FAILURE MODES AND PREVENTATIVE DIAGNOSTICS FOR ATOMIZER COMPONENTS

By Ken Rogers, Omega Atomizers

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TWO QUESTIONS

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

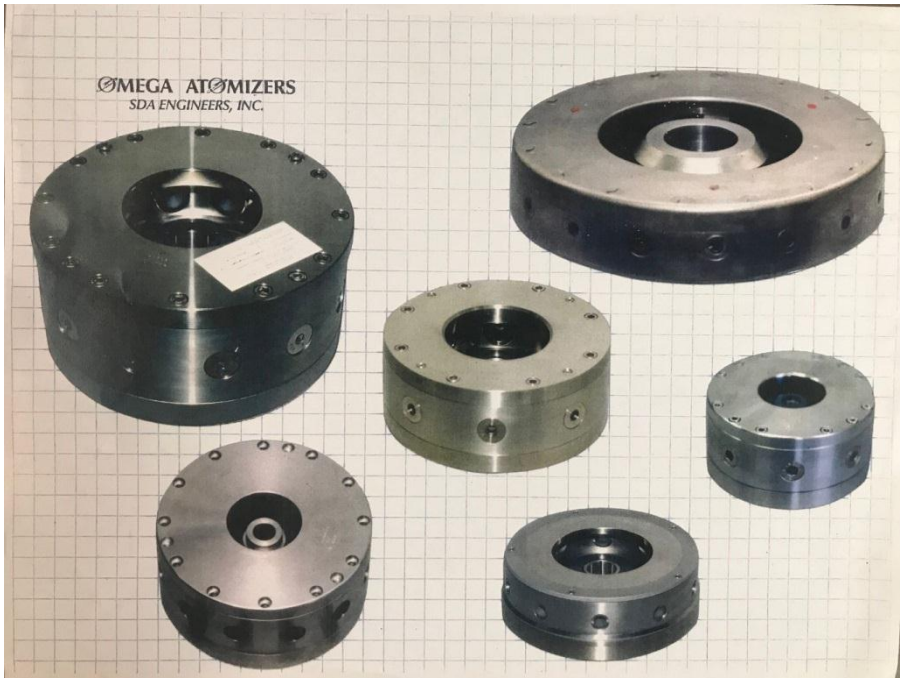
HOW LONG WILL PARTS LAST?

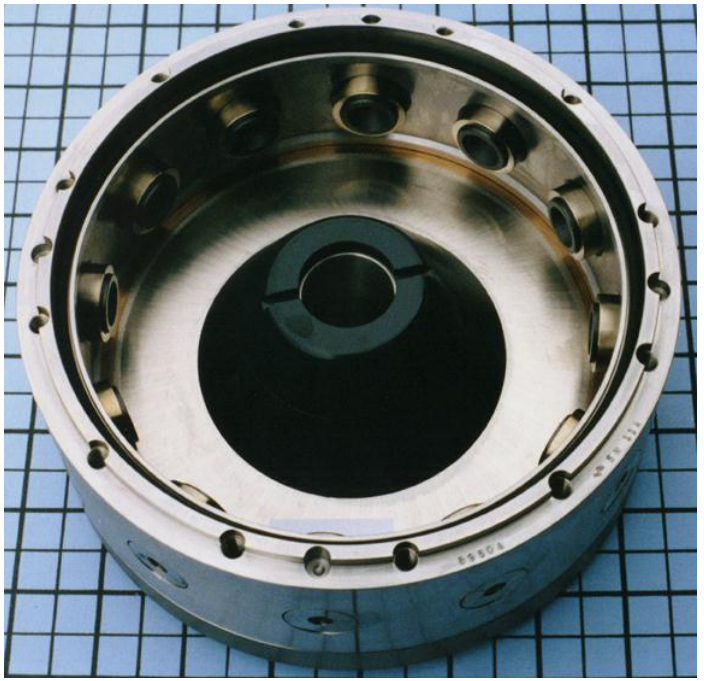
WHEN SHOULD THESE PARTS BE RETIRED?

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

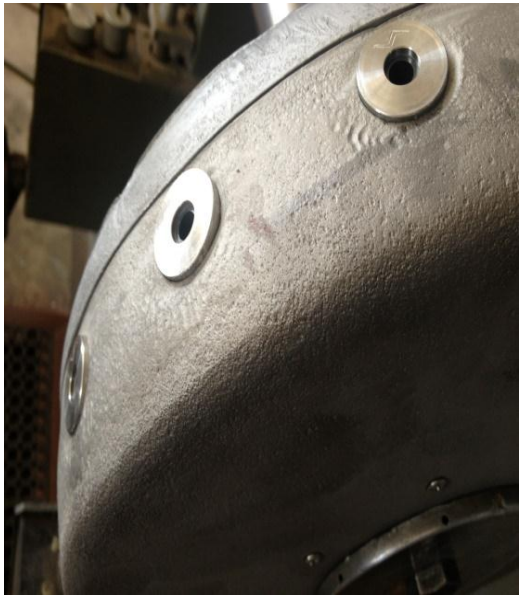
We consider service life in THIRDS

1st THIRD	**OBSERVE**	*Looking for the unusual paterns*
2nd THIRD	**MONITOR**	*Track trouble areas, document damage*
3rd THIRD	**RETIRE?**	*Considering damage , consider retirement*

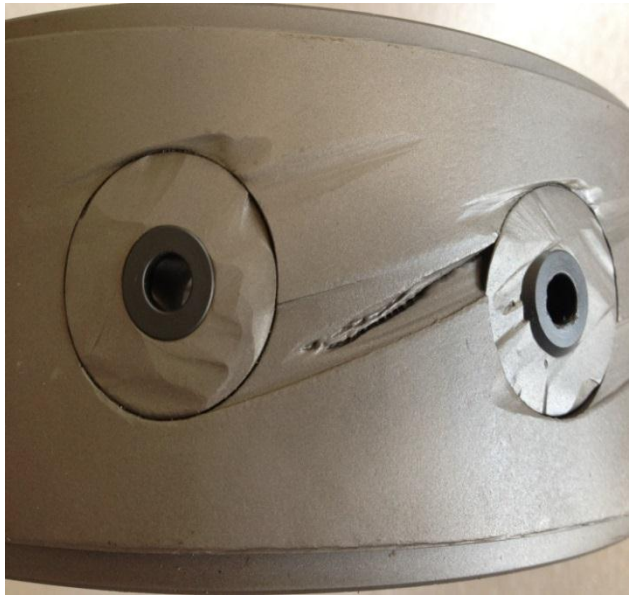
FAILURE MODES

WHAT KIND OF DAMAGE ARE WE LOOKING FOR?

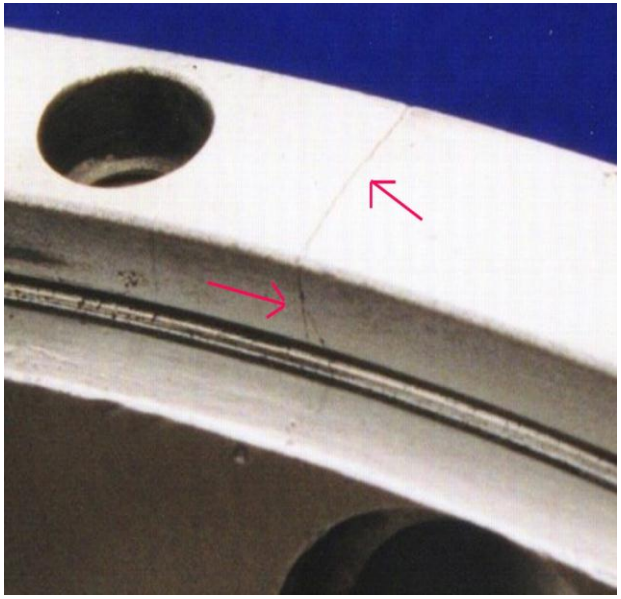
CORROSION



EROSION



CRACKING



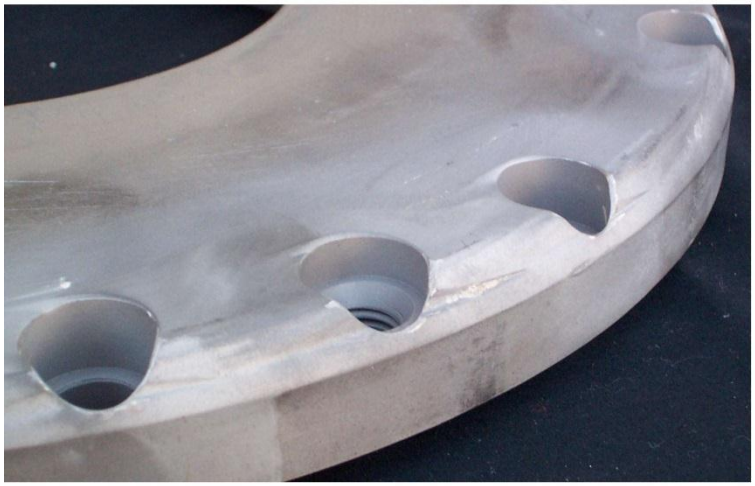
FAILURE MODE
CORROSION

Uniform, General,
Weight Loss Corrosion

Stress Corrosion Cracking

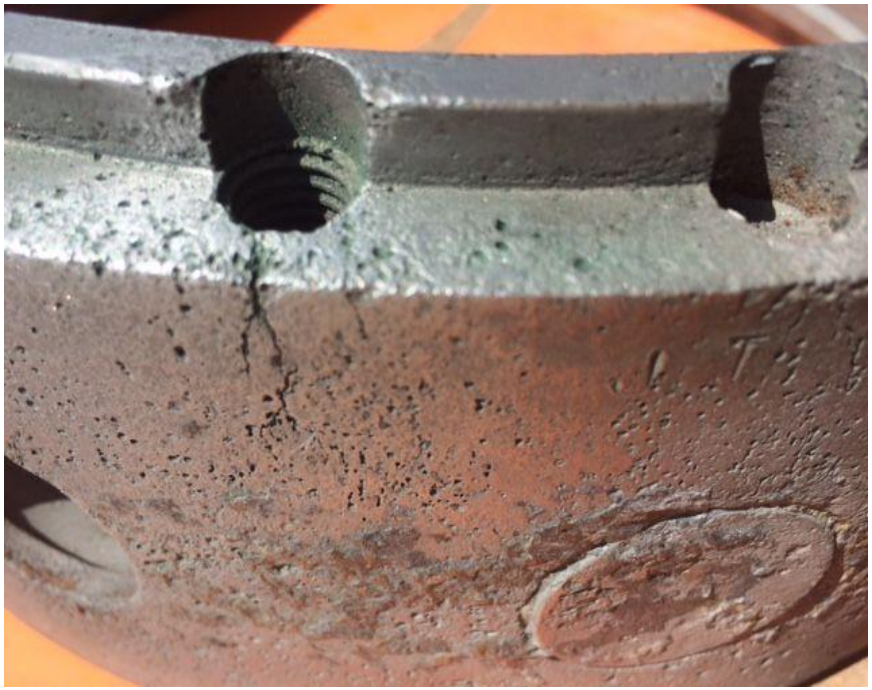
FAILURE MODE
EROSION

CONSIDER WEAR PATHS AND WEAR DEPTH

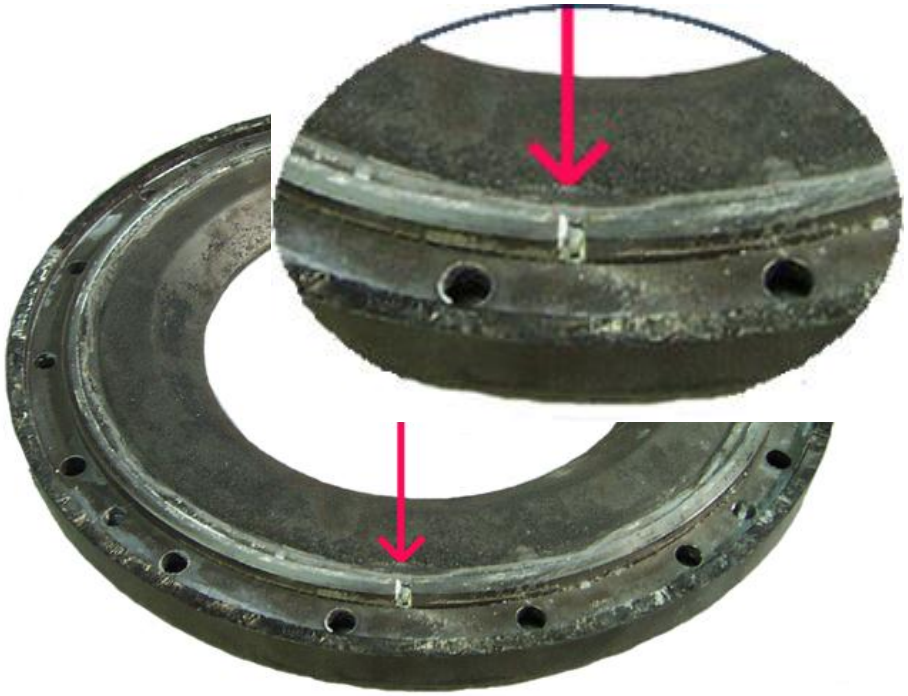


FAILURE MODE
CRACKING

STRESS CORROSION CRACKING



CRACKING FROM APPLIED LOAD



FAILURE MODE
CRACKING

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