CEN

WORKSHOP

AGREEMENT

CWA 15897

November 2008

ICS 13.060.30

English version

Submerged Membrane Bioreactor (MBR) Technology

This CEN Workshop Agreement has been drafted and approved by a Workshop of representatives of interested parties, the constitution of which is indicated in the foreword of this Workshop Agreement.

The formal process followed by the Workshop in the development of this Workshop Agreement has been endorsed by the National Members of CEN but neither the National Members of CEN nor the CEN Management Centre can be held accountable for the technical content of this CEN Workshop Agreement or possible conflicts with standards or legislation.

This CEN Workshop Agreement can in no way be held as being an official standard developed by CEN and its Members.

This CEN Workshop Agreement is publicly available as a reference document from the CEN Members National Standard Bodies.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No.:CWA 15897:2008 E

Contents

Page

Foreword

This CWA 15897:2008 was prepared by the CEN Workshop 34 – 'Submerged' Membrane Bioreactor (MBR) technology.

The production of this CWA (CEN Workshop Agreement) was formally accepted at the Workshop's kick-off meeting on 06 June 2007 in Berlin.

This CWA is based on a research of the European Commission within the scope of its 6th Framework Program: AMEDEUS (accelerate membrane development for urban sewage purification).

As a result the attending interested parties of the MBR standardisation workshop on 24 November 2006 confirmed the standardisation potential and needs of the membrane technology in Europe and especially to develop guidelines or standards on interchangeable filtration modules from both sides of the market. End users have a focus on costs and guaranties. Most market players expect that interchangeable modules will increase the willingness of decision makers to invest in MBR technology.

The final review/endorsement round for this CWA was successfully closed on 14 April 2008. The final text of this CWA was submitted to CEN for publication on 25 June 2008.

This CEN Workshop Agreement is publicly available as a reference document from the National Members of CEN: AENOR, AFNOR, ASRO, BDS, BSI, CSNI, CYS, DIN, DS, ELOT, EVS, IBN, IPQ, IST, LVS, LST, MSA, MSZT, NEN, NSAI, ON, PKN, SEE, SIS, SIST, SFS, SN, SNV, SUTN and UNI.

Comments or suggestions from the users of the CEN Workshop Agreement are welcome and should be addressed to the CEN Management Centre

The following companies/institutions were actively involved in the establishment of this CWA:

— University of Kassel, Germany

— GE W&PT Canada-Zenon Membrane Solutions

— RWTH Aachen, IVT, Germany

— Waternet, the Netherlands

— Kubota Membrane Europe, United Kingdom

— Martin Systems AG, Germany

— Aquantis GmbH, Germany

— Toray Membrane Europe AG, Switzerland

— Degrémont, France

— Rotreat Abwasserreinigung GmbH & Co. KG, Austria

— For the Secretariat: DIN e.V., Germany

Introduction

This document deals with custom designed MBR systems for more than 500 PT. It became clear that it is not possible to have interchangeable membrane modules without considering a complete system. So this led to the conclusion that this document deals with the entire membrane system rather than the membrane modules alone.

It was realised that today's market is a growing one with fast developments in membrane technology. Standards might be too early and may hamper the technological development. So it was decided at this stage start a prestandardisation process, creating a basic document for submerged MBR technology by means of a CEN workshop agreement (CWA). Maybe in a few years time standards will be essential and probably even needed for further growth of the market.

Regarding interchangeability of MBR systems this document especially focuses on separate membrane tanks as there is a tendency that large MBR systems (more than 10 000 m3/d) are designed with separated membrane tanks.

Although there are differences between hollow fibre and flat sheet membrane manufacturers' designs, it is believed that there is no need for separate guidelines because these are focussed on membrane tanks. Furthermore it is clear that interchangeability between hollow fibre membrane systems is not so easy and the same is true for flat sheet membrane systems. Thus, producing two sets of guidelines would be of no real benefit to interchangeability.

1 Scope

This guidance document defines terms commonly used in the field of membrane bioreactor technology.

The document aims at submerged MBR systems for the treatment of municipal wastewater with MBR Separate Systems and MBR Integrated Systems.

This document establishes general principles for MBR filtration systems interchangeability between different MBR filtration systems from different manufacturers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1085, *Wastewater treatment — Vocabulary*

EN 12255-1, *Wastewater treatment plants — Part 1: General construction principles*

EN 12255-6, *Wastewater treatment plants — Part 6: Activated sludge processes*

EN 12255-10, *Wastewater treatment plants — Part 10: Safety principles*

EN 12255-11, *Wastewater treatment plants — Part 11: General data required*

EN 12255-13, *Wastewater treatment plants — Part 13: Chemical treatment - Treatment of wastewater by precipitation/flocculation*

3 Terms and definitions

For the purposes of this guidance document, the terms and definitions given in EN 1085 will apply. In addition, the following terms and definitions specific to membrane bioreactor systems will apply.

NOTE some manufacturers may use different terms for their products, but nevertheless the following terms and definitions are used in this document.

3.1
backflush
see 3.3

3.2
backpulse
see 3.3

3.3
backwashing
backflush
backpulse
short-term reversal of the flow direction through the membrane in intervals to remove the particles accumulated during the filtration process (covering layer), usually with permeate