

### Sample project: Development of hand tools

# **Objective:**

Development of an innovative hand tool with significantly increased power-to-weight ratio compared with conventional tools

## Implementation:

- Simulation-driven development of the tool, from the working principle to the hand-operated prototype, using the relevant methodical development processes
- Methodical design of the working principle and of the basic device concept
- 1D simulation-based systems analysis of load data, efficiency and necessary component properties
- 3D simulation of CFD, electromagnetics, thermodynamics and structural mechanics for component design
- Development, construction and assembly of a variable trial test bench and prototype to evaluate critical functions under changing environmental conditions, usage patterns and specific load cases
- Development, construction and assembly of hand-operated prototypes for realistic testing and for presentation purposes
- Patent research, competition analysis, coordination of manufacturing, and construction optimized for manufacturing and assembly



### Result:

- Hand tool with innovative drive technology
- Optimized individual components
- Scalable design data for various target performance requirements

#### Powertrain development

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