INNOVATIONS IN CAX SYSTEMS

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Abstract: CAx applications always contain graphic, geometric, mathematical and engineering tools for designing in 2D and 3D, and also deal calculations, analysis and management systems. The most CAx programs in engineering are AutoCAD, CATIA, Inventor, Creo, SolidWorks and Solid Edge. Article examines some news CAx systems.
Keywords: CAx, CAD, AutoCAD, Mechanical engineering

INTRODUCTION. Innovation strategy in almost every economic area is essential for development perspective. Growing competitive environment, a rich assortment on the market and increasing customer demands are forcing manufacturers to shorten production cycle time, reduce production costs and improve product quality. One option to reduce the pre-production stages is a computer aided design - CAD (computer-aided design).

AUTOCAD 2014. AutoCAD is popular software for structural design in 2D and 3D by Autodesk. It is designed for CAD in Mechanical Engineering, construction, architecture, mapping and landscaping. The first version of AutoCAD was developed in 1982.

The current version is an AutoCAD 2014, which mainly focuses on increasing productivity and integration "cloud" services. Have also been revised report files, which is now easier. The new version includes Autodesk Exchange Apps integration, which is a store where the user can purchase the extension of the basic functions of AutoCAD. [1]

Innovations are also tools Design Feed for teamwork and live maps that allow the transfer of real maps directly to the drawing area. Facilitate the work of the new bookmarks file to quickly switch between open drawings or rapid creation and opening of new drawings. [1]

CATIA V6. CATIA is a program system for three-dimensional interactive design, manufacture and innovation of highly complex engineering products from French company Dassault Systemes. It is used mainly in the aerospace and automotive industries.

The latest version of CATIA V6R2013x that delivers enhanced industry solutions for industries such as packaging, energy, aerospace and defense, transportation, shipbuilding and so on. New features include, for example, the simulation application lifecycle (SLM), manages the simulated data, the simulation results to share and serve, for example, in support of the decision about return on investment. V6 also offers the possibility of extension for optimal design of composite product with new composite materials and simulate their behavior.
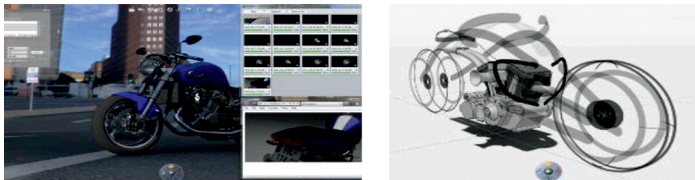

Fig. 1. CATIA Live Rendering and 3D sketching using Natural Sketch [3]

Interactive CATIA Live Rendering (Fig. 1) for the production of high-quality photorealistic images now allows ease of use as well as when shooting camera and offers the possibility of rendering photorealistic images in the background while the user continues to product design in CATIA. [3]

Also new is a Natural Sketch tool (Fig. 1) for 3D Sketching with new features for the real needs of creative designers.[3]

SOLIDWORKS 2014. SolidWorks is a CAx system from SolidWorks Corporation, a subsidiary of Dassault Systemes. Include tools for 3D modeling, assemblies, sheet metal parts, welded constructions, drawings and more. SolidWorks offers best in class volumetric modeling, 2D production documentation and easiest operation between CAx systems. Allow you to import a variety of 2D and 3D formats.
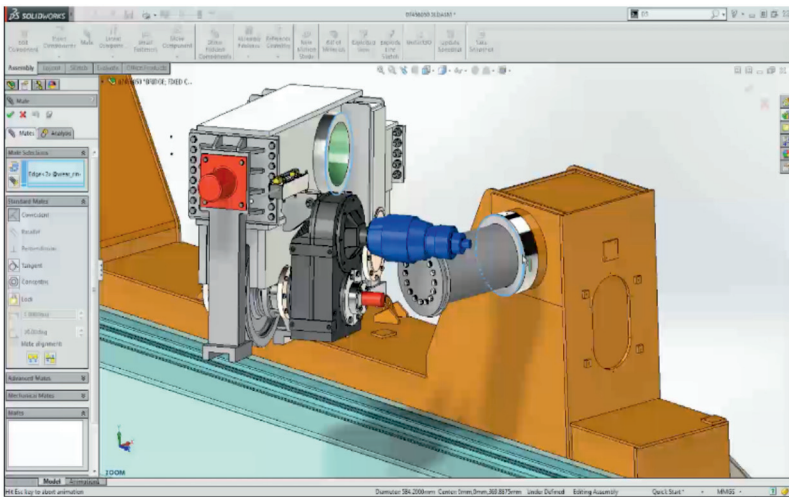

Fig. 2 SolidWorks 2014[5]

The most important innovations include Style Spline function that allows faster and easier to create complex surfaces and organic shapes with precise control. It was further enhanced sketching, making the creation of concepts and designs faster and easier with more robust and powerful features sketches. Improvements concern the reports. Using the new contextual toolbar "Quick link" is to create links faster and easier. Improved features have also been cuts or creating grooves and the metal parts is a new feature for reinforcement. [4]

It is further simplified simulation and eliminates duplication of activities allowing simultaneous creation. New options allow selection and management methods for calculating costs. A new type of calculation based on the average price of the material simplifies setup Costing module. Integration with Microsoft Excel and other user output characteristics Costing module improves share price data. [4]

PTC CREO 2.0. Creo is a suite of software for the design and construction of products developed by PTC, which has replaced the product formerly known as Pro / ENGINEER. PTC in 2012 introduced the current version of Creo 2.0. PTC is to enable manufacturing companies to move into the early phases of product development activi-

ties as much as possible. The combination of new versions of Creo Parametric, Creo Direct, Creo Sketch and Creo Layout brings substantial resources to improve cooperation, more innovation and product validation already during conceptual design. Since all Creo apps share a common data model, data can be designed easily shared between all users and applications and can be used repeatedly throughout the drafting process. [6]

CONCLUSION. This news is just a fraction of what the developers CAx systems recently introduced. Due to stiff competition, the company steadily improved its products and develop new applications to facilitate greater efficiency and engineers work in manufacturing plants.

The article was prepared in accordance with the project KEGA-023TUKE-4/2012 "Creating a comprehensive educationally-teaching material for the subject of Manufacturing Technology, using a combination of classic and modern information technology."

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