

Digital Engineering

Simulation, analysis and configuration of fasteners and components.

+ Configuration

+ Simulation

+ Calculation

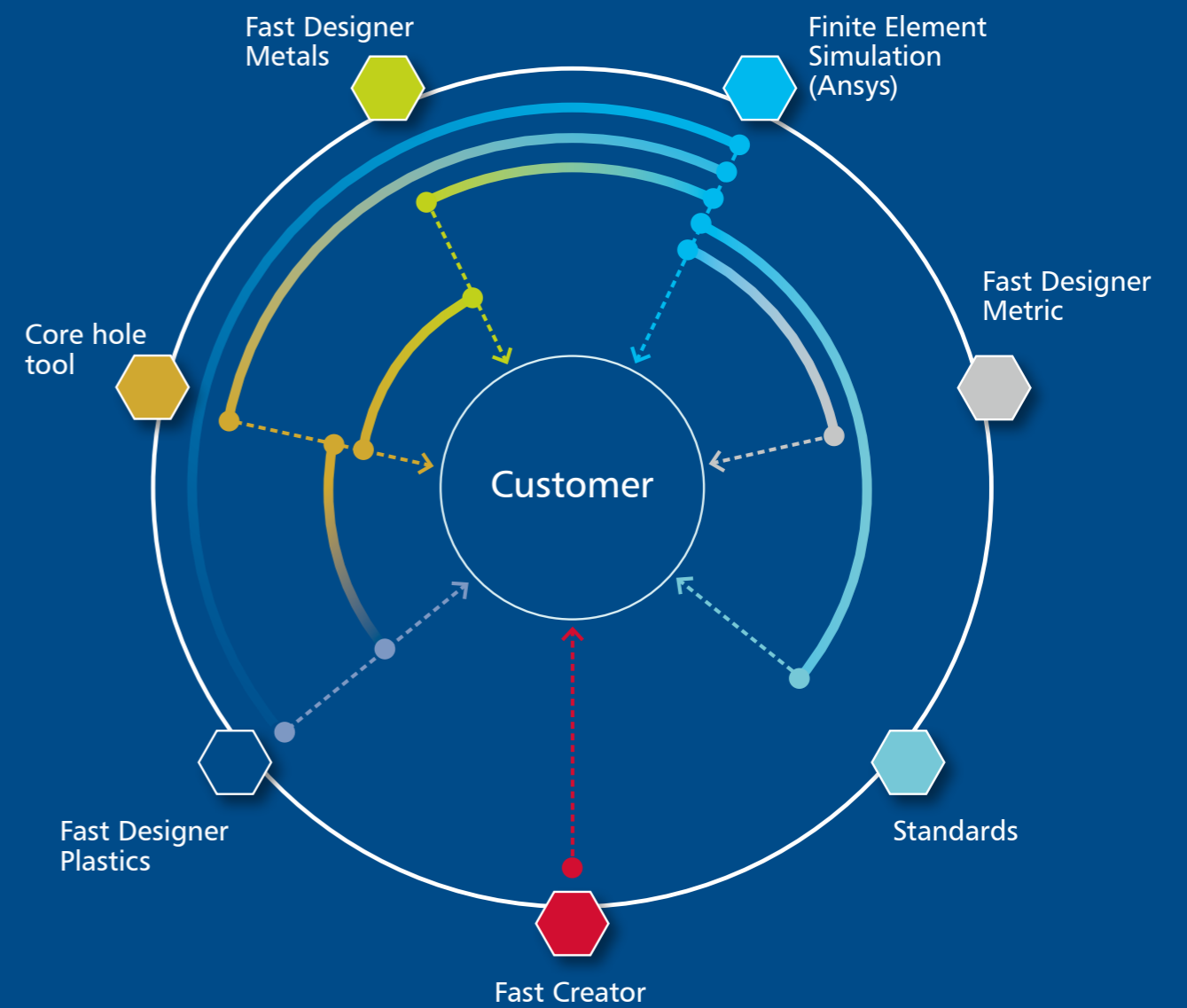
+ Standards



Digital Engineering Tools

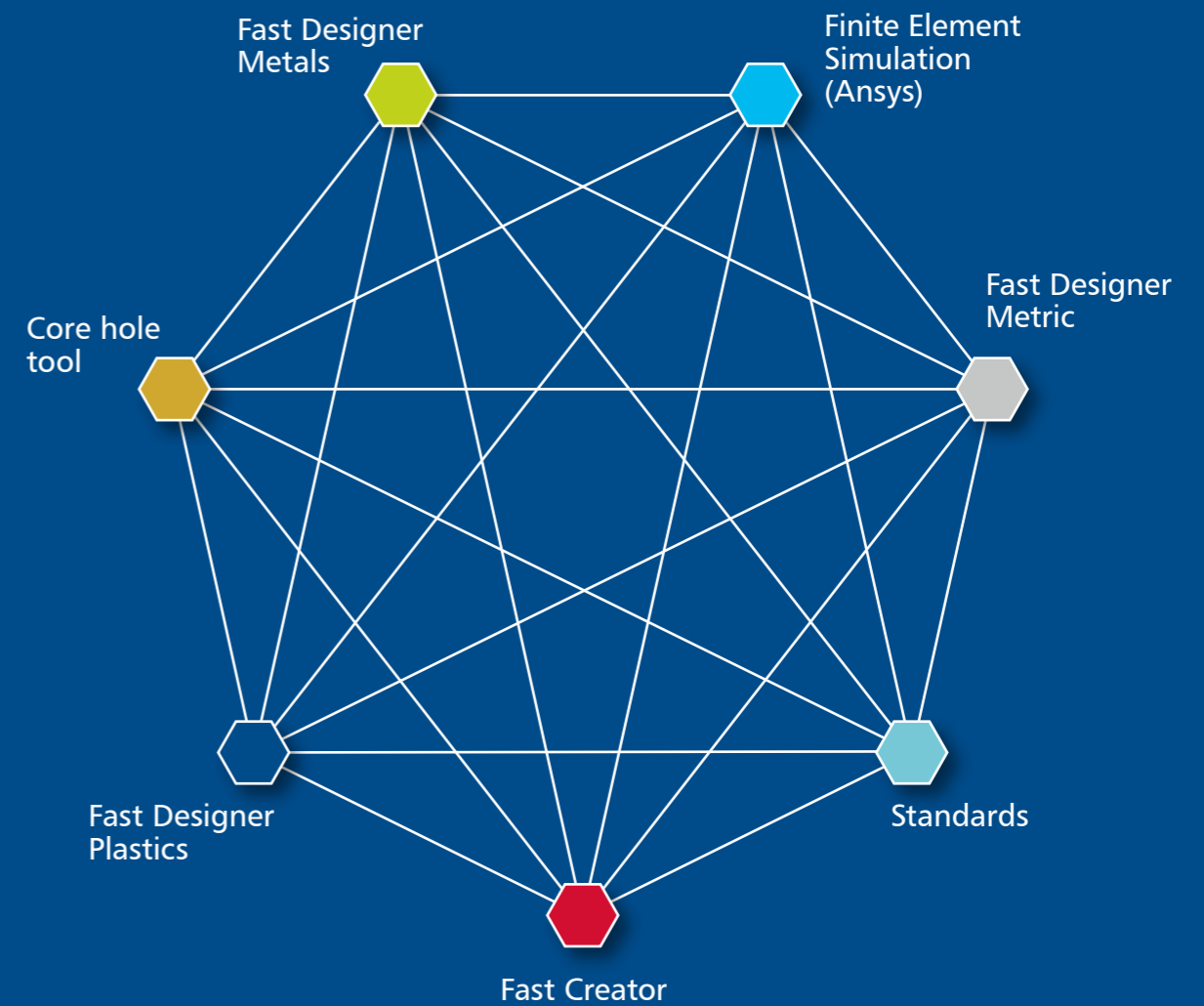
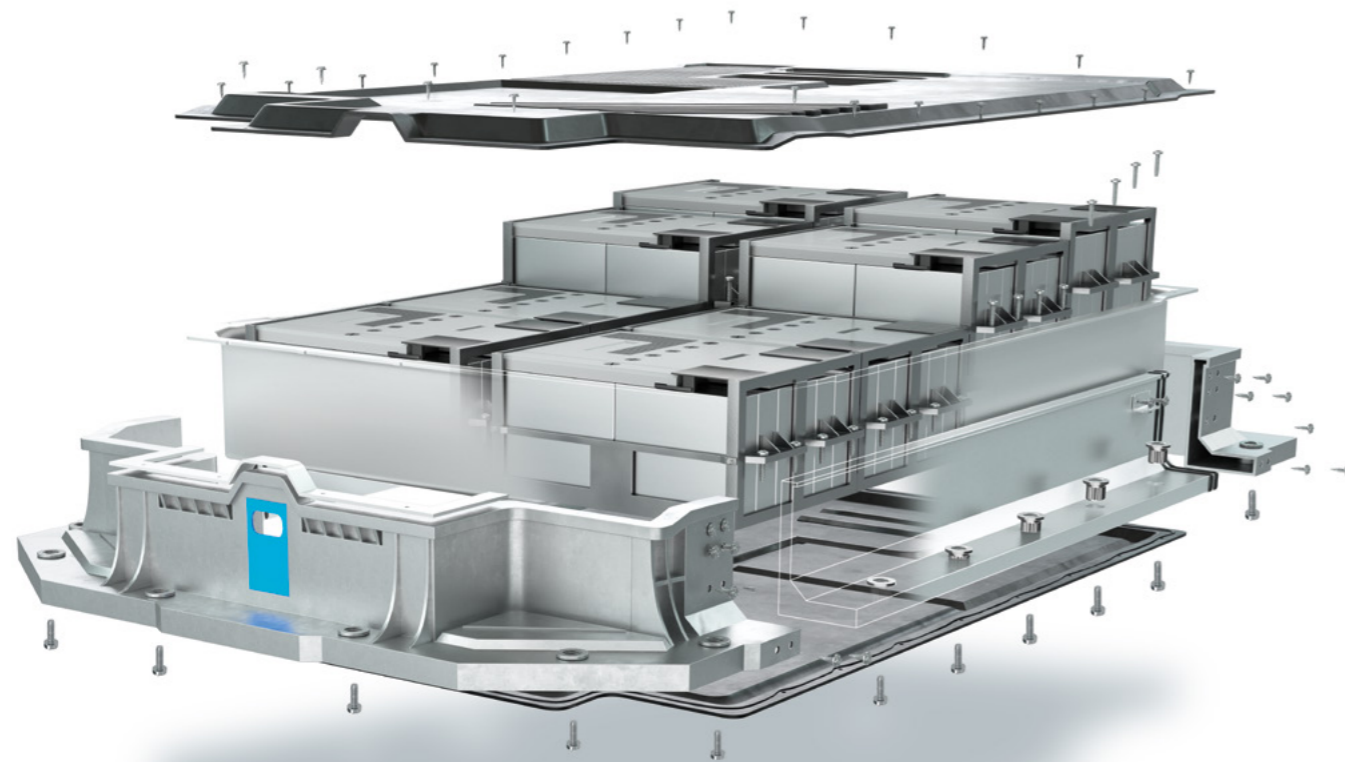
- Fast Designer Metals**
Configuration and assessment of thread forming screws for metals
- Fast Designer Metric**
Configuration and assessment of metric screws
- Fast Creator**
Generating 3D CAD data for fasteners
- Core hole tool**
Configuring core holes for thread forming screws
- Finite element simulation (Ansys)**
Simulating mechanical behaviour of fasteners and components
- Standards**
Calculations and assessments of fasteners and components in compliance with standards and guidelines
- Fast Designer Plastics**
Configuration and assessment of thread forming screws for plastics

Interfaces and information flow



Interaction between the Engineering Tools Used as independent standalone or in combination

The customer's application defines the choice of an appropriate tool or several tools in combination.



Fast Creator

Generating 3D CAD data of fasteners



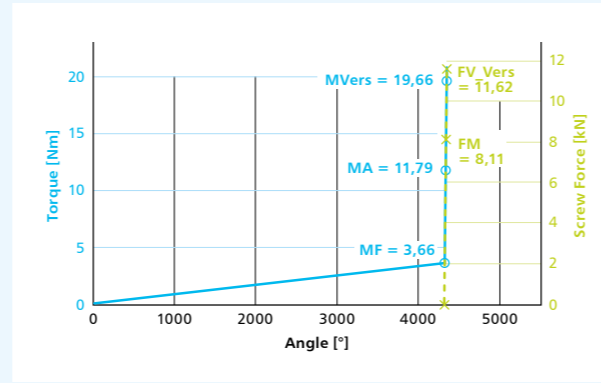
Benefits

- numerous product information documents available to download
- technical drawings and CAD data immediately available
- free of charge to My ARNOLD users

The **Fast Creator** product configurator provides options for huge numbers of different configuration variants. Choose from the existing range of ARNOLD standard and factory standards, depending on your requirements. You can then download the technical drawings and CAD data. And we also offer further help with developing parts from drawings.

Fast Designer Metals

Assembly and strength behaviour of thread forming screws for metals



Benefits

- prediction of behaviour under assembly and operating conditions
- interaction with the core hole tool
- partly based on VDI2230
- based on a comprehensive test database

Fast Designer Metals can be used to calculate various assembly and operating variables for thread-forming TAPTITE 2000SPA® screws, such as tapping torque, assembly preload and failure behaviour. The screw-in materials can be aluminium wrought and casting alloys.



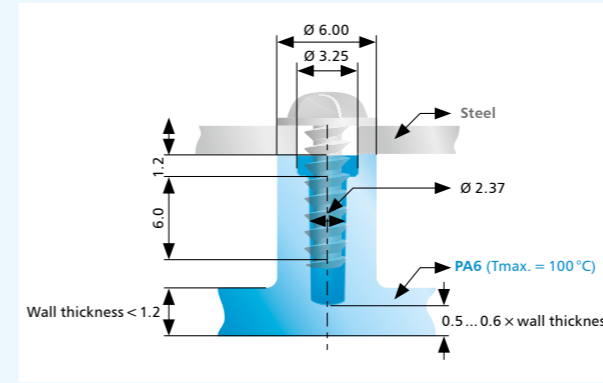
Description



Example

Fast Designer Plastics

Assembly and strength behaviour of thread forming screws for plastics



Benefits

- large selection of thermoplastics
- illustrates the optimum tube design
- recommendation for assembly parameter can be made
- torque / preload curve

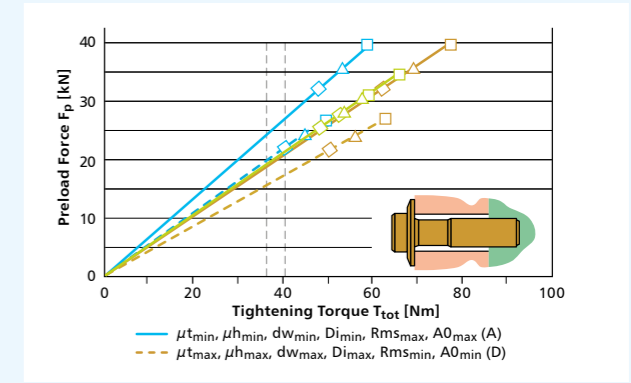
Fast Designer Plastics produces valuable predictions of thread forming screws for plastics with our REMFORM®. The calculation contains the preliminary design and tube geometry, along with various assembly and operating variables, such as assembly preload and failure moment. You can select the screw-in material from a large database of different plastic materials.



Description

Fast Designer Metric

Assembly and strength behaviour of metric screws



Benefits

- wide range of nut and screw types
- you can enter a wide range of operating data
- recommendation for assembly parameters
- tolerances taken into account

Fast Designer Metric enables the calculation of metric screws under thermal and mechanical loads. The calculation is partly based on VDI2230 and also makes use of traditional strength concepts. Recommendations can be made for every application and for every tightening method, even for yield- or angle-controlled methods.



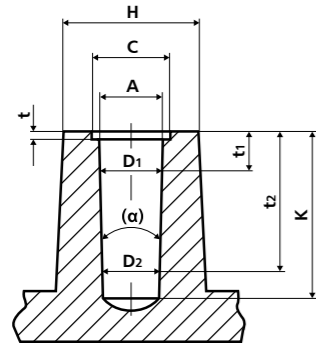
Description



Example

Core hole tool

Configuring core holes in plastic or metal screw-in parts for thread forming screws



Benefits

- + recommendations for metals and plastics
- + comprehensive choice of screw types
- + detailed design specifications
- + tolerances taken into account

The **core hole tool** can calculate the core hole geometry of screw-in parts made of metals and plastics and recommend the optimum solution in line with the relevant tolerances.



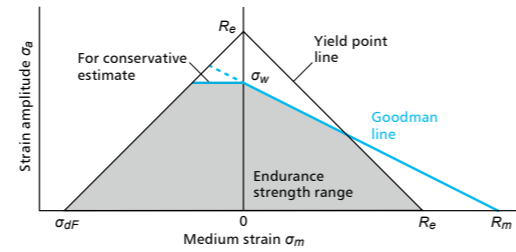
Description



Example

Standards

Applying guidelines, calculation rules and standards to component design for strength assessment



Benefits

- + support for the development of components
- + validation of functional capability
- + recognised and reliable procedure
- + universally deployable

The results of our analytical, empirical, and numerical calculation tools can be used for design validations and strength assessments in recognised and proven procedures such as the VDI 2230 and the FKM guideline*.

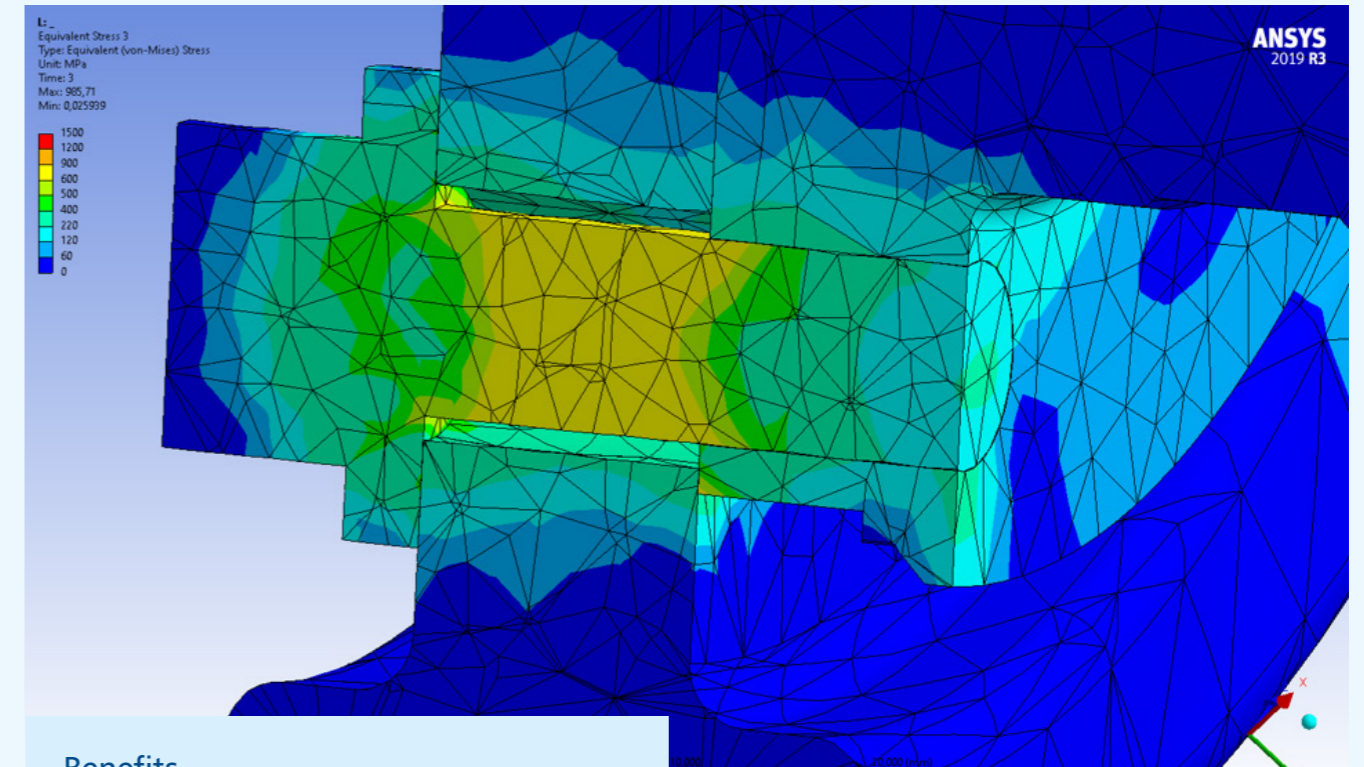
* analytical strength assessments for mechanical components



Description

Finite element simulation

Calculates stresses and deformations in fasteners, components and assemblies under mechanical and thermal loads. Optimises component geometry for weight and stress (including for 3D printing). Examines complex screw fastenings. Forms the basis of static and cyclic strength assessments



Benefits

- + comprehensive range of simulation options
- + detailed analysis and evaluation of mechanical behaviour
- + weight and stress optimisation
- + linked with standards and analytical calculation methods

The software Ansys simulates the mechanical behaviour of components and fasteners, based on the finite element method. The main focus is on structure analysis, stiffness analysis and strength calculation, both linear and nonlinear. A detailed analysis of stresses and deformations provides information on the strength and load bearing capacity behaviour of components.



Description



The ARNOLD GROUP

www.arnold-fastening.com

Wherever customers need us.

ARNOLD – this name is internationally renowned for efficient and sustainable fastening systems on the highest level.

With a foundation of many years of expertise in the production of intelligent fastening systems and very complex extruded parts, the ARNOLD GROUP has developed over a number of years into a comprehensive supplier and development partner for complex fastening systems.

With our positioning of “BlueFastening Systems” this development process will continue under a united and harmonized structure. Engineering, fasteners, and functional parts, together with feeding and processing systems, all from a single source – efficient, sustainable and international.

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