Geometry: Parametric Surface

Geometry

Functions

afx_msg VARIANT	**OSGeometryUI::DefineParametricSurface** (LPCTSTR szName, const VARIANT FAR &varType, const VARIANT FAR &nodeO, const VARIANT FAR &nodeX, const VARIANT FAR &node3rd, const VARIANT FAR &varCount, VARIANT FAR &varVertices, const VARIANT FAR &varAutoGenerate) Creates definition of a parametric surface.
afx_msg VARIANT	**OSGeometryUI::AddParametricSurfaceToModel** (const VARIANT FAR &nSurfaceId) Adds definition of the specified parametric surface to the model.
afx_msg VARIANT	**OSGeometryUI::CommitParametricSurfaceMesh** (const VARIANT FAR &nSurfaceId) Merges the specified parametric mesh with the model.
afx_msg VARIANT	**OSGeometryUI::RemoveParametricSurfaceMesh** (const VARIANT FAR &nSurfaceId) Deletes the specified parametric mesh from the model.
afx_msg VARIANT	**OSGeometryUI::AddDensityPointToSurface** (const VARIANT FAR &nSurfaceId, const VARIANT FAR &varX, const VARIANT FAR &varY, const VARIANT FAR &varZ, const VARIANT FAR &varDensity) Adds a density point to the specified parametric surface.
afx_msg VARIANT	**OSGeometryUI::AddDensityLineToSurface** (const VARIANT FAR &nSurfaceId, const VARIANT FAR &varX1, const VARIANT FAR &varY1, const VARIANT FAR &varZ1, const VARIANT FAR &varDensity1, const VARIANT FAR &varX2, const VARIANT FAR &varY2, const VARIANT FAR &varZ2, const VARIANT FAR &varDensity2, const VARIANT FAR &varDivs) Adds a density line to the specified parametric surface.
afx_msg VARIANT	**OSGeometryUI::AddCircularRegionToSurface** (const VARIANT FAR &nSurfaceId, const VARIANT FAR &varX, const VARIANT FAR &varY, const VARIANT FAR &varZ, const VARIANT FAR &varR, const VARIANT FAR &varDiv, const VARIANT FAR &varDensity, const VARIANT FAR &varIsOpening) Adds a circular region or opening to the specified parametric surface.
afx_msg VARIANT	**OSGeometryUI::AddPolygonalRegionToSurface** (const VARIANT FAR &nSurfaceId, const VARIANT FAR &varVertexCount, const VARIANT FAR &varX, const VARIANT FAR &varY, const VARIANT FAR &varZ, const VARIANT FAR &varDensities, const VARIANT FAR &varEdgeDivs, const VARIANT FAR &varIsOpening) Adds a polygonal region or opening to the specified parametric surface.
afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceCount** () Returns the number of surfaced defined with parametric model.
afx_msg long	**OSGeometryUI::GetParametricSurfaceInfoEx** (long nSurfaceId, BSTR FAR *strName, long *nSurfaceType, BSTR FAR *strSurfaceSubType, long *nVertices, double *meshsize, long *iDivOpt, long *method, long *isQuad, long *originNode, long *nodeOnXAxis, long *nodeTowardsYAxis, long *nCircularOpenings, long *nPolygonalOpening, long *nCicularRegions, long *nPolygonalRegions, long *nDensityPoints, long *nDensityLines) Returns parametric model information for specified surface.
afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceInfo** (const VARIANT FAR &varSurfaceId, VARIANT FAR &varName, VARIANT FAR &varSType, VARIANT FAR &varBPCount, VARIANT FAR &varDPCount, VARIANT FAR &varDLCount, VARIANT FAR &varOpeningCount, VARIANT FAR &varRegionCount) Returns parametric model information for specified surface.

afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceMeshInfo** (const VARIANT FAR &nSurfaceId, VARIANT FAR &varNodeCount, VARIANT FAR &varElementCount) Gets information about specified parametric surface available in the currently loaded model.
afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceMeshData** (const VARIANT FAR &nSurfaceId, VARIANT FAR &varGeneratedNodes, VARIANT FAR &varGenereatedElements) Gets data about specified parametric surface available in the currently loaded model.
afx_msg VARIANT	**OSGeometryUI::SetParametricSurfaceUniqueID** (const VARIANT FAR &szName, const VARIANT FAR &szUID) Sets the unique string ID (GUID) for specified named parametric surface.
afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceUniqueID** (const VARIANT FAR &szName) Returns the unique string ID (GUID) for specified named parametric surface.
afx_msg VARIANT	**OSGeometryUI::SetParametricSurfaceSubType** (const VARIANT FAR &szName, const VARIANT FAR &szSubType) Sets the sub-type attribute for specified named parametric surface.
afx_msg VARIANT	**OSGeometryUI::GetParametricSurfaceSubType** (const VARIANT FAR &szName) Returns the sub-type attribute string for specified named parametric surface.

Detailed Description

These functions are related to operations of Parametric or Physical Surface.

Function Documentation

◆ AddCircularRegionToSurface()

```
VARIANT OSGeometryUI::AddCircularRegionToSurface ( const VARIANT FAR & nSurfaceId,
                                                   const VARIANT FAR & varX,
                                                   const VARIANT FAR & varY,
                                                   const VARIANT FAR & varZ,
                                                   const VARIANT FAR & varR,
                                                   const VARIANT FAR & varDiv,
                                                   const VARIANT FAR & varDensity,
                                                   const VARIANT FAR & varIsOpening )
```
private

Adds a circular region or opening to the specified parametric surface.

Parameters

[in]	**nSurfaceId**	Id of the parametric surface to which the region needs to be added (Type: Long)
[in]	**varX**	Global X coordinate of the center of circular region (Type: Double)
[in]	**varY**	Global Y coordinate of the center of circular region (Type: Double)
[in]	**varZ**	Global Z coordinate of the center of circular region (Type: Double)
[in]	**varR**	Radius of the circular region (Type: Double)
[in]	**varDiv**	Divisions in the circular region (Type: Long)
[in]	**varDensity**	Density of the circular region (Type: Long)
[in]	**varIsOpening**	Option to specify whether the specified region is an opening (1 = Opening, 0 = Region) (Type: Long)

Return values

<val>	Index (0 based) of the region added to the surface (Type: Long)
-1	Region could not be added

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

OSGeometryUI::AddPolygonalRegionToSurface

◆ AddDensityLineToSurface()

```
VARIANT OSGeometryUI::AddDensityLineToSurface ( const VARIANT FAR & nSurfaceId,
                                                const VARIANT FAR & varX1,
                                                const VARIANT FAR & varY1,
                                                const VARIANT FAR & varZ1,
                                                const VARIANT FAR & varDensity1,
                                                const VARIANT FAR & varX2,
                                                const VARIANT FAR & varY2,
                                                const VARIANT FAR & varZ2,
                                                const VARIANT FAR & varDensity2,
                                                const VARIANT FAR & varDivs )   private
```

Adds a density line to the specified parametric surface.

Parameters

[in]	**nSurfaceId**	Id of the parametric surface to which the density line needs to be added (Type: Long)
[in]	**varX1**	Global X coordinate of the starting point of the density line to be added (Type: Double)
[in]	**varY1**	Global Y coordinate of the starting point of the density line to be added (Type: Double)
[in]	**varZ1**	Global Z coordinate of the starting point of the density line to be added (Type: Double)
[in]	**varDensity1**	Density of the starting point of the density line to be added (Type: Long)
[in]	**varX2**	Global X coordinate of the ending point of the density line to be added (Type: Double)
[in]	**varY2**	Global Y coordinate of the ending point of the density line to be added (Type: Double)
[in]	**varZ2**	Global Z coordinate of the ending point of the density line to be added (Type: Double)
[in]	**varDensity2**	Density of the ending point of the density line to be added (Type: Long)
[in]	**varDivs**	Divisions in the density line to be added (Type: Long)

Return values

<val>	Index (0 based) of the density line added to the surface (Type: Long)
-1	Density line could not be added

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

◆ AddDensityPointToSurface()

VARIANT OSGeometryUI::AddDensityPointToSurface (const VARIANT FAR & nSurfaceId,
const VARIANT FAR & varX,
const VARIANT FAR & varY,
const VARIANT FAR & varZ,
const VARIANT FAR & varDensity) private

Adds a density point to the specified parametric surface.

Parameters

[in] **nSurfaceId** Id of the parametric surface to which the density point needs to be added (Type: Long)

[in] **varX** Global X coordinate of the density point to be added (Type: Double)

[in] **varY** Global Y coordinate of the density point to be added (Type: Double)

[in] **varZ** Global Z coordinate of the density point to be added (Type: Double)

[in] **varDensity** Density of the density point to be added (Type: Long) (For details about this parameter, check the following section of STAAD Help documentation : Home > Ribbon Control Reference > Geometry tab > Parametric Models dialog)

Return values

<val> Index (0 based) of the density point added to the surface (Type: Long)

-1 Density point could not be added

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

◆ AddParametricSurfaceToModel()

VARIANT OSGeometryUI::AddParametricSurfaceToModel (const VARIANT FAR & nSurfaceId) private

Adds definition of the specified parametric surface to the model.

Parameters

[in] **nSurfaceId** Id of the parametric surface which needs to be added to the model (Type: Long)

Return values

1 Addition of parametric surface to the model successful

0 Addition of parametric surface to the model unsuccessful

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

See also

OSGeometryUI::DefineParametricSurface

◆ AddPolygonalRegionToSurface()

```
VARIANT OSGeometryUI::AddPolygonalRegionToSurface ( const VARIANT FAR & nSurfaceId,
                                                    const VARIANT FAR & varVertexCount,
                                                    const VARIANT FAR & varX,
                                                    const VARIANT FAR & varY,
                                                    const VARIANT FAR & varZ,
                                                    const VARIANT FAR & varDensities,
                                                    const VARIANT FAR & varEdgeDivs,
                                                    const VARIANT FAR & varIsOpening )
```
private

Adds a polygonal region or opening to the specified parametric surface.

Parameters

[in]	**nSurfaceId**	Id of the parametric surface to which the region needs to be added (Type: Long)
[in]	**varVertexCount**	Number of vertices of the polugonal region (Type: Long)
[in]	**varX**	Array of Global X coordinates of the boundary nodes of the polygonal region (Type: Double)
[in]	**varY**	Array of Global Y coordinates of the boundary nodes of the polygonal region (Type: Double)
[in]	**varZ**	Array of Global Z coordinates of the boundary nodes of the polygonal region (Type: Double)
[in]	**varDensities**	Array of Densities of the polygonal region (Type: Long)
[in]	**varEdgeDivs**	Array of Divisions in each of the edges of the polygonal region (Type: Long)
[in]	**varIsOpening**	Option to specify whether the specified region is an opening (1 = Opening, 0 = Region) (Type: Long)

Return values

<val>	Index (0 based) of the region added to the surface (Type: Long)
-1	Region could not be added

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

OSGeometryUI::AddCircularRegionToSurface

◆ CommitParametricSurfaceMesh()

VARIANT OSGeometryUI::CommitParametricSurfaceMesh (const VARIANT FAR & nSurfaceId)

Merges the specified parametric mesh with the model.

Parameters

[in] **nSurfaceId** Id of the parametric surface which needs to be merged with the model (Type: Long)

Return values

1 Merge of parametric mesh to the model successful

0 Merge of parametric mesh to the model unsuccessful

VBA Syntax

```
Sub Main
    Dim objOpenStaad As Object
    Dim stdFile As String

    Set objOpenStaad = GetObject(,"StaadPro.OpenSTAAD")

    Dim nMeshedSurface As Long
    Dim strName As String
    Dim varTyp As Long
    Dim nodeO As Long
    Dim nodeX As Long
    Dim node3rd As Long
    Dim varCount As Long
    Dim varVertices(3) As Long
    Dim varAutoGenerate As Long
    Dim nAdditionStatus As Long
    Dim nCommitStatus As Long
    Dim x1 As Double
    Dim y1 As Double
    Dim z1 As Double
    Dim density1 As Long
    Dim x2 As Double
    Dim y2 As Double
    Dim z2 As Double
    Dim density2 As Long
    Dim div As Long
    Dim centerX As Double
    Dim centerY As Double
    Dim centerZ As Double
    Dim radius As Double
    Dim circDiv As Long
    Dim nOpening As Long
    Dim nVertexCount As Long
    Dim centerXP(4) As Double
    Dim centerYP(4) As Double
    Dim centerZP(4) As Double
    Dim densities(4) As Long
    Dim edgeDivs(4) As Long
    Dim densityLineIndex As Variant
    Dim densityPointIndex As Variant
    Dim circularRegionIndex As Variant
    Dim polygonalRegionIndex As Variant

    'Define parametric surface
    strName = "Surf1"
    varTyp = 0  'None = 0, Wall = 1, Slab = 2
    nodeO = 2
    nodeX = 5
    node3rd = 3
    varCount = 4
    varVertices(0) = 2
```

```
varVertices(1) = 3
varVertices(2) = 6
varVertices(3) = 5
varAutoGenerate = 1
nMeshedSurface = objOpenStaad.Geometry.DefineParametricSurface(strName, varTyp, nodeO, nodeX, node3rd
    varCount, varVertices, varAutoGenerate)

'Add Density Line to surface
x1 = 180
y1 = 120
z1 = 180
density1 = 2
x2 = 200
y2 = 120
z2 = 200
density2 = 2
div = 10
densityLineIndex =
    objOpenStaad.Geometry.AddDensityLineToSurface(nMeshedSurface,x1,y1,z1,density1,x2,y2,z2,density2,d

'Add Density point to surface
x1 = 100
y1 = 120
z1 = 100
density1 = 3
densityPointIndex = objOpenStaad.Geometry.AddDensityPointToSurface(nMeshedSurface,x1,y1,z1,density1)

'Add circular region to surface
centerX = 80
centerY = 120
centerZ = 80
radius = 5
circDiv = 10
density1 = 4
nOpening = 1
circularRegionIndex = objOpenStaad.Geometry.AddCircularRegionToSurface(nMeshedSurface, centerX, cente
    centerZ, radius, circDiv, density1, nOpening)

'Add polygonal region to surface
nVertexCount = 5
centerXP(0) = 160
centerYP(0) = 120
centerZP(0) = 160
densities(0) = 5
edgeDivs(0) = 10

centerXP(1) = 180
centerYP(1) = 120
centerZP(1) = 180
densities(1) = 5
edgeDivs(1) = 10

centerXP(2) = 200
centerYP(2) = 120
centerZP(2) = 200
densities(2) = 5
edgeDivs(2) = 10

centerXP(3) = 220
centerYP(3) = 120
centerZP(3) = 220
densities(3) = 5
edgeDivs(3) = 10

centerXP(4) = 240
centerYP(4) = 120
centerZP(4) = 240
densities(4) = 5
edgeDivs(4) = 10
```

```
    nOpening = 1
    polygonalRegionIndex = objOpenStaad.Geometry.AddPolygonalRegionToSurface(nMeshedSurface, nVertexCount
        centerXP, centerYP, centerZP, densities, edgeDivs, nOpening)

    'Add parametric surface to model
    nAdditionStatus = objOpenStaad.Geometry.AddParametricSurfaceToModel(nMeshedSurface)

    'Merge mesh to model
    nCommitStatus = objOpenStaad.Geometry.CommitParametricSurfaceMesh(nMeshedSurface)

    Set objOpenStaad = Nothing
End Sub
```

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

◆ DefineParametricSurface()

```
VARIANT OSGeometryUI::DefineParametricSurface ( LPCTSTR              strName,
                                                const VARIANT FAR &  varType,
                                                const VARIANT FAR &  nodeO,
                                                const VARIANT FAR &  nodeX,
                                                const VARIANT FAR &  node3rd,
                                                const VARIANT FAR &  varCount,
                                                VARIANT FAR &        varVertices,
                                                const VARIANT FAR &  varAutoGenerate )
```

private

Creates definition of a parametric surface.

Parameters

[in]	**strName**	Name of the parametric surface (Type: String)
[in]	**varType**	Type of the parametric surface (None = 0, Wall = 1, Slab = 2) (Type: Long)
[in]	**nodeO**	Id of origin node (node no.) of the parametric surface (Type: Long)
[in]	**nodeX**	Id of vertex node (node no.) on local X axis of the parametric surface (Type: Long)
[in]	**node3rd**	Id of vertex node (node no.) on local Y axis of the parametric surface (Type: Long)
[in]	**varCount**	Count of vertices needed to define the parametric surface (Type: Long) (vertices are nodes that exist in the model)
[in]	**varVertices**	Array of vertices of the parametric surface (Type: Long) (vertices must lie on same plane)
[in]	**varAutoGenerate**	Option to specify whether to automatically determine boundary points and density objects for the parametric surface (Generate Automatically = 1, Do *not* Generate Automatically = 0) (Type: Long)

Return values

<nId>	Id of the newly generated parametric surface (Type: Long)
-1	Could not create definition of parametric surface

For illustration of usage of this API, please check the example available in the description of the API **OSGeometryUI::CommitParametricSurfaceMesh**

◆ GetParametricSurfaceCount()

VARIANT OSGeometryUI::GetParametricSurfaceCount ( ) private

Returns the number of surfaced defined with parametric model.

Returns

The number of meshed surface.

C++ Syntax

```
// Count for the meshed surfaces
VARIANT nMeshedSurface = OSGeometryUI::GetParametricSurfaceCount();
```

VBA Syntax

```
' Count for the meshed surfaces
Dim nMeshedSurface As long
nMeshedSurface = objOpenStaad.Geometry.GetParametricSurfaceCount()
```

◆ GetParametricSurfaceInfo()

```
VARIANT OSGeometryUI::GetParametricSurfaceInfo ( const VARIANT FAR & varSurfaceId,
                                                 VARIANT FAR &       varName,
                                                 VARIANT FAR &       varSType,
                                                 VARIANT FAR &       varBPCount,
                                                 VARIANT FAR &       varDPCount,
                                                 VARIANT FAR &       varDLCount,
                                                 VARIANT FAR &       varOpeningCount,
                                                 VARIANT FAR &       varRegionCount )
```

private

Returns parametric model information for specified surface.

Parameters

[in]	**varSurfaceId**	Id of the parametric surface for which mesh information is required (Type: Long)
[out]	**varName**	Name of the mesh.
[out]	**varSType**	Type of surface (None = 0, Wall = 1, Slab = 2).
[out]	**varBPCount**	Count of boundary points.
[out]	**varDPCount**	Count of density points.
[out]	**varDLCount**	Count of density points.
[out]	**varOpeningCount**	Count of openings.
[out]	**varRegionCount**	Count of regions.

Return values

1 True.

0 False.

C++ Syntax

```
int nMeshedSurfaceCount = OSGeometryUI::GetParametricSurfaceCount();
if ( nMeshedSurfaceCount > 0 )
{
     for ( int i = 0; i < nMeshedSurfaceCount; i++ )
         {
         bool RetVal = OSGeometryUI::GetParametricSurfaceInfo(i, &varName, &varSType, &varBPCount,
                                             &varDPCount, &varDLCount, &varOpeningCount,
       &varRegionCount);
         }
 }
```

C# Syntax

```
int nMeshedSurfaceCount = OSGeometryUI.GetParametricSurfaceCount();
if ( nMeshedSurfaceCount > 0 )
{
     for ( int i = 0; i < nMeshedSurfaceCount; i++ )
         {
         bool RetVal = OSGeometryUI.GetParametricSurfaceInfo(i, ref varName, ref varSType, ref
       varBPCount,
                                             ref varDPCount, ref varDLCount, ref varOpeningCount, ref
       varRegionCount);
         }
 }
```

VBA Syntax

```
'Get information for parametric surface #4.
Dim strName As String
Dim surfType As Long
Dim nVertices As Long
Dim nDensityPoints As Long
Dim nDensityLines As Long
Dim nOpenings As Long
Dim nRegions As Long
Dim bVal As Boolean
Dim nParametricSurfaceCount As Long
nParametricSurfaceCount = objOpenStaad.Geometry.GetParametricSurfaceCount()
If nParametricSurfaceCount <> 0 Then
         For i = 0 To nParametricSurfaceCount-1
             bVal = objOpenStaad.Geometry.GetParametricSurfaceInfo(i, strName, surfType, nVertices,
       nDensityPoints, nDensityLines, nOpenings, nRegions)
         Next
 End If
```

See also

OSGeometryUI::GetParametricSurfaceInfoEx

◆ GetParametricSurfaceInfoEx()

```
long OSGeometryUI::GetParametricSurfaceInfoEx ( long        nSurfaceId,
                                                 BSTR FAR * strName,
                                                 long *     nSurfaceType,
                                                 BSTR FAR * strSurfaceSubType,
                                                 long *     nVertices,
                                                 double *   meshsize,
                                                 long *     iDivOpt,
                                                 long *     method,
                                                 long *     isQuad,
                                                 long *     originNode,
                                                 long *     nodeOnXAxis,
                                                 long *     nodeTowardsYAxis,
                                                 long *     nCircularOpenings,
                                                 long *     nPolygonalOpening,
                                                 long *     nCicularRegions,
                                                 long *     nPolygonalRegions,
                                                 long *     nDensityPoints,
                                                 long *     nDensityLines )
```

private

Returns parametric model information for specified surface.

Parameters

[in]	**nSurfaceId**	Parametric surface number ID based on index starting from 1.
[out]	**strName**	(BSTR) String name of the mesh.
[out]	**nSurfaceType**	Type of surface (None = 0, Wall = 1, Slab = 2).
[out]	**strSurfaceSubType**	(BSTR) Sub-type of surface.
[out]	**nVertices**	The number of nVertices after meshing.
[out]	**meshsize**	Target mesh size.
[out]	**iDivOpt**	Number of divisions of boundary edges.
[out]	**method**	Meshing method: MeshingMethodBasic = 0, MeshingMethodStandard = 1
[out]	**isQuad**	Element type: 1 for Quad, 0 for triangular.
[out]	**originNode**	Number ID of node considered as origin.
[out]	**nodeOnXAxis**	Number ID of node on x-axis to determine x-axis.
[out]	**nodeTowardsYAxis**	number ID of node towards positive y-axis;
[out]	**nCircularOpenings**	The number of circular opening(s) on this surface.
[out]	**nPolygonalOpening**	The number of polygonal opening(s) on this surface.
[out]	**nCicularRegions**	The number of circular region(s) on this surface.
[out]	**nPolygonalRegions**	The number of polygonal region(s) on this surface.
[out]	**nDensityPoints**	The number of defined density point(s).
[out]	**nDensityLines**	The number of defined density line(s).

Return values

1 Ok.

0 Error.

C++ Syntax

```
int nMeshedSurfaceCount = OSGeometryUI::GetParametricSurfaceCount();
if ( nMeshedSurfaceCount > 0 )
{
     for ( int i = 0; i < nMeshedSurfaceCount; i++ )
     {
     long RetVal = OSGeometryUI::GetParametricSurfaceInfoEx(i, &strName, &nSurfType, &strSurfSubType,
       &nVertices, &meshsize, &iDivOpt, &method, &isQuad,
            &originNode, &nodeOnXAxis, &nodeTowardsYAxis, &nCircularOpenings, &nCicularRegions,
       &nPolygonalRegions,
            &nDensityPoints, &nDensityLines);
     }
}
```

C# Syntax

```
int nMeshedSurfaceCount = OSGeometryUI.GetParametricSurfaceCount();
if ( nMeshedSurfaceCount > 0 )
{
     for ( int i = 0; i < nMeshedSurfaceCount; i++ )
     {
     long RetVal = OSGeometryUI.GetParametricSurfaceInfoEx(i, ref strName, ref nSurfType, ref
       strSurfSubType, ref nVertices, ref meshsize, ref iDivOpt, ref method, ref isQuad,
            ref originNode, ref nodeOnXAxis, ref nodeTowardsYAxis, ref nCircularOpenings, ref
       nCicularRegions, ref nPolygonalRegions,
            ref nDensityPoints, ref nDensityLines);
     }
 }
```

VBA Syntax

```
Dim i As Integer
Dim strName As String
Dim surfType As Long
Dim surfSubType As String
Dim nVertices As Long
Dim meshsize As Double
Dim iDivOpt As Long
Dim method As Long
Dim isQuad As Long
Dim originNode As Long
Dim nodeOnXAxis As Long
Dim nodeTowardsYAxis As Long
Dim nCircularOpenings As Long
Dim nPolygonalOpening As Long
Dim nCicularRegions As Long
Dim nPolygonalRegions As Long
Dim nDensityPoints As Long
Dim nDensityLines As Long
Dim RetVal As Long
Dim nParametricSurfaceCount As Long
nParametricSurfaceCount = objOpenStaad.Geometry.GetParametricSurfaceCount()

If nParametricSurfaceCount <> 0 Then
    For i = 0 To nParametricSurfaceCount-1
        RetVal = objOpenStaad.Geometry.GetParametricSurfaceInfoEx(i, strName, surfType, surfSubType,
       nVertices, meshsize, iDivOpt, method, isQuad, _
                    originNode, nodeOnXAxis, nodeTowardsYAxis, nCircularOpenings, nPolygonalOpening,
       nCicularRegions, nPolygonalRegions, _
                    nDensityPoints, nDensityLines)
    Next
End If
```

See also

OSGeometryUI::GetParametricSurfaceInfo

◆ GetParametricSurfaceMeshData()

VARIANT OSGeometryUI::GetParametricSurfaceMeshData (const VARIANT FAR & nSurfaceId,
VARIANT FAR & varGeneratedNodes,
VARIANT FAR & varGenereatedElements) private

Gets data about specified parametric surface available in the currently loaded model.

Parameters

[in] **nSurfaceId** Id of the parametric surface for which mesh information is required (Type: Long)

[in] **varGeneratedNodes** Array of node ids generated by meshing operation (Type: Long)

[in] **varGenereatedElements** Array of plate ids generated by meshing operation (Type: Long)

Return values

1 Information about specified parametric surface was found.

0 Information about specified parametric surface was *not* found.

VBA Syntax

```
'Note: Before running this code snippet, please add Microsoft Scripting Runtime as Reference
Dim nNodes() As Long
Dim nElements() As Long
Dim RetVal As Variant
Dim nParametricSurfaceCount As Long
Dim i As Integer
Dim j As Integer
Dim nNodeCount As Long
Dim nElementCount As Long

Dim dictNodes As Scripting.Dictionary
Set dictNodes = New Scripting.Dictionary

Dim dictElements As Scripting.Dictionary
Set dictElements = New Scripting.Dictionary

nParametricSurfaceCount = objOpenStaad.Geometry.GetParametricSurfaceCount()
If nParametricSurfaceCount <> 0 Then
    For i = 0 To nParametricSurfaceCount-1
        RetVal = objOpenStaad.Geometry.GetParametricSurfaceMeshInfo(i, nNodeCount, nElementCount)
        ReDim nNodes(nNodeCount)
        ReDim nElements(nElementCount)
        RetVal = objOpenStaad.Geometry.GetParametricSurfaceMeshData(i, nNodes, nElements)
        dictNodes.Add(i,nNodes)
        dictElements.Add(i,nElements)
        Dim tempArr() As Long
        tempArr = dictNodes.Item(i)
        Dim k As Integer
        For k = 0 To nNodeCount-1
            MsgBox("Node id at index " & k & " for parametric surface id " & i & " is: " &
       tempArr(k))
        Next
        tempArr = dictElements.Item(i)
        For k = 0 To nElementCount-1
            MsgBox("Element id at index " & k & " for parametric surface id " & i & " is: " &
       tempArr(k))
        Next
        nNodeCount = 0
        nElementCount = 0
        Erase nNodes
        Erase nElements
        Erase tempArr
    Next
End If
```

See also

OSGeometryUI::GetParametricSurfaceMeshInfo

GetParametricSurfaceMeshInfo()

VARIANT OSGeometryUI::GetParametricSurfaceMeshInfo (const VARIANT FAR & nSurfaceId,
VARIANT FAR & varNodeCount,
VARIANT FAR & varElementCount) private

Gets information about specified parametric surface available in the currently loaded model.

Parameters

[in] **nSurfaceId** Id of the parametric surface for which mesh information is required (Type: Long)

[in] **varNodeCount** Number of nodes generated by meshing operation (Type: Long)

[in] **varElementCount** Number of plate elements generated by meshing operation (Type: Long)

Return values

1 Information about specified parametric surface was found.

0 Information about specified parametric surface was *not* found.

VBA Syntax

```
Dim nNodeCount() As Long
Dim nElementCount() As Long
Dim RetVal As Variant
Dim nParametricSurfaceCount As Long
Dim i As Integer
nParametricSurfaceCount = objOpenStaad.Geometry.GetParametricSurfaceCount()
ReDim nNodeCount(nParametricSurfaceCount)
ReDim nElementCount(nParametricSurfaceCount)
If nParametricSurfaceCount <> 0 Then
    For i = 0 To nParametricSurfaceCount-1
        RetVal = objOpenStaad.Geometry.GetParametricSurfaceMeshInfo(i, nNodeCount(i),
       nElementCount(i))
        MsgBox("Generated Node count for parametric surface id " &i &" is: " & nNodeCount(i))
        MsgBox("Generated Plate count for parametric surface id " &i &" is: " & nElementCount(i))
    Next
End If
```

See also

OSGeometryUI::GetParametricSurfaceMeshData

GetParametricSurfaceSubType()

VARIANT OSGeometryUI::GetParametricSurfaceSubType (const VARIANT FAR & szName) private

Returns the sub-type attribute string for specified named parametric surface.

Parameters

[in] **szName** Parametric Surface Name.

Return values

Non-empty string Unique string ID.

Empty String Cannot find the parametric surface < **szName** >.

C++ Syntax

```
// Gets the sub-type attribute string of parametric meshed surface with name "Meshed Surface 3".
VARIANT szSubType = OSGeometryUI::GetParametricSurfaceSubType("Meshed Surface 3");
```

VBA Syntax

```
' Gets the sub-type attribute string of parametric meshed surface with name "Meshed Surface 3".
Dim szSubType As VARIANT = OSGeometryUI.GetParametricSurfaceSubType("Meshed Surface 3")
```

See also

OSGeometryUI::SetParametricSurfaceSubType

◆ GetParametricSurfaceUniqueID()

VARIANT OSGeometryUI::GetParametricSurfaceUniqueID (const VARIANT FAR & szName) private

Returns the unique string ID (GUID) for specified named parametric surface.

Parameters

[in] **szName** Parametric Surface Name.

Return values

Non-empty string Unique string ID.

Empty String Cannot find the parametric surface < **szName** >.

C++ Syntax

```
// Gets the unique ID of parametric meshed surface with name "Meshed Surface 3".
VARIANT szUID = OSGeometryUI::GetParametricSurfaceUniqueID("Meshed Surface 3");
```

VBA Syntax

```
' Gets the unique ID of parametric meshed surface with name "Meshed Surface 3".
Dim szUID As VARIANT = OSGeometryUI.GetParametricSurfaceUniqueID("Meshed Surface 3")
```

See also

OSGeometryUI::SetParametricSurfaceUniqueID

◆ RemoveParametricSurfaceMesh()

VARIANT OSGeometryUI::RemoveParametricSurfaceMesh (const VARIANT FAR & nSurfaceId) private

Deletes the specified parametric mesh from the model.

Parameters

[in] **nSurfaceId** Id of the parametric surface which needs to be deleted from the model (Type: Long)

Return values

1 Deletion of parametric mesh successful

0 Deletion of parametric mesh unsuccessful

VBA Syntax

```
Dim nNodeCount As Long
Dim nElementCount As Long
Dim RetVal As VARIANT
RetVal = objOpenStaad.Geometry.RemoveParametricSurfaceMesh(0)
```

See also

OSGeometryUI::DefineParametricSurface

OSGeometryUI::AddParametricSurfaceToModel

OSGeometryUI::CommitParametricSurfaceMesh

◆ SetParametricSurfaceSubType()

VARIANT OSGeometryUI::SetParametricSurfaceSubType (const VARIANT FAR & szName,
const VARIANT FAR & szSubType) private

Sets the sub-type attribute for specified named parametric surface.

Parameters

[in] **szName** Parametric Surface Name.

[in] **szSubType** (LPCTSTR) sub-type attribute.

Return values

0 Failed setting the sub-type attribute

1 Succeeded setting of sub-type attribute

C++ Syntax

```
// Sets the sub-type attribute for parametric meshed surface with name "Meshed Surface 3".
VARIANT RetVal = OSGeometryUI::SetParametricSurfaceSubType("Meshed Surface 3", "WALL_TANK");
```

VBA Syntax

```
' Sets the sub-type attribute for parametric meshed surface with name "Meshed Surface 3".
Dim RetVal As VARIANT = OSGeometryUI.SetParametricSurfaceSubType("Meshed Surface 3", "SLAB_TANK")
```

See also

OSGeometryUI::GetParametricSurfaceSubType

◆ SetParametricSurfaceUniqueID()

VARIANT OSGeometryUI::SetParametricSurfaceUniqueID (const VARIANT FAR & szName,
const VARIANT FAR & szUID) private

Sets the unique string ID (GUID) for specified named parametric surface.

Parameters

[in] **szName** Parametric Surface Name.

[in] **szUID** (LPCTSTR) unique string ID.

Return values

0 OK.

-5603 Cannot find the parametric surface < **szName** >.

C++ Syntax

```
// Sets the unique ID for parametric meshed surface with name "Meshed Surface 3".
VARIANT RetVal = OSGeometryUI::SetParametricSurfaceUniqueID("Meshed Surface 3", "88FC7436-8F64-44c8-
       9E08-3AE4C59FF0E5");
```

VBA Syntax

```
' Sets the unique ID for parametric meshed surface with name "Meshed Surface 3".
Dim RetVal As VARIANT = OSGeometryUI.SetParametricSurfaceUniqueID("Meshed Surface 3", "88FC7436-8F64-
       44c8-9E08-3AE4C59FF0E5")
```

See also

OSGeometryUI::GetParametricSurfaceUniqueID