



# LATONA

**Automatic Mid-mesh Generation System**

ver. 9.0.4

**Easy Manual**



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## **1. About input model**

LATONA9 requires 3D geometrical data as input file in the format of HyperMesh file (.hm), or CAD file (.step, .igs, .x\_t, .catpart, .prt, .sldprt, etc.). Please pay careful attention to the version of input HyperMesh file and make sure that it has the same version with the HyperMesh version executed with LATONA or older. Using newer version of input HyperMesh file will cause error during LATONA execution.

This automatic mid-mesh generation system accepts both part and assembly files as input. For input with part file, LATONA will only generate mid-mesh as output result. In the case of assembly file, it is compulsory to manually define the components/parts inside the assembly file into two types of groups: products or connection parts. All the parts that belong to connection parts have to be replaced into a new sub-assy. After creating new sub-assy for the connection parts, please save the input file. During processing LATONA will only create mid-mesh for product parts and not for connection parts. When all the mid-mesh generation process for all product parts was completed, connector mesh will be automatically created to join two adjacent connected products. As the final output for assembly input file, mid-mesh for product parts and also the connector mesh for connection parts will be generated and connected together.

To gain high-quality mesh from LATONA, it is recommendable to use good-quality CAD data as input. LATONA has auto-repair function for CAD input that has imperfection such as small cracks, unconnected lines, small opening, so that better quality CAD can be created before going to generate mid-mesh. However, please avoid vital error, i.e. topology error, duplicate surfaces, when preparing CAD data for use in LATONA. can be fixed automatically by LATONA.

## **2. System Requirement**

### **License server computer**

**Operating System:** Windows 7

Windows Server 2003

Windows Server 2008

Windows 10

### **Computer to install LATONA**

**Operating System:** Windows 7, Windows 10, Windows Server 2019 (64 bit)

#### **Required software:**

HyperWorks Version 2019.1.6

HyperWorks Version 2021.2 (recommended)

(HyperMesh , Altair Engineering Inc.)

※Please make sure to previously install/update HyperWorks with version listed below before installing LATONA

HyperWorks Version 2019.1.6

HyperWorks Version 2021.2

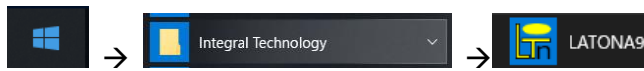
**Minimum memory:** 32 GB (64 bit)

### 3. Operating Graphical User Interface (GUI)

#### 3.1 How to open GUI

There are two ways to open LATONA GUI:

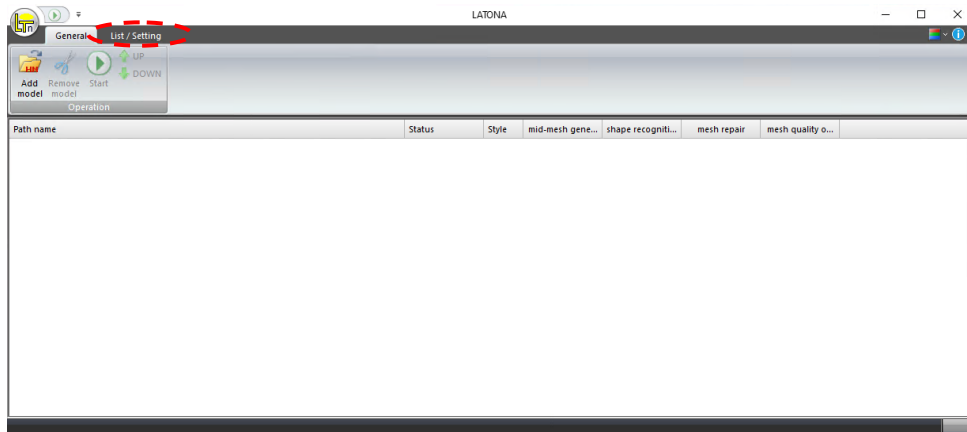
- 1) Go to “Start Menu”→ “Integral Technology”→ LATONA9





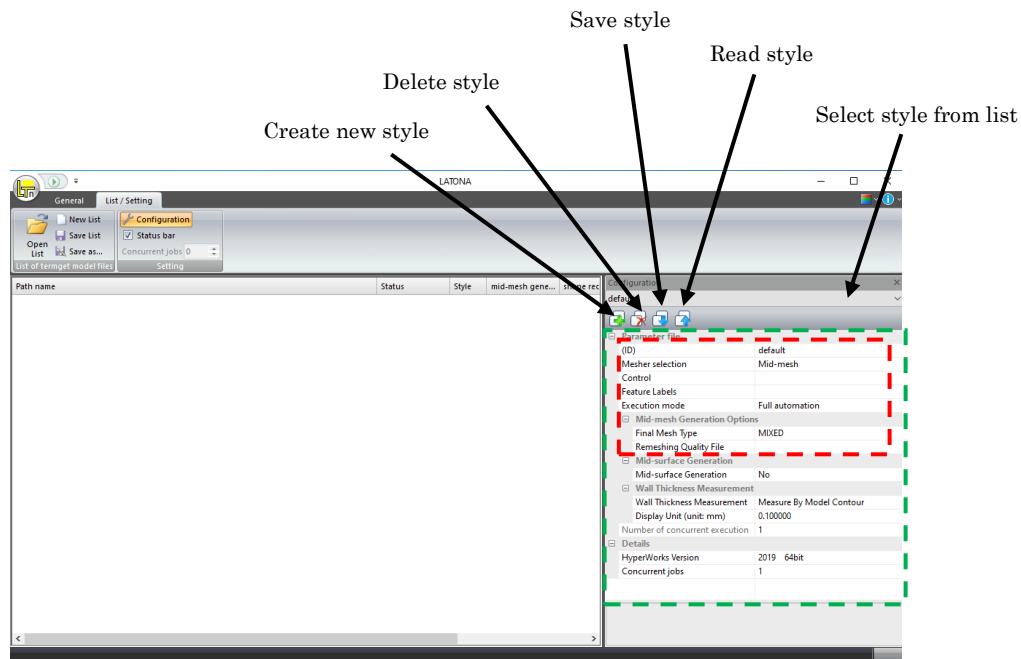
- 2) Double-click on “LATONA.exe” that can be found inside the folder where LATONA was installed.


#### 3.2 Setting of parameter files and style

Firstly, please define parameter files from LATONA GUI. Go to the top of LATONA GUI indicated by  and click on “List/Setting”



By clicking “Configuration” shown in  color, configuration panel will pop-up in the right hand side and use it to create new style or set the necessary parameters. Configuration panel is shown by green dotted-line 



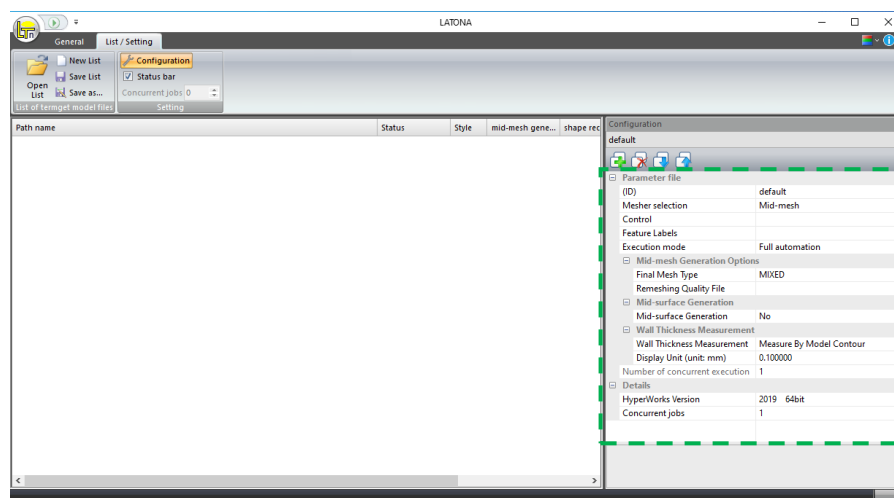
Select style to use from the style list, and set the required parameters from the configuration panel shown in red dotted-line 

The current customers will receive parameter files that has been set with analysis requirement. New users may receive parameter files with default setting so please make sure to reset the parameter values to meet with the analysis requirement.

Parameter file name	How to set parameters	Description
Control parameter file (.ctr)	At the “Control” column, select “ctr” parameter file.	Use this file to set parameters related to feature recognition, file management, output file.
Feature label parameter file (.AILabel)	At the “Feature Labels” column, select “AILabel” parameter file. To set parameters, open “AILabel” parameter file with Notepad/WordPad.	Use this file to set parameters related to AI, feature label manual correction.
Remesh parameter file (.HMRemesh)	At the “Remeshing Quality File” column, select “HMRemesh” parameter file. To set parameters, open “HMRemesh” parameter file with Notepad/WordPad	Use this file to set parameters related to mesh generation (mid-mesh generation, final mesh quality criteria, mesh rules, etc)

### 3.3 Parameter setting

Brief explanation about parameters inside the configuration panel will be briefly covered here.



#### ● Parameters related to mid-mesh generation

##### ➤ Final Mesh Type

Specify the mesh type to be generated for mid-mesh. Default value is “MIXED” type. Other selection of mesh type are “TRIAs”, ”QUADs”, ”MIXED”, ”RIGHT TRIAs”, ”QUADS ONLY”.

##### ➤ Remeshing Quality File

For remeshing quality file, please specify “HMRemesh” parameter file that is suitable for analysis requirement. Please make sure that the settings of the selected “HMRemesh” file are correct. To edit the parameters, open the “HMRemesh” parameter file with Notepad/WordPad and change the parameter value using keyboard.

#### ● Execution mode

In general there are two ways to execute LATONA: 1) full automation, 2) manual correction. Manual correction mode will give better mid-mesh result, as the users are allowed to confirm/modify any mistakes that may occur during shape recognition/mesh generation. It is advisable to check/modify any wrong feature labels resulted from automatic feature recognition in order to obtain nearly perfect mid-mesh result.

#### ● Mid-surface generation

Set this parameter as “Yes” when mid-surface result is necessary. This parameter has the value “No” by default.

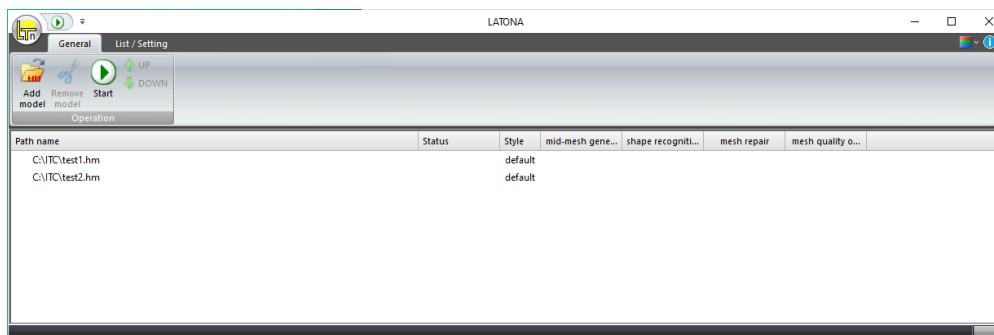
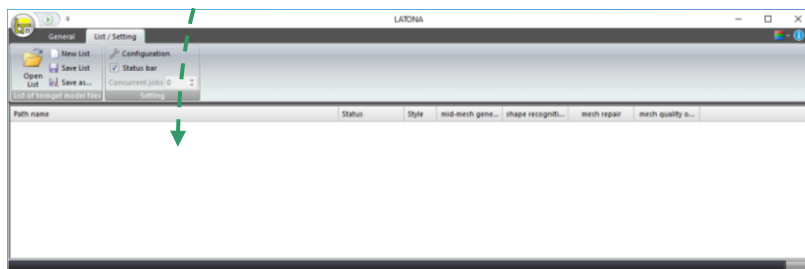
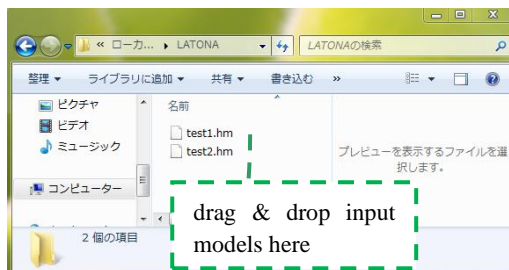
- **Wall thickness measurement**

Set this parameter as “Measure By Model Contour” when wall-thickness data is necessary which will be automatically set by default. Select “Ignore” when wall-thickness data is not needed.





To create the output for wall thickness data, please also specify the output thickness range from “Display Unit (unit:mm)”.

### 3.4 Registration of input models










To start with mid-mesh generation, firstly register all 3D geometry files as input file to start with mid-mesh generation process. To register input files into LATONA GUI, simply drag & drop the input files inside the LATONA GUI (see the figures below for better understanding)





After registration of input models, click on  to start execution of LATONA. Soon after the execution started, “in progress” will be shown at the status bar and  mark will be displayed at the left side of the model in process. Also, the indicator to show the progress of execution process will be displayed on the right side. When the process finished correctly  mark will be displayed at the left side of the model name, and  mark will be displayed when some errors occur. In the case if error occurred, the error message will also be shown in the status bar.

Symbols/marks that will be displayed at the left side of model name and their meaning can be found as follows:

-  execution in progress
-  execution in progress (after restart)
-  pause process
-  process complete
-  process failed & stop
-  error during execution
-  LATONA license not found
-  HyperMesh license not found
-  end task by user interruption

After the execution process completed correctly, a new folder with the same name as the input file name will be created, where the final output result from LATONA is stored. Let’s take an example from the above illustration where test1.hm is located in C:/ITC. The final output result will be stored inside a folder “C:/ITC/test1”. For detail information about the output file name, see Table 1.

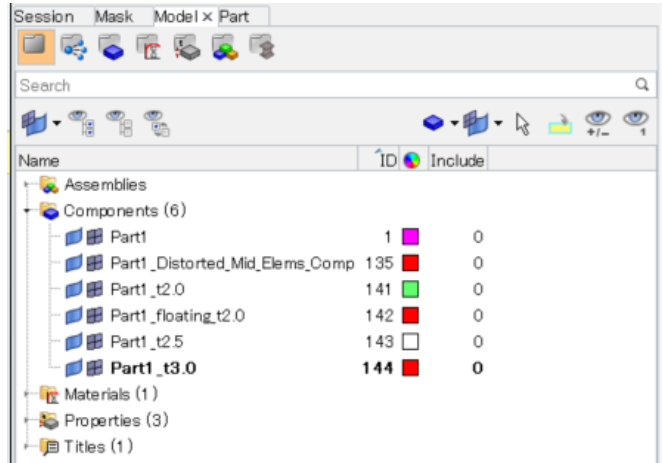


Table 1. List of output file name from LATONA

<b>File name</b>	<b>Description</b>
“input file name”.hm	Input file to LATONA (3D geometry data)
“input file name”.style	File that store all the settings of LATONA GUI, required during re-execution of LATONA
“input file name”.log	LOG file for LATONA process
“input file name”_CRST2.log	LOG file for re-start of LATONA GUI
“input file name”_RES2_BATCH_SOLID_001_Part1.hm	Initial mesh result at the outer surfaces of input 3D-CAD
“input file name”_LTN9_tanbu_result.hm	Recognition result of end-terminal surfaces (used for manual correction)
“input file name”_LTN9_offset_surfs_result.hm	Recognition result of offset surfaces (used for manual correction)
“input file name”_design_result.hm	Recognition result of design surfaces (used for manual correction)
“input file name”_node_pairing_RESULT.hm	Node-mapping result for outer & mid node pairing (used for manual correction)
“input file name”_MPD_1D_edges.hm	1D edges generation result for mid-mesh generation (used for manual correction)
“input file name”_RES5_FINAL.hm	Final output file in HyperMesh format (includes wall thickness value)
“input file name”_RES5_FINAL.bdf	Final output file in Nastran format (includes wall thickness value)

## 4. About output result

The final output from LATONA has a file name ended with 「\_RES5\_FINAL.hm」 . Please see below for the content of final output file and definition of each components.



1. Part1\_tXXX : final mid-mesh result  
(complete with wall thickness value)
2. Part1\_Distorted\_Mid\_Elems\_Comp : indicator for improper mid-mesh location  
(for confirmation purpose)
3. Materials : material info
4. Properties : wall thickness properties info

## 5.Support

For any inquiries, please contact us by email or phone

E-mail : [support@integral-technology.co.jp](mailto:support@integral-technology.co.jp)

<http://www.integral-technology.co.jp/ja-utf8/ContactUS.html>

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