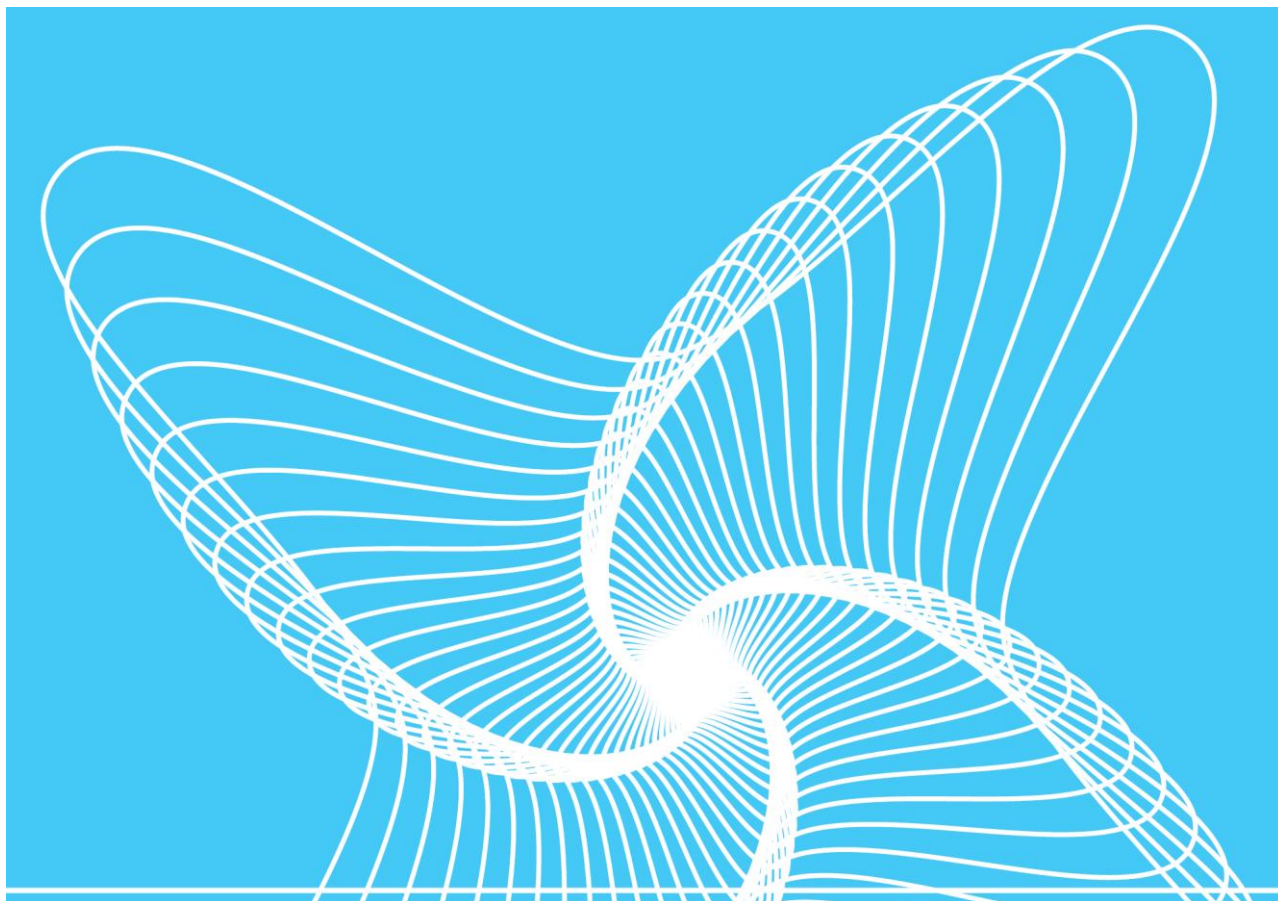


SESAM USER MANUAL

GeniE

Export to Usfos UFO format

Valid from program version V8.1





Sesam User Manual

GeniE – Export to Usfos UFO format

Date: 15 April 2021

Valid from GeniE version V8.1

Prepared by DNV GL – Digital Solutions

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GeniE – Export to Usfos UFO format

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1. EXPORT TO USFOS UFO FORMAT

The GeniE to UFO export is a utility for exporting the model geometry/mesh inclusive basic loads and load combinations in addition to relevant environmental data and model properties to Usfos UFO format files.

UFO format is special designed for being an efficient **U**ser-friendly structural file **F**ormat in connection with modelling of framed structures in Usfos.

1.1 Introduction

The File | Export | Usfos file ... command in GeniE converts model data as default into three files, typically the files used when running Usfos from the Xact user interface, i.e. control file + geometry file + loads(optional) file. The prefix is default set to GeniE workspace name:

- <prefix>_ufo.fem containing structure, structural properties and pile-soil data
- <prefix>_ufo_load.fem containing structural loads in addition to loads from the Wajac run
- <prefix>_control.fem containing environmental properties and wave/current/buoyancy definition, plus named sets

The export utility was introduced in GeniE version 7.12. This document contains recommendations, in particular with respect to load combinations, and a list of converted data types.

1.2 Use of load combinations

The current version of the exporter does not support any user interface for defining Usfos load combinations (COMBLOAD or CCOMB) on the control file. Hence, it is strongly recommended to create and use pre-combinations in GeniE (typically pre-combination of selfweight + dead-loads + live-loads) in the analysis/final combination to be exported.

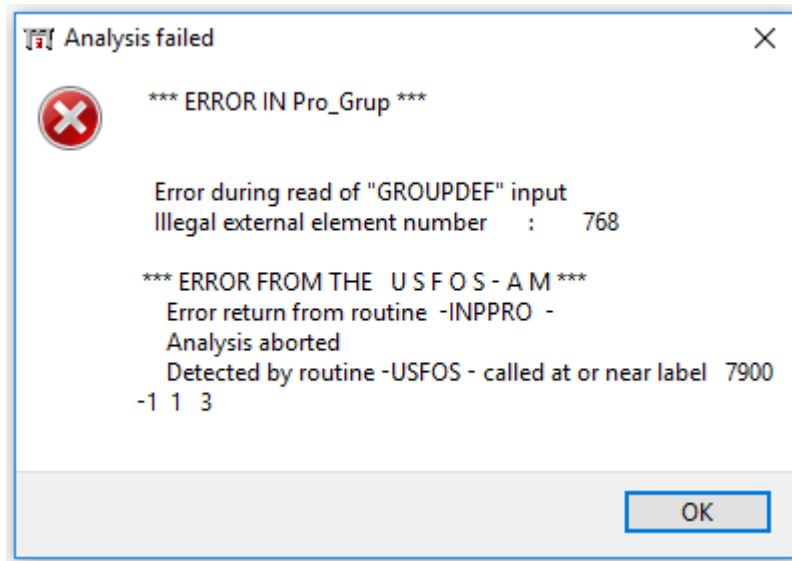
By default, only basic load cases and sub-combinations contributing to the selected “top level” load combination will be exported. Loads in exported combinations will at all levels be scaled according to the load factors given. This applies to both explicit defined loads in GeniE and loads calculated by Wajac. It is also possible to switch off the default behaviour, i.e. export all load cases and combinations.

In cases where the Wajac loads are not going to be used/converted, i.e. where the environmental loads are going to be calculated by Usfos, it is recommended to **not** pre-combine the “Wave Load Analysis” load cases.

In general, load cases (and combinations) in combinations will necessarily be assigned equal load scale factor at the next/parent combination level.

1.3 Limitation in use of set defined in GeniE for export to Usfos

Sets defined in GeniE for export to Usfos cannot contain piles. The reason is that pile elements are not converted to Usfos. A pile is converted as described in 1.5. Sets containing elements of piles will therefore make Usfos fail with a message like what is shown below.



1.4 The Usfos input card CSAVE

The Usfos input card CSAVE is used to specify storage of restart and result data and is written automatically to the control file (<prefix>_control.fem). This card is used to enhance granularity of storage of results.

The format of the card is

```
'      restart      result      print
CSAVE              n          m          k
```

GeniE sets the parameters according to the following rules:

Number of nodes < 1000 → n=0, m=1, k=1

Number of nodes < 3000 → n=0, m=1, k=10

Number of nodes > 3000 → n=0, m=10, k=10

1.5 Converted data types

This table lists the concept/data types currently converted from GeniE/Sesam to Usfos:

Description	GeniE / Sesam (mesh)	Usfos
Geometry:		
Joint / beam intersection	TDNODE, GNODE, GCOORD	NODE
Beam / beam segment	GELMNT1, GELREF1	BEAM
Plate	GELMNT1, GELREF1	QUADSHEL, TRISHELL
Material	TDMATER, MISOSEL	MISOIEP
Section: Tubular, Cone	TDSECT, GPIPE	PIPE
Section: I / H	TDSECT, GIORH, GIORHR	IHPROFIL
Section: RHS / Box	TDSECT, GBOX	BOX
Section: L	TDSECT, GLSEC, GLSECR	LSECTION
Thickness (plate)	GELTH	PLTHICK

Section: All other types	TDSECT, GBARM, GBEAMG, GUSYI, GCHAN, GCHANR	GENBEAM
Local coordinate system	GUNIVEC	UNITVEC
Eccentricity	GECCEN	ECCENT
Non-structural beam	GELMNT1, GELREF1	NONSTRU
Boundary condition fixed/free	BNTRCOS, BNBCD	Given on NODE
Boundary condition diagonal spring to ground	MGSPRNG	SPRNG2GR, SPRIDIAG
Boundary condition diagonal damper to ground	MGDAMP	SPRIDAMP
Boundary condition off-diagonal spring to ground	MGSPRNG	SPRNG2GR, SPRIFULL
Boundary condition off-diagonal damper to ground	MGDAMP	Not supported
Hinge (converted to spring)	BELFIX	BEAM with ElmTrans & MATERIAL type Bearing Lin
Hinge (not converted)	BELFIX	BEAMHING
Shims, Point-Point connections meshed as linear dependency	BNBCD, BLDEP	BEAM with ElmTrans & BLINDP2
Shims, Point-Point connections meshed as spring	MSHGLSP	BEAM with ElmTrans & material MREF + HYPELAST
Shims, Point-Point connections meshed as spring with diagonal damper	MSHGLSP + MGLDAMP	BEAM with ElmTrans & material MREF + HYPELAST + SPRIDAMP
Point mass	BNMASS	NODEMASS
Named set	TDSETNAM, GSETMEMB	Name Group, GROUPDEF
Loads:		
Node load	BNLOAD	NODELOAD
Beam (element) load, line and concentrated	BELOAD1	BEAMLOAD
Temperature (beam)	BEISTE	BELTEMP
Plate pressure	BEUSLO	SHELPRES
Gravity	BGRAV	GRAVITY

<i>Pile – Soil data: (Genosod, Splice)</i>		
Pile geometry		NODE, PILE, PILEGEO, MATERIAL, PILE_D-T
Soil data		SOILCHAR, HYPELAST, ELPLCURV
<i>Environmental: (Wajac)</i>		
Flooding	SCONCEPT, SPROHYDR	FLOODED
Morison coefficient	SCONCEPT, SPROHYDR	HYD_CdCm
Marine growth		M_GROWTH, HYDROPAR MgrThick, MgrDens
Buoyancy override		HYDROPAR BuDiam
Hydro diameter override		HYDROPAR HyDiam
Element refinement		Wave_Int
Non-hydro		NONHYDRO
Current blockage factor		CURRBLOC
Wave kinematics factor		Wave_KRF
Wave		WAVEDATA, MAXWAVE
Current		CURRENT
Buoyancy		BUOYANCY
Air Drag Constant		W_Coeffs, ElmCoeff
Wind profile		WindField, MaxWind
<i>Analysis Control:</i>		
Push Cover + Boat Impact		CUSFOS, CNODES
Boat Impact		BIMPACT, BIMPDATA
<i>Other:</i>		
Storage of restart and result data		CSAVE