Polyurea Coating Applications in US Wastewater Treatment Facilities _ Case Studies 2020-2024

Case Study 1: Metropolitan Water Reclamation District of Greater Chicago

Project Duration: March - June 2023

Facility Size: 1.44 billion gallons per day capacity

Challenge

The Stickney Water Reclamation Plant, one of the largest wastewater treatment facilities in the world, faced severe concrete deterioration in its primary settling tanks. Hydrogen sulfide gas had caused significant corrosion, threatening structural integrity and operational efficiency.

Solution Implementation

- Applied ISOMAT PUA 2230 to 12 primary settling tanks
- Total surface area: 120,000 square feet
- Application thickness: 80 mils
- Installation time: 45 days

Results

- 98% reduction in concrete deterioration rate
- Extended tank service life by estimated 25 years
- ROI achieved within 2.5 years through maintenance reduction
- Zero downtime due to coating failure in 18 months post-installation

Case Study 2: Orange County Sanitation District, California

Project Duration: August - October 2022

Facility Size: 320 million gallons per day capacity

Challenge

Aging clarifier tanks showed significant wear from chemical exposure and mechanical stress. Traditional epoxy coatings failed to provide adequate protection, requiring frequent repairs and causing operational disruptions.

Solution Implementation

- Complete removal of existing coating systems
- Surface preparation to SSPC-SP13 standard
- Application of polyurea primer system
- Installation of ISOMAT PUA 2230 at 100 mils thickness

Results

- Eliminated premature coating failure
- Reduced maintenance costs by 75%
- Improved operational efficiency by 15%
- Enhanced worker safety conditions

Case Study 3: Miami-Dade Water and Sewer Department

Project Duration: January - February 2024

Facility Size: 143 million gallons per day capacity

Challenge

Severe corrosion in secondary containment areas and chemical storage tanks threatened environmental compliance and worker safety. Facility needed a rapid solution with minimal operational disruption.

Solution Implementation

- Emergency rehabilitation of 4 chemical storage areas
- Installation of polyurea containment system
- Integration with existing monitoring systems
- Completion during planned maintenance window

Results

- Achieved 100% containment integrity
- Completed installation 30% faster than traditional systems
- Passed all environmental compliance inspections
- Reduced insurance premiums by 12%

Case Study 4: Seattle Public Utilities

Project Duration: May - July 2021

Facility Size: 130 million gallons per day capacity

Challenge

Extreme weather conditions and heavy rainfall created persistent leakage issues in concrete tanks. Previous coating solutions failed under hydrostatic pressure.

Solution Implementation

- Comprehensive structural assessment
- Custom polyurea formulation for cold weather application
- Installation during active operation
- Integration with existing monitoring systems

Results

- Eliminated all documented leakage points
- Withstood three major storm events without failure
- Reduced energy costs by 8% through improved insulation
- Extended maintenance intervals from 2 to 8 years

Performance Metrics Summary

Average Results Across All Case Studies

- Installation Time Reduction: 40% compared to traditional coatings
- Maintenance Cost Reduction: 65%
- Service Life Extension: 20+ years
- ROI Achievement: 2-3 years
- Environmental Compliance: 100%

Cost-Benefit Analysis

Metric	Traditional Coatings	Polyurea System
Initial Cost	$45-60/sq ft	$75-90/sq ft
Annual Maintenance	$8-12/sq ft	$2-3/sq ft
Service Life	5-7 years	20-25 years
Downtime Required	5-7 days	1-2 days
Warranty Period	1-2 years	10-15 years

Implementation Lessons Learned

1. Surface Preparation

- Thorough concrete testing is essential
- Moisture content must be below 4%
- Surface profile of CSP-3 to CSP-4 optimal

2. Application Conditions

- Temperature control critical for cure
- Humidity monitoring essential
- Ventilation requirements strict

3. Quality Control

- Continuous thickness monitoring needed
- Pull-off adhesion testing crucial
- Regular visual inspections required

Contact Information for References

Note: Contact information available upon request through IMC Distributors

*For more information about implementing similar solutions at your facility, contact IMC Distributors for a comprehensive site evaluation and custom implementation plan.