

EFFICIENT CONSTRUCTION WITH CAD-SYSTEM CATIA V5

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At the middle of 2000th year German automobile industry has began the analysis CAD-system CATIA V5 campaign. According to assessment CATIA V5 this system not only CATIA's new version, it's a new generation of CAD-system, which is more integrated than CATIA V4, and has even another architecture and model assembly philosophy.

Our company has the following aims: system architecture creation, support and development modeling universal methods, and use CATIA V5 to solve engineering problems.

In addition to these aims we develop special models design methods to satisfy our customers' requirements.

The principal CATIA V5 innovation is associativity between different model parameters. It makes it possible to make modifications that permit save a lot of time. Above all, model design logical basis can be defined at any time. These advantages make it possible to develop processes.

However it's also important, and may be the main factor, which determines larger project success is application relevant methodologies, permissive track parents/children relationship, use stored knowledge, generate and storage new knowledge, and many others. Modern requirements, which are connected with design acceleration and cost, stored information reusing when design new products, supply of product essential support information during all product life, make it absolutely necessary to use modern design methodologies. The situation is aggravated with necessity of information about product, and so that this information is considerably different at product life stages. And saving data integrity demand gain currency, for example, you can see it at input/output information parents/children relationship.

The main methodology principles consist in:

- Design process divided into stages
- Each stage correspond with users specialization:
 - * by functions
 - * by data presentation, that is model types (CATPart or CATProduct)
 - * by permissions
- Changing the stage, models inherit data, which is necessary for this stage
- Functions limit allow each user see only previous stages data, which are defined as necessary at this stage
- At once, associative relations with previous design stage data are saved

Thereby, it provides with opportunity of tracking all changes, which were made at previous stages, with information confidentiality and ability to work with slimmed-down form of model at each stage. And it's guaranteed project integrity, as all parents/children relationships could be tracked by links.

Part Design basic principles (not assemblies)

Start model is model without content and it's possessed of certain set properties. For example, start model contains parameters, formulas, checklists, and other data. Then model is handled to certain demands level.

Work results make published and it means that constructor makes results accessible to import to other models, for example for use it at further design stages. In such manner provides with design confidence saving, and models become slimmed-down. It's important for further complex assemblies creation, because they contains slimmed-down models, which also have relationships with generating models.

The module CATIA V5 Part Design has unique possibility as to create geometry at parametric representation, so as give it parametric dependence after design has finished. Parametric relations as structural component can be the modification objects and make it possible for redefinition itself. CATIA allow using underdetermined parameterization that makes it more flexible.

Assembly Design basic principles

The module CATIA V5 Assembly Design provides with structure ease creation and control by the following two ways. Element could be paste into defined position in assembly structure and be linked with other components by constraint or be created at certain position basing on structural settings.

However, the main CATIA V5 system advantage is ability to control complete assemblies or subassemblies due to specification tree.

Functions of assembly status automated analysis

During the part design whole circle constructors can reliably analyze geometrical clashes inside assembly, independently of complexity level and components amount. System detects intersections, over-constraint, over-identification or kinematic relations ambiguity between them and clashes concerning degree of freedom. Analysis report gives constructor comprehensive data about, where and which elements clashes and parameters of it. On the basis of this data he can makes corrections and the check analysis, and makes documentary confirmation the state of checked part.

Assembly specification automatic generation

Independently of assembly scale and complexity the module CATIA Assembly Design creates detailed specification in text format. The system guarantees that all requested for specification data will be without any drops and mistakes. Specifications at CATIA Assembly Design are suitable for production scheduling and other tasks about control of the technological circle.

It's important to train CATIA V5 users

The majority of participants have no problems in understanding, how to create, for example, cylinder, because modeling process is similar to great number of applications. The real problem is another way of thinking during modeling process, due to application of adaptive methodology and parameters. It's impossible to assimilate this modeling method in one week course, and it should be learned by the practically usage of CATIA V5. Among our company tasks are also training and support your personnel during modeling process, and design methods development.

Conclusion

Worldwide famous companies' success shows that usage of CAD-Systems as Catia V5 makes it possible to step forward for you company. And we can help you in it. Due to our long experience in mechanical parts design for such great companies like VW, Daimler, BMW, etc we can offer you face-to-face training, consulting. You will be guided and supported throughout your gain experience process. You with us, so success with you.