

# AFGROW – European Training and Workshop 2018

**Sponsored by ZHAW, the School of Engineering, Centre for Aviation, Winterthur, Switzerland**

**Instructors:**

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**Venue:**

Zurich University of Applied Sciences (ZHAW), Winterthur, Switzerland

**Date:** 25 - 29 June 2018 (June 25-28 Training, June 29 – Workshop)

**Time:** 8 AM to 4:30 PM (24 hours)

**Cost**

**Class:** \$900.00/person until April 25, \$965.00/person thereafter

**Workshop:** \$225.00/person until April 25, \$250.00/person thereafter

**Class and Workshop:** \$1,100.00/person until April 25, \$1,200.00/person thereafter

The first 3 days of the workshop will be a 3-day AFGROW training class, and the fourth day will be a standard workshop format where users can collaborate/discuss issues of interest related to AFGROW, with some presentations and Q and A sessions.

**Description**

The 3-day class will familiarize students with the design and operation of the [AFGROW crack growth life analysis program](#). This will include a review of Linear Elastic Fracture Mechanics (LEFM) concepts, example problems, and new AFGROW capabilities including: a new K-solution for corner cracks at a countersunk hole, and 3-channel (axial, bending, & bearing) loading spectra. The class will also provide an introduction to the use of advanced features unique to AFGROW (COM automation, Advanced Multiple Crack Solutions, and Plug-In K-Solutions).

We are also including a section on tips and tricks to help users model some practical complex geometries (i.e.: continuing damage scenarios). A certificate of completion will be issued to participants upon completion of the training.

## Syllabus

**Day 1**

- Introduction
  - Fundamentals of Linear Elastic
  - Fracture Mechanics
- AFGROW Layout and Flow
- Basic Features
- Main Modules
  - Spectrum
  - Spectrum Filters
  - Stress Intensity/Beta Factors
    - Classic Cases
    - User-Defined Solutions
    - Beta Correction
    - Beta Modification
    - K-Solution Filters
- Growth Rate Models
  - Example Using Tabular Rate Data (Class Participation)

**Day 2**

- Main Modules, Continued
  - Stress State and Failure Criteria
  - Retardation Models
  - Residual Stresses
- Preferences
- Units
- I/O Files
- Examples (Class Participation)
- Additional Capabilities
  - Advanced Models
  - Crack Initiation
  - Environmental Data

**Day 3**

- AFGROW Tips and Tricks
  - Using Superposition & Compounding
  - Getting more out of Advanced Models
  - Generating Reports
  - Continuing Damage
- COM Automation (Class Participation)
- Creating Plug-In K-Solutions
- Class Discussion/Feedback

**Registration Deadline:** June 25, 2018  
**Cancellation Policy:** Cancellations before April 25, 2018 will receive a 50% refund or full credit toward an AFGROW events held in 2018-2019. Cancellations after April 25, 2018 may only receive full credit for an AFGROW events held in 2018-2019.

**Lodging:**

Guesthouse Riverside Inn  
Schlosstalstrasse 139  
8408 Winterthur  
Phone: +41 52 202 26 88  
[www.riversidewinterthur.ch](http://www.riversidewinterthur.ch)  
(Price single rooms approx. CHF 76.00)

Hotel Ibis  
Brühlbergstrasse 7  
8400 Winterthur  
Phone: +41 52 264 57 00  
[www.accorhotels.com](http://www.accorhotels.com)  
(Price single rooms approx. CHF 100.00)

Park Hotel Winterthur AG  
Stadthausstrasse 4  
8400 Winterthur  
Phone: +41 52 265 02 65  
<http://phwin.ch>  
(Price single rooms approx. CHF 165.00)

Hotel Wartmann  
Rudolfstrasse 15  
8400 Winterthur  
Phone: +41 52 260 07 07  
[www.wartmann.ch](http://www.wartmann.ch)  
(Price single rooms approx. CHF 170.00)

For further hotels in Winterthur please check: [www.winterthur-tourismus.ch](http://www.winterthur-tourismus.ch)

**Local Attractions:** Winterthur is a treasure trove rich in art, history and nature. Switzerland's sixth-biggest city boasts art collections of world renown, other museums and monuments, a lively old town, an active music and comedy scene, and extensive parks and public gardens give Winterthur, a town small enough to get around conveniently, and the amenities of a big city.

**About ZHAW, the School of Engineering, Centre for Aviation:** The ZHAW is the oldest technical university in Switzerland, with a long history that dates back to 1874. Today it is among the largest universities of applied sciences in Switzerland and boasts an extensive national and international network.

The Centre for Aviation is firmly established in the tradition of the ZHAW School of Engineering. Its researchers work in interdisciplinary projects which aim to find viable solutions for challenges the aviation industry faces – today and tomorrow.

The Centre for Aviation combines various technologies, methods, and areas of expertise in a bid to find sustainable solutions for the ever-increasing challenges of global mobility, and explore new approaches of making aviation even more efficient and safe. The results of our research are integrated into the Bachelor's degree programme in Aviation.

The Centre for Aviation has three strategic research areas:

- Aerodynamics & Flight Mechanics
- Aviation Meteorology and Atmospheric Research
- Human Factors & Aeronautical Communication
- Unmanned Aircraft Systems and Operation
- Structural Integrity & Systems Engineering



Special Labs: Engineering Simulator, Wind Tunnel, UMARS (Metrological Measurement System), LIDAR, Remote Pilot Station, Head and Eye Tracking, Unmanned Modular Aircraft Research System (UMARS)