



## **Karpel Dynamic Consulting, Ltd.**

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Karpel Dynamic Consulting (KDC) was founded in 2003 by Prof. Moti Karpel and Zipi Karpel for the purpose of providing consultancy and computational tools in the area of structural dynamics and aeroelasticity.

Moti Karpel received his academic degrees from Technion - Israel Institute of Technology, Tel Aviv University and Stanford University. He worked at the Israeli Aircraft Industries for 15 years, including 7 years as Head of Dynamics and Loads. Was Senior Research Associate at NASA Langley Research Center before joining the Technion where he was Professor in 1998-2016, holding the Sanford Kaplan Chair for Aerospace Engineering, and is now Prof. Emeritus. Has been occasionally appointed as Designated Engineering Representative (DER) for aircraft certification in Israel on loads and aeroelasticity. He is Fellow of the American Institute of Aeronautics and Astronautics (AIAA). Moti is the Technical Director of KDC.

Zipi Karpel is a Technion graduate in Computer Science and completed the MBA program in Bar-Ilan University in Israel. She was a member of the founding team of Direct Insurance (IDI) in Israel as VP of IT and OPS. Later she joined IDI's holding company (DIFI) as VP for Business Development, establishing subsidiaries in Poland, Czech rep and Russia, and involved in intensive investigations of other markets such as Korea, Brazil and Greece. During these years she participated as supervisory board member in number of companies in the group. Zipi is the Business Director of KDC.

The main consulting activities of KDC are on:

- Frequency- and time-domain modeling for industrial applications.
- Flutter analysis of flight vehicles and wind turbines.
- Aeroservoelastic stability, response and control performance analyses.
- Dynamic loads for structural design with linear and nonlinear control systems.
- Computational (CFD-based) aeroelasticity.
- Practical implementation of nonlinear structural, aerodynamic and control effects.
- Loads and aeroelasticity issues in aircraft certification.
- Aeroelastic and aeroservoelastic considerations in multi-disciplinary design optimization.
- Vibration control using piezoelectric actuators.

The following KDC software packages are commercially available:

- ASE\*: ASE state-space modeling and stability analysis.
- GUST\*: Dynamic loads in response to discrete and continuous gusts.
- Dynresp: Dynamic response to gusts, control commands and direct forces of linear and nonlinear aeroservoelastic systems with applications to all aspects of aircraft dynamic loads and flutter.
- DynSOF: Loads distributions for structural design based on Summation-of-Force and Mode-Displacement methods.
- STFWT: Flutter analysis of large wind turbines.

\*ASE and GUST are currently distributed by Zona Technology as part of the ZAERO package.

Past and current customers of KDC include: Airbus Defence & Space (formerly EADS-CASA, Spain); EADS-MAS (Germany); IPTRADE (USA, in projects for Nikon, Japan); XEMC Darwind (The Netherlands); SDI (USA); IAI, Rafael, Elbit Systems and CAAI (Israel) and COMAC BASTRY and SADRI (China).

KDC employs aerospace experts on per-project basis. Additionally, projects are often performed in cooperation with companies of special expertise, such as Doron Engineering for structural finite-element modeling and Computational Engineering Software (CES) for industrial software applications.