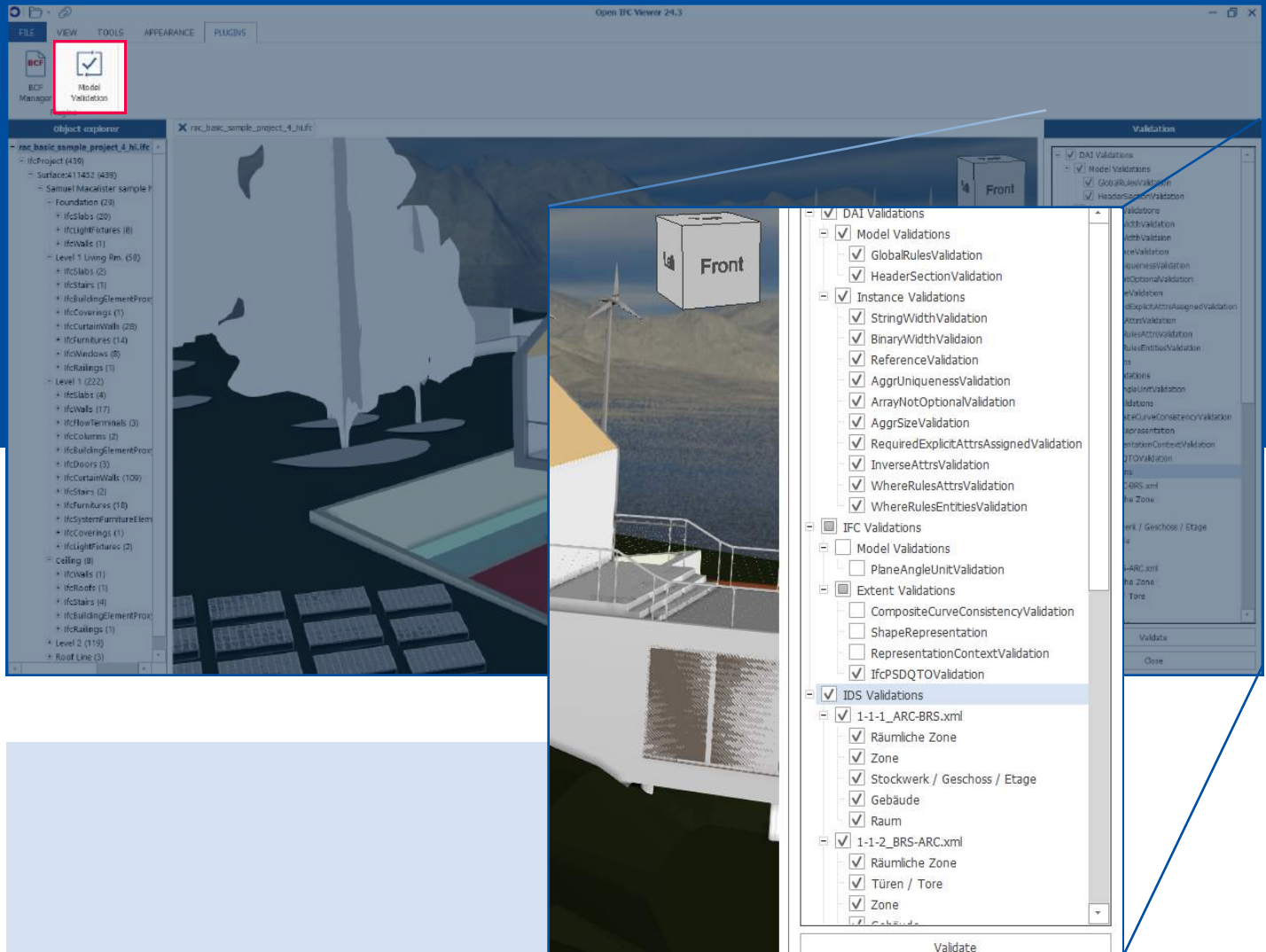# OPEN IFC VIEWER VALIDATION PLUGIN

Validation Plugin is available on click to Validation icon in PLUGINS tab of top ribbon panel:

Just after click on the icon, the tool will be initialized with available Validation Tasks on several validation levels

1. DAI VALIDATIONS

SDAI-Level Validation Tasks described within ISO 10303-22 specification, following validation tasks are implemented in ODA SDAI 24.2:

a. Global Rules validation

IFC Model Global Rules validation according to EXPRESS Schema definitions.

b. String Width validation

Checks if STRING attribute value size is correct according to attribute type definition.

c. Binary Width validation

Checks BINARY attribute value size is correct according to attribute type definition.

d. References Validation

Checks if references are to instances of correct EXPRESS type.

e. Aggr Uniqueness Validation

Checks if all aggregate items are unique within aggregation instance.

f. Array Not Optional Validation

Checks if ARRAY attributes have not unset items, for appropriate ARRAY types.

g. Aggr Size Validation

checks if AGGREGATIONs size is correct in accordance to type defined within schema.

h. Required Explicit Attributes Assignment Validation

Checks required (non-optional) attributes have assigned values.

i. Inverse Attributes Validation

Checks inverse attributes back links types correctness.

j. Where Rules for Attributes Validation

Checks if application instance attribute value satisfies Where Rules defined within defined type of attribute.

k. Where Rules for Entities Validation

Checks if application instance satisfies all its Where Rules defined within EXPRESS schema entity definition.

l. Header Section Validation

Non-standard validation of Header Section loaded from Step Physical File, is positioned as ODA SDAI validation.

2. IFC VALIDATIONS

IFC Format-dependent validation tasks

a. Plane Angle Unit Validation

Validation if plane angle units are defined within the IFC model. This validation task has healer which can repair incorrect model.
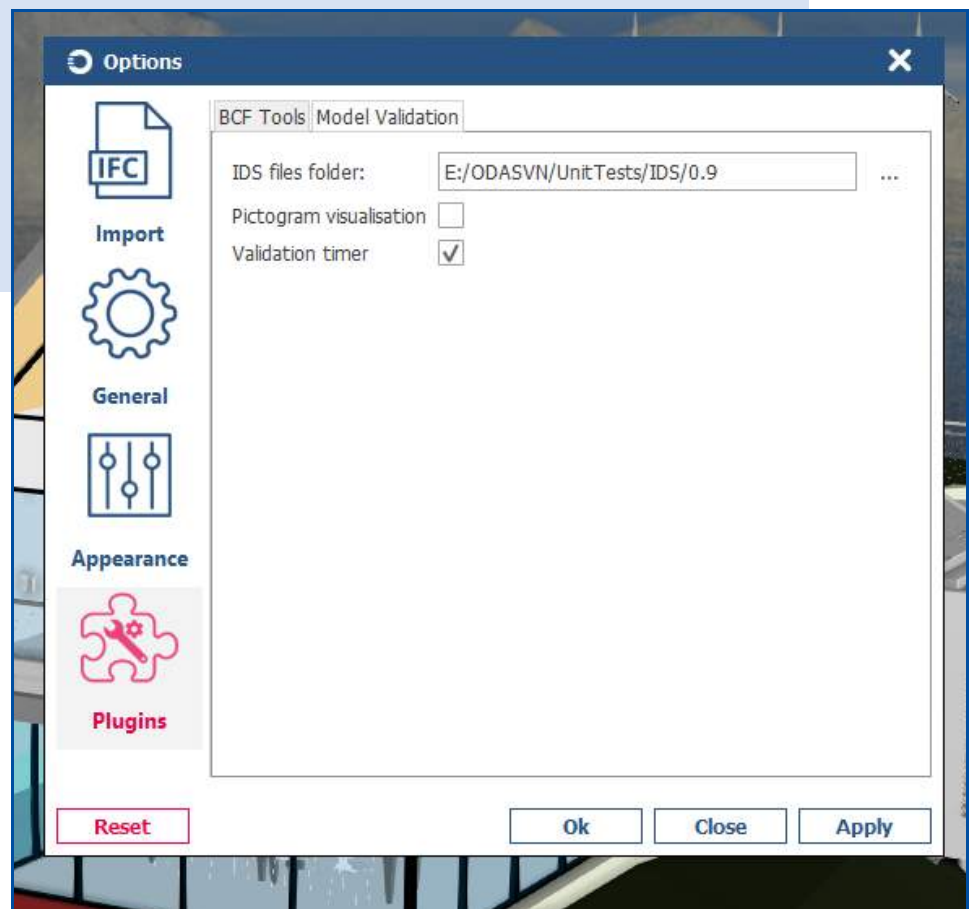
b. PSD/QTO Validation

Validation of Property and Quantity Sets assignment correctness within an IFC model, implementation is based on ODA PSD/QTO Engine which is a part of ODA IFC SDK.
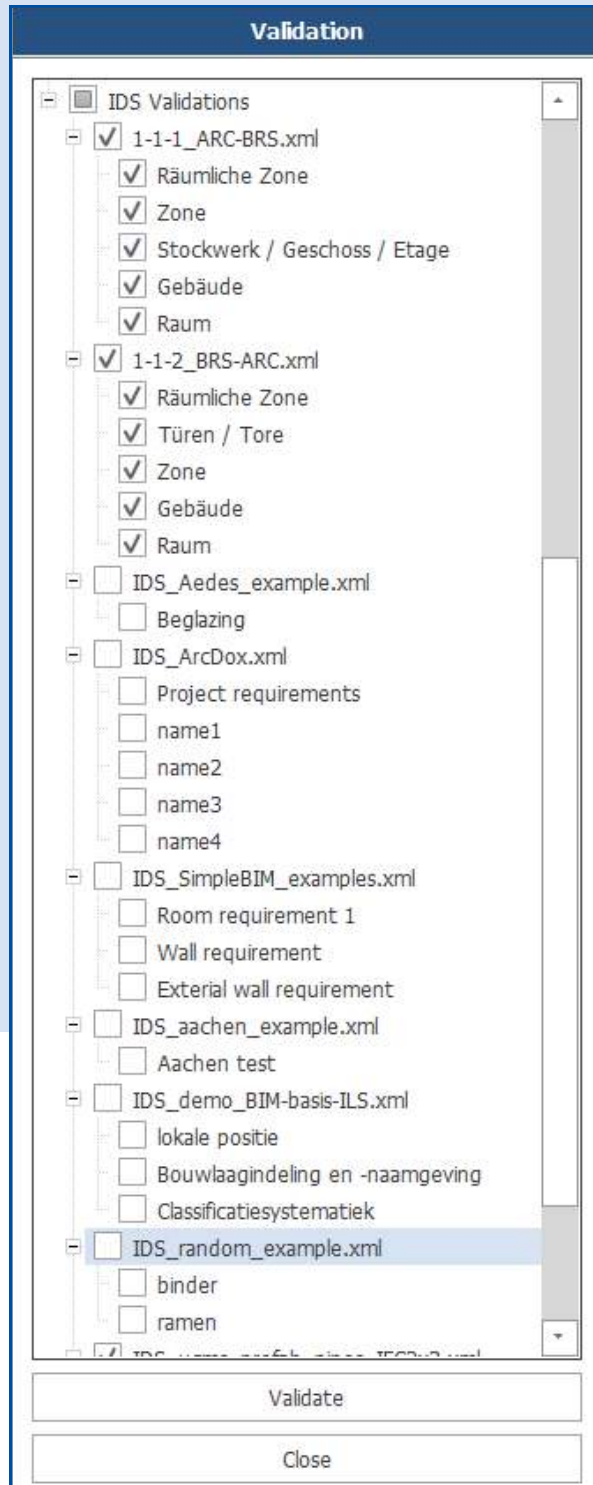
3. IDS VALIDATIONS

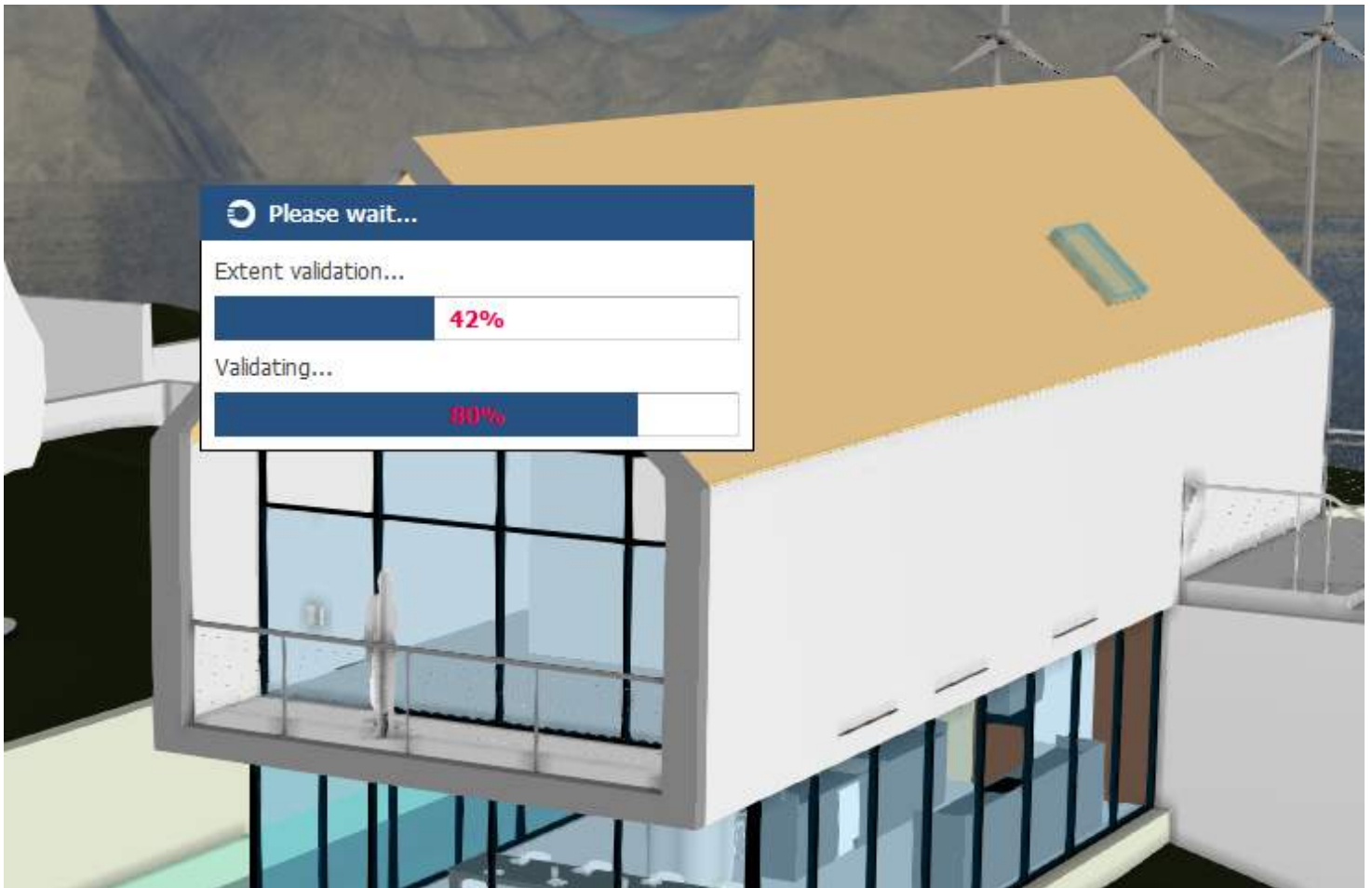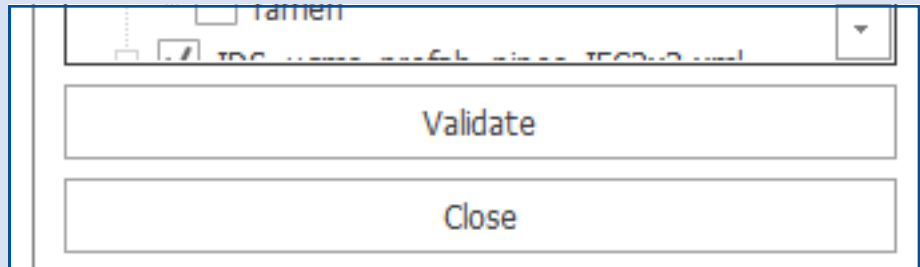## A subset of IFC Validations for IDS files stored into defined folder

a. The folder which contains IDS files for validations can be defined in File/Options/Plugins/Validation tab:
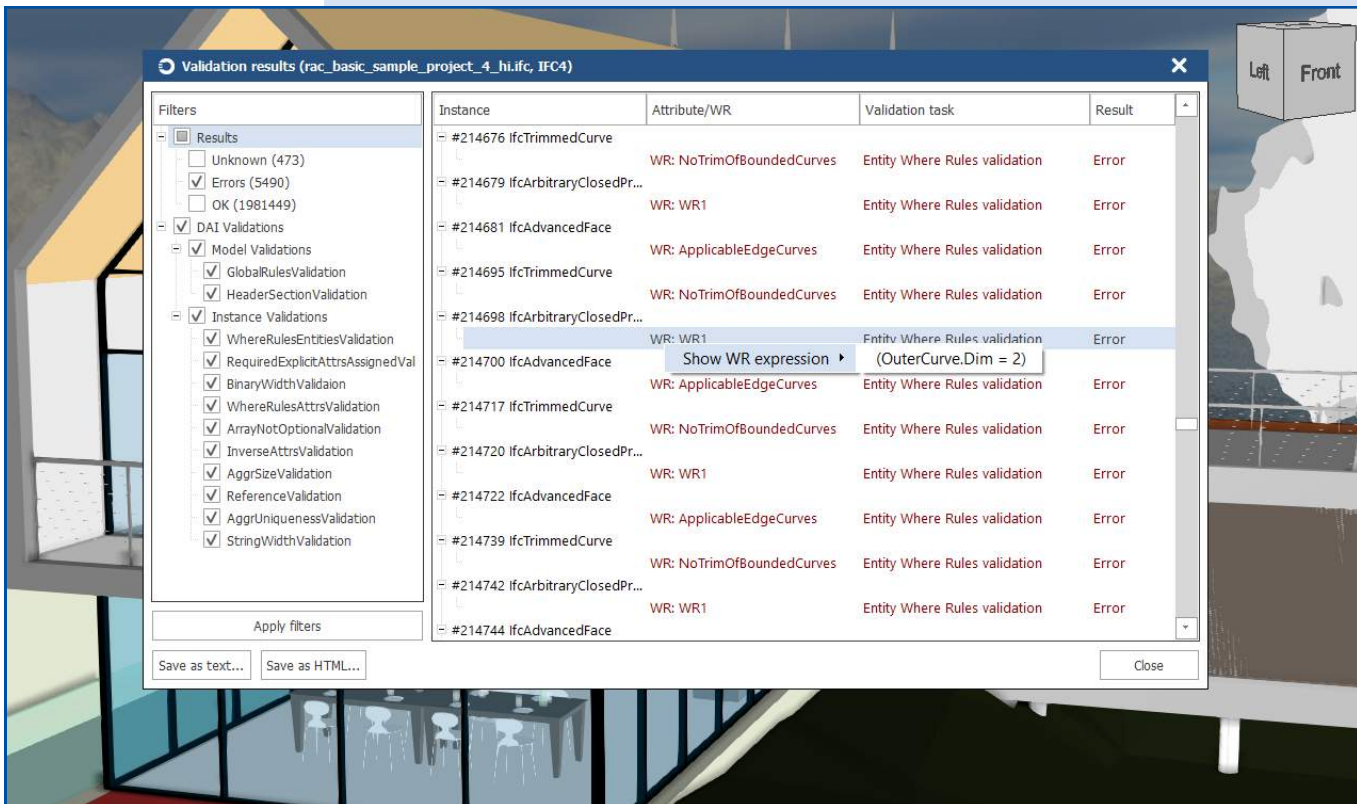
b. **All IDS files from the folder will be loaded using ODA IDS API, and validation tasks for Validation Engine will be initialized:**

c. After desired validations selected, validation process can be started by pressing Validate button on the form, validation process will start:

A Validation Report window will appear just after validation process finished:

■ Right table contains a list of validations, columns of table contain:

□ **Instance** — Handle of instance within IFC model and its entity definition from EXPRESS schema.

□ **Attribute/WR** — Failed attribute or Where Rule identifier (name). Where Rule expression defined within EXPRESS schema may be shown on the screen from right-click menu on the table cell.

□ **Validation task** — Name of validation task as it hard-coded in ODA IFC SDK or defined within IDS file (only for IDS validation tasks).

□ **Result** — Result of validation task processing for the application instance/model. Result may be Error (failed), OK (passed) or Unknown (Validation task can't be processed in some circumstances, as not enough data to process etc.).

■ **Left Tree component allows different filters for received validation data to appear in right table:**

❑ Results sub nodes allow report lines filtering by validation result.

❑ Validation Tasks sub nodes allow report lines filtering by validation task names.

Desired configuration should be applied by press on 'Apply filters' button, following filters configuration will show Errors and Unknown validations of aggregation sizes:

After filtration, validation report may be saved as text file (Save as text... button):

```
Lister - [e:\Model Validation\rac_basic_sample_project_4_hi.ifc.txt]          —   □   ×

File  Edit  Options  Encoding  Help                                                3 %

Automatically generated validation log file
This file contains information about results of validation tasks
File name: E:/ODASUN/UnitTests/Ifc4/rac_basic_sample_project_4_hi.ifc
File schema: IFC4
Validation time: 69723 msec
Date: Mon Mar 27 22:06:45 2023


Used validation tasks
Name            Description
AggrSizeValidationTask         Aggregation size validation


#1000 IfcRationalBSplineSurfaceWithKnots      ControlPoints        Aggregation size
validation        Unknown
#1072 IfcRationalBSplineSurfaceWithKnots      ControlPoints        Aggregation size
validation        Unknown
#1357 IfcRationalBSplineSurfaceWithKnots      ControlPoints        Aggregation size
validation        Unknown
#1429 IfcRationalBSplineSurfaceWithKnots      ControlPoints        Aggregation size
validation        Unknown
#30061 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
#30086 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
#30169 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
#30224 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
#30238 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
#30264 IfcBSplineCurveWithKnots         ControlPoints      Aggregation size validation
          Unknown
```

Or as good-looking HTML report (Save as HTML):

Reports contain following information

- Header with information about IFC file, its EXPRESS schema, version of ODA SDAI, which was used for validation, time spent on validation and validation date

- Table with names and descriptions of validation tasks used for validations

- Table with validation results, a copy of table from validation report window