CASE STUDY

# From Reactive to Predictive

## How a Midwest Ethanol Facility Achieved $1.6M Annual Impact with 45-Minute Early Warnings

**The slurry density meter wasn't responding.** Plant operators watched as the readings remained flat despite visible changes in cook solids concentration. The lack of correlation between these key process parameters was alarming - it posed significant risks to fermentation feed quality, potentially compromising ethanol yield and batch quality. By the time they realized the measurement system had failed, several batches of fermentation feed were already at risk. The team knew they needed to catch these failures before they impacted production - they just didn't have the predictive capability to do it.

## The Cost of Reactive Maintenance

Before Golgix Early Warning, the facility was managing measurement failures reactively:

- Measurement system failures discovered after feed quality was compromised
- No advance warning of sensor degradation or sampling line blockages
- Feed preparation quality inconsistencies affecting downstream fermentation
- At **148,000+ gallons daily production** (48,000+ bushels/day), undetected measurement failures directly threatened ethanol yield

The real cost wasn't just lost gallons - it was the inability to prevent problems before they impacted the critical fermentation process.

## Proactive Intelligence, Not Just Monitoring

In May 2025, Golgix partnered with this Midwest facility - not to replace existing control systems or demand infrastructure overhauls, but to enhance what was already there with intelligence.

### The Deployment:

- **Behind-the-firewall Early Warning system:** Real-time correlation monitoring across all process areas.
- **Predictive alerts** with 45-60 minute lead time for measurement system failures.
- **Human-centric collaboration:** Alerts delivered in plain language to empower operator decision-making.

In May 2025, the Early Warning system flagged an emerging anomaly: slurry density measurements were losing correlation with cook solids concentration. This wasn't reactive monitoring - it was predictive intelligence giving the team 45-60 minutes to act before feed quality was compromised.

The automated root cause analysis immediately identified three probable causes: sampling line blockage preventing representative measurements, inadequate mixing causing stratification in cook tanks, and sensor degradation from fouling or calibration drift. Armed with this intelligence, the team moved from firefighting to structured problem-solving.

### Implementation Timeline (May-June 2025)

> **May 1-22:** Anomaly detection phase - Early Warning system identified measurement correlation issues
> **May 23-28:** Implementation period - Corrective measures, equipment maintenance, system optimization
> **May 29-June 18:** Post-implementation monitoring - Sustained performance improvements validated

Between May 23-28, the facility implemented targeted corrective measures - clearing sampling lines, optimizing mixing protocols, and servicing density sensors. The Early Warning system continued monitoring throughout, validating that the interventions were working.

## The Numbers That Matter

### The Transformation:

- Normalized Yield: **+1.08%** (+0.034 gal/bu)
- Ethanol Yield: **+4.22%** (13.86% → 14.45% w/v)
- Daily Production: **+1,658 gal/day**

#### For Plant Managers
#### Yield & Production

**+4.22%** ethanol yield improvement (13.86% → 14.45% w/v)

**+1,658** gallons/day sustained production increase

#### For CFOs
#### Financial Impact

**$1.6M** annual impact from yield improvement

**605,000** additional gallons annually

#### For Ops Directors
#### Predictive Capability

**45-60 minute** advance warning for measurement failures

Reactive maintenance transformed to proactive prevention

### Table 1: Performance Impact (Pre vs. Post-Implementation)

| Performance Metric | Baseline | Post-Implementation | Improvement |
|---|---|---|---|
| Normalized Yield (gal/bu) | 3.162 | 3.196 | **+1.08%** |
| Ethanol Yield (% w/v) | 13.86 | 14.45 | **+4.22%** |
| Daily Production (Gallons) | 145,756 | 147,414 | **+1,658 Gallons** |
| Additional Annual Output (Gallons) | | 605,000 Gallons | **+605K Gallons** |

**The Golgix Early Warning system provides comprehensive monitoring across all critical ethanol production process areas:**

- Fermentation Process Control
- Distillation Column Operations
- Contamination Management
- Slurry pH Quality control

## From the Floor

*"We used to find out about measurement problems after they'd already affected our fermentation feed. Now the Early Warning system tells us 45 minutes before a failure happens. That's the difference between preventing a problem and fixing one. This isn't AI replacing our expertise - it's AI giving us the time to use it."*

— Operations Director, Midwest Ethanol Facility

**Ready to transform reactive maintenance into predictive intelligence? Let's talk about what Early Warning can do for your facility.**
**No new infrastructure. No system overhauls. Just your team, empowered by predictive analytics.**