

## 1. What's in this Zip File?

- ? **“WeirAnalysisProduct.zip”**:
  - o Weir PSFM
  - o Weir PW
  - o Weir DM (Daily Monitor, Automated, one-click data analysis, modeling and trend charts)
  - o Weir DMA (Provides automation for Weir PW/PSFM interfaces to APC and Factory Control)
- ? **“LithoWorksProduct.zip”**
  - o LithoWorks PW (a “Lite” version of Weir PW for process window analysis)
  - o LithoWorks PEB – Post Exposure Bake (Note: This is an “Alpha” release and contains some bugs etc.)

**Software can be installed and used up to ten (10) times without obtaining a user’s license. To obtain a user’s license, call or email TEA Systems after installation and provide their “ID A:” code number that will be presented to you by the Weir software.**

## 2. Overview

The Weir Wavefront Engineering Suite provides a common interface to lithography and process engineers for all their metrology needs. Any metrology data set can be viewed and analyzed in their raw formats. Data is converted and stored in convenient Microsoft Excel® spreadsheets. The software is an open system providing the user with full access to all raw, modeled and intermediate data files. They can also be modeled or calibrated to examine focus variations and, soon, full-field process window analyses with the prior removal of tool and wafer induced perturbations.

The Weir Analysis software suite consists of two major interfaces; The Weir engineering interface and the Weir Daily Monitor. The engineering interface provides full analysis and control for interactive analysis, calibration and modeling of metrology and process data. It also provides an interface for the creation and maintenance of Daily Monitor templates, the Exposure Tool library and the Phase Shift Focal calibration library, used for the calibration and analysis of Phase Shift Focus Monitor (PSFM) and Phase Grating reticles marketed by Benchmark Technologies.

The Weir Daily Monitor program is a smaller, stand-alone tool for production. It uses templates constructed by the user to perform one-click automated analyses of raw, focus, calibration and modeled data for production stability and control. Summary data is automatically analyzed and stored in easily accessed spreadsheets (“XLT” files) and presented to the user as trend charts for each variable.

The engineering interface consists of three major product segments:

- 1) Data conversion, layout and metrology analysis
- 2) Weir PSFM Focal plane analyses (Calibration and fixed-focus analysis)
- 3) Weir PW for analysis of any semiconductor metrology including precision, error-budget, spatial wafer, field, slit and scan and process window calculations.

Unique to any other package, the Weir PW analysis optimizes the process for each individual point in the field. The full-field analysis yields a wealth of information on the optimum lens performance for a given setup of the optical train. Calibrations can selectively use all points in the field, selected points or a give row or column in the scanning slit center.

In this sense, the analysis can also be used for multiple scanner and stepper performance matching by matching dose, scan, tilt , process window and lens wavefront optimization.

## 3. Data Accessible to the Weir Suite

Weir Analysis is a lithographic engineer’s tool for wavefront engineering. Overlay, registration, critical dimension, all ellipsometer, scatterometer and film thickness data can be imported from many source formats including:

Accent Optical CDS 200 family	KLA ProData files (*.pfe)
Applied Materials (AMAT) NanoSEM 3D	NanoMetrics OCD Scatterometer family
ASML self registration files including FOCAL	Nikon NRM Series Overlay (*.msr)
BioRad Questar (several formats)	Nova Track 2020-3030 Overlay (*.csv & *.xls)
Hitachi Laxxx Overlay	OnWafer Thermal probe (*.csv) files
IVS Overlay Family (IVS 130 etc. from Schlumberger)	SensArray Thermal probe files (*.csv or *.xls stored data)
IVS CD-SEM family (IVS 230 etc. from Schlumberger)	Schlumberger Yosemite CD-SEM (*.tab, *.csv and space delimited)
KLA Archer overlay family	Therma-Wave RTCD Ellipsometer
KLA ASET F5 Ellipsometer SCD	Timbre Technologies ODP scatter analysis (*.csv and space delimited.)
KLA 5xxx Overlay family	Excel-based Focus-Dose data in table format
KLA 8xxx CD-SEM family	and others ...

Weir Engineering is always striving to expand the range of data imports and welcomes sample files from any source. Remember, there is never a charge to update or expand the list of imported data sources. If your metrology tool is not on this list then please submit a data sample for analysis.

## 4. Hardware and Software Requirements

- ? Requires Microsoft Windows 2000 or Window XP. Microsoft Excel® is also required for storage of data.
- Minimum recommended Hardware:
  - o Pentium III, 1 GHz or greater
  - o 128 Meg. RAM or more
  - o 50 Meg. In program directory
  - o 2 Gigbyte Data directory
  - o Microsoft Excel from Office 2000 or later
    - o VBA, Macro interface add-in must be installed for remote control by Weir
  - o Windows 2000, XP

## 5. Release Version 3.9

**September 2004:** *This is a full release version of the software. After installation you will need to call customer support to obtain a valid License Confirmation ID. See the section on License Management for more details.*

Software also includes LithoWorks Package for PW lite and PEB.

## 6. Installation

### 6.1 Steps for Installation

- 1) You will need Administrator privilege to install the software.
- 2) Download the product 'zip' file onto your computer
- 3) Extract ALL the contents into a temporary directory

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- 4) Run 'setup.exe'
  - a) Basic files MAY have to be updated on some computers. If so, the program will ask if you wish to install these files. Answer “yes”. You will then need to re-boot the computer. After your computer starts again, then restart this procedure at step #1 above.
  - b) Some installation files may claim a conflict with existing files. Select the “Ignore” option.
  - c) Note that some systems will then ask if you wish to continue installation, answer “Yes”.

The program will then install under the new “Weiring Analysis” group under the start button.

This installation will copy all templates and sample data files into the installation directory. The default installation directory is “C:\Program Files\Weir Wavefront Engineering”.

## 6.2 Uninstall

To remove the Weir Wavefront software:

- 1) Select the menu Start/Settings/Control Panel
- 2) Select the icon “Add/Remove Programs”
- 3) Select the Install/Uninstall tab.
- 4) Scroll down to “Weir Wavefront Engineering”
- 5) Follow the on-screen instructions. All portions of the software will be removed.

## 7. License Management

### Installing the software and Confirmation ID

#### 7.1 Overview

The Weir Wavefront Engineering Software Suite uses a license management system that does not require hardware add-ons.

At first use of the software, you will be presented with a screen that shows an installation date and two numbers. The date and numbers are keys for computing a Confirmation Identification code that will turn on the software for a demonstration period or for permanent use, see figure #1.

If you do not enter a Confirmation ID, the software will continue to run with full functionality for a total of ten (10) restarts before shutting down. However, at each restart, the license maintenance screen will first appear.

#### 7.2 Obtaining a license

The License Management screen will appear at each software startup until a permanent license is installed. The screen can also be accessed from the Weir Main window's menu item **"/Tools/License Management"**.

To obtain a license, send the Installation date and two Confirmation ID's shown on the screen to Benchmark Technologies. Benchmark will then return a Confirmation ID to you. Remember that the software will continue to run for a maximum of ten (10) times without the Confirmation ID.

When you receive your Confirmation ID enter it into the ID field. Also insure that the "Installation Date" field corresponds to the original date that you submitted with numbers. You can change the illustrated date by using the "Set Date" command button. Selection of the "Enter Confirmation" command button will then validate the license entries and turn on the software.

When a valid Confirmation License is entered this screen will no longer appear at software startup. You can access this screen at any time using the **"/Tools/License Management"** menu.

If you obtain a demonstration license, the software will notify you at startup during the last ten days of your demonstration period. At the end of this period, the software will no longer function. Enter a full license confirmation ID to continue to use the software.

Retain a copy of this screen and your Confirmation ID for your records. If you reinstall the software onto the same computer you will need to re-enter the Installation Date and Confirmation ID. Your confirmation ID keys upon:

- 1) The Installation Date
- 2) The hardware of your computer and
- 3) The disk upon which the Weir Software is installed.

If any of the above 3 items are changed, you will have to request a new Confirmation ID.

