SOLID - LIQUID SEPARATION EXPERT

SOFTWARE • COURSES • CONSULTANCY

Software

For Filters, Filtering Centrifuges and Hydrocyclones
Design, Performance Simulation and Optimization
Analysis of Test Data and Suspension Characterization.


FILOS


CENTRISTAR


FILASTRA


CYCLONPLUS

Courses

One, two or three-days course as video conference
or at your place. Vivid Presentations. Learn in short time
how to effectively face Solid-Liquid Separation tasks.

Consultancy

Professional and objective Support for any Solid-Liquid Separation
Problem. Maximal Benefit at Low Costs.

Updated Version 2022

By Prof. Dr. Ioannis Nicolaou
NIKIFOS President

Courses in Solid-Liquid Separation

One, two or three - days course as video conference or at your place

Our slogan is: **"Understand Solid-Liquid Separation and learn how to effectively face Solid-Liquid Separation problems".** The long teaching experience, the practice oriented approach with examples and the vivid presentations of Prof. Nicolaou gives the guarantee for a highly effective course.

Overview of the Course Content (valid for the 3-days course)

Introduction to Solid-Liquid Separation • Suspension Characterization • Suspension Pre-Treatment • Sedimentation Theory • Sedimentation Apparatuses • Introduction to Filtration • An overview of diverse Filter Apparatuses • An overview of diverse Filter Centrifuges • Filter Media • Theory of cake forming filtration • A worked out example for the calculation of the cake formation step in Filters and in Filter Centrifuges • Cake Washing in Filters and Filter Centrifuges, theory and practical aspects • Cake Deliquoring in Filters and Filter Centrifuges, theory and practical aspects • Calculation of a Nutsche Filter and a Filter Centrifuge • Selection criteria for Solid-Liquid Separation equipment.

Consultancy in Solid-Liquid Separation Projects

We offer you our support for any Solid-Liquid Separation project. Prof. Dr. Nicolaou, with his more than 35-years focused research and practice experience on this field, is a guarantee for an objective, cost saving, effective and quick solution of your Solid-Liquid Separation problem.

We do our Best so that you have maximal benefit at low costs!

Software for Solid-Liquid Separation

Solid Liquid Separation made Easy and Interesting, Professional Support

Powerful, practice oriented, user friendly and reliable Solid-Liquid Separation Software based on the up to date Filtration and Separation theory and on minimal experimental effort.

- **FILOS**
- **CENTRISTAR**
- **FILASTRA**
- **CYCLONPLUS**

Scale-up, Design, Performance Simulation & Optimization of diverse Solid-Liquid Separation Apparatuses:

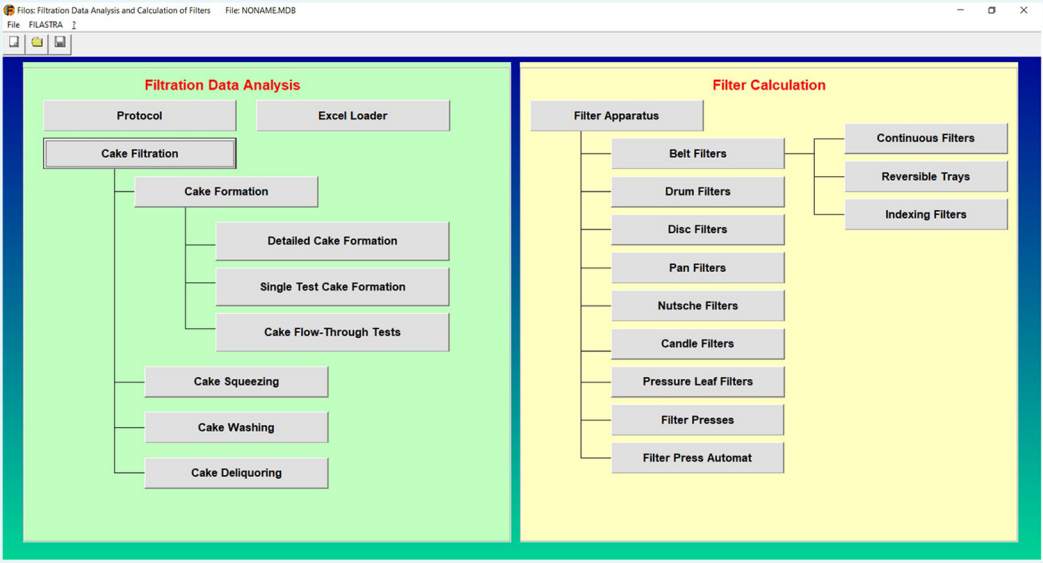
- Belt Filters, Drum Filters, Pan and Disc Filters, Continuous Pressure Filters, Nutsche Filters, Candle and Pressure Leaf Filters, Filter Presses and Filter Press Automats etc.
- Filter Centrifuges (Horizontal and Vertical Peeler Centrifuges, Vertical Basket Centrifuges, Inverting Filter Centrifuges etc.).
- Hydrocyclones.

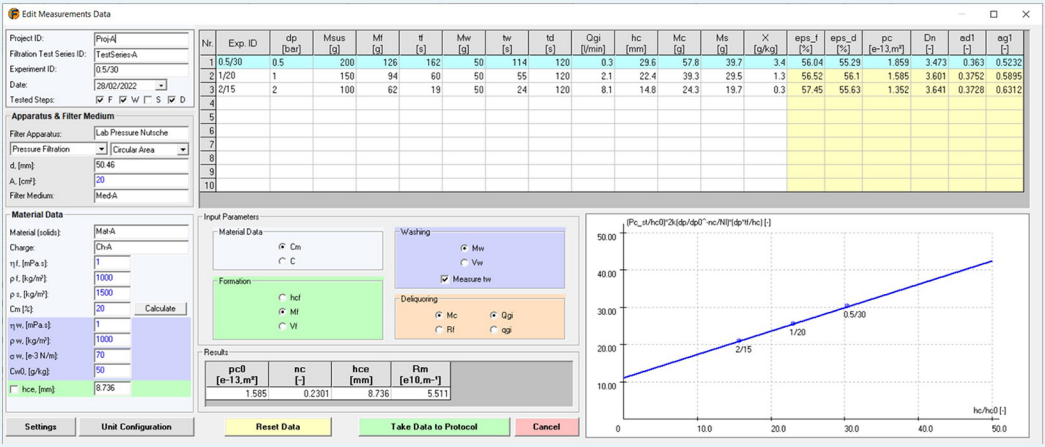
Test Data Analysis by using practice oriented and physically based mathematical models

- Determination of the necessary material parameters for the simulation of Solid-Liquid Separation Apparatuses.
- Characterization of the filtration and separation behavior of the suspension.
- Analysis of test data and judgment of the quality of the tests.
- Saving of all simulations, test data and analysis results in an "intelligent" database in form of tables and graphs.

FILOS - Software

Documentation and Analysis of Filtration Test Data
Performance Calculation & Optimal Design of Continuous and Batch Filter Apparatuses



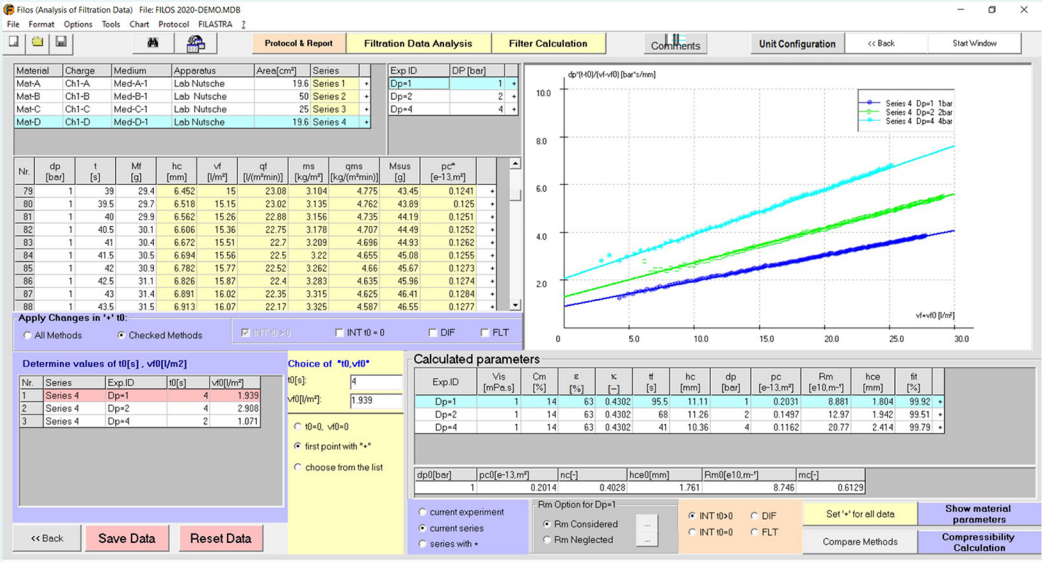


Novel and user- friendly FILOS modules for entering, analyzing and saving of Test Data in Laboratory, Pilot & Industrial scale with judgment/correction of the quality of the measured data and reliable determination of all efficiency parameters, necessary for the performance calculation of filter apparatuses. Consideration not only of the cake formation step but also of the optional steps: washing, squeezing and deliquoring of the filter cake.

FILOS - Software

Documentation and Analysis of Filtration Test Data
Performance Calculation & Optimal Design of Continuous and Batch Filter Apparatuses

Powerful Modules for Analysis of Cake Formation, Cake Washing, Cake Deliquoring and Cake Squeezing Test Data



- Reliable and user-friendly determination of all material parameters (efficiency parameters), which have to be obtained from the analysis of test data and which are necessary for the performance simulation of continuous and batch filter apparatuses. These are:
  - Cake porosity, cake permeability/resistance, cake compressibility, filter medium resistance.
  - Efficiency parameters for cake washing, cake deliquoring and cake squeezing.

- Reliability of the material efficiency parameters due to the theory based plotting of the measured data and the user-friendly detection and correction or exclusion of wrong measurements.

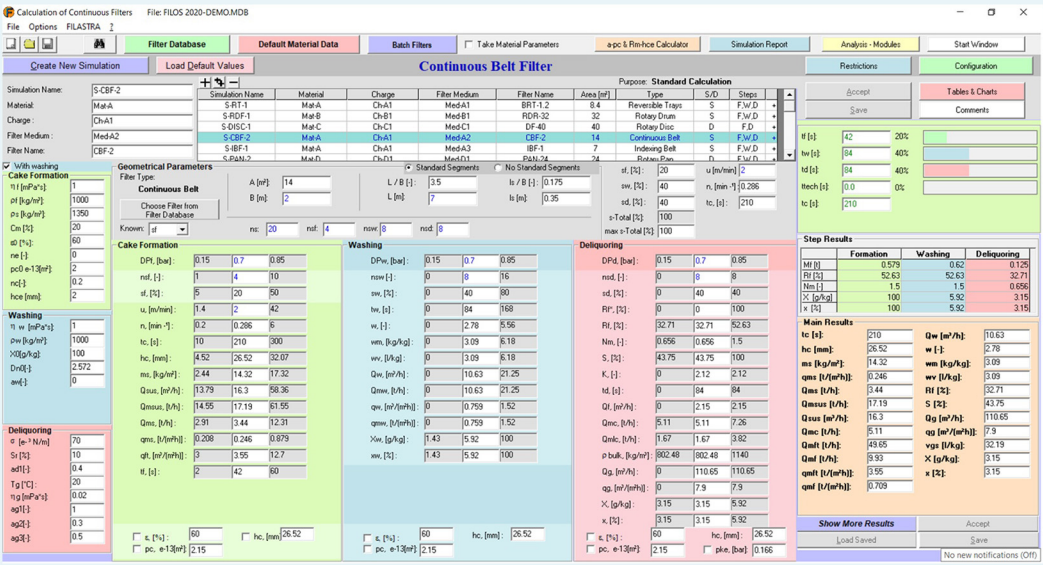
- Saving of all measured and analysis results data in an intelligent database in form of tables & diagrams and comparison of the filterability of different suspensions.

FILOS - Software

Documentation and Analysis of Filtration Test Data
Performance Calculation & Optimal Design of Continuous and Batch Filter Apparatuses

Continuous Filters: Belt Filters, Drum Filters, Pan and Disc Filters

Batch Filters: Nutsche Filters, Candle and Pressure Leaf Filters, Filter Presses and Filter Press Automats



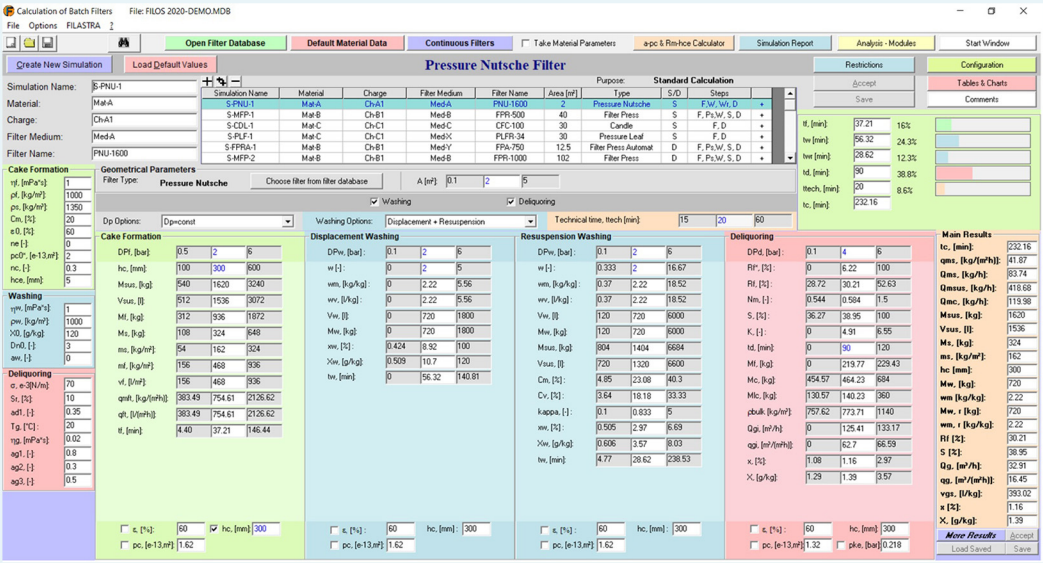
Standard Calculation: Calculation of the filter performance for a given suspension and given filter and filter setting parameters.
Filter Design: Calculation of the needed filter area when the filter performance is given.

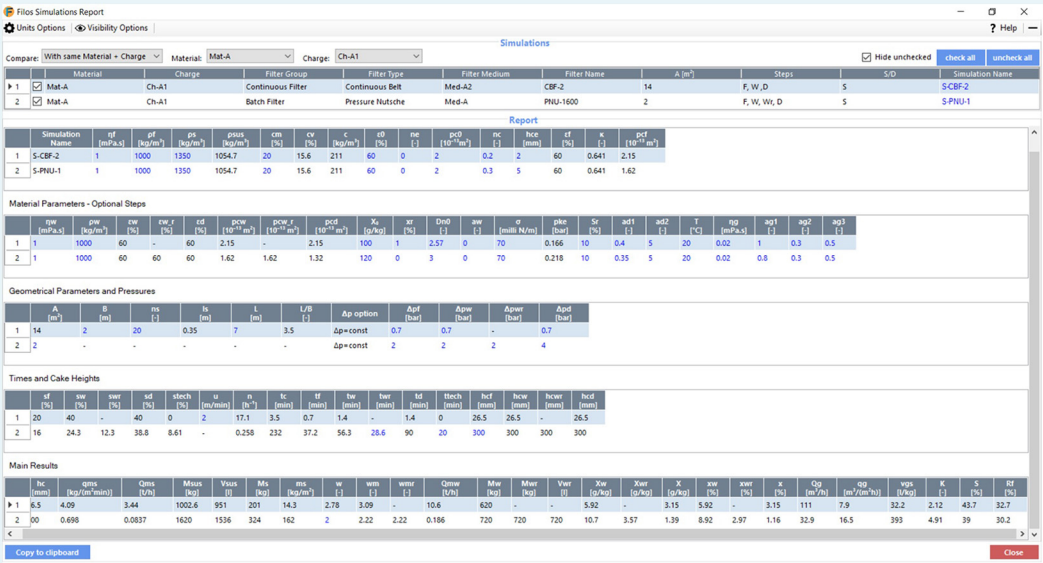
- Material parameters can be automatically loaded as inputs and analysis results of the FILOS Analysis modules or default data can be loaded. Filter geometrical data are saved in a database and can be loaded to the *Simulation* window.
- Every Step: Cake Formation, Cake Washing, Cake Deliquoring has its own column.
- Highest flexibility regarding input and calculated parameters.
- The *Tables & Charts* module enables in form of tables and diagrams the study of the influence of geometrical and setting parameters on the filter performance. All tables and graphs can be exported and used for the Project report or for further data processing.

FILOS - Software

Documentation and Analysis of Filtration Test Data

Performance Calculation & Optimal Design of Continuous and Batch Filter Apparatuses





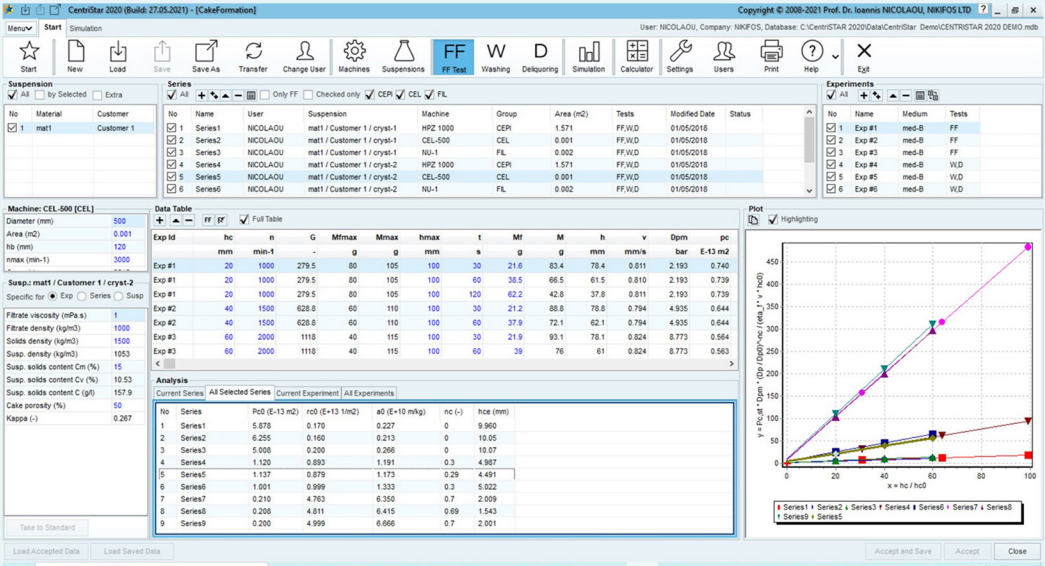
Powerful *Simulations Report* module: Input and filter performance data of different simulations are listed together and can be easily compared. Transfer of the data to *Excel*.

CENTRISTAR Software

for Batch Filter Centrifuges

Centrifuge Scale-Up, Simulation and Optimization of Centrifuge Performance, Analysis of Test Data, Databases for Suspensions, Centrifuges, Simulations, Measured and Analyzed Data

Analysis of Test Data from Industrial & Pilot Centrifuges, Laboratory Bucket Centrifuges and Filter Nutsches



The cake permeability / resistance, cake compressibility and filter medium resistance (including the resistance of the cake heel) as well as efficiency parameters for the cake washing and deliquoring step are determined by the CENTRISTAR Analysis modules (FF, W, D). Reliable values of these parameters are necessary for the reliable calculation of the centrifuge performance (*Simulation* module of CENTRISTAR). Tests with different apparatuses can be analyzed and plotted in the same diagram enabling a direct comparison. For example, analysis results of test data from a laboratory nutsche and a pilot centrifuge can be directly compared and the scale-up factor can be determined.

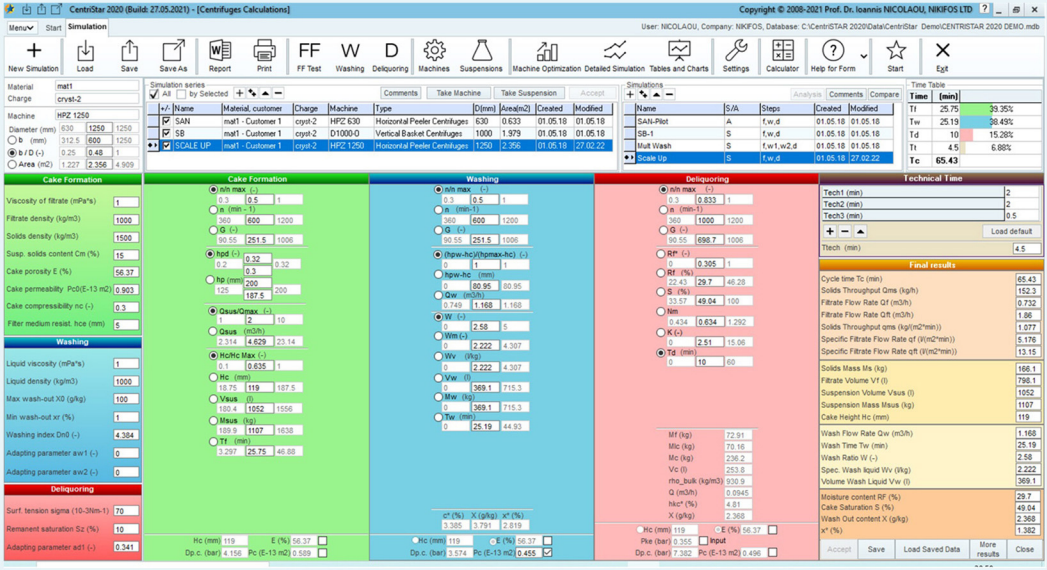
CENTRISTAR Software

for Batch Filter Centrifuges

Centrifuge Scale-Up, Simulation and Optimization of Centrifuge Performance, Analysis of Test Data, Databases for Suspensions, Centrifuges, Simulations, Measured and Analyzed Data

Simulation of the Centrifuge Performance and Scale-Up

The CENTRISTAR-Simulation module enables the calculation not only of the feeding step (cake formation) but also of all other optional steps: Predeliquoring, Washing and Deliquoring of the cake. The influence of all parameters on the centrifuge performance can be calculated in a user-friendly way and displayed in form of tables and graphs.



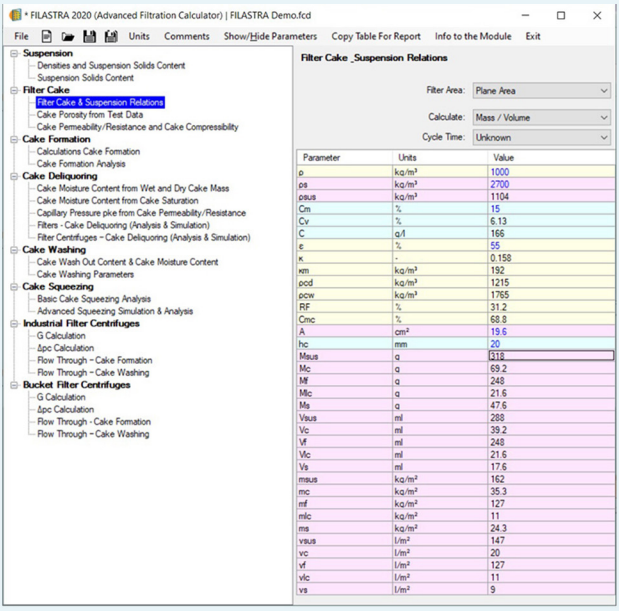
- For all steps, the cake compressibility, the filter medium resistance (heel resistance included) and the possibility to apply a gas overpressure are considered. Use of practice oriented and physically based mathematical models.
- For the washing and deliquoring step, the necessary wash liquid amount, the wash out content in the cake and the moisture content for different setting parameters are calculated.
- Scale-up from the analysis of one pilot test.
- Determination of the optimal operational conditions.
- Program creates a report as Word-document with the main simulation results.

FILASTRA Software

Flexible & Easy Calculation of Filtration Parameters

A Must for all Dealing with the Filtration of Suspensions

With its 24 modules, the user can solve small tasks easily and with highest flexibility as for example: solids density from the densities of liquid and suspension and the suspension solids content. Cake porosity from tests with a nutsche or a centrifuge under consideration of non-volatile solutes in the cake liquid etc. The powerful module *Cake Formation Analysis* enables the determination of the cake permeability and the cake porosity from only one test with a batch or a continuous filter.



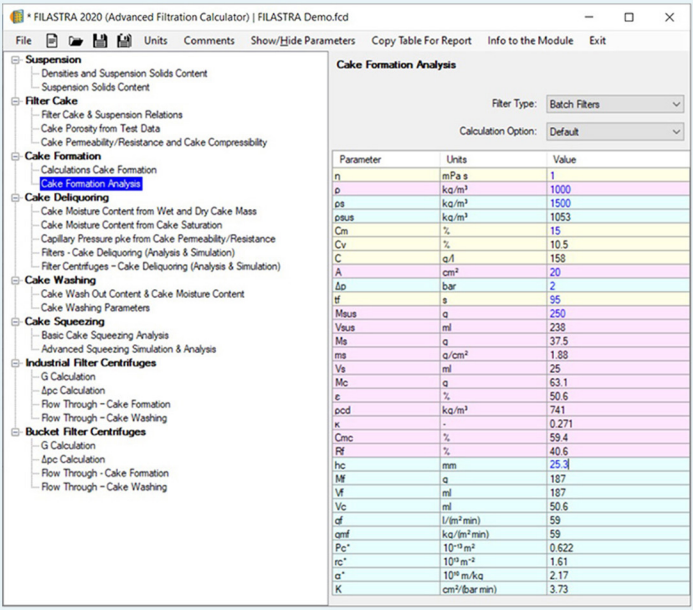
Further modules enable: the calculation of the cake formation step considering the cake compressibility and filter medium resistance. Calculation of the capillary threshold pressure from the cake permeability / cake resistance. Cake wash out content from the wash out concentration in the wash filtrate of the resuspended cake or from the wash filtrate without resuspension of the cake. Calculations to the cake deliquoring and cake washing step for filters and filter centrifuges. Analysis of cake squeezing tests and simulation of the cake squeezing (moisture content as a function of the squeezing pressure). Calculation of the most important parameters for laboratory and industrial filter centrifuges etc.

FILASTRA Software

Flexible & Easy Calculation of Filtration Parameters

A Must for all Dealing with the Filtration of Suspensions

Groups of parameters allow high flexibility regarding the input parameters (any parameter in one group can be entered and all others are calculated). All parameters of the same group have the same background color. Distinction between input and calculated parameters by displaying them in different color (blue for input and black for calculated parameters).



- The contents of any module can be copied and pasted in other applications like Microsoft Word or Excel as tables or images and can be used for the project report.
- Units for all parameters can be chosen, even US-units as well as units templates. The user can define and save sets of units for the laboratory, the pilot and the industrial scale.
- By using the *Show/Hide* menu, the user can define, which parameters should be displayed. Only input parameters cannot be hidden.
- For every module, comments can be entered and saved. The *Info to the Module* menu gives explanations to the function of each module.
- FILASTRA is integrated in FILOS and in CENTRISTAR.

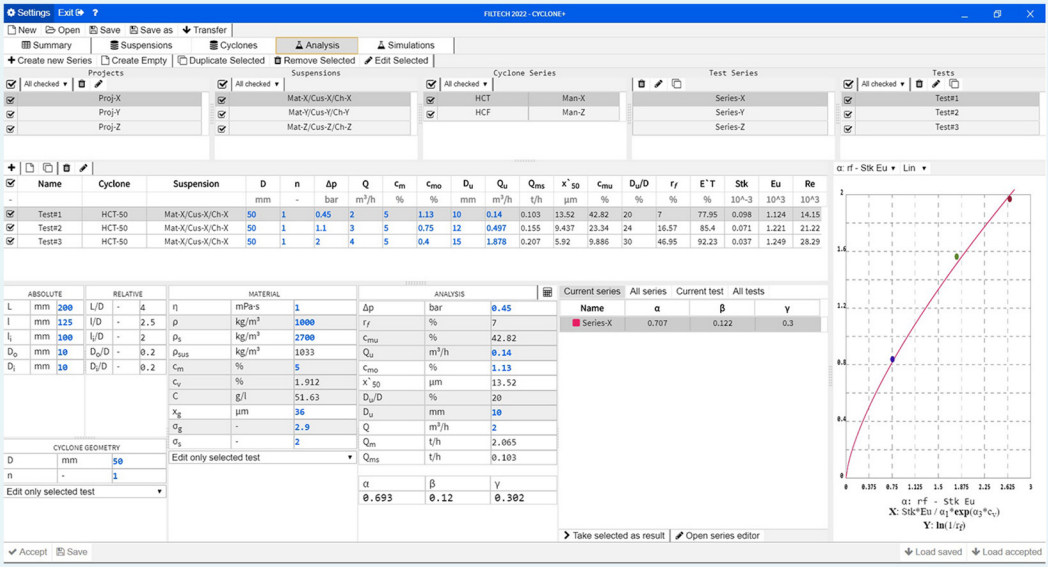
CYCLONPLUS Software

The Novel Software for Design and Performance Calculation of Hydrocyclones

Analysis of Hydrocyclones Test Data and Scale-Up

Practice Oriented • User Friendly • Reliable

Reliable calculation of the Hydrocyclone performance for given geometry with consideration of parallel connection of Hydrocyclones (*Standard Calculation* Option) or determination of the needed size and number of Hydrocyclones for a given performance (*Design* Option). Highest flexibility for the input parameters by using the parameters grouping concept.



- Powerful module for the analysis of test data or performance data of Hydrocyclones in operation with determination of the needed adaptation parameters for the reliable design and performance calculation of Hydrocyclone units. All in one window: List of projects, suspensions, cyclone series, table with all tests of the given test series, input field for entering the measured parameters as well as diagrams with the fitting curve and the listing of the determined adaptation parameters.
- Suspension database with all material parameters needed for the *Analysis* and *Simulation* modules. Analysis of data of the particle size distribution by mass and calculation of its characterizing parameters (mean particle size and the geometric standard deviation).
- Hydrocyclone database with all absolute and specific geometrical parameters.

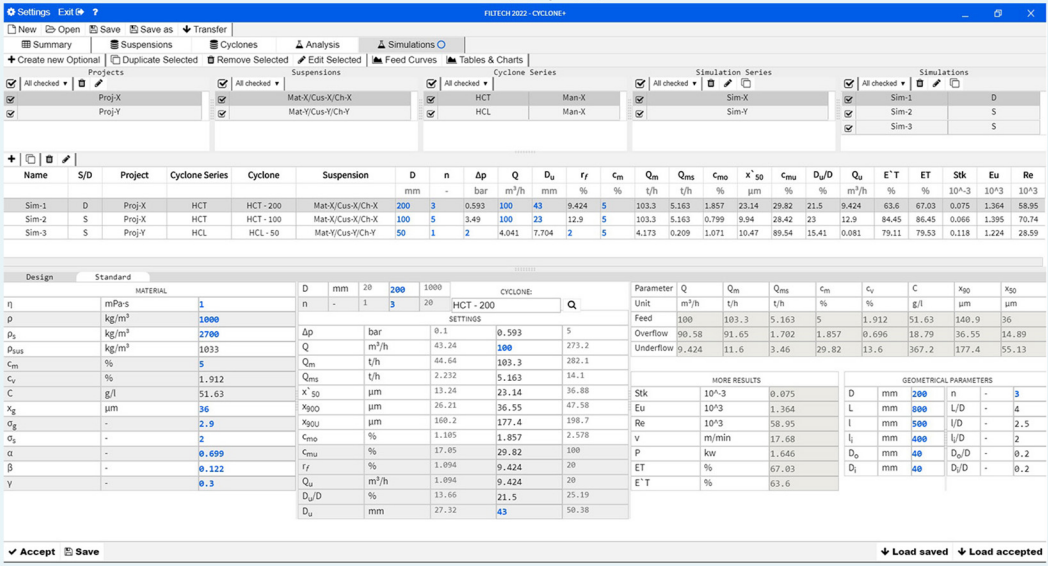
CYCLONPLUS Software

The Novel Software for Design and Performance Calculation of Hydrocyclones

Analysis of Hydrocyclones Test Data and Scale-Up

Practice Oriented • User Friendly • Reliable

For the performance calculation (*Standard* option of the *Simulation* module) besides the suspension parameters and the three adaptation parameters (results of the *Analysis* module), the diameter D and number of cyclones n in parallel connection are given. Another two settings parameters are entered as for example the feed volume flow rate Q and the underflow (apex) diameter Du. Calculated are the pressure drop Δp, the cut size x'50, the overflow and underflow solids content (cmo, cmu) and the flow rates in the overflow and underflow (Qo, Qu).



- Many other important parameters like total efficiency ET, solids content and particle size distribution of overflow and underflow are calculated and displayed. The influence of all parameters can be studied in the *Tables & Charts* module. The grouping of parameters enables a high flexibility regarding the input parameters. The calculation and display of min-max values for each parameter makes the program very user-friendly allowing the input of only meaningful values.
- For the *Design* option of the simulation module the main result parameters are the cyclone diameter and the number of cyclones in parallel connection (D, n) as well as the apex diameter Du. Inputs for the Design option are the feed flow rate Q , the pressure drop Δp, the cut size or the overflow solids content (x'50 or cmo) and the underflow solids content or the relative underflow volume rate (cmu, rf).

Prof. Dr. –Ing. Habil. Ioannis Nicolaou

More than 35 years focused Research and Industrial Experience on Solid-Liquid Separation

NIKIFOS President since 2000

- Born in Cyprus as Greek Cypriot.

- Diploma in Chemical Engineering, University of Karlsruhe / Germany, 1984 (graduating with distinction – first class).

- PhD, University of Karlsruhe / Germany, Institute of Mechanical Process Engineering and Mechanics, 1991 (passed with distinction – first class).

- *Emil Kirschbaum* Award for an outstanding diploma (1985) and *Heinz-Maier-Leibnitz* Award of the German government for an outstanding research work on Filtration (1994).

- Professoral (Habilitation) Thesis, University of Karlsruhe / Germany, 1996.

- Research Fellow as Co-worker of Prof. Stahl, a worldwide leader in applied Solid Liquid Separation Research work, 1986-1996.

- Head of the Solid-Liquid Separation and Crystallization team, Siemens (former Hoechst AG), 1997-2000.

- Professor at the University of Karlsruhe / Germany since 1997 with own lectures and visiting Professor at the University of Florida, Engineering Research Center for Particle Science & Technology, Eminent Scholar, 2002.

- President of the company NIKIFOS since 2000, Consultant, Software Developer and Trainer.

YOUR BENEFITS BY USING OUR SOFTWARE

- Practice oriented, reliable, user-friendly, experiment & theory-based design, performance calculation and optimization of all important filter apparatuses, Filtering Centrifuges and Hydrocyclones.

- Minimal experimental effort (under some conditions even one experiment is enough) with maximum yield of information due to the powerful and user friendly test-data analysis modules for all steps (cake formation, washing, deliquoring) and due to the inter- and extrapolation reliability of the physically and experimentally based mathematical models. Saving of time and money.

- The quality of the test data can be easily judged due to the theory based diagrams of the data analysis program modules.

- The performance of Solid-Liquid Separation equipment can be quickly and easily simulated and judged (also for settings which cannot be experimentally tested due to limitations and other experimental conditions) and their optimization potential can be determined.

- Comparison of the performance of various Solid-Liquid Separation equipment enables for a given suspension the correct selection and optimization of the selected equipment.

- Creation of an "intelligent" database for all tested suspensions including all test analysis input and results data as well as for all simulations.

- Project reports can be easily prepared.

- A valuable tool for training purposes.

- An ideal sales tool for impressing and convincing your customers.

Licensing Options

The programs are normally yearly licensed. Possible is also the licensing for more than one year. Besides the standard single user licensing option, which is restricted for local use, we offer also a company license with unlimited use for all company locations. For more information, please contact us.

Filtration & Separation of Suspensions

Professionality – Objectivity – Reliability - Maximal Benefit at Low Costs

- Are you currently facing a problem in your Solid – Liquid Separation projects and you need an immediate, professional, objective and inexpensive support?

- Are you dealing with the filtration of suspensions and you want to judge the performance of your filters and optimize them by determining the optimization potential with minimal experimental effort?

- Do you need professional, practice oriented and very effective short courses in Solid – Liquid Separation?

- Do you need novel, user friendly, reliable, powerful and practise oriented software for the design, calculation and optimization of the performance of diverse cake forming Filter Apparatuses and for characterizing the filterability of your suspensions by analyzing the filtration tests?

- Do you need a very powerful and user-friendly software for the performance calculation and optimization of filter centrifuges with theory-based analysis of centrifuge tests to determine the necessary parameters for reliable centrifuge scale-up and optimization?

- Are you confronted with projects involving scale-up and performance optimization of Hydrocyclones and you need a novel, very user-friendly and reliable software to help you solving your problems fast and inexpensive?

Contact us

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