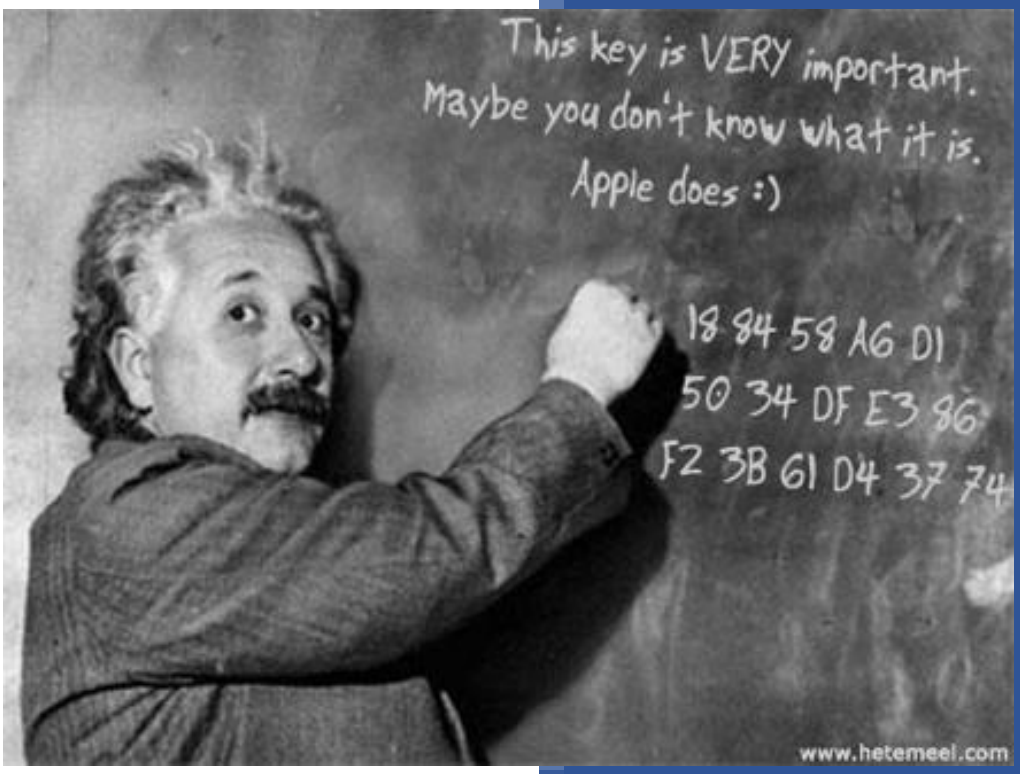
Optimizer E3 a member of CubeMaster SDK

Reference Guide



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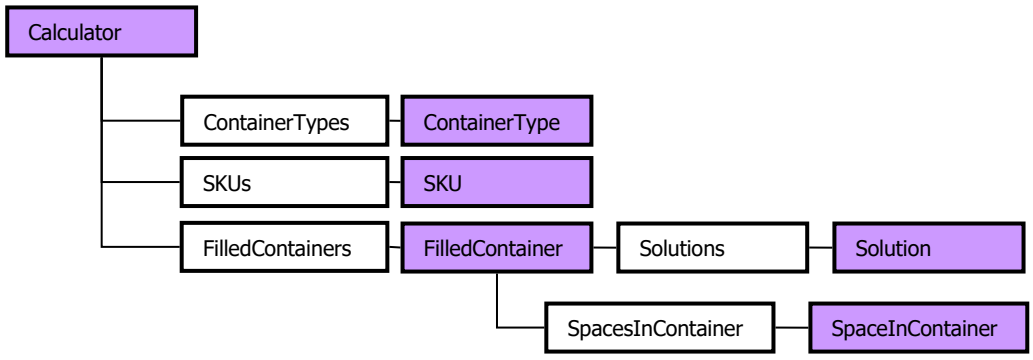
1 Introduction

OptimizerE3 Programmer's Reference Guide is for the developer who likes to make a software application with load planning and optimization features. This document contains a full description for the object model, collections, properties, methods, events, enumerations and code samples of OptimizerE3 components as followings;

- OptimizerE3 Object Model
- OptimizerE3 Objects
- OptimizerE3 Collections
- OptimizerE3 Events
- OptimizerE3 Enumerated Constants
- OptimizerE3 Code Samples

2 Object Model

OptimizerE3 has one root object - *Calculator*. The *Calculator* has three members - *ContainerTypes*, *SKUs*, and *FilledContainers*. Each member represents a collection of *ContainerType*, *SKU* and *FilledContainer* object respectively. The *ContainerType* represents information of a container size such as sea van, truck, trailer, pallet and carton to be used during the load optimization. It includes a name, sizes, weight, color and description of container. The *SKU* represents information of one SKU such as shipping carton, master carton and pallet load to be loaded into the containers. It includes a name, sizes, weight, quantity, color and description of SKU. The *FilledContainer* represents information of one loaded container after the calculation. It contains the number of SKUs, load-blocks, spaces and load summary. It has another two objects, *Solutions* and *SpacesInContainer*. The *Solutions* object is a collection of *Solution* object that presents one load-block in a container. The *SpaceInContainer* object is a collection of *SpaceInContainer* that represents one space in a container. The following picture shows the



conceptual view of the relation between the objects and collections of the *Calculator* object.

3 Calculator Object

The *Calculator* is a main object to collect the input data, execute the optimization and store the results of the optimization. The optimization requires the following information as input data;

- A list of container types
- A list of SKUs
- Load type
- Load rules

Available container types are carton (tote), pallets, sea vans, trucks and air pallets. Available SKU types are carton and unitload of cube shape. The roll shape is not supported in the current version of Calculator. Three load types – Single Load, Mix Load and Set Load are supported. For more information of the load type and load rules, please refer the CubeMaster User's Guide.

3.1 Calculator Object Overview

❑ Properties & Collections

ApplyGroup	ApplyItemSequence
bApplyUnitLoadOnMixLoad	bFillAirbagOnContainer
bSplitIdenticalItem	~~CntLoadDir~~
CompareTypeOnItemSum	ContainerCount
FilledContainers (New at ver 10.10.4.0 – replaced Containers)	ContainerTypes (New at ver 10.10.4.0 – replaced ContainerTags)
DataErrorType	EnhanceAllContainers
EnhanceLastContainer	~~EnhanceSKUList~~
ErrorMessage	ItemCompareCondition
~~LicenseKey~~	LimitMaxLoadWeight
~~LoadByItemPriority~~	~~MachineName~~
~~MaxContainerWeight~~	MergeEmptySpaces
~~MinCntGapWidth~~	MixDifferentGroupOnMultiSetLoad
OptimalLoadLevel	~~OptionBLOBStream~~
~~PredefinedOption~~	~~SimProperties~~
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StackingRule	~~SortTypeOnItemSum~~
SubTitle	Title
UOM	bUseSafeStacking
MinSupportRate	

❑ Functions & Methods

AddItem	AddItem2
~~AddPreloadContainer~~	~~AddSubContainer~~
~~AddUserAdditionItem~~	~~ApplyUserAdditionItems~~
~~AutoDetectSimType~~	~~ContainerInfo~~
FindItem	GetResultBLOBStream
~~GetResultRecordset~~	~~GetSKURecordset~~
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~~OnStartPage~~	Reset
Run	SaveToFile
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~~SetContainerCornerCastSize~~	SetContainerNamingRule
~~SetGroupSequence~~	~~SetItemAlias2At~~
~~SetItemAliasAt~~	~~SetItemArrowDirectionStringAt~~
~~SetItemColorAt~~	~~SetItemCommentAt~~
~~SetItemConstraintPrimaryLoadDirIndexAt~~	~~SetItemCumulativeLayerLimitAt~~
~~SetItemFlipStartLayerAt~~	~~SetItemGroupNameAt~~
~~SetItemHatchStyleAt~~	~~SetItemJobHeightSlackAt~~
~~SetItemJobLengthSlackAt~~	~~SetItemLoadDirAt~~
~~SetItemLoadTypeAt~~	~~SetItemMaxLayerAt~~
~~SetItemMaxLayersAt~~	~~SetItemMaxLayerStringAt~~
~~SetItemNetWeightAt~~	~~SetItemPropertiesAt~~
~~SetItemProperty4At~~	~~SetItemSetRatioAt~~
~~SetItemSimpleLoadLowerLayerPatternTypeAt~~	~~SetItemSimpleLoadUpperLayerPatternTypeAt~~
~~SetItemUserActionTypeAt~~	SetResultBLOBStream
~~SetResultRecordset~~	~~SubtractItemFromLoadedPattern~~
~~SubtractItemFromLoadedPattern2~~	~~TryToLoadIntoOneContainer~~
SetMaxRuns	UnloadContainerByID
~~UseSavedDefaultOption~~	

- **Events**

None

3.2 Calculator Object Prosperities

- **ApplyGroup Property**

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization uses the group rule.
Syntax	Property ApplyGroup As Bool

Remarks	The group rule allows the optimization to place SKUs of the same group into same area in a container. You can group SKUs with order number or destination through the *GroupName* property of SKU object. . The default value for this property is FALSE.
Data Type	Bool

ApplyItemSequence Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization uses the sequence rule.
Syntax	Property ApplyItemSequence As Bool
Remarks	The sequence rule allows the optimization to put SKUs with high priority earlier in the container and low priority later. You can determine priority of each SKU by using the *Sequence* property of SKU object. If you are using the group rule with the sequence rule together, the group rule is applied first. The default value for this property is FALSE.
Data Type	Bool

bApplyUnitLoadOnMixLoad Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization makes unit loads first on the mix load.
Syntax	Property bApplyUnitLoadOnMixLoad As Bool
Remarks	When the bApplyUnitLoadOnMixLoad property is set to TRUE, the optimization fills containers with single SKU type first and the next containers with remain SKUs later. The default value for this property is TRUE.
Data Type	Bool

bFillAirbagOnContainer Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization fills containers with air-bags when the containers filled with single SKU types.
Syntax	Property bFillAirbagOnContainer As Bool
Remarks	When the bFillAirbagOnContainer property is set to TRUE, the optimization fills containers with air-bags after filling inside the containers with single SKU type completely. The default value for this property is FALSE. * Please note that the size of air-bags is determined automatically.
Data Type	Bool

bSplitIdenticalItem Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization places the same type of SKUs in different spaces.
Syntax	Property bSplitIdenticalItem As Bool
Remarks	When the bSplitIdenticalItem property is set to TRUE, the optimization fills the spaces with maximum efficiency and thus allows splitting the same type of SKUs into different spaces. The default value for this property is TRUE.
Data Type	Bool

CompareTypeOnItemSum Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns the rule to indentify a SKU during the optimization.

Syntax Property CompareTypeOnItemSum As _CompareTypeOnItemSum

Remarks The following values are available;

Value	Description	Constant
0	Identifies two SKUs if all properties are same.	*CompareAll*
1	Identifies two SKUs if the name and sizes properties are same.	*CompareNameAndSizeOnly*
2	Identifies two SKUs if the certain properties are same.	*CompareConditionally*

The ItemCompareCondition property should be set when the CompareTypeOnItemSum property is set to *CompareConditionally*.

The default value for this property is CompareAll.

Data Type _CompareTypeOnItemSum

ContainerCount Property

Applies To LoadOptimizerLib.Calculator

Description Return the number of loaded containers that were generated from the optimization.

Syntax Property ContainerCount As Long

Remarks Read Only

Data Type Long

FilledContainers Property

Applies To LoadOptimizerLib.Calculator

Description Returns the collection of the *FilledContainer* object. The *FilledContainer* object represents a loaded container generated from the optimization.

Syntax Property FilledContainers As Variant

Remarks Read Only. Use this property to access all loaded containers that were generated from the optimization.

Data Type Variant (*FilledContainers*)

Examples (Visual Basic Code)

```
Dim oMixLoad As New LoadOptimizerLib.Calculator
Dim oContainers As IFilledContainers
Dim oContainer As IContainer
Dim i As Integer

oMixLoad.Run (0)

Set oContainers = oMixLoad. FilledContainers

For i = 1 To oContainers.Count
    Set oContainer = oContainers.Item(i)
```

```
Debug.Print "# FilledContainer:" + CStr(oContainer.ID)
Debug.Print "    Name =" + oContainer.Name
Debug.Print "    Number of loads= + CStr(oContainer.ItemCount)

Next i
```

ContainerTypes Property

Applies To	LoadOptimizerLib.Calculator
Description	Returns the collection of the *ContainerType* object. The *ContainerType* represents an empty container such as sea container, truck and trailer to be loaded.
Syntax	Property ContainerTypes As Variant
Remarks	Read Only.
Data Type	Variant (*ContainerTypes*)

DataErrorType Property

Applies To	LoadOptimizerLib.Calculator
Description	Returns the error type of the optimization.
Syntax	Property DataErrorType As _DataErrorType
Remarks	Read Only. The available values are below.

- errorEmptyItemList: There are no cargoes provided in the calculator. So, no empty containers were filled and the *FilledContainer* member should be empty.
- errorItemHasZeroLoadCount: Some of cargoes have no amount to be processed that was provided by the *CountToLoad* of *ISKU*. Even with this error the other cargoes with correct amounts have been successfully placed in the empty containers. So please check the *FilledContainer* member if they are empty or not.
- errorItemHasZeroSetCount: Some of cargoes have no set ratio to be processed that was provided by the *SetRatio* of *ISKU*. Even with this error the other cargoes with correct set ratio have been successfully placed in the empty containers. So please check the *FilledContainer* member if they are empty or not.
- errorItemIsTooBig: Some of cargoes are bigger than the size of containers that were provided by the *Length*, *Width* and *Height* of *ISKU*. Even with this error the other cargoes with correct size have been successfully placed in the empty containers. So please check the *FilledContainer* member if they are empty or not.
- errorItemIsTooSmall Some of cargoes are too small than the size of containers that were provided by the *Length*, *Widht* and *Height* of *ISKU*. Even with this error the other cargoes with correct size have been successfully placed in the empty containers. So please check the *FilledContainer* member if they are empty or not.
- errorInvalidContainerSize: Some of the empty containers have incorrect sizes that were provided by the *Length*, *Widht* and *Height* of *IContainerType*. Even with this error the other empty containers with correct size have been successfully filled with the cargoes. So please check the *FilledContainer* member if they are empty or not.
- errorInvalidItemSize: Some of cargoes have incorrect sizes that were provided by the *Length*, *Widht* and *Height* of *ISKU*. Even with this error the other cargoes with correct size have been successfully placed in the empty

containers. So please check the *FilledContainer* member if they are empty or not.

- errorEmptyContainerList: There are no empty containers provided in the calculator. So, no empty containers were filled and the *FilledContainer* member should be empty.
- errorInvalidItemOrientations: Some of cargoes have incorrect orientations that were provided by the *Orientation* of *ISKU*. Even with this error the other cargoes with correct size have been successfully placed in the empty containers. So please check the *FilledContainer* member if they are empty or not.
- errorValid: Nothing wrong in the calculator which means all amount of cargoes were placed in the empty container and the *FilledContainer* member has the list of the filled container.
- errorLockeyNotFound: A dongle or license was not found in the computer where the calculator runs. Please make sure to put a dongle into the computer.

Data Type _DataErrorType

EnhanceAllContainers Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns whether the optimization uses the enhancement rules to the all loaded containers.

Syntax Property EnhanceAllContainers As Bool

Remarks When this property is set to TRUE, the optimization applies the enhancement rules to all loaded containers after feasible solutions found to improve the volume efficiency. The enhancement rules contain the following procedures;

1) Replace containers with smaller container
2) Unload containers with low volume efficiency
3) Fill unused spaces of containers with extra SKUs
4) Fill unused spaces of containers with more number of existing SKUs

Each procedure is applies sequentially to each container.

The default values for this property is FALSE.

Data Type Bool

EnhanceLastContainer Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns whether the optimization uses the enhancement rules to the last loaded container.

Syntax Property EnhanceLastContainer As Bool

Remarks When this property is set to TRUE, the optimization applies the enhancement rules to the last container only after feasible solutions found to improve the volume efficiency. The enhancement rules contain the following procedures;

1) Replace container with smaller container
2) Unload container with low volume efficiency
3) Fill unused spaces of container with extra SKUs
4) Fill unused spaces of container with more number of existing SKUs

Each procedure is applies sequentially to the last container.

The default values for this property is FALSE.

Data Type Bool

ErrorMessage Property

Applies To LoadOptimizerLib.Calculator

Description Returns the message of the optimization when it meets errors during the calculation.

Syntax Property ErrorMessage As String

Remark Read Only.

Data Type String

ItemCompareCondition Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns the condition to compare and identify two SKUs during the optimization.

Syntax Property ItemCompareCondition As _ItemPropertyID

Remarks This property represents a set of SKU properties to be compared to identify two SKUs.

This property should be set when the CompareTypeOnItemSum property is set to *CompareConditionally.*

The following values are combined using the OR operator ;

Value	Description	Constant
1	Group Name	*propidGroupName*
2	SKU Name	*propidName*
4	Sizes	*propidSize*
8	Weight	*propidWeight*
16	Alias 1	*propidAlias1*
32	Alias 2	*PropidAlias2*
64	Property 1	*propidProperty1*
128	Property 2	*propidProperty2*
256	Property 3	*propidProperty3*
512	Property 4	*propidProperty4*
1024	Property 5	*propidProperty5*
2048	Property 6	*propidProperty6*
4096	Property 7	*propidProperty7*
8192	Property 8	*propidProperty8*
16384	Property 9	*propidProperty9*
32768	Property 10	*propidProperty10*
65536	Color	*propidColor*
131072	Piece Qty	*propidSubPackQty*
262144	Stack Value	*propidStackValue*
524288	Load Orientation	*propidOrientation*
1048576	Load Sequence	*propidSeq*

For example, set 6 (2 + 4) to specify the name and sizes for comparison two SKUs.

Data Type _ItemPropertyID

LimitMaxLoadWeight Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization fills containers less than max weight.
Syntax	Property LimitMaxLoadWeight As Bool
Remarks	When the LimitMaxLoadWeight property is set to TRUE, the optimization fills containers not to exceed the max weight of each container. Please note the optimization leaves containers even more spaces are available when the load weight reaches the max weight. The MaxWeight property of ContainerType should be set when this rule is used. The default value for this property is FALSE;
Data Type	Bool

MergeEmptySpaces Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization merges spaces inside containers.
Syntax	Property MergeEmptySpaces As Bool
Remarks	When this property is set to TRUE, the optimization merges two spaces and makes new space where more SKUs are filled with. The default value for this property is TRUE.
Data Type	Bool

MixDifferentGroupOnMultiSetLoad Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization puts SKUs of different groups in same container.
Syntax	Property MixDifferentGroupOnMultiSetLoad As Long
Remarks	The default value for this property is FALSE.
Data Type	Long

OptimalLoadLevel Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns the level of the optimization.
Syntax	Property OptimalLoadLevel As LoadLevel
Remarks	The following values are available;

Value	Description	Constant
1	Fastest and normal quality.	*level1*
2	Better quality than level 2.	*level2*
3	Faster than level 4.	*level3*
4	Slowest and best quality.	*level4*

The default value for this property is *level2*.

Data Type	LoadLevel

SimType Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns the load type of the optimization.

Syntax Property SimType As SimulationType

Remarks The following values are available;

Value	Description	Constant
0	Mix Load	*simMixLoad*
1	Set Load	*simSetLoadByQuantity*
3	Single Load	*simSimpleLoad*
4	Multiple Set Load	*simOrderSetLoadByQuantity*

The default value for this property is *simMixLoad*.

Data Type SimulationType

SKUs Property

Applies To LoadOptimizerLib.Calculator

Description Returns the collection of the SKU object. The SKU object represents one SKU to be stowed in container during the optimization.

Syntax Property SKUs As Variant

Remarks Read Only. Use this property to manage a list of SKUs. New SKUs can be added or existing SKUs can be removed from the list.

Data Type Variant

Example (Visual Basic Code) The following example changes the group name of the all SKUs with new name.

```
Dim oMixLoad As New LoadOptimizerLib.Calculator
Dim oSKUs As ISKUs
Dim oSKU As ISKU
Dim i As Ingeger

Set oSKUs = oMixLoad.SKUs
For i = 1 To oSKUs.Count
    Set oSKU = oSKUs.Item(i)
    oSKU.GroupName = "NewGroup"
Next i

Set oSKUs = Nothing
Set oSKU = Nothing
Set oMixLoad = Nothing
```

StackingRule Property

Applies To LoadOptimizerLib.Calculator

Description Sets or returns the stacking rule to be used by the optimization.

Syntax Property StackingRule As ItemStackingRule

Remarks The following values are available;

Value	Description	Constant
1	When this rule is activated, the calculation	*HigherStackValueBott*

	will utilize the stack value of the cargoes. A cargo with a high stack value will not be placed on the top of a cargo with a low stack value.	*omFirst*
2	When this rule is activated, the calculation will stack two different cargoes on each other only if the stack values of them are same.	*BothStackValuesSame*
3	When this rule is activated, the calculation will stack two different cargoes on each other only if the footprints of them are the same.	*BothFootPrintsSame*
4	When this rule is activated, the calculation will consider the weight of the cargoes for the stacking two different cargoes. A cargo will be not placed on the top of a lighter cargo. For example, a cargo of weight 300 Kg is not allowed to be placed on the top of a cargo of weight 200 Kg, which will not be placed on the top of a cargo 100 Kg.	*HeavierBottomFirst*
5	When this rule is activated, the calculation will consider the floor stack of the cargoes. Floor Stacking rules are guidelines for how to load cargo into a vehicle when they're not placed on a pallet (sometimes referred to as the dead stacking). There are three options. For more about the floor stack properties of the cargo, please see the *FloorStackType* of the cargo.	*FloorStack*
6	When this rule is activated, the calculation will look up the Stack Matrix. The Stack Matrix allows you to define the relationships between two different cargoes. It can be defined as a square matrix (like a row and column spreadsheet such as Lotus 1-2-3 or Microsoft Excel); this matrix contains one row and one column for each cargo name. When you define a cargo, the stack matrix initializes automatically. When a new cargo is defined, a new row and column are added to the matrix. Each entry in the matrix is a box marked with a “Yes” or “No.” The Yes/No indicate whether a cargo for the corresponding column can be placed on top of a cargo for the corresponding row. The cargo across the top of the matrix (columns) are considered the “top” cargo, while the cargo along the side of the matrix (rows) is considered the “bottom” cargo.	*FollowStackMatrix*
100	When this rule is activated, any cargoes are allowed to be placed on the top of anything else in terms of the way to maximize the space utilization of the container being filled up.	*BestFit*
101	When this rule is activated, the calculation will not stack any cargoes either on top of different cargoes.	*AlwaysNotAllowed*

Data Type ItemStackingRule

SubTitle Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns the description of the optimization.
Syntax	Property SubTitle As String
Data Type	String

❑ Title Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns the title of the optimization.
Syntax	Property Title As String
Data Type	String

❑ UOM Property

Applies To	LoadOptimizerLib. Calculator
Description	Sets or gets the unit of measure for the calculation.
Syntax	Property UOM As LoadOptimizerLib. Calculator. _UnitType
Remarks	

Constant	Description	Enumeration
0	inch+lbs	*UnitEnglish*
1	mm+Kg	*UnitMetric*
2	Cm+Kg	*UnitHighMetric*

Data Type	LoadOptimizerLib. Calculator. _UnitType

❑ bUseSafeStacking Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns whether the optimization uses the safe stacking rule or not.
Syntax	Property bUseSafeStacking As Bool
Remarks	The safe stacking rule allows the optimization to place SKUs in a safe stacking on top of the other SKUs to avoid falling down. The other property *MinSupportRate* would be specified for increasing the supported area of the top load.
Data Type	Bool

❑ MinSupportRate Property

Applies To	LoadOptimizerLib.Calculator
Description	Sets or returns the amount of the top load to be supported by the bottom load in proportional rate when the safe stacking rule is activated.
Syntax	Property MinSupportRate As Double
Remarks	This property is activated only when the *bUseSafeStacking* was set *True*.
Data Type	Double

3.3 Calculator Object Methods

❑ AddItem Method

Applies To LoadOptimizerLib.Calculator

Description Insert a new SKU into the simulation.

Syntax Sub AddItem(***tName*** As String, ***tQuantity*** As Long, ***tdLength*** As Double, ***tdWidth*** As Double, ***tdHeight*** As Double, ***tdWeight*** As Double)

Parameters

Parameter	Description
tName	Name of SKU
tQuantity	The number of SKU
tdLength	Length of SKU
tdWidth	Width of SKU
tdHeidht	Height of SKU
tdWeight	Weight of SKU

Remarks Use the *AddNewSKU()* method of the SKUs object if you want more convenient way.

Data Type None

❑ AddItem2 Function

Applies To LoadOptimizerLib.Calculator

Description Insert a new SKU into the simulation.

Syntax Function AddItem2(***tName*** As String, ***tQuantity*** As Long, ***tdLength*** As Double, ***tdWidth*** As Double, ***tdHeight*** As Double, ***tdWeight*** As Double, ***tDir*** As ItemLoadDirType, ***tMaxLayer*** As Long, ***StackValue*** As Long, ***tPriority*** As Long, ***tColor*** As Long) As Long

Parameters

Parameter	Description
tName	Name of SKU
tQuantity	The number of SKU
tdLength	Length of SKU
tdWidth	Width of SKU
tdHeidht	Height of SKU
tdWeight	Weight of SKU
tDir	A constant to permit the orientations of SKU. The constant *ItemLoadDirType* has the following meanings.

Value	Description	Enum
1	Permit orientation #1	*dir1*
2	Permit orientation #2	*dir2*
3	Permit orientation #1 and #2	*dirBasic*
4	Permit orientation #3	*dir3*
8	Permit orientation #4	*dir4*
16	Permit orientation #5	*dir5*
32	Permit orientation #6	*dir6*
63	Permit all orientations (#1,2,3,4,5,6)	*dirAll*

tMaxLayer	The number of max stacks of SKU. Leave 0 not to set the max stack of the SKU.
StackValue	Stack priority of SKU.

tPriority	Load priority of SKU. A SKU with less priority is places earlier in the container. This is activated only when the *LoadByItemPriority* = TRUE
tColor	Color of SKU. Set 0 to assign a random color.

Remarks Use the *AddNewSKU()* method of the SKUs object if you want more convenient way.

Data Type Long

FindItem Function

Applies To LoadOptimizerLib.Calculator

Description Find a SKU with a name

Syntax Function FindItem(*tItemName* As String) As Long

Parameters

Parameter	Description
tItemName	A SKU name to search in the SKU list

Remarks Returns 0 if no SKU is found

Data Type Long

GetResultBLOBStream Function

Applies To LoadOptimizerLib.Calculator

Description Get a stream of the engine.

Syntax Function GetResultBLOBStream() As Object

Parameter None

Example (Visual Basic Code)

```
Dim oMixLoad As New LoadOptimizerLib.Calculator
Dim oResultStream As Stream

'Set container
oMixLoad.SetContainer typeContainer, "40ft", 12000, 3600, 3890, 300, 3000, _
                      0, 0, 0, 0, RGB(255, 255, 255), 0

'Add SKUs
oMixLoad.AddItem2 "item2", 60, 1900, 1800, 700, 10.2, dirBasic, 0, 0, 4, 0
oMixLoad.AddItem2 "item2", 200, 1200, 876, 298, 33.2, dirBasic, 0, 0, 3, 0
oMixLoad.AddItem2 "item3", 100, 1000, 1000, 798, 33.9, dirBasic, 0, 0, 2, 0

‘Start the calculation
oMixLoad.Run (0)

‘Get a stream from the engine and save the stream to a file
Set oResultStream = oMixLoad.GetResultBLOBStream
oResultStream.SaveToFile "c:\Result.slover", adSaveCreateOverWrite

Set oResultStream = Nothing
Set oMixLoad = Nothing
```

Remarks Use the *SetResultBLOBStream* to set a stream to the engine

Data Type IStream

LoadFromFile Method

Applies To LoadOptimizerLib.Calculator

Description Load the simulation from a file.

Syntax Sub LoadFromFile(***FileName*** As String)

Parameters

Parameter	Description
FileName	A full path name to read

Remarks Use the *SaveToFile* to store a simulation to a file.

Data Type None

Reset Method

Applies To LoadOptimizerLib.Calculator

Description Initialize the engine.

Syntax Sub Reset()

Parameters None

Data Type None

Run Method

Applies To LoadOptimizerLib.Calculator

Description Start the calculation of the engine.

Syntax Sub Run(***tbShowGagebar*** As Long)

Parameters

Parameter	Description
tbShowGagebar	<Internal use only>

Data Type None

SaveToFile Method

Applies To LoadOptimizerLib.Calculator

Description Store the simulation to a file.

Syntax Sub SaveToFile(***FileName*** As String)

Parameters

Parameter	Description
FileName	A full path name to write.

Remarks Use the *LoadFromFile* to load a simulation from a file.

Data Type None

SetContainerNamingRule Method

Applies To LoadOptimizerLib.Calculator

Description Set an option to name containers in the solutions.

Syntax Sub SetContainerNamingRule(***Prefix*** As String, ***Suffix*** As String, ***StartSeq*** As Long, ***SeqLength*** As Long)

Parameter

Parameter	Description
Prefix	Prefix of the name

Suffix	Suffix of the name
StartSeq	The starting sequence of the name
SeqLength	The length of the sequence of the name

Remarks The engine will name all the loaded containers with this rule after the calculation. For example, if the Prefix has '#', Suffix has 'AH', StartSeq has 2 and SeqLength has 3, the names of three containers are '#002AH', '#003AH' and '#004AH'.

Data Type None

SetMaxRuns Method

Applies To LoadOptimizerLib.Calculator

Description Set an option to tune the calculation.

Syntax Sub SetMaxRuns(***MaxSearchVolPercent*** As Double, ***MaxSearchDepth*** As Long, ***MaxTimeSeconds*** As Long)

Parameter

Parameter	Description
MaxSearchVolPercent	Max volume percent to be allowed for the searching process of the calculation algorithm. The usual calculation tries to find 100 percent while evaluating the searching area but this option makes it stop if an evaluation with this value found and move to next. This option can lead to poor solutions at faster time.
MaxSearchDepth	Max search depth to be allowed for the searching process of the calculation algorithm. The calculation engine tries to evaluate all depths in the searching area but this option gives less ones to the calculation and make it faster but lead to poor solutions.
MaxTimeSeconds	Not available at this time. Please give 0.

Example (Visual Basic Code)

```
Dim oMixLoad As New LoadOptimizerLib.Calculator
oMixLoad.SetMaxRuns 80,2,0
oMixLoad = Nothing
```

Remarks The call of this member makes the calculation works faster for a big and large shipment by lowering the number and depth of the searching area. The less number of *MaxSearchVolPercent* and *MaxSearchDepth* works faster but the solutions get worse than was usual.

Data Type None

SetResultBLOBStream Method

Applies To LoadOptimizerLib.Calculator

Description Set a stream to the engine.

Syntax Sub SetResultBLOBStream(***pStream*** As Object)

Parameter

Parameter	Description
pStream	An *IStream* object

Example (Visual Basic Code)

```
Dim oMixLoad As New LoadOptimizerLib.Calculator
Dim stOption As Stream

Set stOption = New Stream
stOption.Open
stOption.Type = adTypeBinary
```

```
stOption.LoadFromFile "C:\ResultSimulation.solver"

oMixLoad. SetResultBLOBStream stOption

stOption = Nothing
oMixLoad = Nothing
```

Remarks Use *GetResultBLOBStream* to get a stream from the engine

Data Type None

UnloadContainerByID Method

Applies To LoadOptimizerLib.Calculator

Description Unload a container and remove it from the solutions.

Syntax Sub UnloadContainerByID(ContainerID As Long)

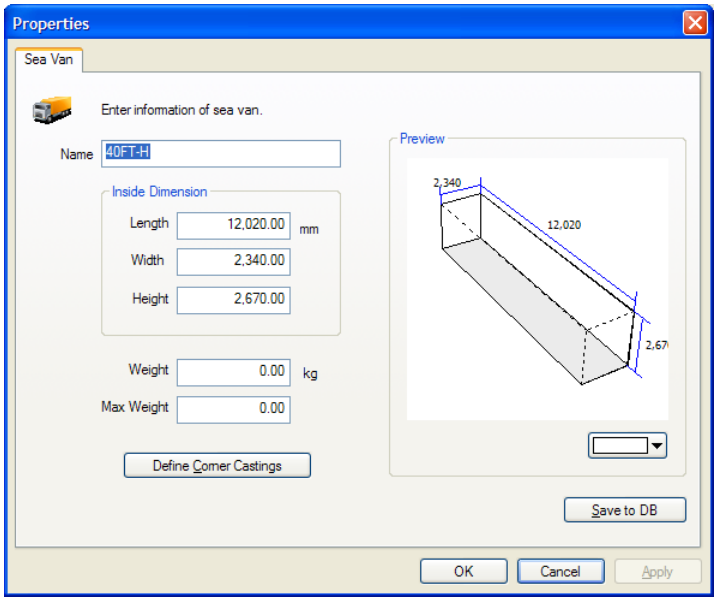
Parameters

Parameter	Description
ContainerID	An index in the list to indicate the container to remove

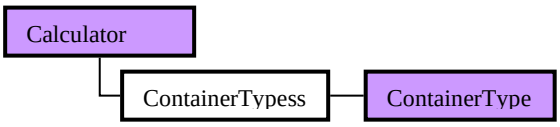
Data Type None

4 ContainerType Object

The *ContainerType* object provides a set of properties such as type, name, size, weight and description of one container type. Using this object, you can define one container type to be filled during the optimization. The following picture shows the poperties window of the container type at the CubeMaster software.



The following picture shows the relations of the three objects – *Calculator*, *ContainerTypes* and *ContainerType* which means the *ContainerType* is accessible only through the *ContainerTypes*.



[Picture 6. ContainerTypes Object]

4.1 ContainerType Object Overview

- **ContainerType Object Properties, Collections**

Alias	Capa
Color	Height
Length	MaxCE
MaxWeight	Name
OutHeight	OutLength

OutWidth	PalletType
Type	TypeString
UnitPrice	Weight
Width	

- **ContainerType Object Method**

None

- **ContainerType Object Event**

None

4.2 ContainerType Object Properties

- **Alias Property**

Applies To LoadOptimizerLib.IContainerType
Description Sets or returns the alias of container
Syntax Property Alias As String
Data Type String

- **Capa Property**

Applies To LoadOptimizerLib.IContainerType
Description Sets or returns the number of containers
Syntax Property Capa As Integer
Data Type Integer

- **Color Property**

Applies To LoadOptimizerLib.IContainerType
Description Sets or returns the color of container in RGB format. Set 0 to assign a random color.
Syntax Property Color As Long
Data Type Long

- **Height Property**

Applies To LoadOptimizerLib.IContainerType
Description Sets or returns the internal height of container
Syntax Property Height As Double
Data Type Double

- **Length Property**

Applies To LoadOptimizerLib.IContainerType

Description	Sets or returns the internal length of container
Syntax	Property Length As Double
Data Type	Double

MaxCE Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the max cube efficiency in percentage of container
Syntax	Property MaxCE As Double
Data Type	Double

MaxWeight Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the max weight (payload) of container
Syntax	Property MaxWeight As Double
Data Type	Double

Name Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the name of container
Syntax	Property Name As String
Data Type	String

OutHeight Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the external height of container
Syntax	Property OutHeight As Double
Data Type	Double

OutLength Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the external length of container
Syntax	Property OutLength As Double
Data Type	Double

OutWidth Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the external width of container
Syntax	Property OutWidth As Double
Data Type	Double

PalletType Property

Applies To LoadOptimizerLib.IContainerType

Description Sets or returns the pallet type of container if it is a pallet

Syntax Property PalletType As _PalletType

Remarks This property is effective only the type of container is a pallet(*Type = typePallet*)

Constant	Description	Enumeration
0	Default	typeDefault
1	Paper pallet	typePaperPallet
2	Steel pallet	typeSteelPallet
3	Wooden pallet	typeWoodPallet

Data Type _PalletType

❑ Type Property

Applies To LoadOptimizerLib.IContainerType

Description Sets or returns the type of container

Syntax Property Type As CntType

Remarks

Constant	Description	Enumeration
0	Ship carton or box	*typeBox*
1	Pallet	*typePallet*
2	Sea van	*typeContainer*
3	Truck and trailer	*typeTruck*
4	Air pallet	*typeAircraft*

The *PalletType* should be defined if the *Type=typePallet*

Data Type CntType

❑ TypeString Property

Applies To LoadOptimizerLib.IContainerType

Description Sets or returns the type of container in a string

Syntax Property TypeString As String

Remarks

Type	Returns
typeBox	'BOX'
typePallet	'PLT'
typeContainer	'CTN'
typeTruck	'TRK'
typeAircraft	'ULD'

Data Type String

❑ UnitPrice Property

Applies To LoadOptimizerLib.IContainerType

Description Sets or returns the unit price (or shipping cost) of container

Syntax Property UnitPrice As Double

Data Type	Double

Weight Property

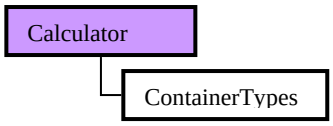
Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the weight of container
Syntax	Property Weight As Double
Data Type	Double

Width Property

Applies To	LoadOptimizerLib.IContainerType
Description	Sets or returns the internal width of container
Syntax	Property Width As Double
Data Type	Double

5 ContainerTypes Object

The *ContainerTypes* is a collection to store multiple *ContainerType* objects. The *ContainerTypes* is accessible through the property *ContainerTypes* of the *Calculator* object. Once the *ContainerTypes* is acquired, you can iterate all elements in it.



[Picture 6. ContainerTypes Object]

5.1 ContainerTypes Object Overview

ContainerTypes Object Properties

Count	Item

ContainerTypes Object Method

AddNewContainer	~~RemoveAllSubContainerTags~~ (Removed at ver 10.10.4.0)
~~AddNewContainerTag~~ (Removed at ver 10.10.4.0)	RemoveAll (New at ver 10.10.4.0 – Replaced RemoveAllSubContainerTags)

5.2 ContainerTypes Object Properties

Count Property

Applies To LoadOptimizerLib.IContainerTypes

Description Returns the number of items (container types) in the collection.

Syntax Property Count As Long

Data Type Long

Item Property

Applies To LoadOptimizerLib.IContainerTypes

Description Returns an item (container type) in the collection.

Syntax Property Item(***index*** As Long) As ContainerType

Parameters

Parameter	Description
Index	An index to item between 1 and *Count.*

Data Type *ContainerType*

5.3 ContainerTypes Object Methods

AddNewContainer Method

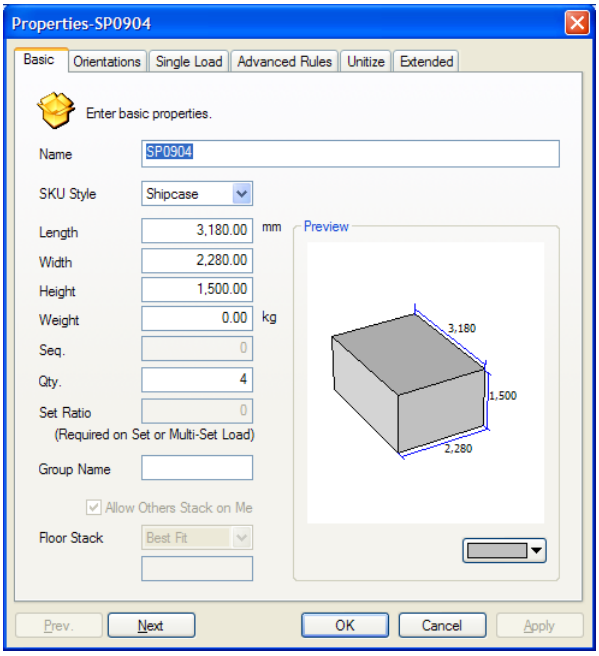
Applies To	LoadOptimizerLib.IContainerTypes
Description	Adds a new container type into the collection and returns *ContainerType* object to allow you to access the new container type.
Syntax	Sub AddNewContainer() As ContainerType
Example (Visual Basic Code)	Dim oContainerTypes Dim oContainerType Set oContainerTypes = oOptimizer.ContainerTypes 'Add new container type Set oContainerType = oContainerTypes.AddNewContainer oContainerType.Type = typeContainer oContainerType.Name = "40FT" oContainerType.Length = 12020 oContainerType.Width = 2330 oContainerType.Height = 2330 oContainerType.MaxCE = 0.7 oContainerType.MaxWeight = 2000 oContainerType.UnitPrice = 4000 'Shipping cost
Remarks	See *ContainerType* object to learn about the properties for container type
Data Type	*ContainerType*

Remove Method

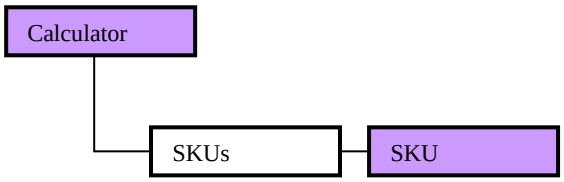
Applies To	LoadOptimizerLib.IContainerTypes
Description	Removes all items in the collections. A new member at ver 10.10.4.0 to replace an old member RemoveAllSubContainerTags().
Syntax	Sub Remove ()

6 SKU Object

The *SKU* object provides a set of properties such as name, size, weight and description of one SKU type. Using this object, you can define a SKU to be stowed in the container type that was defined with the *ContainerType* object. The following picture shows the properties window of the SKU at the CubeMaster software.



The following picture shows the relations of the three objects – *Calculator*, *SKUs* and *SKU* which means the *SKU* is accessible only through the *SKUs*.



[Picture9. SKU Object]

6.1 SKU Object Overview

- **SKU Object Properties, Collections**

Alias1	Alias2
bApplyBarcodeLabel	bKeepBasicOrientationOnSimpleLoad
CBM	Color

CountToLoad	DepartureTime
Description	GroupName
Height	Length
LoadDir1MaxLayer	LoadDir2MaxLayer
LoadDir3MaxLayer	LoadDir4MaxLayer
LoadDir5MaxLayer	LoadDir6MaxLayer
LoadedCount	LoadSequence
Name	NetWeight
Orientation	PrimaryOrientationIndex
Property1	Property2
Property3	Property4
Property5	Property6
Property7	Property8
Property9	Property10
Property11	Property12
Property13	Property14
Property15	Property16
Property17	Property18
Property19	Property20
SecondaryOrientationIndexAtLastSpace	SetRatio
SimpleLoadLowerLayeAllowOverhang	SimpleLoadLowerLayerPatternType
SimpleLoadLayersQtyRotated	SimpleLoadUpperLayerPatternType
SimpleLoadOverhangLength	SimpleLoadOverhangWidth
StackValue	SubPackQty
~~TurnStartLayer~~	Type
UnitLoadBLOBStream	UnitloadContainer
UnitPrice	UnloadedCount
Weight	Width
DeadStackType	DeadStackOthersAllowedOnMe
MaxWeightAllowedOnMe	MinBottomLayer

SKU Object Method

~~AddSubItem~~	SetPropertyBasic

SKU Object Event

None

6.2 SKU Object Properties

Alias1 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the alias1 of the SKU
Syntax	Property Alias1 As String
Data Type	String

Alias2 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the alias2 of the SKU
Syntax	Property Alias2 As String
Data Type	String

bApplyBarcodeLabel Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns whether the SKU has a barcode on the 3D graphics
Syntax	Property bApplyBarcodeLabel As Bool
Data Type	Bool

bKeepBasicOrientationOnSimpleLoad Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns whether the all orientation are allowed on the bottom of container. If set TRUE, only the basic orientations allowed on the bottom of container. Otherwise, all orientations are allowed.
Syntax	Property bKeepBasicOrientationOnSimpleLoad As Bool
Data Type	Bool

CBM Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the volume of the SKU.
Syntax	Property CBM As Double
Data Type	Double

Color Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the color of the SKU in RGB format. Set 0 to assign a random color.
Syntax	Property Color As Long
Data Type	Long

CountToLoad Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the quantity of the SKU to be loaded.
Syntax	Property CountToLoad As Integer
Remarks	Use the *LoadedCount* property to read the number of loaded for the SKU after the optimization.
Data Type	Integer

DepartureTime Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the departure time of the SKU in a string.
Syntax	Property DepartureTime As String
Data Type	String

Description Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the description of the SKU.
Syntax	Property Description As String
Data Type	String

GroupName Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the group name of the SKU.
Syntax	Property GroupName As String
Data Type	String

Height Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the height of the SKU.
Syntax	Property Height As Double
Data Type	Double

Length Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the length of the SKU.
Syntax	Property Length As Double
Data Type	Double

LoadDir1MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #1 of the SKU.
Syntax	Property LoadDir1MaxLayer As Integer

Data Type	Integer

LoadDir2MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #2 of the SKU.
Syntax	Property LoadDir1MaxLayer As Integer
Data Type	Integer

LoadDir3MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #3 of the SKU.
Syntax	Property LoadDir3MaxLayer As Integer
Data Type	Integer

LoadDir4MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #4 of the SKU.
Syntax	Property LoadDir4MaxLayer As Integer
Data Type	Integer

LoadDir5MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #5 of the SKU.
Syntax	Property LoadDir5MaxLayer As Integer
Data Type	Integer

LoadDir6MaxLayer Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the max stacks for the orientation #6 of the SKU.
Syntax	Property LoadDir6MaxLayer As Integer
Data Type	Integer

LoadedCount Property

Applies To	LoadOptimizerLib.ISKU
Description	Returns the number of loaded for the SKU.
Syntax	Property LoadedCount As Integer
Data Type	Integer

LoadSequence Property

Applies To	LoadOptimizerLib.ISKU

Description Sets or returns the load sequence of the SKU.

Syntax Property LoadSequence As Integer

Data Type Integer

Name Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the name of the SKU.

Syntax Property Name As String

Data Type String

NetWeight Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the net weight of the SKU.

Syntax Property NetWeight As Double

Data Type Double

Orientation Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the SKU orientations permitted to the optimization.

Syntax Property Orientation As ItemLoadDirType

Remarks A constant to permit the orientations of SKU. The constant *ItemLoadDirType* has the following meanings.

Value	Description	Enum
1	Permit orientation #1	*dir1*
2	Permit orientation #2	*dir2*
3	Permit orientation #1 and #2	*dirBasic*
4	Permit orientation #3	*dir3*
8	Permit orientation #4	*dir4*
16	Permit orientation #5	*dir5*
32	Permit orientation #6	*dir6*
63	Permit all orientations (#1,2,3,4,5,6)	*dirAll*

Data Type ItemLoadDirType

PrimaryOrientationIndex Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the primary orientation among the permitted ones.

Syntax Property PrimaryOrientationIndex As Integer

Data Type Integer

Property1 Property

Applies To LoadOptimizerLib.ISKU

Description	Sets or returns the property1 of the SKU.
Syntax	Property Property1 As String
Data Type	String

Property2 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property2 of the SKU.
Syntax	Property Property2 As String
Data Type	String

Property3 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property3 of the SKU.
Syntax	Property Property3 As String
Data Type	String

Property4 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property4 of the SKU.
Syntax	Property Property4 As String
Data Type	String

Property5 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property5 of the SKU.
Syntax	Property Property5 As String
Data Type	String

Property6 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property6 of the SKU.
Syntax	Property Property6 As String
Data Type	String

Property7 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property7 of the SKU.
Syntax	Property Property7 As String
Data Type	String

Property8 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property8 of the SKU.
Syntax	Property Property8 As String
Data Type	String

Property9 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property9 of the SKU.
Syntax	Property Property9 As String
Data Type	String

Property10 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property10 of the SKU.
Syntax	Property Property10 As String
Data Type	String

Property11 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property11 of the SKU.
Syntax	Property Property11 As String
Data Type	String

Property12 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property12 of the SKU.
Syntax	Property Property12 As String
Data Type	String

Property13 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property13 of the SKU.
Syntax	Property Property13 As String
Data Type	String

Property14 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property14 of the SKU.
Syntax	Property Property14 As String
Data Type	String

Property15 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property15 of the SKU.
Syntax	Property Property15 As String
Data Type	String

Property16 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property16 of the SKU.
Syntax	Property Property16 As String
Data Type	String

Property17 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property17 of the SKU.
Syntax	Property Property17 As String
Data Type	String

Property18 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property18 of the SKU.
Syntax	Property Property18 As String
Data Type	String

Property19 Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property19 of the SKU.
Syntax	Property Property19 As String
Data Type	String

Property20 Property

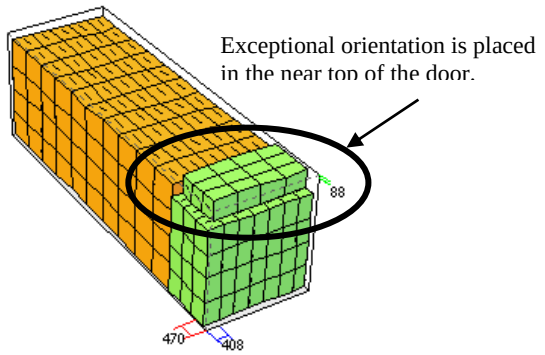
Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the property20 of the SKU.
Syntax	Property Property20 As String
Data Type	String

SecondaryOrientationIndexAtLastSpace Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or returns the orientation to allow placing the SKU into the last space at near top of the door.

Syntax Property SecondaryOrientationIndexAtLastSpace As Integer

Remarks Use this property if you like to allow an exceptional orientation could be placed into the near top spaces at the door.



Data Type Integer

SetRatio Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the set ratio of the SKU.

Syntax Property SetRatio As Double

Remarks This property is effective only if the *SimType* of the *Calculator* is *simSetLoadByQuantity* or *simSetLoadByQuantity*.

Data Type Double

SimpleLoadLowerLayeAllowOverhang Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns whether an overhang is allowed to the single load optimization of the SKU. Use the SimpleLoadOverhangLength and SimpleLoadOverhangWidth to get or set the max allowed overhang.

Syntax Property SimpleLoadLowerLayeAllowOverhang As Bool

Data Type Bool

SimpleLoadLowerLayerPatternType Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the pattern type for the bottom layers to be applied to the unit load with this SKU.

Syntax Property SimpleLoadLowerLayerPatternType As Integer

Remarks

Value	Description
0	1 block pattern type
1	2 blocks pattern type
2	4 blocks pattern type
4	3 blocks pattern type
100	Multi-surface
9	Best fit

Data Type Integer

SimpleLoadUpperLayerPatternType Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the pattern type for the top layers to be applied to the unit load with this SKU. Top layers could be ignored if the space on the bottom layers is too small either the turning orientations of the SKU were not allowed. Please set 104 to this option to enforce the top layers to be empty.

Syntax Property SimpleLoadLowerLayerPatternType As Integer

Remarks

Value	Description
0	1 block pattern type
1	2 blocks pattern type
2	4 blocks pattern type
4	3 blocks pattern type
9	Best fit
104	Always empty the top layers

Data Type Integer

StackValue Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the stack value of the SKU.

Syntax Property StackValue As Integer

Remarks This property is effective only if the *UploadRule* of the *Calculator* is *uploadLoose.*

Data Type Integer

SubPackQty Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the number of pack inside the SKU.

Syntax Property SubPackQty As Long

Data Type Long

UnitLoadBLOBStream Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the unitload of the SKU.

Syntax Property UnitLoadBLOBStream As Object

Remarks The SKU with a unitload assigned with this property is recognized as a pallet load and drawn in full 3D pallet load inside the container.

Data Type Object

UnitloadContainer Property

Applies To LoadOptimizerLib.ISKU

Description Returns the FilledContainer object indicating the unitload of the SKU.

Syntax Property UnitloadContainer As FilledContainer

Remarks Use this property to access the unitload properties of the SKU. The unitload should be created inside the SKU or assigned with *UnitLoadBLOBStream* outside the SKU already.

Data Type FilledContainer

UnitPrice Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the unit price (cost) of the SKU.

Syntax Property UnitPrice As Double

Data Type Double

UnloadedCount Property

Applies To LoadOptimizerLib.ISKU

Description Returns the number of cargos remaining for the SKU after the optimization.

Syntax Property UnloadedCount As Integer

Data Type Integer

Weight Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the weight of the SKU.

Syntax Property Weight As Double

Data Type Double

Width Property

Applies To LoadOptimizerLib.ISKU

Description Sets or returns the width of the SKU.

Syntax Property Width As Double

Data Type Double

DeadStackType Property

Applies To LoadOptimizerLib.ISKU

Description Sets or gets the floor stacking type of the SKU.

Syntax Property DeadStackType As _DeadStackType

Data Type _DeadStackType

Remark

Constant	Description	Enumeration
0	The two options below are disregarded and the cargoes are placed where it's most efficient in relation to other items in the load.	*DeadStackBestFit*
1	Any solutions are disregarded in which the cargo is not placed on the floor.	*DeadStackBottomOnly*
2	Any solutions are disregarded in	*DeadStackNoBottom*

	which the cargo is placed on the floor.

In order to activate this property, you should set *FloorStack* to the *StackingRule* of the *Calculator* class.

It can be used at following purpose;

① Preventing heavy boxes from being placed on top of light boxes

② Putting a pallet on top of other with exactly same footprint

③ Stick two different boxes together vertically

❑ DeadStackOthersAllowedOnMe Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or gets if the SKU can support others.
Syntax	Property DeadStackOthersAllowedOnMe As Boolean
Data Type	Boolean
Remark	In order to activate this property, you should set *FloorStack* to the *StackingRule* of the *Calculator* class.

❑ MaxWeightAllowedOnMe Property

Applies To	LoadOptimizerLib.ISKU
Description	Sets or gets the weight the SKU can support.
Syntax	Property MaxWeightAllowedOnMe As Double
Data Type	Double
Remark	In order to activate this property, you should set *True* to the *bUseSafeStacking* of the *Calculator* class.

6.3 SKU Object Methods, Functions

❑ SetPropertyBasic Method

Applies To	LoadOptimizerLib.ISKU
Description	Sets basic properties as the name, quantity, length, width and height of the SKU.
Syntax	Sub SetPropertyBasic(***Name*** As String, ***CountToLoad*** As Long, ***Length*** As Double, ***Width*** As Double, ***Height*** As Double)

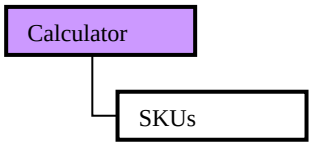
Parameter

Parameter	Description
Name	Name of the SKU
CountToLoad	Quantity of the SKU
Length	Length of the SKU
Width	Width of the SKU
Height	Height of the SKU

Data Type None

7 SKUs Object

The *SKUs* is a collection to store multiple *SKU* objects. The *SKUs* is accessible through the property *SKUs* of the *Calculator* object. Once the *SKUs* is acquired, you can iterate all elements in it.



[Picture8. SKUs Object]

7.1 SKUs Object Overview

- **SKUs Object Properties, Collections**

Count	Item
TotalCBM	TotalLoadedQty

- **SKUs Object Method**

AddNewSKU	RemoveAll
RemoveAt	

- **SKUs Object Event**

None

7.2 SKUs Object Properties

- **Count Property**

Applies To LoadOptimizerLib.ISKUs
Description Return the number of items (SKUs) in the collection.
Syntax Property Count As Long
Data Type Long

- **Item Property**

Applies To LoadOptimizerLib.ISKUs
Description Returns an item (SKU) in the collection.

Syntax Property Item(***index*** As Long)

Parameter

Parameter	Description
Index	An index to item between 1 and *Count.*

Data Type None

❑ TotalCBM Property

Applies To LoadOptimizerLib.ISKUs

Description Returns the sum of volume for all SKUs in the collection.

Syntax Property TotalCBM As Double

Data Type Double

❑ TotalLoadedQty Property

Applies To LoadOptimizerLib.ISKUs

Description Returns the sum of load quantities for all SKUs in the collection.

Syntax Property TotalLoadedQty As Long

Data Type Long

7.3 SKUs Object Methods, Functions

❑ AddNewSKU Functions

Applies To LoadOptimizerLib.ISKUs

Description Adds a new SKU into the collection and returns *SKU* object to allow you to set properties of the new SKU.

Syntax Sub AddNewSKU() As SKU

Example (Visual Basic Code)

```
Dim oSKUs, oSKU

Set oSKUs = oOptimizer.SKUs

Set oSKU = oSKUs.AddNewSKU
oSKU.Name = "AA-101"
oSKU.Length = 690
oSKU.Width = 900
oSKU.Height = 500
oSKU.CountToLoad = 100
oSKU.Orientation = dirBasic

Set oSKU = oSKUs.AddNewSKU
oSKU.Name = "BB-303"
oSKU.Length = 900
oSKU.Width = 800
oSKU.Height = 550
oSKU.CountToLoad = 100
oSKU.Orientation = dirBasic
```

Data Type SKU

RemoveAll Method

Applies To LoadOptimizerLib.ISKUs

Description Remove all items from the collection.

Syntax Sub RemoveAll()

Data Type None

RemoveAt Method

Applies To LoadOptimizerLib.ISKUs

Description Remove an item from the collection.

Syntax Sub RemoveAt(index As Long)

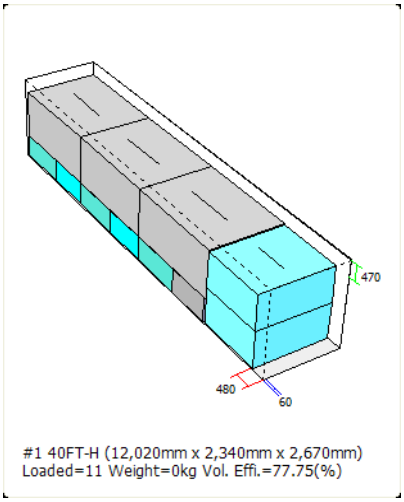
Parameters

Parameter	Description
Index	An index to item between 1 and *Count*

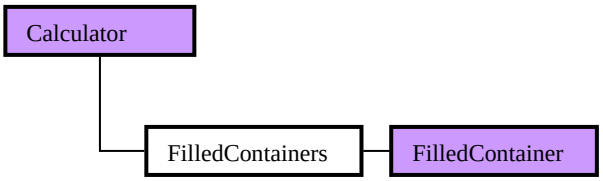
Data Type None

8 FilledContainer Object

The *FilledContainer* object provides a set of properties such as name, size, weight and load information of one loaded container. By using this object, you can access one loaded container after the optimization. The following picture shows a sample image for the loaded container.



The following picture shows the relations of the three objects – *Calculator*, *FilledContainers* and *FilledContainer* which means the *FilledContainer* is accessible only through the *FilledContainers*.



[Picture 12.FilledContainer Object]

8.1 FilledContainer Object Overview

- **FilledContainer Object Properties, Collections**

Alias	AppliedBandType
Comment	~~ContainerData~~
ContainerName	ContainerWeight
CubeEfficiency	DepartureTime
GrossItemCount	Height
ID	IsAnglePanelApplied
IsTopPanelApplied	IsWrappingApplied

ItemCount	ItemCount
Length	LimitCE
LimitWeight	LoadedCBM
LoadedWeight	Name
NetWeight	OutHeight
OutLength	OutWidth
~~PatternEditType~~	ProductionLine
Property1	Property2
Property3	Property4
Property5	Property6
Property7	Property8
Property9	Property10
~~SimpleLoadCustomPatternType~~	SimpleLoadHeight
SimpleLoadLayerCount	SimpleLoadLength
SimpleLoadPlaneEfficiency	SimpleLoadWidth
Solutions	SpacesInContainer
Width	

- **FilledContainer Object Method**

ApplyAnglePanel	ApplyBanding
ApplyHandlingSign	ApplyTopPanel
ApplyWrapping	~~DisplayPattern~~
GetPatternBLOBStream	~~ReloadTo~~
SaveToFile	~~UnloadBlockByIndex~~

- **FilledContainer Object Event**

None

8.2 FilledContainer Object Properties

- **Alias Property**

Applies To LoadOptimizerLib.IContainer

Description Sets or returns the alias 1 of the container.

Syntax Property Alias As String

Data Type String

- **AppliedBandType Property**

Applies To LoadOptimizerLib.Icontainer

Description Returns the banding type applied to the container if the type is a pallet.

Syntax Property AppliedBandType As _BandType

Remarks

Value	Description	Enum
0	No banding applied	*BandNone*
1	2 straps along the length	*Band2LineLengthSide*
2	2 straps along the width	*Band2LineWidthSide*
3	2 straps along the length and 2 straps along the width	*Band2LineBothSide*

Data Type _BandType

Comment Property

Applies To LoadOptimizerLib.IContainer

Description Sets or returns the comment of the container.

Syntax Property Comment As String

Data Type String

ContainerName Property

Applies To LoadOptimizerLib.IContainer

Description Sets or returns the name of the container type applied to this container.

Syntax Property ContainerName As String

Data Type String

ContainerWeight Property

Applies To LoadOptimizerLib.IContainer

Description Sets or returns the weight of the container type (without load weight).

Syntax Property ContainerWeight As Double

Data Type Double

CubeEfficiency Property

Applies To LoadOptimizerLib.Icontainer

Description Returns the volume efficiency in percentage of the container.

Remarks Read only

Syntax Property CubeEfficiency As Double

Data Type Double

DepartureTime Property

Applies To LoadOptimizerLib.IContainer

Description Sets or returns the departure time of the container.

Syntax Property DepartureTime As String

Remarks This property does not affect the calculation.

Data Type String

GrossItemCount Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the gross load quantity of the container.
Syntax	Property GrossItemCount As Long
Remarks	Read only
Data Type	Long

Height Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the height of the container (it is equal the internal height of the container type applied to the container).
Remarks	Read only
Syntax	Property Height As Double
Data Type	Double

ID Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the ID of the container.
Syntax	Property ID As Long
Remarks	Read only. Every container is given an ID after the calculation.
Data Type	Long

IsAnglePanelApplied Property

Applies To	LoadOptimizerLib. IContainer
Description	Returns whether the angle panel (or post guard) is applied to the container if it is pallet type.
Syntax	Property IsAnglePanelApplied As Bool
Remarks	Read only
Data Type	Bool

IsTopPanelApplied Property

Applies To	LoadOptimizerLib. IContainer
Description	Returns whether the top panel is applied to the container if it is pallet type.
Syntax	Property IsTopPanelApplied As Bool
Remarks	Read only
Data Type	Bool

IsWrappingApplied Property

Applies To	LoadOptimizerLib. IContainer
Description	Returns whether the wrapping is applied to the container if it is pallet type.

Syntax	Property IsWrappingApplied As Bool
Remarks	Read only
Data Type	Bool

ItemCount Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the number of load inside the container.
Syntax	Property ItemCount As Integer
Remarks	Read only
Data Type	Integer

Length Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the length of the container (it is equal the internal length of the container type applied to the container).
Syntax	Property Length As Double
Remarks	Read only
Data Type	Double

LimitCE Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the max volume percentage of the container.
Syntax	Property LimitCE As Double
Remarks	Read only
Data Type	Double

LimitWeight Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the max weight of the container.
Syntax	Property LimitWeight As Double
Remarks	Read only
Data Type	Double

LoadedCBM Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the volume of the load inside the container.
Syntax	Property LoadedCBM As Double
Remarks	Read only
Data Type	Double

LoadedWeight Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the gross weight (load weight + container weight) of the container.
Syntax	Property LoadedWeight As Double
Remarks	Read only
Data Type	Double

Name Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the name of the container.
Syntax	Property Name As String
Remarks	Every container has a name created from the naming rule. The naming rule is defined with the method, *Calculator.SetContainerNamingRule*.
Data Type	String

NetWeight Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the load weight inside the container.
Syntax	Property NetWeight As Double
Remarks	Read only
Data Type	Double

OutHeight Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the external height of the container.
Syntax	Property OutHeight As Double
Remarks	Read only
Data Type	Double

OutLength Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the external length of the container.
Syntax	Property OutLength As Double
Remarks	Read only
Data Type	Double

OutWidth Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the external width of the container.
Syntax	Property OutWidth As Double
Remarks	Read only
Data Type	Double

ProductionLine Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the production line of the container.
Syntax	Property ProductionLine As String
Remarks	This property does not affect the calculation.
Data Type	String

Property1 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property1 of the container.
Syntax	Property Property1 As String
Data Type	String

Property2 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property2 of the container.
Syntax	Property Property2 As String
Data Type	String

Property3 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property3 of the container.
Syntax	Property Property3 As String
Data Type	String

Property4 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property4 of the container.
Syntax	Property Property4 As String
Data Type	String

Property5 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property5 of the container.
Syntax	Property Property5 As String
Data Type	String

Property6 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property6 of the container.

Syntax	Property Property6 As String
Data Type	String

Property7 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property7 of the container.
Syntax	Property Property7 As String
Data Type	String

Property8 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property8 of the container.
Syntax	Property Property8 As String
Data Type	String

Property9 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property9 of the container.
Syntax	Property Property9 As String
Data Type	String

Property10 Property

Applies To	LoadOptimizerLib.IContainer
Description	Sets or returns the property10 of the container.
Syntax	Property Property10 As String
Data Type	String

SimpleLoadHeight Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the height of the load if the container is filled with this SKU only.
Syntax	Property SimpleLoadHeight As Double
Remarks	Read only
Data Type	Double

SimpleLoadLayerCount Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the number of load layers if the container is filled with this SKU only.
Syntax	Property SimpleLoadLayerCount As Integer
Remarks	Read only
Data Type	Integer

SimpleLoadLength Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the length of the load if the container is filled with this SKU only.
Syntax	Property SimpleLoadLength As Double
Remarks	Read only
Data Type	Double

SimpleLoadPlaneEfficiency Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the area efficiency of the load if the container is filled with this SKU only.
Syntax	Property SimpleLoadPlaneEfficiency As Double
Remarks	Read only
Data Type	Double

SimpleLoadWidth Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the width of the load if the container is filled with this SKU only.
Syntax	Property SimpleLoadWidth As Double
Remarks	Read only
Data Type	Double

Solutions Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the collection of the *Solution* object. The *Solution* object represents load information of the SKU loaded in the container.
Syntax	Property Solutions As Solutions
Remarks	Read only
Data Type	*Solutions*

SpacesInContainer Property

Applies To	LoadOptimizerLib.Icontainer
Description	Returns the collection of the *SpaceInContainer* object. The *SpaceInContainer* object represents space information in the container.
Syntax	Property SpacesInContainer As SpacesInContainer
Remarks	Read only
Data Type	*SpacesInContainer*

Width Property

Applies To	LoadOptimizerLib.IContainer
Description	Returns the width of the container (it is equal the internal width of the container type applied to the container).

Syntax	Property Width As Double
Remarks	Read only
Data Type	Double

8.3 FilledContainer Object Methods, Functions

ApplyAnglePanel Method

Applies To	LoadOptimizerLib.IContainer
Description	Add angle panels (or post guards) on the pallet load
Syntax	Sub ApplyAnglePanel(***PanelWidth*** As Double, ***PanelColor*** As Long)

Parameters

Parameter	Description
PanelWidth	The size of panel
PanelColor	The color of panel

Remarks	
Data Type	None

ApplyBanding Method

Applies To	LoadOptimizerLib.IContainer
Description	Add banding straps on the pallet load
Syntax	Sub ApplyBanding(***BandWidth*** As Double, ***BandColor*** As Long, ***BandType*** As _BandType)

Parameters

Parameter	Description
BandWidth	The size of strap
BandColor	The color of strap
BandType	The type of strap.

Remarks	For more about *BandType*, see the *AppliedBandType* property.
Data Type	None

ApplyHandlingSign Method

Applies To	LoadOptimizerLib.IContainer
Description	Add handling sign on the pallet load
Syntax	Sub ApplyHandlingSign()
Parameters	None
Remarks	
Data Type	None

ApplyTopPanel Method

Applies To	LoadOptimizerLib.IContainer
Description	Add top panel on the pallet load
Syntax	Sub ApplyTopPanel(***PanelLength*** As Double, ***PanelWidth*** As Double, ***PanelColor***

As Long)

Parameters

Parameter	Description
PanelLength	The length of panel
PanelWidth	The width of panel
PanelColor	The color of panel

Remarks

Data Type None

ApplyWrapping Method

Applies To LoadOptimizerLib.IContainer

Description Add wrapping on the pallet load

Syntax Sub ApplyWrapping(***WrapColor*** As Long)

Parameters

Parameter	Description
WrapColor	The color of warpping

Remarks

Data Type None

GetPatternBLOBStream Method

Applies To LoadOptimizerLib.IContainer

Description Returns the stream of the container.

Syntax Function GetPatternBLOBStream() As Object

Parameters None

Remarks

Data Type ADO::Stream

SaveToFile Method

Applies To LoadOptimizerLib.IContainer

Description Store the container to a file.

Syntax Sub SaveToFile(***strFullPathName*** As String)

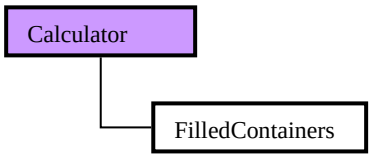
Parameters

Parameter	Description
strFullPathName	A full path name to write

Data Type None

9 FilledContainers Object

The *FilledContainers* is a collection to store multiple *FilledContainer* objects. The *FilledContainers* is accessible through the property *FilledContainers* of the *Calculator* object. Once the *FilledContainers* is acquired, you can iterate all elements in it.



[Picture 11.FilledContainers Object]

9.1 FilledContainers Object Overview

- **FilledContainers Object Properties, Collections**

AverageCubeEfficiency	Count
Item	TotalGrossLoadCount
TotalLoadCount	

- **FilledContainers Object Method**

AddEmptyContainer	GetContainerByID

- **FilledContainers Object Event**

None

9.2 FilledContainers Object Properties

- **AverageCubeEfficiency Property**

Applies To	LoadOptimizerLib.IContainers
Description	Returns the average volume efficiency for the all containers in the collection.
Syntax	Property AverageCubeEfficiency As Double
Data Type	Double

- **Count Property**

Applies To	LoadOptimizerLib.IContainers
Description	Returns the number of items (containers) in the collection.

Syntax Property Count As Long

Data Type Long

Item Property

Applies To LoadOptimizerLib.IContainers

Description Returns an item (container) in the collection.

Syntax Property Item(***index*** As Long)

Parameter

Parameter	Description
index	An index to an item between 1 and *Count.*

Data Type None

TotalGrossLoadCount Property

Applies To LoadOptimizerLib.IContainers

Description Returns sum of gross load quantities for the all containers in the collection.

Syntax Property TotalGrossLoadCount As Long

Data Type Long

TotalLoadCount Property

Applies To LoadOptimizerLib.IContainers

Description Returns sum of load quantities for the all containers in the collection.

Syntax Property TotalLoadCount As Integer

Data Type Integer

9.3 FilledContainers Object Methods, Functions

AddEmptyContainer Functions

Applies To LoadOptimizerLib.IContainers

Description Add an empty container to the collections and return the *FilledContainer* object to allow you to access the new container.

Syntax Function AddEmptyContainer() as FilledContainer

Data Type FilledContainer

GetContainerByID Method

Applies To LoadOptimizerLib.IContainers

Description Find a container with an ID in the collection.

Syntax Function GetContainerByID(ID As Long)

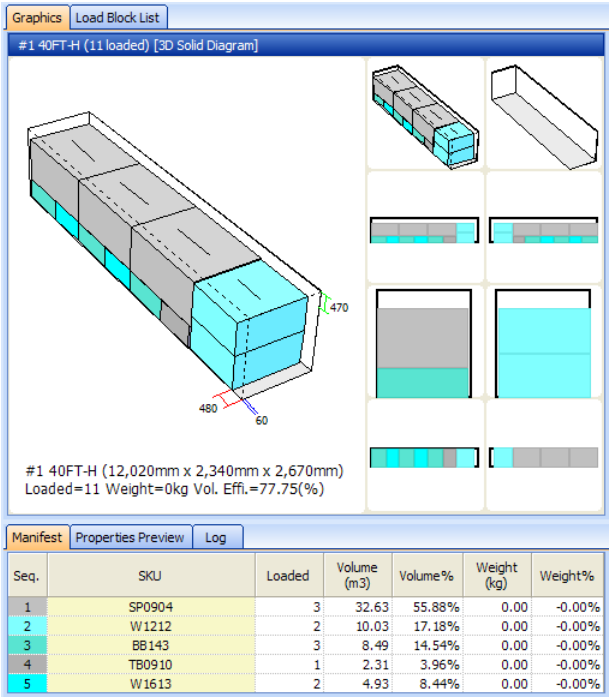
Parameter

Parameter	Description
ID	An ID of container to find

Data Type None

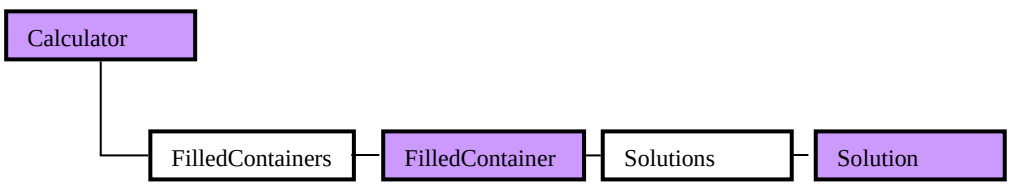
10 Solution Object

The *Solution* object provides a set of properties for a SKU loaded in the container and its information such as load volume, quantity and weight. By using this object, you can access one line of the manifest of the loaded container. The following picture shows the conceptual image for a manifest of the loaded container.



Seq.	SKU	Loaded	Volume (m3)	Volume%	Weight (kg)	Weight%
1	SP0904	3	32.63	55.88%	0.00	-0.00%
2	W1212	2	10.03	17.18%	0.00	-0.00%
3	BB143	3	8.49	14.54%	0.00	-0.00%
4	TB0910	1	2.31	3.96%	0.00	-0.00%
5	W1613	2	4.93	8.44%	0.00	-0.00%

The following picture shows the relations of the five objects – *Calculator*, *FilledContainers*, *FilledContainer*, *Solutions* and *Solution* which means the *Solution* is accessible only through the *Solutions*.



[Picture13.Solution Object]

10.1 Solution Object Overview

- **Solution Object Properties, Collections**

~~ActionType~~	Color
ContainerNameOnUnitLoad	DepartureTime
Description	GrossLoadedCount
GroupName	IsUnitloadContainer
ItemAlias	ItemAlias2
ItemCBM	ItemHeight
ItemLength	ItemName
ItemProperty1	ItemProperty2
ItemProperty3	ItemProperty4
ItemProperty5	ItemProperty6
ItemProperty7	ItemProperty8
ItemProperty9	ItemProperty10
ItemWeight	ItemWidth
LoadedCount	LoadedItem
SetRatio	SubPackQty

- **Solution Object Method**

None

- **Solution Object Event**

None

10.2 Solution Object Properties

- **Color Property**

Applies To LoadOptimizerLib.ISolution

Description Retusn the color of the SKU

Syntax Property Color As Long

Data Type Long

- **ContainerNameOnUnitLoad Property**

Applies To LoadOptimizerLib.ISolution

Description Returns the name of the pallet if the SKU is a pallet load

Syntax Property ContainerNameOnUnitLoad As String

Data Type Long

DepartureTime Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the departure time of the SKU
Syntax	Property DepartureTime As String
Remarks	Read only
Data Type	String

Description Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the description of the SKU
Syntax	Property Description As String
Remarks	Read only
Data Type	String

GrossLoadedCount Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the gross load quantity of the SKU. It equals *LoadedCount* x *SubPackQty* of the SKU.
Syntax	Property GrossLoadedCount As Long
Remarks	Read only
Data Type	Long

GroupName Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the group name of the SKU
Syntax	Property GroupName As String
Remarks	Read only
Data Type	String

IsUnitloadContainer Property

Applies To	LoadOptimizerLib.Isolution
Description	Returns whether the SKU is a pallet load.
Syntax	Property IsUnitloadContainer As Bool
Remarks	Read only
Data Type	Bool

ItemAlias Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the alias of the SKU
Syntax	Property ItemAlias As String

Remarks	Read only
Data Type	String

ItemAlias2 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the alias2 of the SKU
Syntax	Property ItemAlias2 As String
Remarks	Read only
Data Type	String

ItemCBM Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the volume of the SKU
Syntax	Property ItemCBM As Double
Remarks	Read only
Data Type	Double

ItemHeight Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the height of the SKU
Syntax	Property ItemHeight As Double
Remarks	Read only
Data Type	Double

ItemLength Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the length of the SKU
Syntax	Property ItemLength As Double
Remarks	Read only
Data Type	Double

ItemName Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the name of the SKU
Syntax	Property ItemName As String
Remarks	Read only
Data Type	String

ItemProperty1 Property

Applies To	LoadOptimizerLib.ISolution

Description	Returns the property1 of the SKU
Syntax	Property ItemProperty1 As String
Remarks	Read only
Data Type	String

ItemProperty2 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property2 of the SKU
Syntax	Property ItemProperty2 As String
Remarks	Read only
Data Type	String

ItemProperty3 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property3 of the SKU
Syntax	Property ItemProperty3 As String
Remarks	Read only
Data Type	String

ItemProperty4 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property4 of the SKU
Syntax	Property ItemProperty4 As String
Remarks	Read only
Data Type	String

ItemProperty5 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property5 of the SKU
Syntax	Property ItemProperty5 As String
Remarks	Read only
Data Type	String

ItemProperty6 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property6 of the SKU
Syntax	Property ItemProperty6 As String
Remarks	Read only
Data Type	String

ItemProperty7 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property7 of the SKU
Syntax	Property ItemProperty7 As String
Remarks	Read only
Data Type	String

ItemProperty8 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property8 of the SKU
Syntax	Property ItemProperty8 As String
Remarks	Read only
Data Type	String

ItemProperty9 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property9 of the SKU
Syntax	Property ItemProperty9 As String
Remarks	Read only
Data Type	String

ItemProperty10 Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the property10 of the SKU
Syntax	Property ItemProperty10 As String
Remarks	Read only
Data Type	String

ItemWeight Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the weight of the SKU
Syntax	Property ItemWeight As Double
Remarks	Read only
Data Type	Double

ItemWidth Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the width of the SKU
Syntax	Property ItemWidth As Double
Remarks	Read only
Data Type	Double

LoadedCount Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the number of load for the SKU
Syntax	Property LoadedCount As Long
Remarks	Read only
Data Type	Long

LoadedItem Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the *SKU* object of the SKU to allow you to access the properties of the SKU
Syntax	Property LoadedItem As SKU
Remarks	Read only
Data Type	SKU

SetRatio Property

Applies To	LoadOptimizerLib.ISolution
Description	Returns the set ratio of the SKU
Syntax	Property SetRatio As Integer
Remarks	Read only
Data Type	Integer

SubPackQty Property

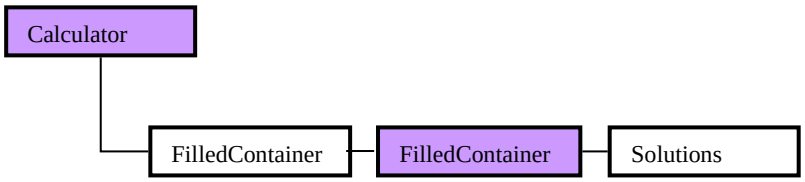
Applies To	LoadOptimizerLib.ISolution
Description	Returns the number of pack inside the SKU.
Syntax	Property SubPackQty As Long
Remarks	Read only
Data Type	Long

10.3 Solution Object Methods, Functions

- **None**

11 Solutions Object

The *Solutions* is a collection to store multiple *Solution* objects. The *Solutions* is accessible through the property *Solutions* of the *FilledContainer* object. Once the *Solutions* is acquired, you can iterate all elements in it.



[Picture12.Solutions Object]

11.1 Solutions Object Overview

- **Solutions Object Properties, Collections**

Count	Item
~~SolutionByGroupAt~~	~~SolutionByGroupCount~~

- **Solutions Object Method**

Reset

- **Solutions Object Event**

None

11.2 Solutions Object Properties

- **Count Property**

Applies To	LoadOptimizerLib.ISolutions
Description	Returns the number of item(solution)s in the collection
Syntax	Property Count As Long
Data Type	Long

- **Item Property**

Applies To	LoadOptimizerLib. ISolutions
Description	Returns an item (solution) in the collection.

Syntax Property Item(***index*** As Long)

Parameter

Parameter	Description
index	An index to an item between 1 and *Count.*

Data Type None

11.3 Solutions Object Methods, Functions

Reset Method

Applies To LoadOptimizerLib.ISolutions

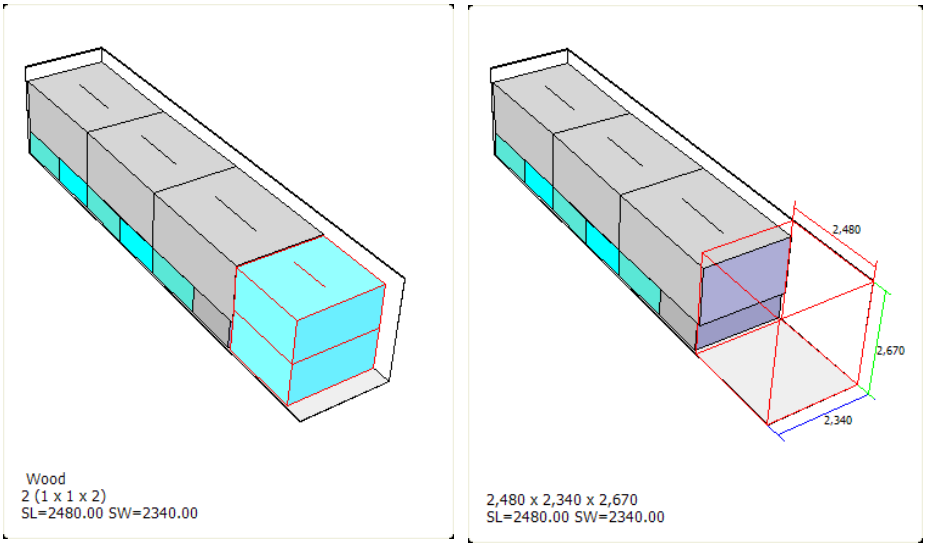
Description Initialize the collection

Syntax Sub Reset()

Data Type None

12 SpaceInContainer Object

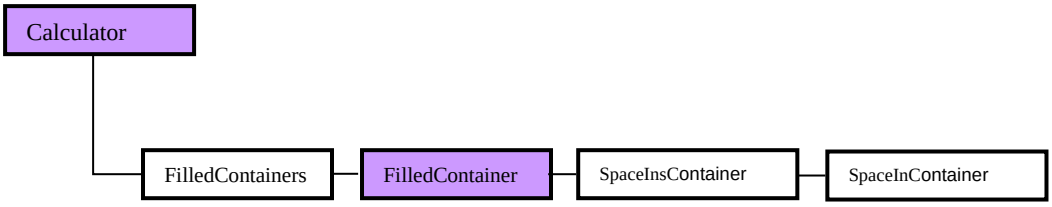
The *SpaceInContainer* object provides a set of properties for a space in the loaded container and the SKU inside the space if it is a filled space. Using this object, you can access a space in the loaded container. The space has two types – filled and empty as in the following picture.



A filled space

An empty space

The following picture shows the relations of the five objects – *Calculator*, *FilledContainers*, *FilledContainer*, *SpacesInContainer* and *SpaceInContainer* which means the *SpaceInContainer* is accessible only through the *SpacesInContainer*.



[Picture16.SpaceInContainer Object]

12.1 SpaceInContainer Object Overview

- **SpaceInContainer Object Properties, Collections**

Height	~~ItemData~~
Length	~~LoadableContainers~~
~~LoadableSKUs~~	LoadedItem

LoadedItemCount	LoadedItemName
Width	

- **SpaceInContainer Object Method**

None

- **SpaceInContainer Object Event**

None

12.2 SpaceInContainer Object Properties

- **Height Property**

Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the height of the space
Syntax	Property Height As Double
Remarks	Read only
Data Type	Double

- **Length Property**

Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the length of the space
Syntax	Property Length As
Remarks	Read only
Data Type	Double

- **LoadedItem Property**

Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the *SKU* object inside the space to allow you to access the properties of the SKU. If the space is empty, it returns NULL.
Syntax	Property LoadedItem As SKU
Remarks	Read only
Data Type	SKU

- **LoadedItemCount Property**

Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the number of SKU inside the space. If the space is empty, it returns 0.
Syntax	Property LoadedItemCount As Long
Remarks	Read only
Data Type	Long

- **LoadedItemName Property**

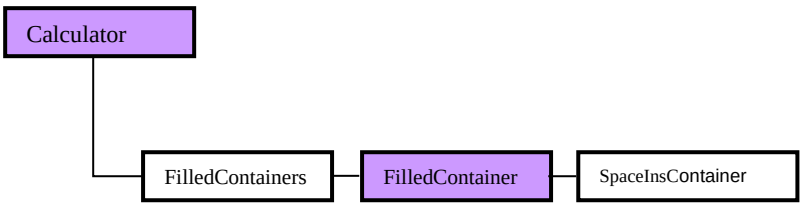
Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the name of SKU inside the space. If the space is empty, it returns “”.
Syntax	Property LoadedItemName As String
Remarks	Read only
Data Type	String

- **Width Property**

Applies To	LoadOptimizerLib.ISpaceInContainer
Description	Returns the width of the space
Syntax	Property Width As Double
Remarks	Read only
Data Type	Double

13 SpacesInContainer Object

The *SpacesInContainer* is a collection to store multiple *SpaceInContainer* objects. The *SpacesInContainer* is accessible through the property *SpacesInContainer* of the *FilledContainer* object. Once the *SpacesInContainer* is acquired, you can iterate all elements in it.



[Picture15.SpacesInContainer Object]

13.1 SpaceInsContainer Object Overview

- **SpaceInsContainer Object Properties, Collections**

Count	GarbageSpaceAt
GarbageSpaceCount	Item
LoadedSpaceAt	LoadedSpaceCount

- **SpaceInsContainer Object Method**

None

- **SpaceInsContainer Object Event**

None

13.2 SpaceInsContainer Object Properties

Count Property

Applies To LoadOptimizerLib.ISpacesInContainer

Description Returns the number of item(SpaceInContainer)s in the collection. It equals the sum of *GarbageSpaceCount* and *LoadedSpaceCount*.

Syntax Property Count As Long

Data Type Long

GarbageSpaceAt Property

Applies To LoadOptimizerLib. ISpacesInContainer

Description Returns an empty space in the collection.

Syntax Property GarbageSpaceAt(index As Long)

Parameter

Parameter	Description
index	An index to an item between 1 and *GarbageSpaceCount*

Data Type None

GarbageSpaceCount Property

Applies To LoadOptimizerLib. ISpacesInContainer

Description Returns the number of empty spaces in the collection.

Syntax Property GarbageSpaceCount As Long

Data Type Long

Item Property

Applies To LoadOptimizerLib. ISpacesInContainer

Description Returns an item(space)s in the collection.

Syntax Property Item(index As Long)

Parameter

Parameter	Description
index	An index to an item between 1 and *Count.*

Data Type None

LoadedSpaceAt Property

Applies To LoadOptimizerLib. ISpacesInContainer

Description Returns a space filled with a SKU in the collection.

Syntax Property LoadedSpaceAt(index As Long)

Parameter

Parameter	Description
index	An index to an item between 1 and *LoadedSpaceCount.*

Data Type None

LoadedSpaceCount Property

Applies To	LoadOptimizerLib. ISpacesInContainer
Description	Returns the number of spaces filled with a SKU in the collection.
Syntax	Property LoadedSpaceCount As Long
Data Type	None