

## VOLUME

### ENOVIA VPM Volume Computation



ENOVIA® VPM Volume Computation provides the ability to create alternate representations of products or assemblies for size reduction or for the creation of geometry creation better suited to specific contexts.

#### Key Benefits

- Generate lighter representations of parts by simplifying meshes to a user-selectable level of accuracy
- Generate simplified external representations of parts ensuring confidentiality protection when communicating with suppliers
- Perform space reservation by generating the swept volume of a moving part
- Optimize digital mock-up management through the combination of ENOVIA Volume Computation commands tailored to meet the user's specific needs
- Manage the different representations by saving and reusing them for productive digital review and analysis

## Product Overview

ENOVIA VPM Volume Computation creates accurate reduced representations of parts or assemblies by keeping their external representation only. Users can generate simplified representations of parts ensuring confidentiality protection when communicating with suppliers. Further design is facilitated by performing space reservation through swept volume which can also be used for clash detection. Finally, all generated representations can be managed easily by saving and reusing them for productive digital review and analysis.

ENOVIA VPM Volume Computation enables the user to handle digital mock-ups of all sizes in industries as various as consumer goods, automotive, aerospace, energy, shipbuilding or heavy machinery. It enables greater productivity for digital review and analysis with a comprehensive set of commands and unique set of functions to optimize the size and number of files that can be manipulated at any stage of the review. Security of confidential IP is protected by replacing geometrically accurate parts with simplified external representations. Users can create representations of products or assemblies which are adapted to specific review tasks. ENOVIA VPM Volume Computation enables user to perform potentially complicated and time consuming verifications on products easily and with fewer actions.

## Product Highlights

ENOVIA VPM Volume Computation has the following key capabilities:

### **Mesh Simplification for Lightweight Representations**

The mesh simplification function allows users to select a part or an assembly and simplify it through an additional tessellation in order to generate a light external envelope of the part or assembly. The extent of the simplification is user-controllable and the resulting representation is a unique volume. Thanks to this simplification functionality, users can easily manage the file size against the precision of the representation and thus drastically reduce the size of their assemblies. The user can directly access this command from the wrapping command to obtain the lightest part representation desired. By providing instantaneous simplification, storage of any intermediate results is avoided. In addition, it provides a powerful help to wrapping in order to obtain an ultra light alternate representation.

### **Simplified External Representations for Sensitive Data**

The wrapping function allows users to select a part or a set of parts and wrap it by applying an additional tessellation. This generates a lightweight external envelope of the selected part, a unique volume-typed solid, for situations where the outer aspect need not be identical to the original one. With this functionality, the user can roughly reserve space for a component not completely designed yet.

The user can protect confidential information by replacing accurate parts with a simplified representation when sending information to partners. Additionally this feature can be used to drastically reduce the size of an assembly for improved productivity when reviewing a mock-up. The level of tessellation is selectable enabling the user to manage file size against precision of the wrapped representation.

### **Swept Volume Generation of a Moving Part for Space Reservation**

ENOVIA VPM Volume Computation generates the swept volume of a moving part using a simulation defined by the user. This function allows the user to perform space reservation early in the process of assembly design, but also can be used for clash detection to ensure that a moving part will not come into contact with another part of the assembly at any time. The number of pre-defined positions stored in the simulation can be reduced according to a controlled decrease of the final computation accuracy. This leads to a quicker computation and more lightweight representation of the swept volume. The swept volume function is fully integrated into the simulation environment results are linked to simulation output. Thus, a change in the simulation parameters will be propagated to the associated swept volume representation.

### **Offset Generation of a Part for Space Reservation**

The Offset function allows users to select a part or a set of parts and enlarge it by computing a new outer tessellation. This generates an external envelope of the selected part, a unique volume-typed solid, for situations where one must take a security margin. With this functionality, the user can roughly reserve space for a component not completely designed yet. The value of offset (distance between the real shape skin and the new one) is selectable enabling the security margin management.

### **Thickness Generation of a Part for Space Reservation**

The Thickness function allows users to select a surface or a set of surfaces and transform them in volume. This generates an external envelope of the selected part, a unique volume-typed solid, for situations where one must take into account the thickness of real part such as sheet-metal part or thin part. With this functionality, the user can roughly reserve space for a component designed as surfacic. Two values are selectable to compute the volume on surface representing outer shape, inner shape or medium shape.

### **Manage Different Representations for Productive Design Review and Analysis**

The generated shapes are standard representations and are opened directly in the application window. They can be saved or exported as any other representation. The representations can be created immediately under the currently active product structure or can be created separately. Depending on their needs, the user can perform usual digital review and analysis, either on the original shape or on one of its computed representations.

### **ENOVIA R.A.C.E. Setup Compliancy**

When ENOVIA VPM Volume Computation is deployed along with ENOVIA® VPM Team Central™ or ENOVIA® VPM Central™ using the available ENOVIA Rapid Application Configured Environment (R.A.C.E.) Setup, the applications can be used immediately in production. This eliminates the need for specific customizations and reduces the time and effort for enterprise deployments.

### **The Role of ENOVIA V6 and PLM 2.0**

ENOVIA VPM Volume Computation supports PLM 2.0, product lifecycle management online for everyone, and the ENOVIA V6 values: global collaboration innovation, single PLM platform for intellectual property (IP) management, online creation and collaboration, ready to use PLM business processes, and lower cost of ownership.



## Delivering Best-in-Class Products



Virtual Product



Information Intelligence



3D Design



Virtual Planet



Realistic Simulation



Dashboard Intelligence



Digital Manufacturing



Social Innovation



Collaborative Innovation



3D Communication

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