DESDAF USER INFORMATION

**Executive Summary:**

The software package DESDAF provides a design and analysis tool for packed saturators used in dissolved air flotation (DAF).  With only a few inputs from the user, the program can either design a new saturation system from scratch or analyse an existing saturator in terms of its air transfer efficiency.  The end result in both cases is the amount of air supplied by the saturator to the flotation unit.

The design of a packed saturator is based on a model for predicting the air transfer efficiency in the packing layer of that saturator.  The model was developed and experimentally verified by the RAU Water Research Group.  It assumes the Lewis-Whitman two-film theory as well as concentration driven diffusion and uses the Onda correlations to estimate the mass transfer coefficient of air into water.  The analysis component of DESDAF incorporates test and calculation procedures, which were also developed by the RAU Water Research Group in an attempt to standardise these methods.  Both, the design and analysis part of the program, take factors into account, which have hitherto been ignored or been used incorrectly, such as the saturator air composition and the oxygen saturation level of raw water and recycle.

DESDAF furthermore includes a comprehensive help component, which not only serves as support tool for the design and analysis part but can also be read as stand-alone documentation.  It provides comprehensive background information on air dissolution and packed saturator systems and incorporates the latest knowledge on this subject.

The scope of DESDAF and DESDAF’s target groups are addressed in Chapter 1 of this report.  Chapter 2 gives a brief summary of the fundamentals of air dissolution, which form the basis of the program.  Chapter 3, 4 and 5 represent the User’s Manual with instructions for software installation and of how to use the program.  Explicit examples are given for all three components of the program (design, analysis and help).  A print-out of all the help screens can be found in Appendix A.  One of DESDAF’s program options is the analysis of an existing saturator from field measurements.  A step-by-step description of the procedure for measuring the saturator efficiency is appended to Section 7.

**Installation Instructions:**

Unzip the files ‘DesDaf.zip’ and ‘Figures.zip’ and extract the zipped files into the folder, under which you wish to install the program.

Let’s assume the folder is called ‘DesDaf’.

In the folder (‘DesDaf’), in which you have extracted the files, create a new folder called ‘Figures’.

Move the four Bitmap Image files (‘DAF’, ‘Henry’, ‘MeasMeth’, ‘PackSat’) into the folder ‘Figures’.

You should now see the following files/folders under ‘DesDaf’: -

               i)      Figures (Folder)

             ii)      DesDaf Help      (Help File)

            iii)      DesDaf\_10        (Application)

Double-click on DesDaf\_10 and the program will start.