FAILURE MODES AND PREVENTATIVE DIAGNOSTICS FOR ATOMIZER COMPONENTS

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TWO QUESTIONS

As a supplier and manufacturer we are regularly asked these questions;

HOW LONG WILL PARTS LAST?

WHEN SHOULD THESE PARTS BE RETIRED?
TWO CATEGORIES OF PARTS

ATOMIZER STRUCTURAL COMPONENTS – INTENDED TO LAST YEARS

EXPENDABLE WEAR PARTS – EXPECTED LIFE UNIQUELY VARIABLE
### PROTOCOL FOR CONSIDERING SERVICE LIFE OF ATOMIZER COMPONENTS

We consider service life in THIRDS

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<td><strong>MONITOR</strong></td>
<td>Track trouble areas, document damage</td>
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<td><strong>RETIRE?</strong></td>
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FAILURE MODES

WHAT KIND OF DAMAGE ARE WE LOOKING FOR?

CORROSION  EROSION  CRACKING
FAILURE MODE
CORROSION

Uniform, General,
Weight Loss Corrosion

Stress Corrosion Cracking
FAILURE MODE
EROSION

CONSIDER WEAR PATHS AND WEAR DEPTH
FAILURE MODE
CRACKING

STRESS CORROSION CRACKING

CRACKING FROM APPLIED LOAD
Specialist in Fatigue and Fracture Mechanics will say that a crack does not necessarily mean failure is imminent. For atomizers, some cracking in expendable parts can be tolerated. However, for structural components, cracking should be considered critical.

How would you defend prior knowledge of cracking after a catastrophic failure?
DIAGNOSTICS?

The PROTOCOL is the foundation of the DIAGNOSTICS

**OBSERVE**  Looking for the unusual  Mostly visual

**MONITOR**  Tracking, documenting  Photos, Logs

**RETIRE?**  Terminal issues  Last service turn?
PREDICTIVE?

The PROTOCOL is the tool that motivates development of a documented history that allows some ability to predict the life of parts and when or if they should be retired.

Important for new users to develop history

   DSUA is excellent resource for new users

Important for experienced users to gain efficiency and reduce cost
CONCLUSIONS

We can, we must, observe and monitor damage considering the typical failure modes these systems produce. A simple PROTOCOL can aid in developing a history useful in making the best decisions and getting the most value from these systems and components.

OBSERVE
MONITOR
RETIRE?
QUESTIONS