



**ADVANCED
DIAMOND**
TECHNOLOGIES



ENHANCED ROTATING EQUIPMENT LIFE THROUGH DIAMOND

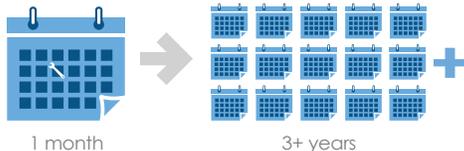
THE INTEGRATION OF ADT'S UNCD[®]

... helped an aerospace component manufacturer drastically reduce the costs associated with its reactors' mechanical seals. With previous sealing systems failing every month, the adoption of diamond seal faces enabled the replacement of a complicated and expensive double seal system with a single seal. This was not only a much simpler and less costly solution, it also extended the mean time before seal replacement from less than one month to over three years.

ADT'S DIAMOND MATERIAL ENABLED DRAMATIC COST REDUCTION AND ENHANCED RELIABILITY FOR A LARGE-SCALE MANUFACTURING PROCESS

ENHANCED EQUIPMENT LIFE

SEAL USEFUL LIFE WENT FROM
ROUGHLY 1 MONTH TO 3+ YEARS



&

ENHANCED OPERATIONAL EFFICIENCY

UNCD REDUCED A NUMBER OF
CRITICAL EXPENSES AND LIABILITIES



DIAMOND PROPERTIES LEVERAGED IN THIS STUDY:



Lubricity



Hardness



Low Friction

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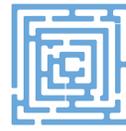
THE APPLICATION

Constant seal failure drastically reduced the operational efficiency of a major aerospace component manufacturer's processes. Before the company identified diamond as the optimal solution to these problems, a number of different double seal systems were deployed in an attempt to extend seal operating life, reduce downtime and eliminate the need for large amounts of water to act as a coolant for the double seals.

Eventually, operators turned to a single mechanical seal system utilizing ADT's UNCD diamond coating. Due to the lubricity of UNCD, the single seal system did not require an external water buffer for cooling. The new seal was more durable, able to withstand the intermittent dry running conditions present in its reactor and lasted for over three years – compared to one month with previous equipment. This combination of process optimization and equipment durability provided a quick and ongoing return on investment.

THE CHALLENGE

On a daily basis, large-scale reactor operations were challenged by:



Complex Sealing Logistics



Intermittent Dry Running



Constant Utilization



High Stress Use



Frequent Maintenance

THE SOLUTION

ENHANCED EQUIPMENT LIFE

After three years of use, not one of the single mechanical seals utilizing ADT's UNCD diamond coated seal face has failed at the manufacturer's facility, despite having over a dozen in active use. This allowed one diamond-enhanced seal to operate over 30x longer than the previously used traditional seals.

1 ADT SEAL DID THE JOB OF 30+ TRADITIONAL SEALS



1 ADT Seal



30+ Traditional Seals

A REDUCTION OF 12 REPLACEMENTS PER YEAR =



INCREASED EFFICIENCY

The maintenance costs and downtime associated with 12 seal changeovers a year, on each of the 12 facility reactors, represented a major cost to the component manufacturer – a fact only amplified by the large size of the application's rotating equipment. Each replacement represented a hazardous multi-day process, preventing production and revenue generation.

TO LEARN MORE ABOUT HOW ADT'S UNCD
has revolutionized mechanical seals in industrial applications:

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