



## RBP test result validity based on duplicate measurements

### Use of RBP test as specified in BSI PAS 110

The residual biogas potential (RBP) test is used under BCS to assess the stability of digestates, and an important criterion for operators to demonstrate resource recovery. Digestate samples are tested in triplicate in line with the BSI PAS110 referenced method by REAL approved laboratories. Alongside test samples (mixed with an inoculum), controls are also run consisting of the inoculum on its own and a positive control containing inoculum plus cellulose substrate. These controls are also systematically set up in triplicate in line with the method.

In most cases, the average of the triplicate measurements will best represent the activity (or stability) of the digestate sample; however, on occasion an individual replicate may behave differently from the other two during the test. The difference may be assumed due to the biological nature of the 'system' or result from a technical issue relating to an individual vessel. In the latter case, the issue will have been identified by the laboratory during or at the end of the 28-day test.

By setting up samples and controls in triplicate, the laboratory can use the data generated to report a result that gives the truest measure of the digestate sample stability. This result may be based on duplicate readings, discounting the third replicate for one of the above reasons. Results have been accepted under the scheme since its inception based on duplicate measurements; however, in BSI PAS110:2014 annex A, Table A.1 it states:

'Assessment of RBP test pass or fail shall use the average of the triplicate RBP values that each sample test generates'

### The BCS position

Following a recent operator led challenge of an RBP test failure based on duplicate measurement (due to an identified technical issue), REAL has held discussions with certification bodies and approved laboratories. REAL's conclusion of these discussions is that the wording in the above sentence is confusing and its inclusion/wording in BSI PAS 110 should be reconsidered at the next review.

In the meantime, REAL's interpretation of this sentence is that 'assessment' of the triplicate values is not the same as 'reporting' based on triplicate values and, that the assessment is carried out by the laboratory prior to reporting. Therefore, REAL supports the above approach whereby a laboratory sets up an RBP test in triplicate and assesses the performance of individual replicates before deriving an average RBP value and assigning 'pass' or 'fail'.

REAL recognises an alternative interpretation of this sentence is that all RBP results must be based on triplicate measurements to be valid. However, REAL does not consider this interpretation is in the best interest of all operators or the scheme at this current time. Adopting this interpretation would mean

that some results currently accepted as 'pass' would become invalid resulting in time and cost implications for operators.

#### **Future review**

BSI PAS 110:2014 may be under review again in the near future and if a decision is taken to revise the standard, this will provide a timely opportunity to consider the statement in PAS 110 in more detail and clarify its meaning.