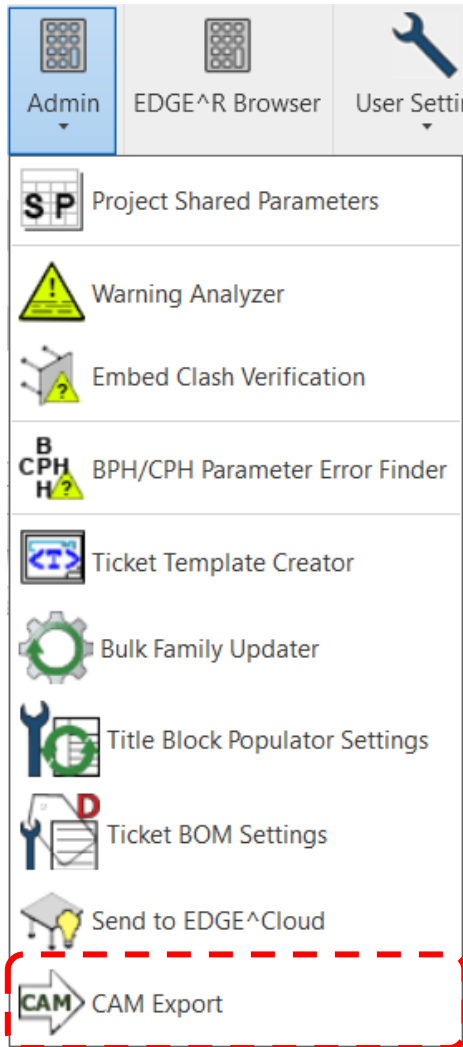


# Admin Tools: CAM Export

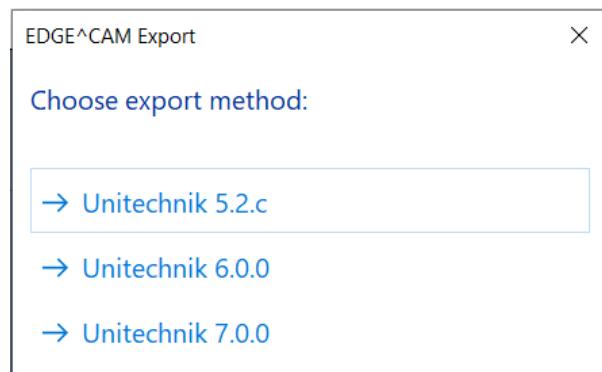
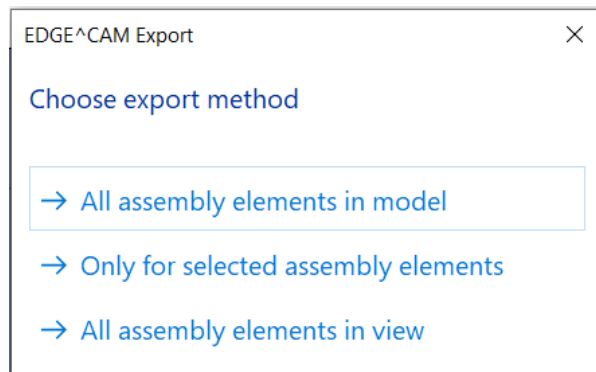


## **Programmed Result of Tool:**

CAM Export allows users to take their Revit model and export assemblies to a file that is formatted to be compatible with much of the machinery used to automate precast production. The exported file contains information about the precast member, finishes, cutouts, rebar, embed placement, and more.

## **Steps to Perform Tool Operation:**

1. Select CAM Export under the Admin drop-down
2. Choose to export either:
  - a. All assemblies in the model
  - b. Selected assemblies
    - i. Assemblies must be pre-selected before step 1
  - c. All assembly elements visible in the view
    - i. Only elements visible in the active view will be exported (ex. if a plate was hidden in the active view, then that plate would be excluded from export)
3. Choose the file format and version to export out to:
  - a. PXML
  - b. Unitechnik (UXML)
    - i. Unitechnik 5.2.c
    - ii. Unitechnik 6.0.0
    - iii. Unitechnik 7.0.0
  - c. All
4. The exported file(s) will be saved to one of the following folder paths based on the file format and version selected in step 3: C:\EDGEforREVIT\PXML V1.3, C:\EDGEforREVIT\Unitechnik V5.2, C:\EDGEforREVIT\Unitechnik V6.0, C:\EDGEforREVIT\Unitechnik V7.0



# Admin Tools: CAM Export

## Expected Interactions:

- CAM\_PRODNO and CAM\_ORDERNO are parameters that should exist on the assembly instance. The user should assign values to these parameters on the assembly prior to running CAM Export, otherwise a warning will be displayed during export and a dummy value will be exported for these.
  - If these parameters do not exist on the assembly, then run Project Shared Parameters to add them to the project.
- Export alignment is based on the assembly origin, so it is highly recommended to run the Top as Cast or Match Top as Cast tool on all relevant assemblies before attempting to export them.
  - The assembly origin position is irrelevant for the export; the origin of the piece within the export will always be at minimum X, Y, and Z so that the piece is always on the pallet.
  - Assembly origin rotation/axes determine the orientation of the piece within the export.
- Users may export only what geometry is visible in an assembly view using EDGE^CAM by choosing the “All assembly elements in view” option.
  - This means that the export will contain all visible solid elements in the view and any geometry that was hidden prior to running CAM Export will be excluded
    - The export considers the view’s detail level and only sends geometry that would appear at that detail level
- It is recommended that your MANUFACTURE\_COMPONENT values for materials within the assembly contain the following terms (listed in all caps below) for each family to ensure that they are exported appropriately. It is also recommended that you do not combine any of these terms for any given family as it might result in an undesirable outcome.
  - EMBED - plate or embed type families
  - INSULATION - insulation families
  - CGRID - carbon fiber grid families
  - SHEARGRID - sheargrid families
  - STEM MESH - double tee stem wire mesh families
  - WWF - welded wire mesh families
  - LIFTING - lifting families
  - CIP - cast in place families
  - ERECTION - erection material/ loose material families
  - REBAR - rebar families
  - CONNECTION - connection families with other families nested within (typically the connection is not exported, just its nested families are)
- The exported model data is contained within the following sections of the export file:
  - Lots – this contains basic information about assembly such as weight and volume
    - Layers – This represents the different mixes/finishes for a piece. If the precast member has finishes (modeled as Revit walls) or different architectural mixes, then they will be exported as different layers within the piece.
    - Contours – This represents the outer perimeter of the precast member.
    - Cutouts – This represents the cutouts within the precast member.
  - Mount parts – This represents specific materials within the assembly such as embeds, lifting, or insulation. These are exported as a bounding box rather than the true shape of the element within Revit.
  - Reinforcement
    - Rodstock – This represents rebar within the assembly.
    - Mesh – This represents mesh sheets within the assembly.



# Admin Tools: CAM Export

## Expected Interactions:

- Users have two options for exporting mesh using CAM Export:
  - If you use the 2D mesh (EDGE^R style families), it will be exported as a mount part, representing the extents/bounding box of the mesh in the piece
    - This approach works for both Unitechnik and PXML exports
    - All mesh exported by this approach will be assumed to have a thickness of 6mm
  - A second option exists for PXML exports, supporting a more accurate mesh geometry
    - Users must place rebar family instances to represent each wire in the mesh construct.
      - This could be accomplished by nesting bar/wire family instances withing a parent mesh family
    - Each wire (or parent family, if the “wires” are nested into some parent) must have a parameter called “MESH\_SHEET” with a value set to the same name as all other associated members within that mesh sheet.
- Users may elect to export only the flange portion of Double Tee assemblies if desired
  - To do so, set the “CAM\_FLANGE\_ONLY” parameter on the top-level double tee family to true
    - This will export only the geometry, mountparts, and reinforcement found within the flange portion of the double tee
    - This geometry will be shifted down to lie on the pallet (i.e., bottom of the flange will be flush with the pallet)
    - Mount parts and reinforcement must have their family origin in the flange portion of the double tee to be exported with these settings

## Known Limitations:

- Only assembly instances are supported for export.
- The Unitechnik file format enforces many digit and character length restrictions on its fields and if these are exceeded by any of the data to be exported then a warning will be displayed, and the value will be trimmed to conform.
  - Ex. depth/thickness of a slab or mount part is capped at 3 digits in Unitechnik 5.2 and 6.0
- The geometry of the precast member will be exported as prismatic in the Z direction.
  - Z direction is based on the Z axis of the assembly origin.
  - The most extreme extents of the precast member will be used to construct the contour of the geometry.
- Only cutouts running entirely through the precast piece in the Z direction will be represented in the export.
  - Cutouts that do not meet this criteria, such as reveals or recesses, will be excluded from the export.
- Bent reinforcement of any 3-dimensional configuration can be represented in PXML formatted exports.
  - This is not necessarily true for Unitechnik exports. Most rebar in Unitechnik files will instead be represented as a bounding box rather than the true shape of the bar.

