

GERMAN
DWA Rules and Standards

Advisory Leaflet DWA-M 180E
**Framework for Planning of Real Time Control
of Sewer Networks**

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Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V.
German Association for Water, Wastewater and Waste
Theodor-Heuss-Allee 17 · 53773 Hennef · Germany
Tel.: +49 2242 872-333 · Fax: +49 2242 872-100
E-Mail: kundenzentrum@dwa.de · Internet: www.dwa.de

The German Association for Water, Wastewater and Waste (DWA) is the speaker for all interdisciplinary water matters and intensively involved with the development of reliable and sustainable water management. Being a politically and economically independent organisation it operates specifically in the areas of water management, wastewater, waste and soil protection.

In Europe the DWA is the association in this field with the greatest number of members and, due to its specialist competence it holds a special position with regard to standardisation, professional training and information of the public. The members, approximately 14,000 represent specialists and managers from municipalities, universities, engineer offices, authorities and businesses.

The focal point of its activities lies in the elaboration and updating of uniform technical regulations and standards and as well as assisting in the preparation of technical standard specifications at the national and international levels. This however, does not only include technical-scientific subjects but also economical and legal concerns of environmental protection and protection of bodies of waters.

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Foreword

Thanks to high investments in runoff and sewage treatment facilities, water quality of watercourses has clearly improved over the last few decades. However, further measures for the reduction of pollution of watercourses are expected especially owing to the European Water Framework Directive based integrative and preferably emission oriented approach. It will be a requirement for the operators of drainage systems to further reduce watercourse pollution and to optimise the utilisation of existing resources considering operational and economic aspects.

For implementation of these tasks, discharge control techniques (commonly known as real time control) are available. Already today, these techniques are used to comply with legislation for sewer network monitoring as well as to meet the requirements of EN 752. Nowadays, controlled processes are evident in public and private activities (e. g. traffic dependent control of light signal systems, temperature dependent heating and air condition control, etc.) which, based on decades of experience with instrumentation and control techniques in the sewage sector, are more and more applicable in the area of sewer network operation, as well. Also a possible need for a certification of the network real time control system would, assuming that all necessary proofs are provided, not be different to any other technical systems.

This Advisory Leaflet contributes to the future need to include real time control mechanisms as a possible option to solve drainage problems. The important issues and steps are described to inform planners, operators and authorities about these techniques and to guide them in application.

Authors

This Advisory Leaflet was created by the DWA Working Group ES-2.4 "Integral Real Time Control of Urban Drainage Systems" in the ES-2 committee "System Related Planning".

The DWA Working Group ES-2.4 "Discharge Regulation in Sewer Networks" includes the following members:

BROLL-BRICKHARDT, Jörg	Dipl.-Ing., Bremen (Deputy spokesman)
ERBE, Volker	Dr.-Ing., Wuppertal
GATKE, Dietmar	Dipl.-Ing., Bremen
HAAS, Ulrich	Dipl.-Ing., Stuttgart
KREUTZ, Dietmar	Dipl.-Ing., Mönchengladbach
MESSMER, Albert	Dr.-Ing., Seeshaupt
SCHEER, Martina	Dipl.-Ing., Sonthofen
SCHÜTZE, Manfred	Dr., Barleben
SCHUMACHER, Bert	Dipl.-Ing. Reg. BD, Detmold
WEILANDT, Matthias	Dipl.-Ing., Bochum
WEYAND, Michael	Dr.-Ing., Essen (Spokesman)

Project organiser within the DWA Head Office:

BERGER, Christian	Dipl.-Ing., Hennef
	Department Wastewater and Water Protection

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Publisher's note: Program "PASST" (Planning aid for flow control) is not available in English. The German version of "PASST" is not part of the English version of Advisory Leaflet DWA-M 180E. An English language description and summary of PASST is given by SCHÜTZE et al., 2004.

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User Notes

This Advisory Leaflet is the result of honorary, technical-scientific/economic collaboration which has been achieved in accordance with the principles applicable therefore (statutes, rules of procedure of the ATV-DVWK and the Standard ATV-DVWK-A 400). For this, according to precedents, there exists an actual presumption that it is textually and technically correct.

The application of this Advisory Leaflet is open to everyone. However, an obligation for application can arise from legal or administrative regulations, a contract or other legal reason.

This Advisory Leaflet is an important, however, not the sole source of information for correct solutions. With its application no one avoids responsibility for his own action or for the correct application in specific cases; this applies in particular for the correct handling of the margins described in the Advisory Leaflet.

Introduction

Today, in many cases drainage systems and treatment plants face multiple and simultaneous demands to avoid overflow, increase utilisation of the sewer network, lower drainage costs and increase operational stability and capacity of the treatment plant (as a result of flow fluctuations or duration of combined wastewater and stormwater inflow). Realising these goals is increasingly difficult due to rising requirements. Also there is hardly an existing water management system in which the discrepancies between design and operational conditions are as high as in a combined sewer system. For more than 90 % of the time, combined sewers are loaded with less than 10 % of their transport capacity.

In addition, sewer networks and watercourses are closely interconnected through discharge structures. Regulations with regard to these interfaces and their discharge into watercourses are expected to change in the light of the upcoming introduction of the European Water Framework Directive with its combined approach for consideration of emissions and immissions. This includes turning away from local point loading approaches (discharge points) while favouring linear considerations (watercourse sections). This induces not only modified requirements in both qualitative and also especially quantitative aspects for discharge points in each single case, but demands for an additional and coordinated conceptual approach for the whole system including catchment area, sewer network, treatment plant and watercourse.

In the light of these aspects, a real time control tool enables the user to utilise the additional benefits resulting from the discrepancy between planning and operational conditions and to take account of some conflicting dewatering, treatment and conservation requirements in an appropriate way.

1 Scope

1.1 Aims

This Advisory Leaflet introduces the basic aspects of real time control to potential users and presents a sound level of knowledge to those planners, operators and administrations involved in the development of real time control systems. The Advisory Leaflet aims to achieve the use of real time control as a potential alternative on a regular basis in future planning of drainage schemes. This includes simple local control systems as well as complex structured interconnected control systems. The necessary steps along the planning process are shown and explained. Because of the structured layout of this Advisory Leaflet it is possible that some technically interconnected aspects are split between the different sections depending on their importance in the planning process.