

### The MYTHS of ATP Testing

#### **“I already measure for microorganisms. I don’t need an ATP test.”**

- ATP monitoring fills an ADDITIONAL need – the total microbial population directly relates to required biocide.
- No other microbiological test method provides this information in such a short amount of time or in such an easy-to-use format.

#### **“We don’t profit off the use of test kits”**

- This is true but should never be the direct objective. Microbiological tests are a means to an end, and must be rolled out effectively to gain maximum utility and value!

#### **“ATP does not correlate with culture tests.”**

- This is a true statement in many cases, but it does not invalidate the usefulness of ATP
- ATP measures the total population, regardless of state, nature, and type.
- Culture tests measure only presently-viable organisms that can grow in the environment provided and see single organisms the same as clumps.
- With all this said, 2<sup>nd</sup> Generation ATP test kits correlate much better with plate counts as compared to 1<sup>st</sup> Generation techniques.

#### **“ATP does not provide useful or relevant data in my application”**

- This was true with past 1<sup>st</sup> Generation technology adapted from surface hygiene.

- Problems with previous versions of ATP testing include poor sampling technique, incomplete ATP extraction or recovery, reliance on machine readings only, and a lack of sensitivity.
- LuminUltra has spent 10+ years overcoming these deficiencies.
- The best example is the upstream oil and gas industry, where ATP was tried and did not work in the past. 2<sup>nd</sup> Generation ATP has led to a revolution of microbial testing in this field.

#### **“ATP tests measure only planktonic microorganisms; sessile microorganisms are more important.”**

- This was true for 1<sup>st</sup> Generation techniques.
- 2<sup>nd</sup> Generation ATP measurements can be done on whatever sample you want, with kits designed to measure sessile samples so long as they can be retrieved.
- ATP is a proven, accurate tool for measuring/confirming deposit activity in addition to water alone.

#### **“ATP methods are prone to interferences.”**

- Not anymore with 2<sup>nd</sup> Generation ATP methods from LuminUltra! Complete removal of interferences is achieved through filtration and/or dilution as well as several built-in features in our reagent system to negate inhibitory sample characteristics.

#### **“ATP Measurements cost too much, and 2<sup>nd</sup> Generation ATP is more expensive than 1<sup>st</sup> Generation.”**

- ATP methods are very much in line with traditional measurements when you factor in all materials and manpower.

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- If you factor in time savings and effective decision making, ATP methods can be substantially cheaper!
- In general, applications where 1<sup>st</sup> Generation ATP methods are used need two tests to obtain accurate information, whereas 2<sup>nd</sup> Generation requires only one test. Given that 2<sup>nd</sup> Generation tests are generally double the cost, the net effect is cost neutral.
- Furthermore, with 2<sup>nd</sup> Generation tests you get accurate results every time. The value per measurement ratio is much higher than with 1<sup>st</sup> Generation methods!

## **“2<sup>nd</sup> Generation ATP methods are more labor-intensive than 1<sup>st</sup> Generation methods.”**

- What’s the difference between a 1 minute test versus 5 minutes when you’re reducing feedback from 24+ hours?
- ATP tests are actually easier than most plate counts, and provide a definitive number that does not require physical counting or a subjective estimation on the behalf of the user.

## **“All ATP tests are the same.”**

- False. See our ‘2<sup>nd</sup> Generation vs. 1<sup>st</sup> Generation ATP’ whitepaper.
- 1<sup>st</sup> Generation methods have been around for 40+ years and are designed for semi-quantitative applications such as food processing and medical hygiene.
- 2<sup>nd</sup> Generation ATP testing from LuminUltra is the only commercial product that provides fully quantitative microbiological tests for any type of fluid.

## **“Switching test kits means I need to switch luminometers, meaning a new capital investment.”**

- False. 2<sup>nd</sup> Generation ATP methods have been designed to be luminometer-independent and have been proven to work in most any photomultiplier-equipped luminometer.

## **“Switching test kits means I need to establish a new RLU interpretation scale.”**

- 2<sup>nd</sup> Generation ATP test kits report true ATP concentration which translates across the board.

No more relative comparisons, it is now all on the same level.

## **“I want to keep my 1<sup>st</sup> Generation ATP testing platform, so having 2 ATP systems will be confusing.”**

- Not if the proper education is provided!
- Once you invest in 2<sup>nd</sup> Generation ATP, you won’t want or need to use 1<sup>st</sup> Generation!

## **“There is no benefit to switching from 1<sup>st</sup> Generation to 2<sup>nd</sup> Generation ATP.”**

- Benefits are many and include:
  - (Most often) 1 test rather than 2 tests – same labor, same price, better results.
  - Better sensitivity – see problems evolving faster.
  - Reliable results – no issues with free > total ATP.
  - Communicate results similar to CFU/mL via conversion of results using UltraCheck™ 1 ATP standard; no more RLU’s.
- In industrial applications, it has been found that most problematic systems start with problematic raw water supply. 1<sup>st</sup> Generation methods often lack the sensitivity to measure biomass in raw water supply. Hence, with more flexible and sensitive 2<sup>nd</sup> Generation methods, you can distinguish between biomass buildup in a cooling system versus seeding from the raw water.

## **The TRUTHS about ATP Testing**

### **“With a properly-designed ATP test, total microbial load is measured.”**

- Plate counts will typically underestimate or completely miss troublemakers (e.g. biofilm-forming organisms).
- Deposit control programs target the total microbiological population. Therefore, a measure of the total population provides confirmation of effective treatment.
- This information is useful for all biocides, whether the residual can be measured or not.

### **“With ATP tests, feedback is nearly real-time.”**

- Culture-based tests provide results within days of initial preparation.
- ATP measurements provide results in minutes.
- This opens up a whole new world of flexibility since microbiological surveys can be completed within hours. Problems can be detected or confirmed quickly so that they can be dealt with immediately rather than waiting several days for culture test results to be known.

### **“The ATP Measurement is Sensitive.”**

- Biological problems are best controlled in the early stages of growth.
- Most microorganisms present in a given sample cannot be cultured, but ARE detectable via ATP measurements.
- LuminUltra’s ATP measurement kits are designed to detect the lowest level of microbial activity on the market.

### **“The ATP test is capable of measuring microbial Quantity AND Quality.”**

- LuminUltra’s big breakthrough: Measuring biological stress
- By accurately accounting for extra-cellular ATP with the dATP measurement, LuminUltra has discovered that the ratio of extra-cellular to total ATP is a fundamental indicator of biomass health.
- This new tool allows operators to optimize biocide effectiveness in deposit control or nutrient dosing in wastewater treatment.