Tolerancing for Aluminium Extruded Profiles to EN 755-9:2016/ EN 12020-2:2021(2016) & ISO standards – Course Synopsis

Aims & Objectives

The course is delivered as an intensive, two-day programme that focuses on the fundamental concepts of tolerancing for aluminium extruded profiles as per EN 755-9:2016 & EN 12020-2:2016 and ISO standards.

Participants will learn the application of concepts and rules defined in the set of current tolerancing standards from a practical point-of-view, discover how the system of dimensional and geometrical tolerancing works, find out the pitfalls, ambiguities and misconceptions that rely on the standards interpretation and gain confidence on how they will be able to overcome them.

This highly-interactive course includes extensive classroom discussions, team exercises and problem-solving sessions. Examples of drawings or components from the client, where available, are used in order to illustrate the course material. Customization of the course to specific participant needs can be discussed.

To maximize the effectiveness of the training, an upper limit to the class size of 10 delegates is recommended.

Course topics

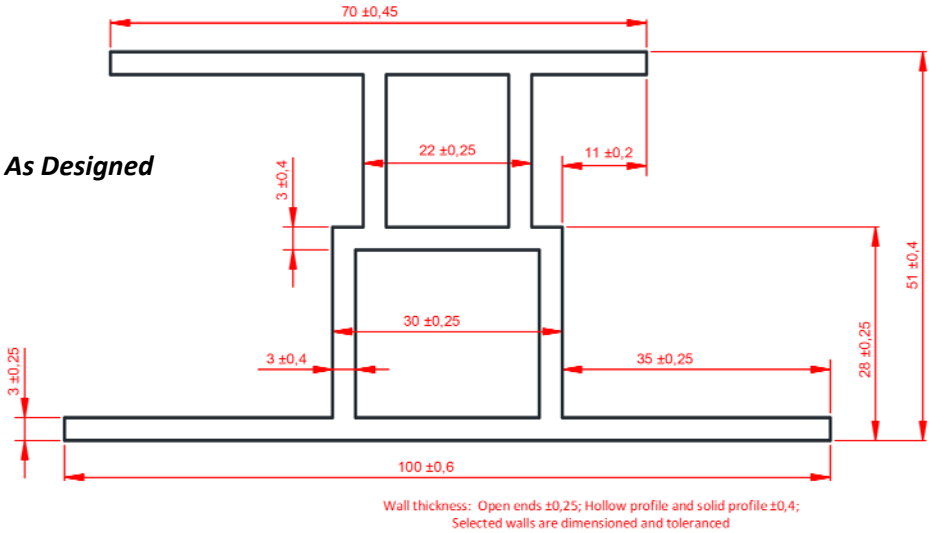
- Introduction to dimensional and geometrical tolerancing
  - axiom of manufacturing imprecision, interchangeability in industry, the role of standardization
- Standards in context
  - EN 755-9:2016 and EN 12020-2:2021 (2016)
  - ISO 6362 series of standards *(ISO 6362-3:2022, ISO 6362-4:2022 and ISO 6362-5:2022)*
  - ISO GPS *(Geometrical Product Specification)* system *vs*. EN, DIN and relevant national standards
- What is Geometrical Tolerancing?
  - benefits and advantages of Geometrical Tolerancing
  - major pitfalls of traditional tolerancing and how to overcome them
- Tolerances for aluminium extruded profiles as per EN 755-9:2016 & EN 12020-2:2021 (2016)
  - tolerances on dimensions *(wall thickness, A, B, C, E, H dimensions)*
  - tolerances on Form *(straightness, convexity, concavity)*
  - tolerances on Orientation *(parallelism, angularity)*
  - tolerances on Profile *(contour, twist)*
- Ambiguities and misconceptions on EN 755-9:2016 & EN 12020-2:2021 (2016)
  - ambiguous terms and definitions lead to ambiguous requirements
  - typical inspection and verification problems and how to overcome them
- The concept of Features and Features-of-Size *(ISO 17450-3:2016)*
- Linear and angular size tolerances clarified
  - ISO 14405-1:2016, ISO 14405-2:2018 and ISO 14405-3:2016
  - Size vs. Form: the Envelope Requirement
- Datums and datum systems *(as per ISO 5459:2011 and ISO/DIS 5459.2:2017)*
  - what is a datum and why is it needed?
  - datum and datum features, indicating datums on drawings, annotation and symbology
- Tolerance frames
  - tolerance symbols, tolerance frame modifiers, tolerance frame on the engineering drawings
  - 3D-CAD Model Based Annotation (MBD) *(as per ISO 16792:2021)* and 3D-PMI
- Tolerance characteristics *(including what they will and won't control – ISO 1101:2017)*
  - tolerances of form, orientation, location and profile *(ISO 1660:2017)*
- Finding your way through the tolerancing system – understanding how each tolerance type works

The Trainer

Georgios Kaisarlis, Ph.D., M. Eng., has more than 20 years of teaching and working experience in the fields of Geometrical Dimensioning and Tolerancing (GD&T), precision manufacturing and industrial dimensional metrology. His long industrial experience comes from his career as a field engineer for the Hexagon MI group and his involvement as lead engineer in numerous specialized technical projects for the manufacturing industry *(reverse engineering, dimensional metrology, product design and development).* He has delivered several hundreds of GD&T and dimensional metrology classes for a variety of manufacturing clients throughout Europe and the Middle East.

Dr Kaisarlis is serving as appointed Technical Expert (WG2/WG10/WG17/WG18) and as accredited national delegate (ELOT/NQIS) in ISO TC/213 *"Dimensional and geometrical product specifications and verification".* ISO TC/213 is responsible for the international ISO standards relating to Geometrical Product Specification and Geometrical Tolerancing. He currently holds a research and teaching assistant's position in the School of Mechanical Engineering of the National Technical University of Athens (NTUA), Greece. Dr Kaisarlis holds a M. Eng. Degree in Mechanical Engineering from TU Athens (NTUA) since 1997 and a Ph.D. degree from the same University since 2007.

As Designed



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