

Load case implementation and Autogeneration of inputfiles

$$f(x+\Delta x) = \sum_{i=0}^{\infty} \frac{(\Delta x)^i}{i!} f^{(i)}(x) = \int_a^b \epsilon^b \Theta^{\sqrt{17}} + \alpha f \delta e^{i\pi} = 2.7182818284$$

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Excel Spreadsheet

Name	Date modified	Type	Size
animation	30-09-2011 16:26	File folder	
control	30-09-2011 16:26	File folder	
control_level	30-09-2011 16:27	File folder	
data	30-09-2011 16:27	File folder	
eigenfreq	30-09-2011 16:27	File folder	
htc	30-09-2011 16:27	File folder	
htc_hydro	30-09-2011 16:27	File folder	
logfiles	30-09-2011 16:27	File folder	
res	30-09-2011 16:25	File folder	
simulation_jec	30-09-2011 16:28	File folder	
turb	30-09-2011 16:25	File folder	
winlog_16.db	17-01-2011 14:35	DLL File	32 KB
Animation_eigenfreq.exe	08-07-2009 15:39	Application	1,869 KB
Animation_time_simulation.exe	10-07-2009 12:07	Application	1,869 KB
DFORMD.DLL	20-06-2001 03:11	DLL File	448 KB
DFORMTO.DLL	20-06-2001 03:11	DLL File	448 KB
DFORMT.DLL	20-06-2001 03:10	DLL File	440 KB
refnearth.m	26-06-2001 03:10	PII File	440 KB



Name	Date modified	Type	Size
Mtc_jec	30-09-2011 16:28	File folder	
Mtc_master	30-09-2011 16:28	File folder	
logfiles_jec	30-09-2011 13:30	File folder	
res_jec	30-09-2011 13:30	File folder	
turb_jec	30-09-2011 13:29	File folder	
Hawc2_JEC61400-1ed1_infkuten	30-09-2011 13:11	Microsoft Office E...	217 KB
Hawc2Bat.BAT	30-09-2011 15:03	Windows Batch File	15 KB

Spreadsheet input 1



Main data for HAWC calculation

Path to master folder:	C:\Users\anyd\Desktop\HAWC2_kursus\HAWC2_course_oct_2011\hawc2_model\
Master folder:	simulation_iec
Model rar file:	
Prefix:	
Name of htc folder:	htc_iec
Name of turbulence folder:	turb_iec
Name of wake turbulence folder:	
Name of meander turbulence folder:	
Name of result directory folder:	
Name of log folder:	
HAWC version:	HAWC2MB
user initials:	anyd
Path to Pjobjdir:	
Copy Back turbulence:	1=copy back, 0=don't

Do not use the danish letters a and å in the input data
Do not use blank characters in file or directory names
All directories including empty(htc,turb,res,logfile) must be present in the packed rar file

Spreadsheet input 2



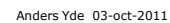
Input data to cover an IEC61400-1 Loadbasis

Vref	42.5	reference windspeed [m/s]	Vave	8.5
Iref	0.14	expected value of turbulence intensity		
WSP_start	4	start wind speed [m/s]		
WSP_step	2	wind speed step [m/s]		
Diameter	126	rotor diameter [m]		
Δ1	42	longitudinal turbulence scale parameter [m]		
Vrated	12	rated windspeed [m/s]	Ve50	58.5
Vout	25	cut-out windspeed [m/s]	Ve1	47.6

Park turbulence contribution: Uniform distribution assumed
Number of surrounding turbines N: 0
Distance to neighbouring turbine d: 1000

WSP	sigma1	m	sigma off
4	1.204		1.204
6	1.414		1.414
8	1.624		1.624
10	1.834		1.834
12	2.044		2.044
14	2.254		2.254
16	2.464		2.464
18	2.674		2.674
20	2.884		2.884
22	3.094		3.094
24	3.304		3.304
26	3.514		3.514

masterfile: ./htc_master/NREL_5MW_distributed.htc
turb_base_name: turb
start_seed_nr: 1001

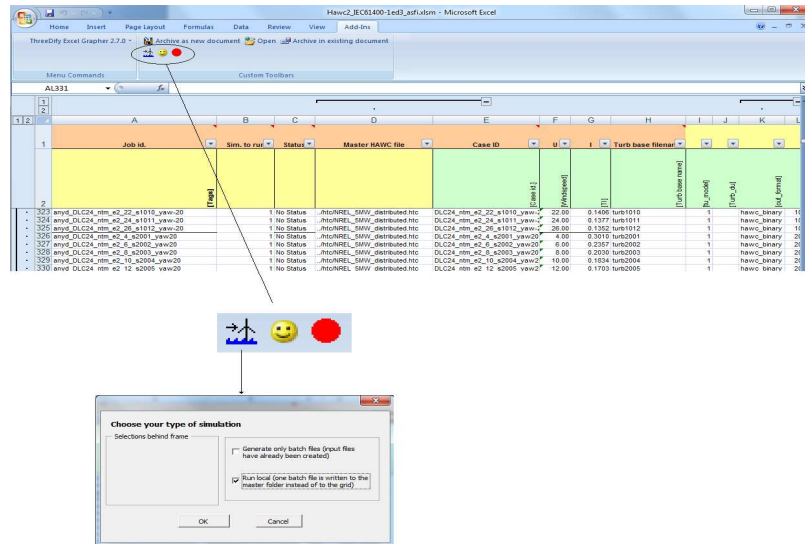


```

begin Simulation;
  time_stop   [time stop];
  solvetype   1 ;   (newmark)
  on_no_convergence continue ;
  logfile ./logfiles_iec/[Case id.].log ;
; animation ./animation/[Case id.].dat;
;
  begin newmark;
    deltat   0.02;
  end newmark;
end simulation;
;
begin new_htc_structure;
  beam_output_file_name ./logfiles/[Case id.]_beam.dat;           Optional - Calculated beam
  properties of the bodies are written to file
  body_output_file_name ./logfiles/[Case id.]_body.dat;          Optional - Body initial position
  and orientation are written to file
; body_eigenanalysis_file_name ./eigenfrq/[Case id.]_body_eigen.dat;
; structure_eigenanalysis_file_name ./eigenfrq/[Case id.]_strc_eigen.dat;
;-----
begin main_body;          tower 87m
  name      tower ;
  type      timoschenko ;
  nbodies   1 ;

```

Generation of HTC's & Bat file



Quick guide

1. Sheet: Main

Enable macros. Set all necessary folder names to match your directories of the hawc2 folder (path to master folder has to end with /)

2. Sheet: input

If covering the IEC61400-1 Load basis insert all values in the green cells from the standard. Click to generate the load cases in the sheet loadcases

3. Sheet: Loadcases

Check all inputs and if you wish to remove any load cases clear the cells in row "Sim. to run". Click to generate all HTC-input files and the batch file. Mark "run local" and click "ok". (jobs after an empty field in the "Job id." Will not be run)

- remember to set decimal symbol to . in Windows (Control Panel\Clock, Language, and Region\Change the date, time, or number format\Format\additional settings)

Exercise

• Ex1 Generate HTC & Bat - files

- Generate all the HTC-files from the load case basis and a Batch file (skip step 2)
- Check some of HTC-files and see if the right values are inserted?
- Run a load case in HAWC2
 - Start command prompt and write: hawc2mb
simulation_iec\htc_iec\loadcase name" or tab to browse files
- Make initial assessments of results using windap, does the results make sense?

• Ex2 Run a bat file

- Create a bat-file containing the 3 first loadcases and run it in HAWC2.
- (move the bat-file to the main folder and add the directory simulation_iec\ to the path files)

• Ex3 Make a parameter study of own choice

- Generate a new set of the loadcases with new parameters of your own choice (this can be damping parameter, turbulence intensity, wind direction)
- Make assessments of the results using windap.

Running HAWC2 on a cluster (thyra)

