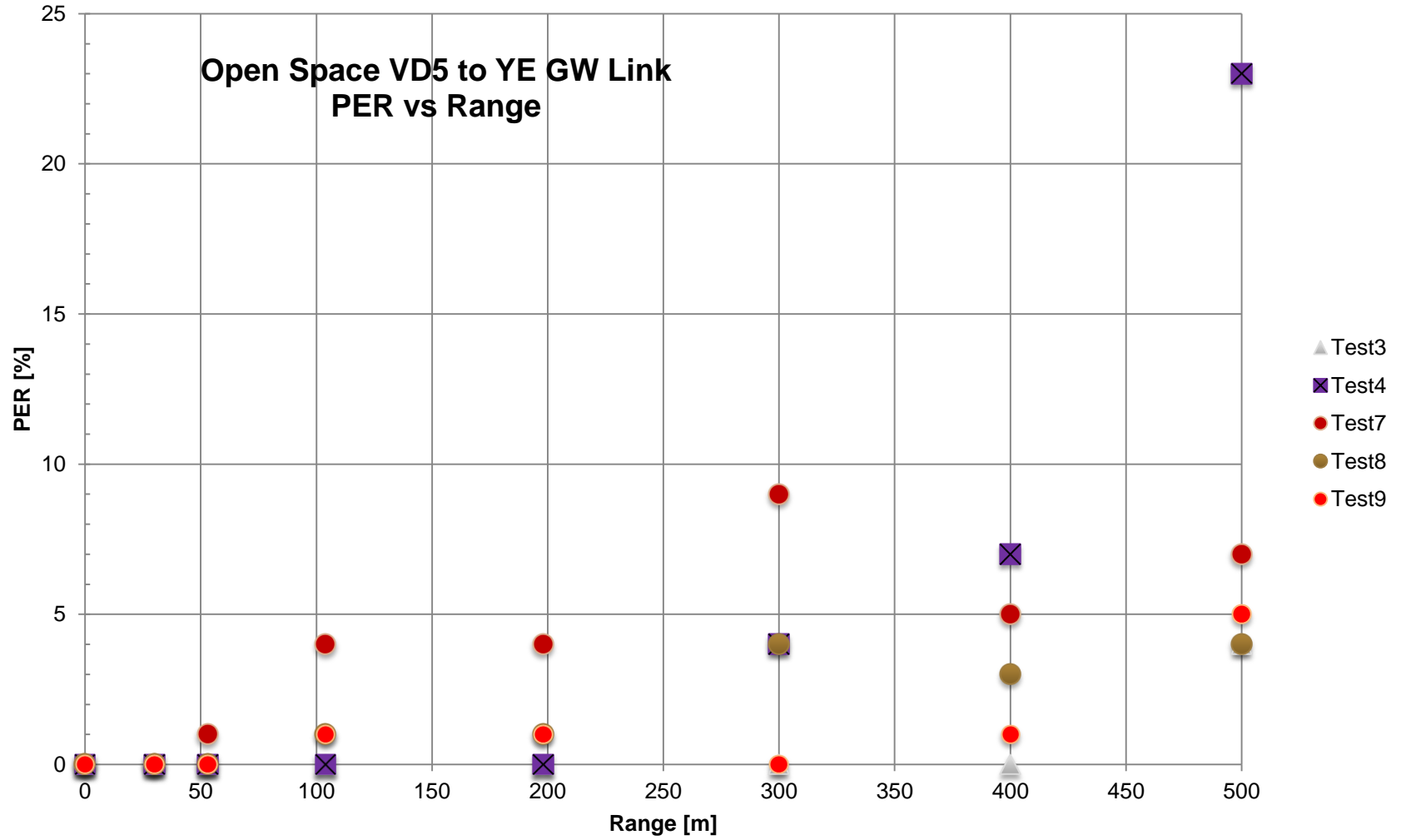
- ❖ Autonomous, Power Efficient
- ❖ Retains configuration
- ❖ LEDs for alive indication
- ❖ Installed on a Valve or an Actuator
- ❖ Measures Angle, Temperature, Dynamics, Battery, (4 Digitals)
- ❖ ISA100, ZigBee, 125KHz Magnetic and IR OOB provisioning
- ❖ In future – control of valves.



VD ISA100 Free Space Test



VD ISA Free Space Results

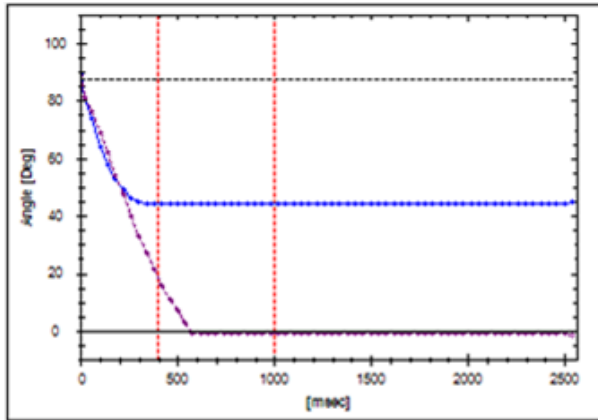


Valves Monitoring & Diagnostics

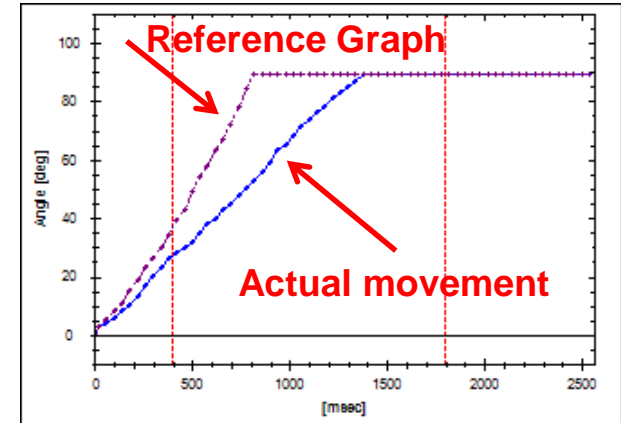


VD ISA100 Diagnostics Features

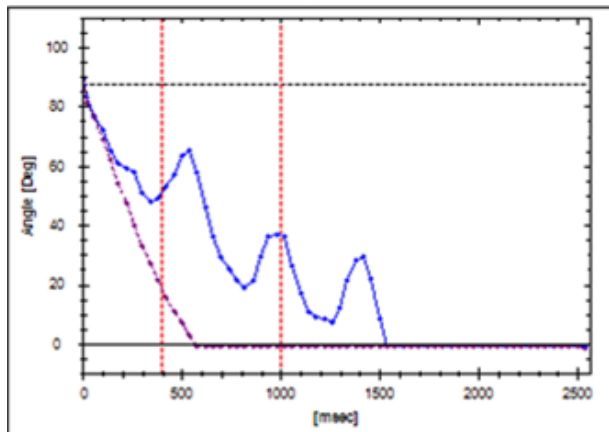
Partial open



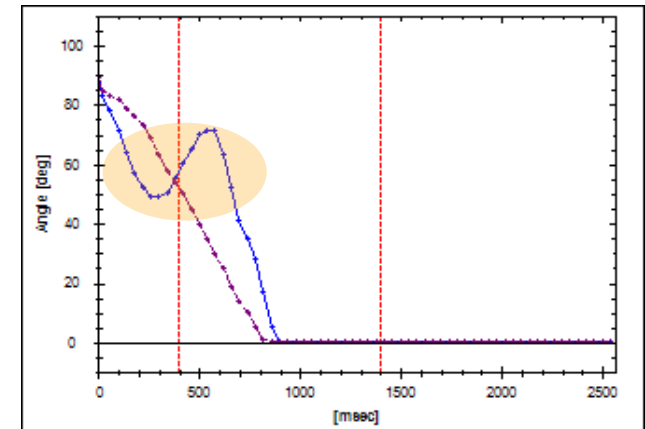
Prolonged movement



Air pressure problem

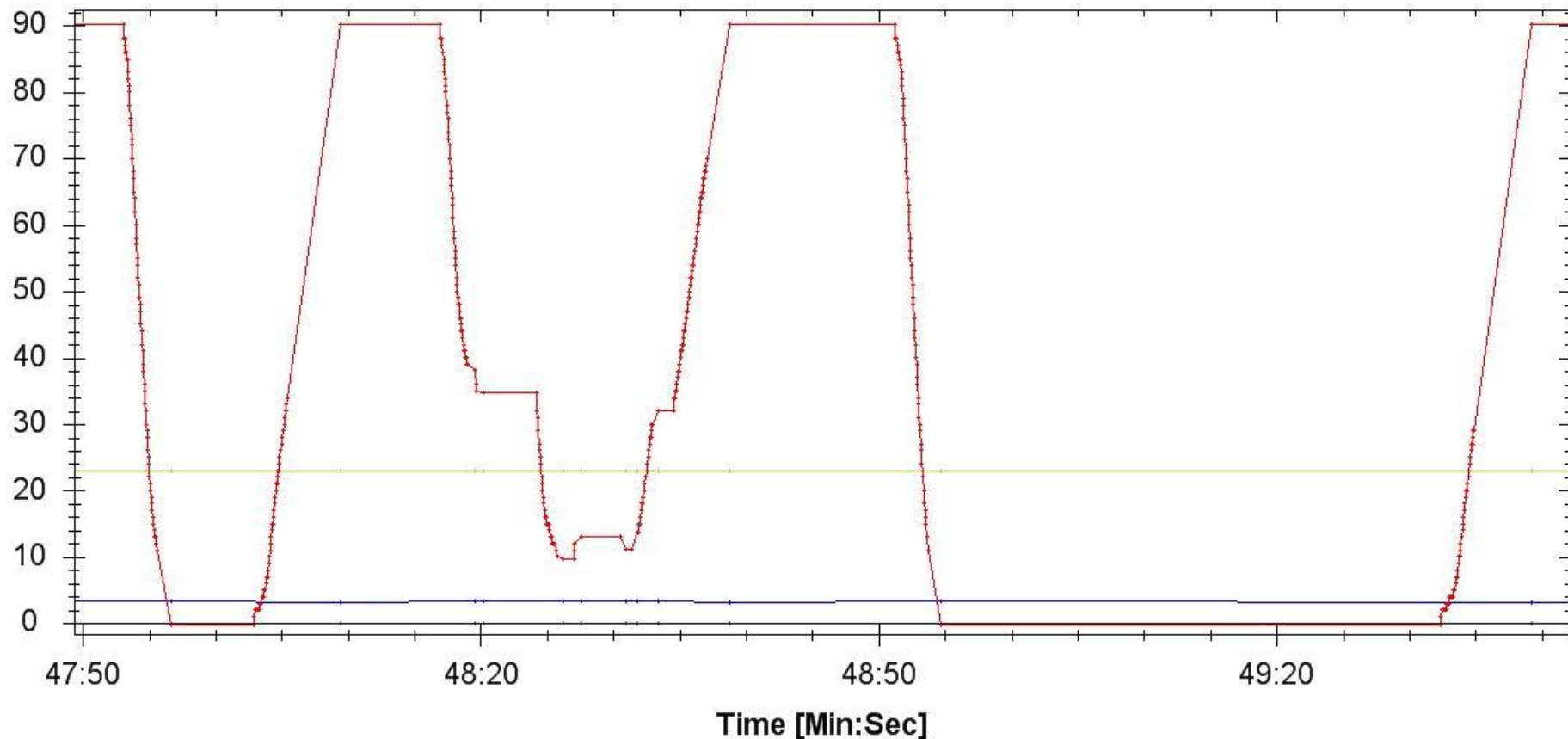


Sticky valve

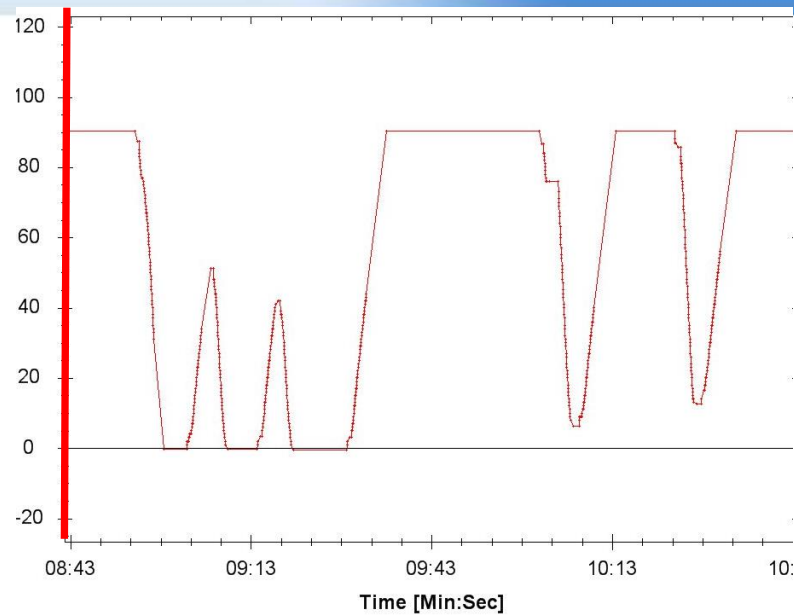


Malefunction of Actuated Valve

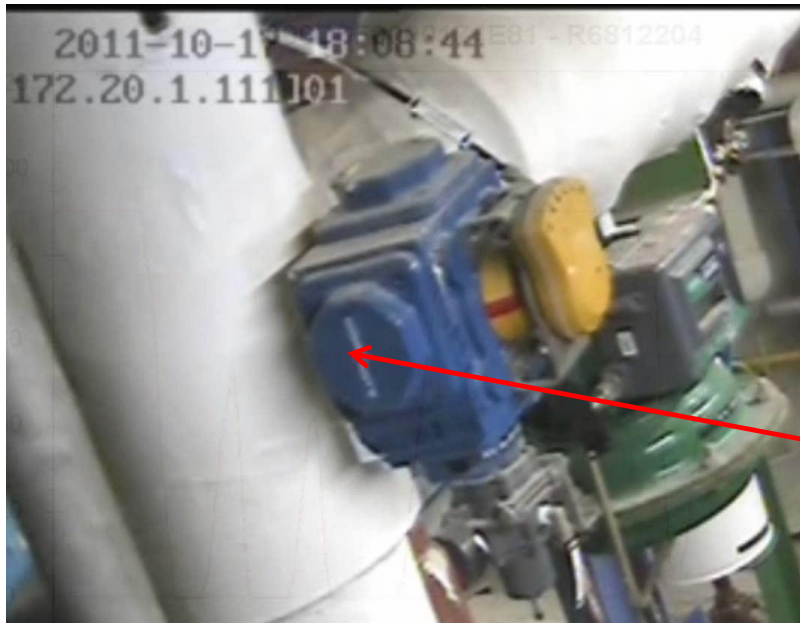
000D6F0000174E81 - R6812204



Jittering Actuated Valve



A **rotork**® Company



Click on the left picture to start video & chart

Vopak - Rising Handle



A rotork[®] Company



Raising Handle 2.wmv

Paz Refinery in Israel



A rotork[®] Company



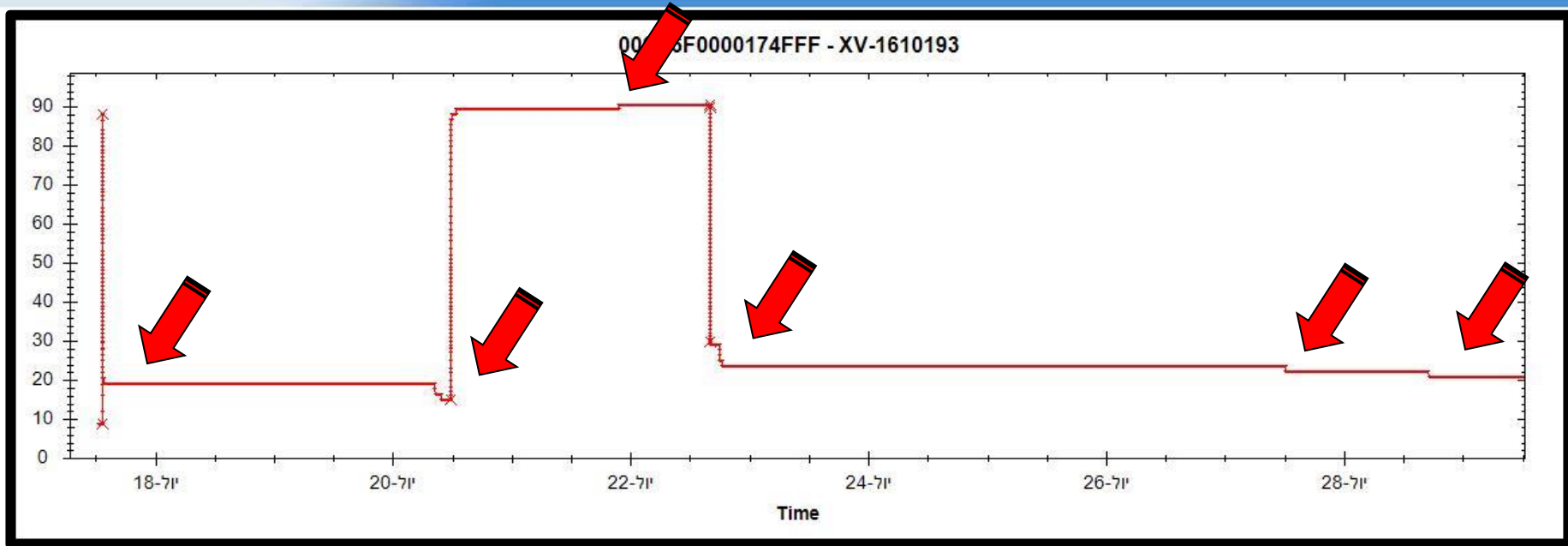
Paz Refinery – VD Installation



A rotork[®] Company

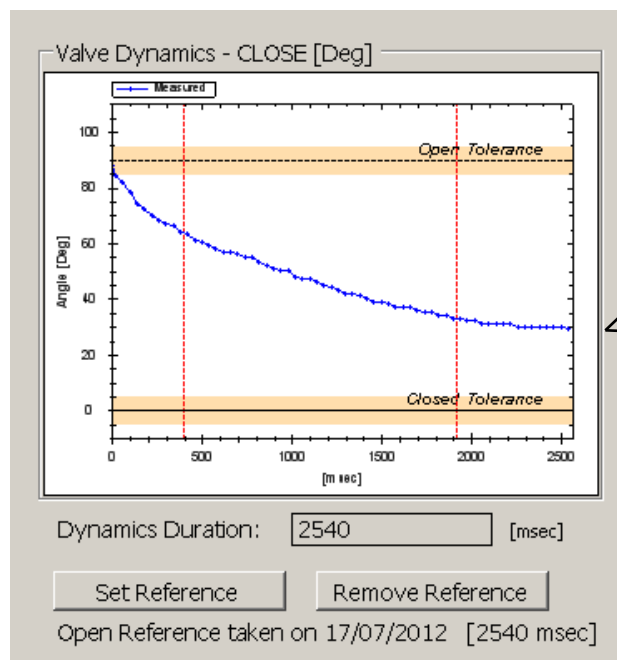


Field Example- Detect the un completed valve movement



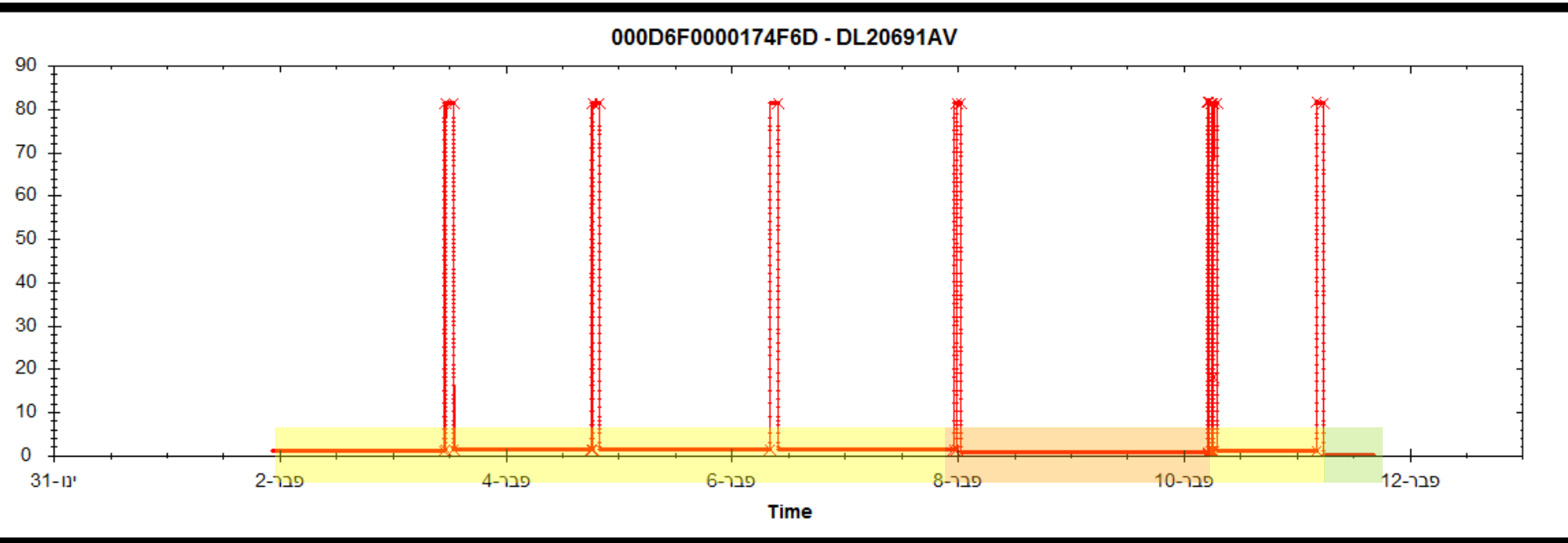
VALVE STATUS SUMMARY

EUI	Valve Tag	Last Seen	Hardware Timestamp	Angle	Open Percentage	Valve State
000D6F0000174D6F	XV-1610171	12:36:03.203,ג יום	12:36:03.147,ג יום	92.3	100	OPEN
000D6F00001750AF	XV-1610177	12:36:33.078,ג יום	12:36:33.011,ג יום	0.5	0	CLOSED
000D6F0000174C00	XV-1610178	12:37:12.578,ג יום	12:37:12.536,ג יום	-0.2	0	CLOSED
000D6F0000174FFF	XV-1610193	12:35:36.468,ג יום	12:35:36.406,ג יום	19.2	18	PARTIALLY
000D6F0000174CF2	XV-1610200	12:35:50.890,ג יום	12:35:50.850,ג יום	-0.2	0	CLOSED
000D6F0000174CF1	XV-1610175	12:35:12.875,ג יום	12:35:12.700,ג יום	0.0	0	CLOSED



Position Status
19.2°

Field Example- Detect the un completed valve movement



Filtration site of National Water Co.

The Challenge:

- ❖ Monitoring the process of adding chemicals to drinking water



Mekorot Eshkol



Sapir – Sea of Galilee Intake





Rotem - Flap Position Measurement



[Rotem 20120227_121223.mp4](#)

Kemira – Specialty Chemicals

Chemical Production site

The Challenge

Monitoring critical manual valves in the process following an incident

The Solution

The Eltav wireless solution has been installed on variety of manual ball valves and actuators providing process interlocks and on line monitoring.



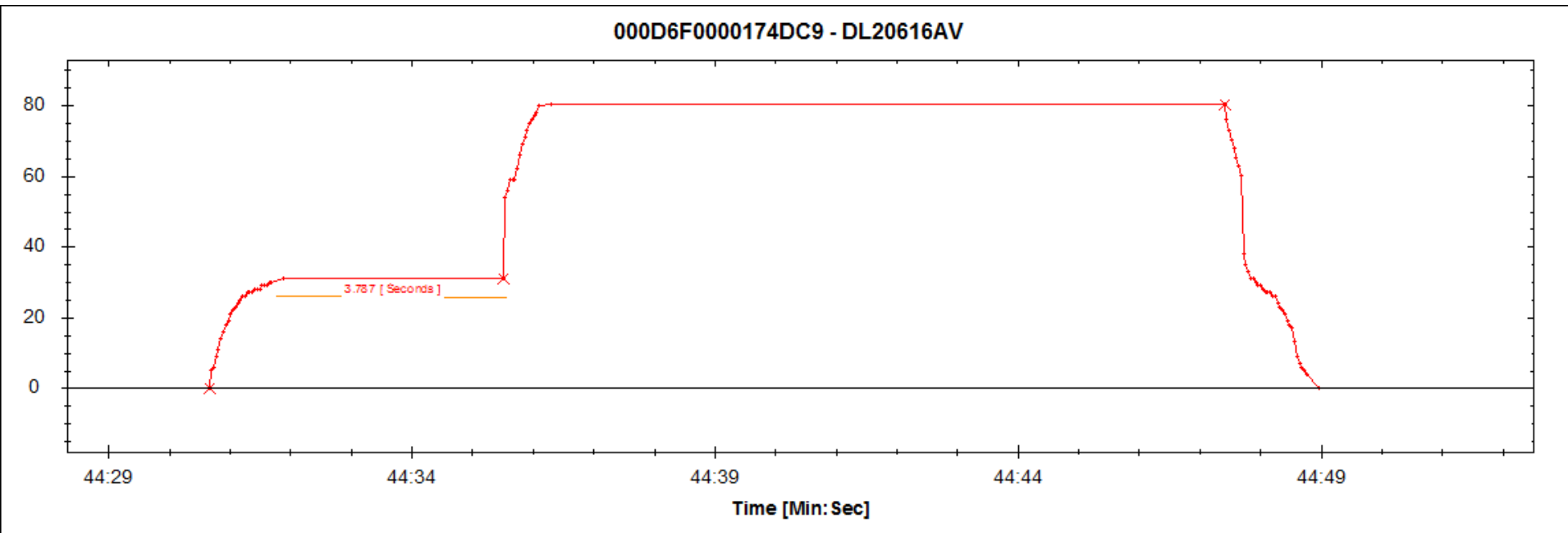


Dannon / Strauss Installation

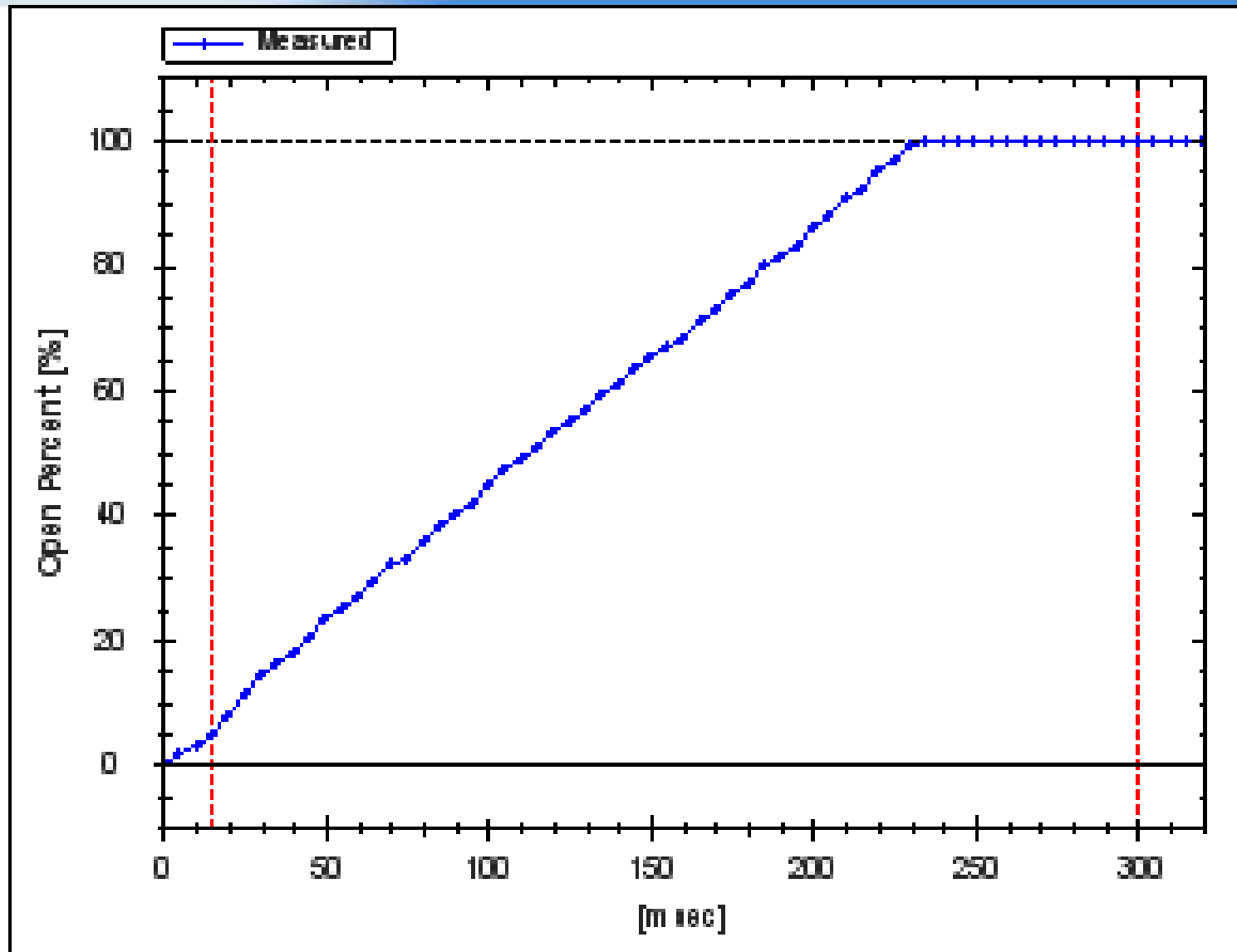


ON OFF Lifting DEMO P1080136.MOV

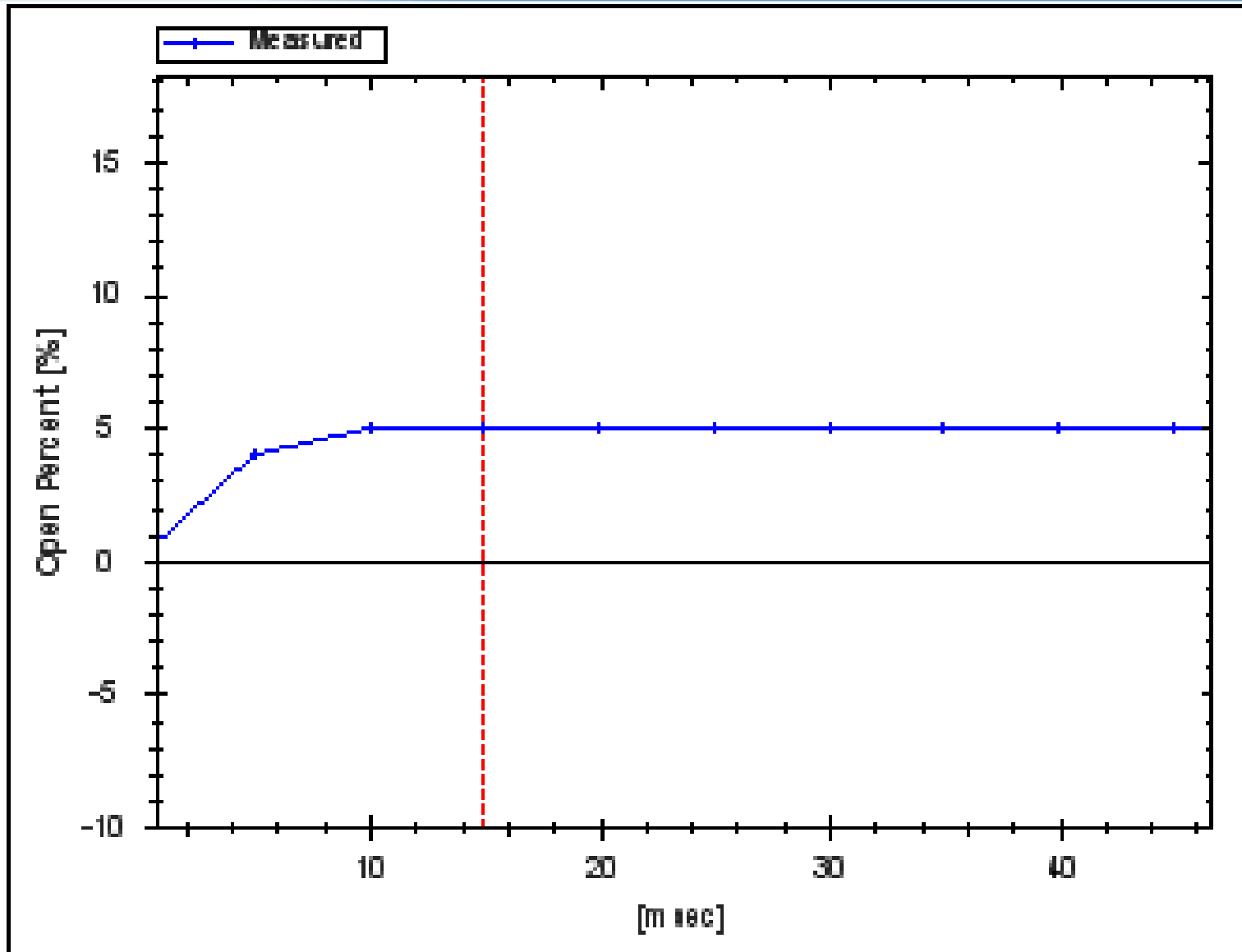
Dannon / Strauss Log File 616AV



Dynamics CLOSED > OPEN



UP LIFTING on OPEN/CLOSED AXIS ENLARGED



George Fisher Torn Diaphragm Detection

Test #	Torn Diaphragm	New Diaphragm VD Calibrated (REF) Figure of Merit
1	50.6	5.0
2	95.1	7.4
3	42.8	0.1
4	101.2	1.9
5	52.6	0.1
6	74.2	0.6
7	41.0	0.1
8	69.4	1.0
9	53.2	0.1
10	83.5	2.0
11	54.1	0.1
12	72.2	0.3
13	44.5	0.6
14	75.7	2.8
15	35.8	0.4
16	60.6	2.0
17	43.7	0.2
18	50.6	1.1
19	39.1	0.1
20		1.9
21		0.8

Average

60.0

1.4

Damaged O-RING

