White Paper

Progressive Press Die design add-on in SolidWorks

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SolidWorks is a registered trademark of SolidWorks Corporation. Drawing example provided by Nara Mold & Die Co., Ltd.

Preface

Can this software really achieve 3D manufacturing? Is there real advantage in 3D designing? These questions grow larger as you come close to shop floor. On the other hand, 3D designing is a firmly established practice, as the advantage is obvious in designing by the visibility and the ease of analysis. If a through workflow is possible using 3D down to machining, the advantage of 3D is an unquestionable truth.

But problems exist. Is 3D data from the upper stream possibly be used in the down stream as it is? Does the design fully take account of machining process? Is the manufacturing information contained in the design correct? Can it be properly passed to CAM?

3DQuickPress assures you of the advantage of 3D. Till now, 2D engineering has been firmly rooted in Progressive Die Designing. Unskilled 3D engineering could never a rivalry against 2D expert. Overcoming this reality, 3DQuickPress along with its developers and resellers in unity provides real advantage of 3D to users. The resulted advantage is equal for all the users, regardless either large or small in company size.

Since 2003, 3DQuickPress built up a solid market in US and Europe, then its' marketing started in Japan. Japanese resellers appreciated in particular its PRL (Production Ready Library) technique, which creates the knowledge base of the parts and die sets. As the development has progressed ahead, 3DQuickPress reflected requests from users one after another to build in number of easy to use functionalities into the software until it reached to today's V3.

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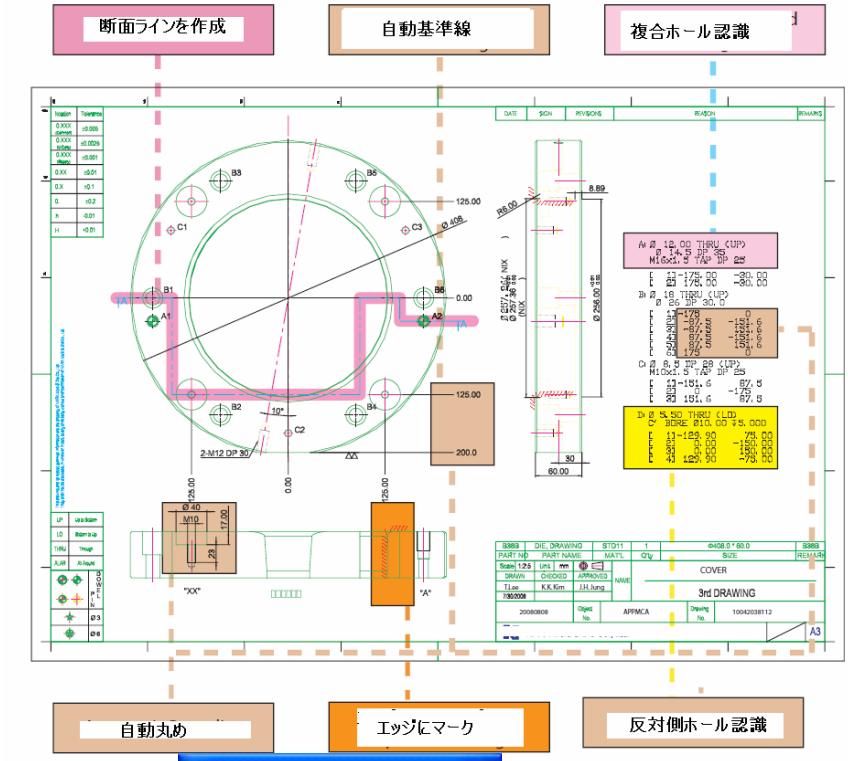
The purpose of this writing is to introduce new improvements and functionalities which were already developed and being included in the next V3.XXX version of 3DQuickPress. These improvements reflected the requests from auto-parts manufacturers and electronic device manufacturers. As for the existing features of 3DQuickPress, all the points are referred to in other materials and writings. Above all the existing features, we like to call your particular attention to “3DQuickForm“ which produces blanks and thinning simulation of complex forms.

Detailed Design

The following illustration is an actual example of drawing from 3DQuickPress.



These icons 

are used to create the above drawing. Creation of cross sections at will, standard ordinates and datum line setting,

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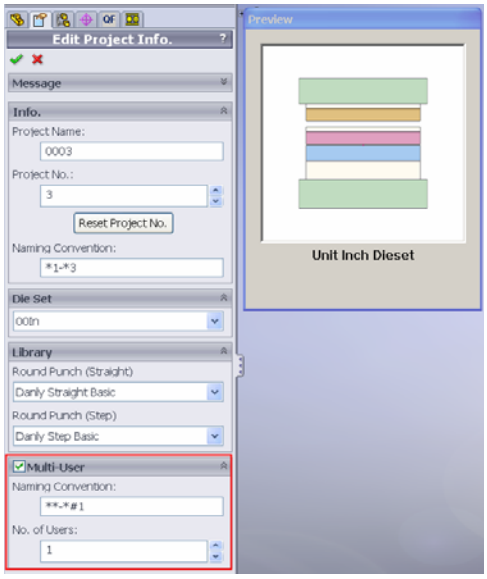
annotation to edges, call out of holes, various cosmetic hole simbles, revsion of decimal places, etc. are possible. 3DQuickPress hole table provides you abandant information including grouping, flexible format, complex holes, description of holes on wrong side, which are not available by the SolidWorks native hole table. In this way, 3DQuickPress delievers the drawings exactly meeting your needs and the detailed hole table.

Increased Performance

SolidWorks 2009 will show you significant improvements in the speed and ease of use. 3DQuickPress also provides increased performance in various technic in the strip layout creation, concurrent designing, improved hole handling, complete support of light weight which helps opening punch assemblies and so on.



Easy To Use

Any change of SolidWorks model can be reflected into strip layout without harming 3DQuickPress characteristics of light weight operability. User defined components can be inserted or swapped in a strip layout design. Drawings are available directly from strip layout. Scrap shapes can be checked. Station numbers are given automatically. Material width change is possible from either sides. You can check finished product shape after modification.

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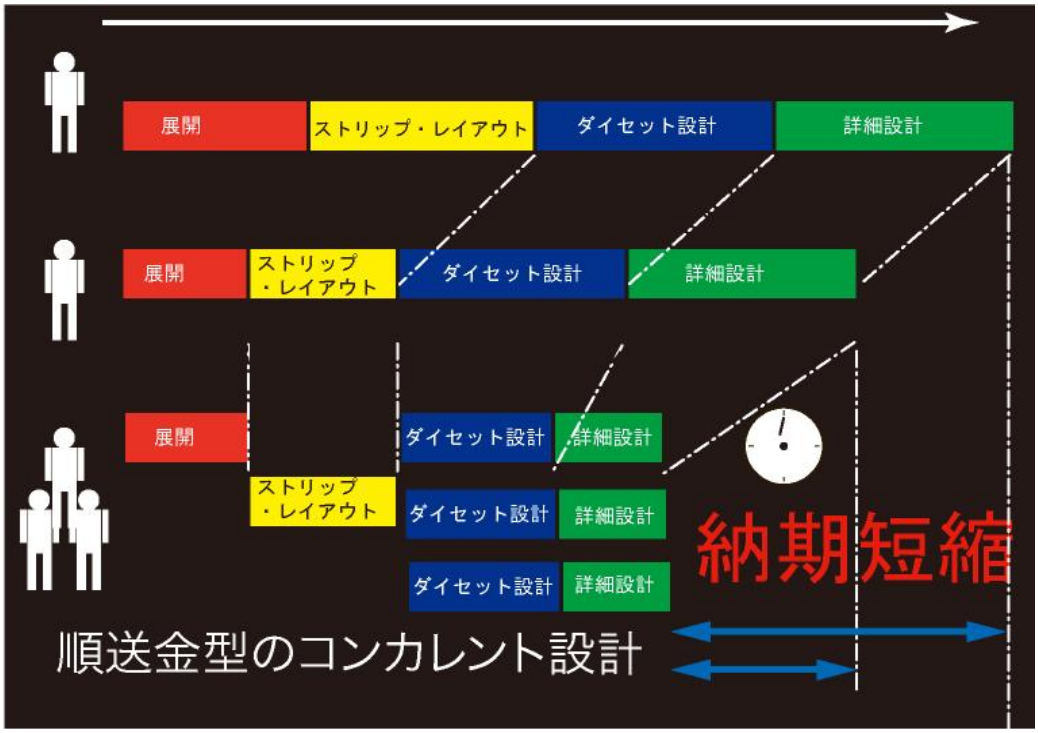
Swapping is possible in the die set process. Punches can be designed starting from parts or assembly. By all these, you may even divert layout process. Interference check can be saved for further use while with SolidWorks only it is visible but no saving and no further use.

Translation, copy and rotation of parts require no steps and simple and easy. （See the details under “Quick3D Initiative”）

Concurrent Design

Creating a master strip layout and its multiple divisions, multiple users can carry out die set designing separately and simultaneously. This is an unique technology which makes 3DQuickPress outstanding among all the similar products, high-end or middle range.



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Complex Tooling

Using “change over” handle in the tooling manager and using multiple strip layout, you can produce multiple products in single die set. It cleverly saves time and labor when you have many similar shapes to be punched or cut with largely common tools. Some customer who produces 27 different but similar products takes this strategy.

If you have 3,000 holes, 3DQuickPress gives a great relief by way of clustering to users who have been annoyed from the known extremely slow performance.

If you have different thicknesses in a material, you may not be disturbed any longer. Gradual change of thickness could also be coped with by careful approach. Counter bends can be handled.

Integration of Design and Manufacturing

Manufacturing information can be passed to the screen image, drawing and hole table using color information. This is the first step towards total automation of all the process to be followed including CAM programming. Not limited to feature, sketched geometry is also the subject of the color information. You are no longer dependent on any specific CAM system and may use all what you have or you may want to use. If any specific CAM system has to be employed, 3D through-out can not be achieved.

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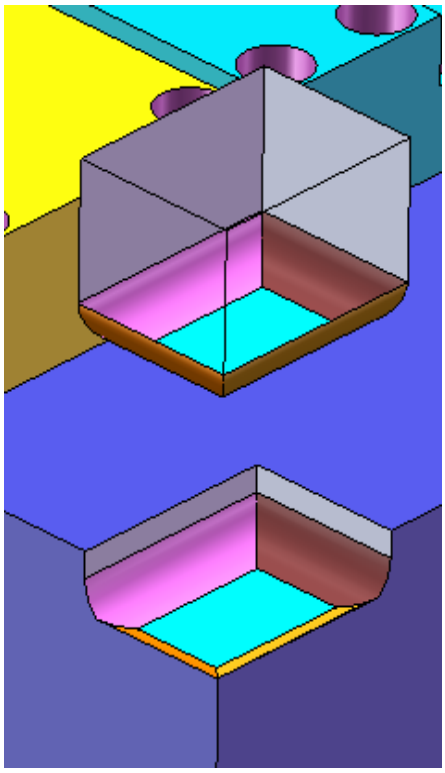
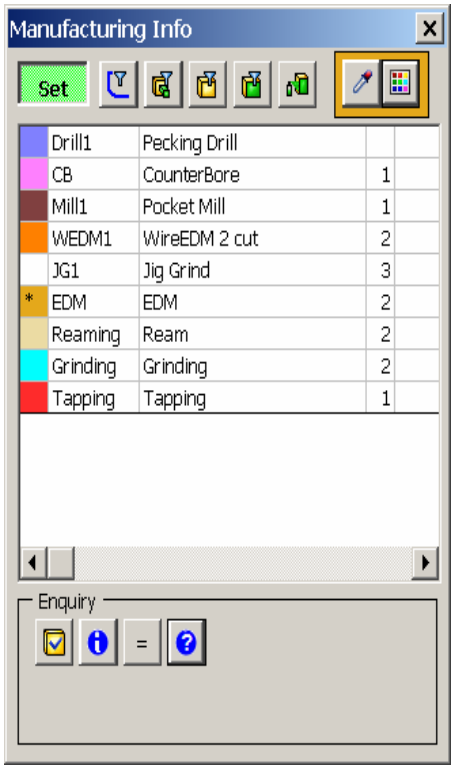


Color information of the parts is automatically passed to hole.



Manufacturig information, decimal places, number of holes are defined into color informtion.

Quick3D Initiative

The purpose of “Quick3D Initiative” is to solve the complexity and heavy weight of 3D, and help learning 3D by either expert or beginners. It will upgrade their ability and eliminate their psychological resistance. Companies can immediately bring in beginners to the real job, are no longer dependent on small number of expert and now can make use of human resources so far not yet utilized.

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Problems of Parametric Design

Small number of engineers may well master the top down designing, mating, in-context designing etc. and can achieve highest efficiency of 3D. But, large number of people will face with insoluble difficulties such as cycled links. If an assembly consists of small number of parts, problem is not there. In medium size assembly typical for progressive dies, difficulty will possibly be too serious. The process is greatly disturbed and a lot of time is lost by reconstruction errors and inability of correction. Company may need to have in-house trainer to keep eyes on the errors and accidents all the time. Further training will also take a long time. The loss of time and money is quite heavy.

Some will go back to 2D. But, smart users will go back to “3D Bottom Up” designing. Contrary to the “Top Down” designing, they will build up assembly from less linked parts. It is a right answer. Yet, there are some difficulties in handling multiple parts in an assembly. Modification is not necessarily easy, the result of modification is unpredictable, definition of locations using mates is tedious, revision control is difficult and performance is not good enough.

Quick3D proposes you…

Quick3D concept suggests, “Go back to Bottom Up and Use 2D approach”. 3DQuickPress offers icon menu to assist you. Bottom up is the easy way to learn assembly design and 2D method is the way most of users were used to in the past.

In 2D approach of Quick3D, parts can easily and correctly be inserted by pointing the positions. For translation and copying parts, you just specify “from ..to” or x

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or y or direction. Rotation can be done about any axis you define. Geometry can be imported into file from other places. You may create blocks starting from sketch or you may do it from cross section views. All are no-parametric.

QIC (Quick Insert Components) of 3DQuickPress inserts components without mating relations. Operation is simple and supports both parts and assemblies. You may also project on to free surfaces.

With utilities, you may delete components, rename, search and hold in hand full control of the assembly management. If necessary, you may set on “Beginners Mode”. This will prevent users to be drugged into the trouble of context problems as it prohibits too many linkages to be attached.

In the multi-body designing, automatic naming and conversion of multi-body to an assembly are possible. Interference check supports the check on reference surfaces. The results can be exported to parts documents and short cut to the parts is automatically created.

Concept of Quick3D

The quickest way for 2D experienced user to be the master of 3D designing is to make up a workflow based on 2D concept and make himself to be fully capable of utilizing assemblies. For those who are already knowledgeable of 3D, the most comfortable way for designing assemblies is to get rid of relations. 3DQuickPress will help them with the Quick3D concept.

Quick3D is the most practical way for all the engineers to become skillful 3D designers and expert of progressive die designing without any fall out behind.

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Conclusion

By the 3D Through-out, companies may drive rationalization, within and around themselves with associated companies, also can cut the delivery lags, labor costs and further enlarge the benefit limitlessly. 3DQuickPress and its related software, backed up by the support of the developer, resellers and the engineers team, will provide a solid proof that such success is within your reach. Nano-soft Co., Ltd., at Shin-Yokohama is always ready to give a few hour demo and presentation if requested. Please contact *3dquickpress@nanosoft.co.jp*. Their parent, Sofix Co., Ltd. is a system developer for machine controlling programs and other industrial software. We wish to go hand in hand for cooperation not only with existing users but also with machine builders, related software venders in order to increase business chances for the benefit of all the parties concerned.

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