

# BM-Advance2 Dual Respirometer

## Biological Wastewater Health-Check, Toxicity Studies and Pilot Plant Services

Enva can now offer a State-Of-The-Art approach to diagnosing the root cause of performance problems in Biological Activated Sludge Systems.

The activated sludge process is a means of treating municipal or industrial wastewater, using aeration and a micro-organism biomass, to remove biodegradable organic compounds.

Many factors affect the performance of an activated sludge process, for example;

- Nature of the substrate to be treated
- Biodegradability of substrate
- Toxicity of substrate
- Consistency of influent
- Food to Micro-organism Ratio (F:M)
- Presence of Nutrients such as Nitrogen, Phosphorus and trace elements
- Operating parameters, e.g. Dissolved Oxygen, pH, Temperature
- Plant and Equipment capacity and design

In most plants there is ongoing monitoring of key parameters such as DO, pH, COD/BOD, N, P etc through various stages of the process. This is important as it provides an overview of the fundamentals of the operation.

**However, in many cases the ‘fundamentals’ appear correct and yet the plant is not performing as it should. Why is this so?**

We have found that this is often down to an issue with toxicity or biodegradability of a particular component of the wastewater. Furthermore, particular micro-organisms may be inhibited more than others, for example Nitrifying bacteria.

Enva offer a reliable diagnostic service for determining the root causes of inhibition within a biological wastewater process.

### Introducing our BM-Advance2 dual respirometer

We have worked in partnership with Surcis-SL, based in Barcelona, to bring this service to the Irish market. Surcis-SL are specialists in the field of respirometry and biological studies in wastewater treatment. Their knowledge has seen them develop a top-quality range of respirometry equipment which accurately and scientifically measures the Oxygen Uptake Rate of a sample under a range of conditions.

Utilising this technique, we can see whether the presence of certain waste streams or compounds reduces the Oxygen Uptake Rate. We can also see what portion of the organics in the wastewater are “Readily Biodegradable” versus “Slowly Biodegradable”.



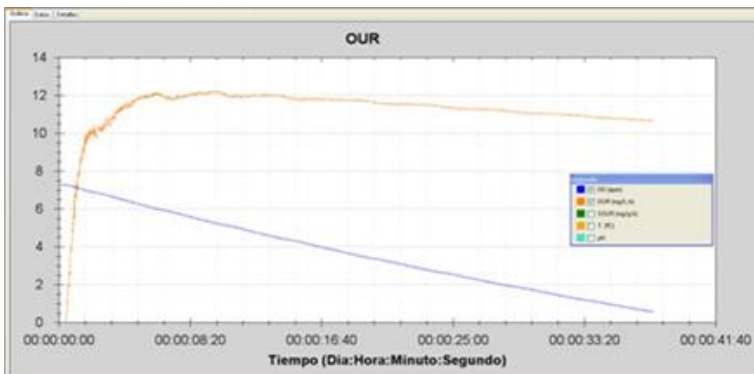
Traditional studies of this nature could only focus on a very narrow area, such as nitrification inhibition in one specific set of conditions. The BM-Advance2 allows for the study of multiple issues across multiple operating conditions – all in a highly controlled and verifiable environment – bringing Pilot Plant Studies to a new level.

**Applications can include:**

- Identifying components of wastewater which cause inhibition or poor performance
- Assessing the biodegradability of wastewater
- Understanding the effects of varying operating parameters, such as pH, Temperature, DO, Organic loading and Nutrient levels
- Assessing the oxygen requirements under differing conditions, identifying opportunities for energy savings
- Optimising conditions for Nitrification and Denitrification
- Assessing the value of bio-augmentation and supplementation
- Helping you to achieve compliance through better knowledge of your processes

The BM-Advance 2 is an excellent piece of equipment and augments our already significant laboratory capabilities for wastewater. However, like any equipment it is only as good as the information it is given, the quality of the samples and the interpretation of the results.

Our experience in wastewater treatment means that we can work with the customer on an individual case-by-case basis. We can look at all of the factors that influence the performance of your wastewater treatment plant, helping to solve ‘Macro’ issues such as loading, nutrients, key operating parameters and now drilling into the ‘Micro’ issues of Respirometry, Inhibition and Toxicity.



Time	OUR (mg/L.h)	SOUR (mg/g.h)
00:00:53	4,08	2,27
00:00:54	4,67	2,59
00:00:55	4,58	2,54
00:00:56	4,5	2,5
00:00:57	4,42	2,46
00:00:58	4,97	2,76
00:00:59	4,88	2,71
00:01:00	4,8	2,67
00:01:01	4,72	2,62
00:01:02	5,23	2,91
00:01:03	5,14	2,86

**Our work with you would include:**

- Initial assessment an overview of your wastewater process, the waste streams that feed the plant, the current results and known issues that you wish to resolve
- Selection of ‘suspect’ wastewater streams which may be causing issues for the micro-organism population
- Agree a sampling and analysis programme with you to ensure that a representative study is carried out
- Daily collection of samples as required
- Carry out the required Respirometry and other microbiological studies in our laboratory
- Regular updates on progress
- Draft report and discussion with you on findings
- Final Report with full detail on all results, interpretation and conclusions

We are also confident that any issues that are identified can be resolved, and we can work with you to identify any changes to your plant or process which would improve performance. We can provide proven technologies and products for onsite treatment, as well as an array of offsite treatment options for problematic streams.

**Further information**

<https://enva.com/water-services/waste-water/advanced-respirometry>

Please contact us to discuss your requirements, or to request further information at [marketing@enva.com](mailto:marketing@enva.com)