

ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA

SCUOLA DI INGEGNERIA E ARCHITETTURA

DICAM – Dipartimento di Ingegneria Civile, Ambientale e dei Materiali

Corso di Laurea Magistrale in Ingegneria Civile

TESI DI LAUREA MAGISTRALE

**PROVE SU TAVOLA VIBRANTE DI UN SILO METALLICO A
FONDO PIANO: ANALISI DELLA RISPOSTA SISMICA
MEDIANTE MISURAZIONI OTTICHE**

APPENDICE A – Parte 4

CANDIDATO

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RELATORE

Chiar.mo Prof. Ing. Stefano Silvestri

Anno Accademico 2018-2019

Sessione I

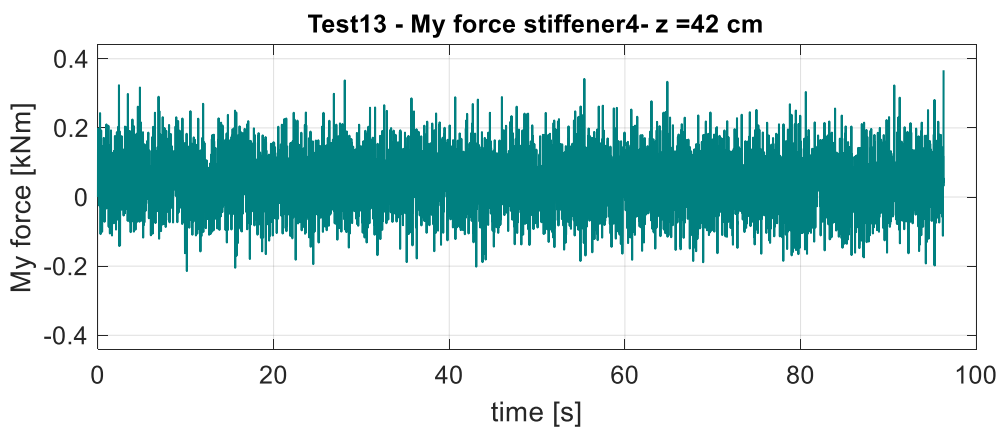
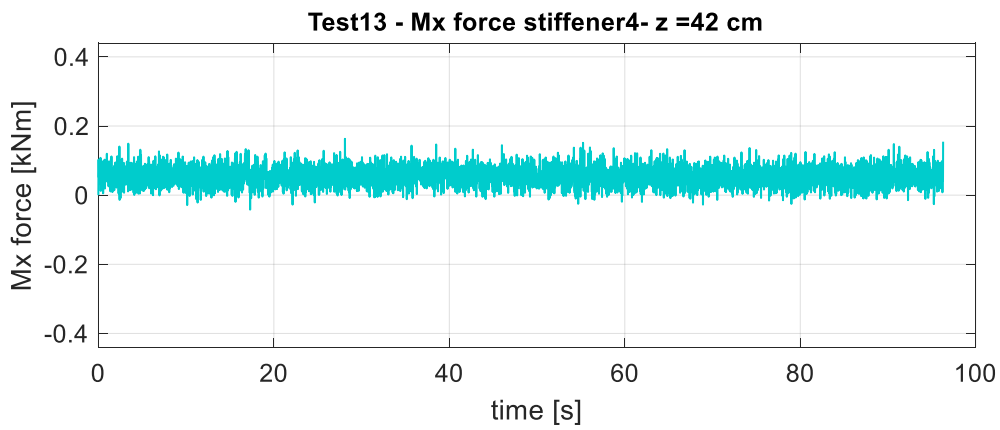
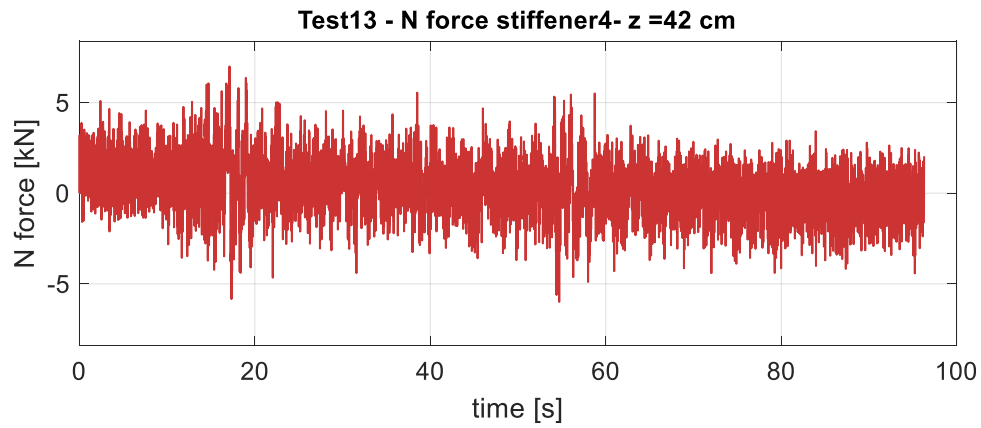
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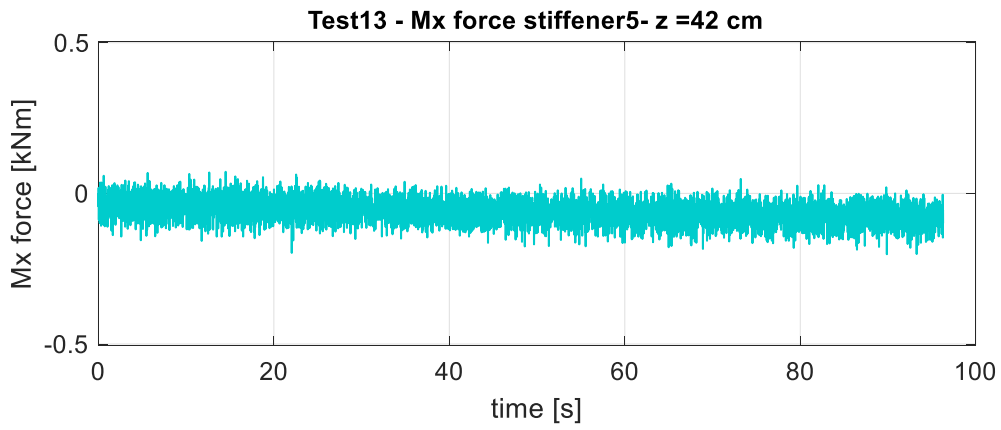
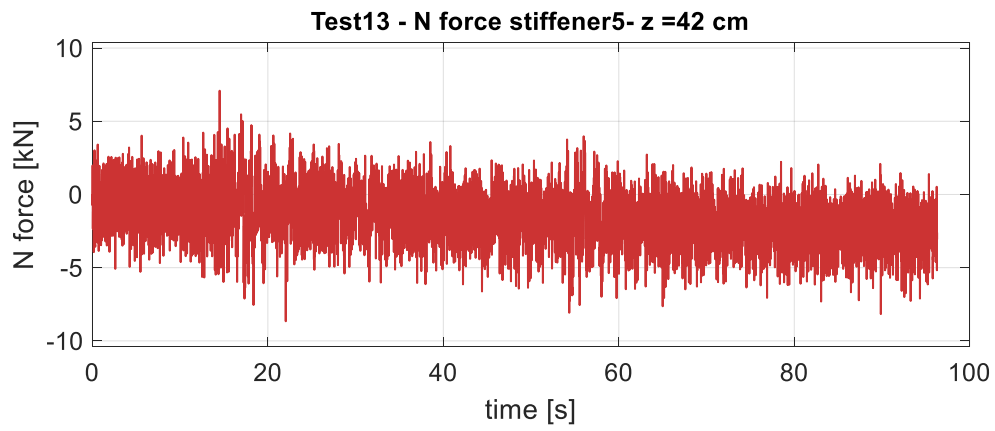
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Earthquake input RS1 0.1 g: Test 13

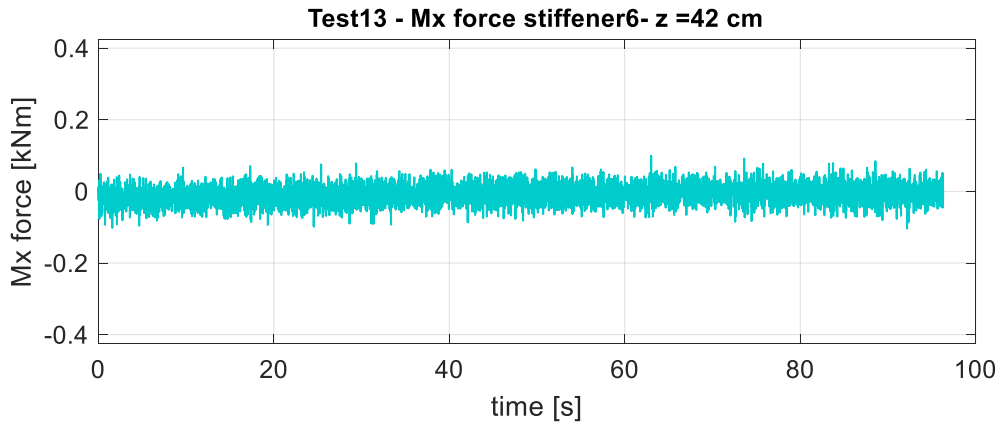
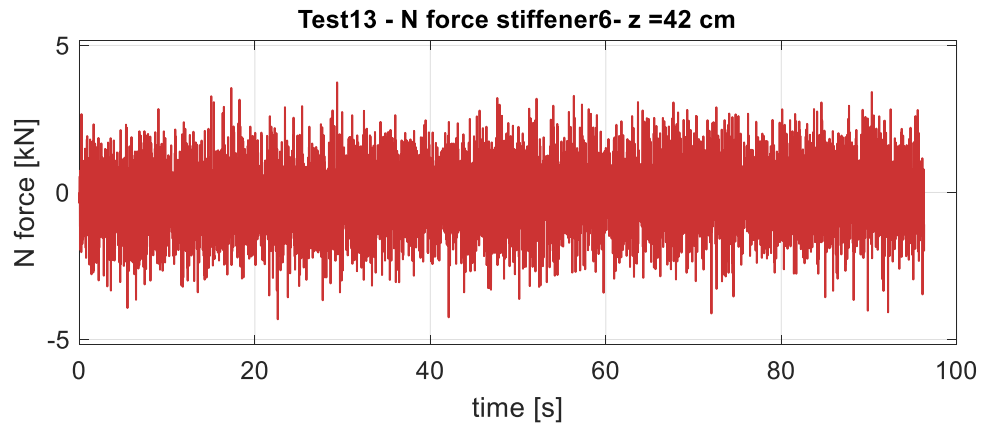
Quota Z = 42 cm: montante 4



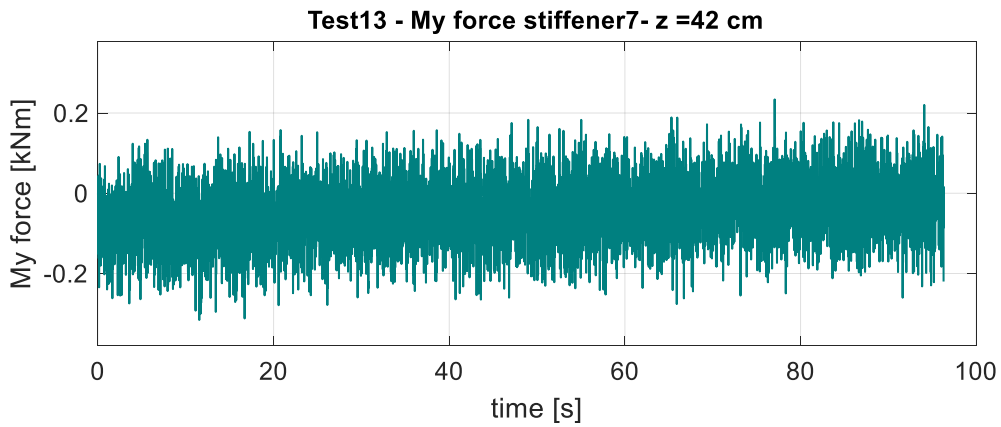
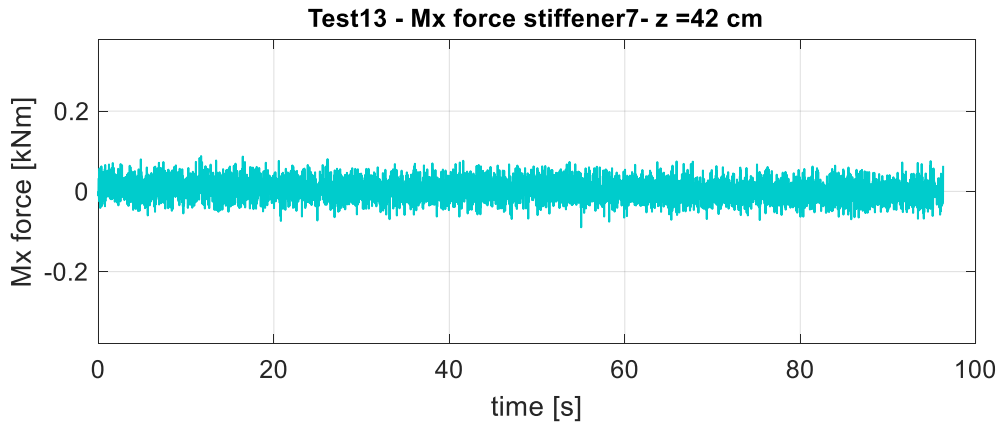
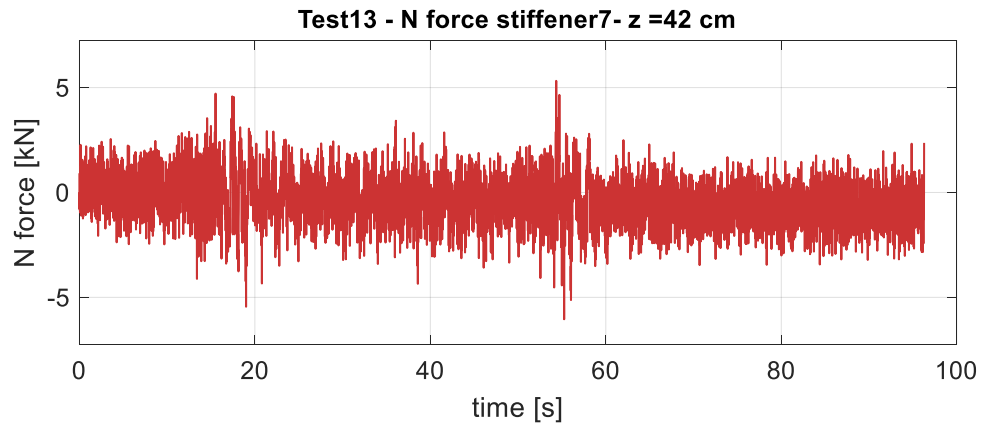
Quota Z = 42 cm: montante 5



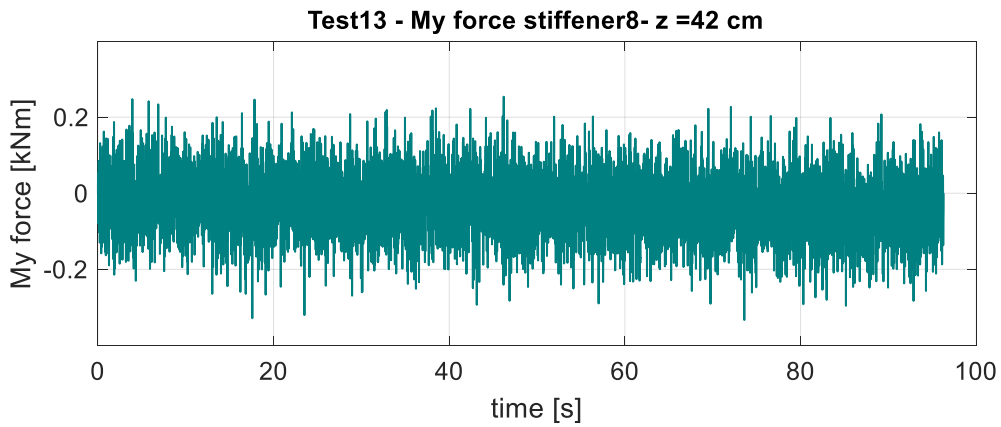
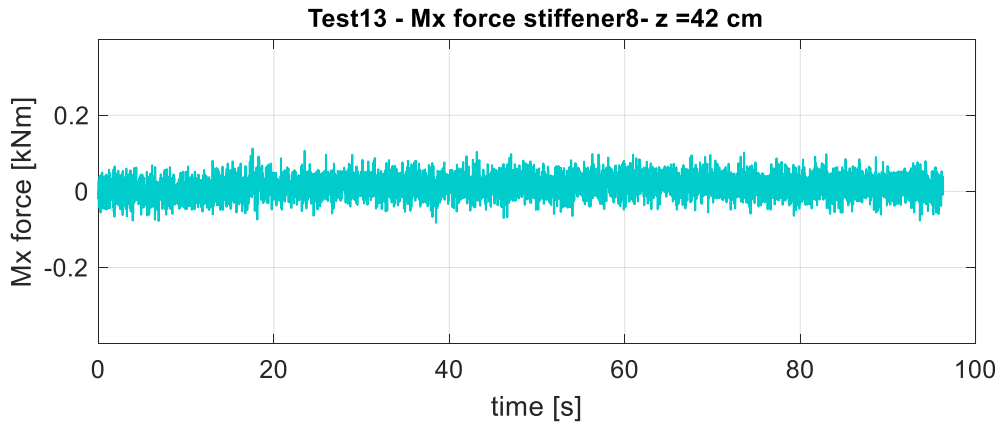
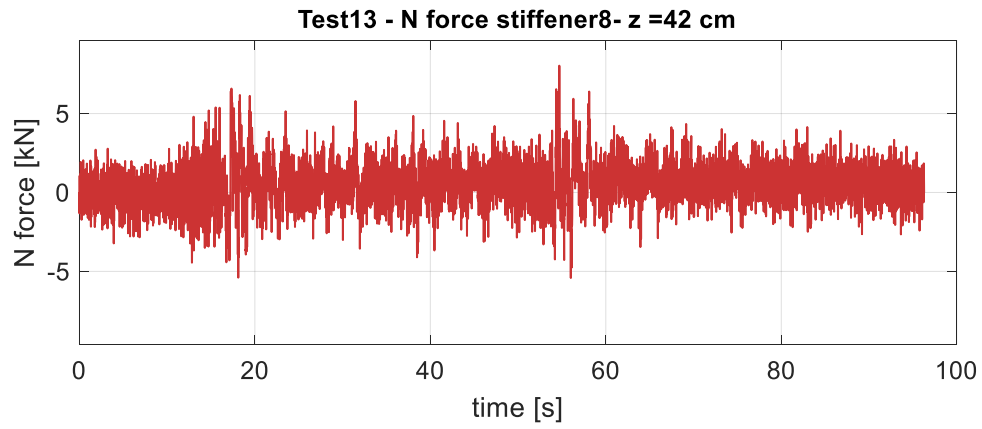
Quota Z = 42 cm: montante 6



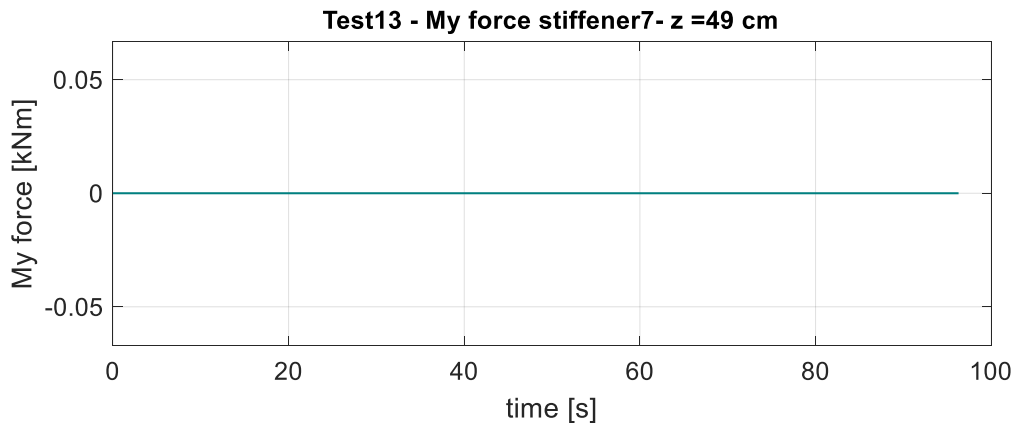
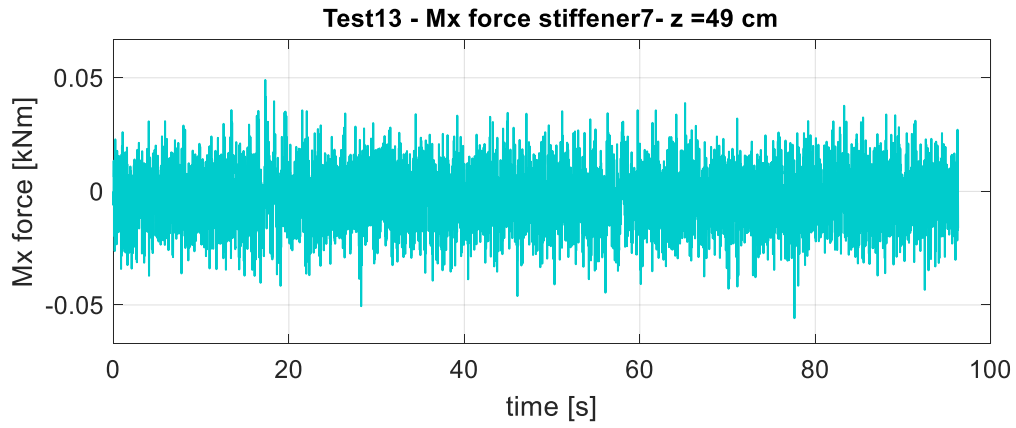
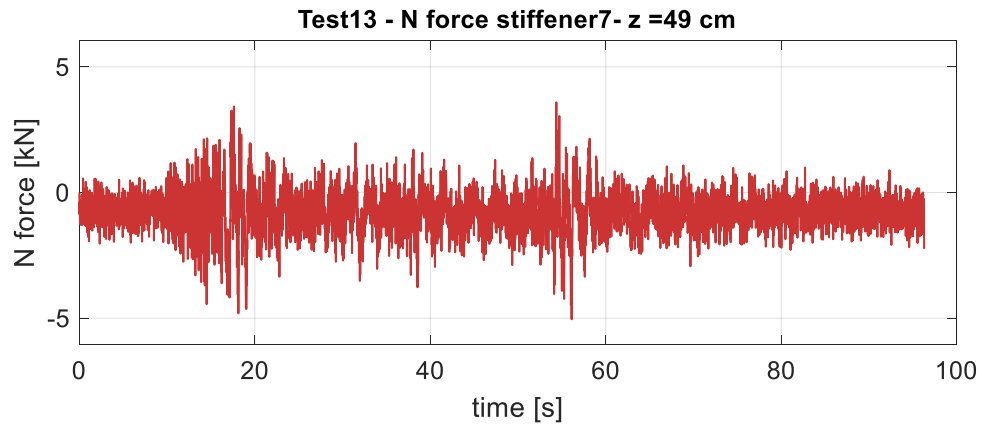
Quota Z = 42 cm: montante 7



Quota Z = 42 cm: montante 8

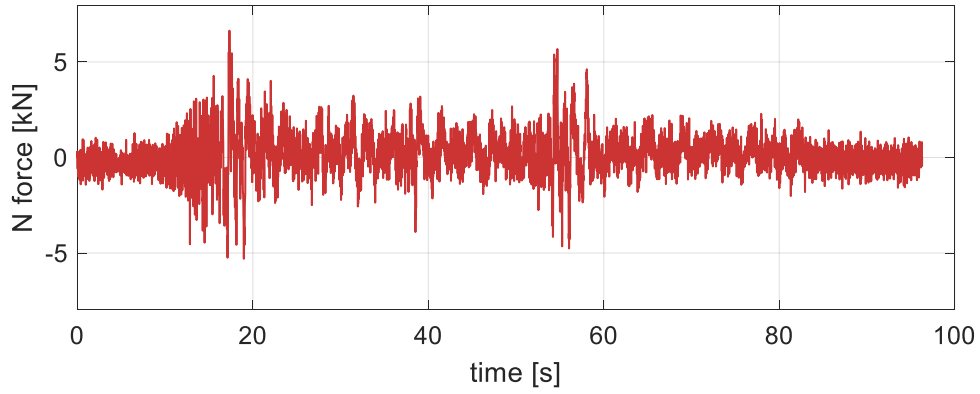


Quota Z = 49 cm: montante 7

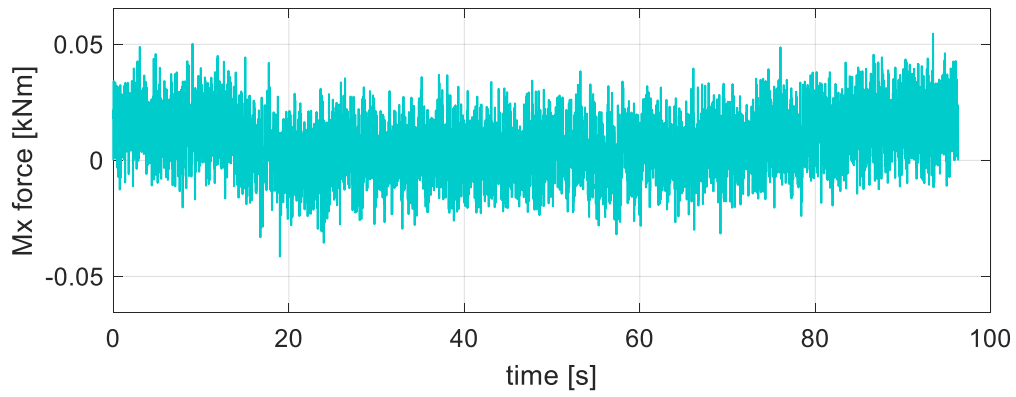


Quota Z = 49 cm: montante 8

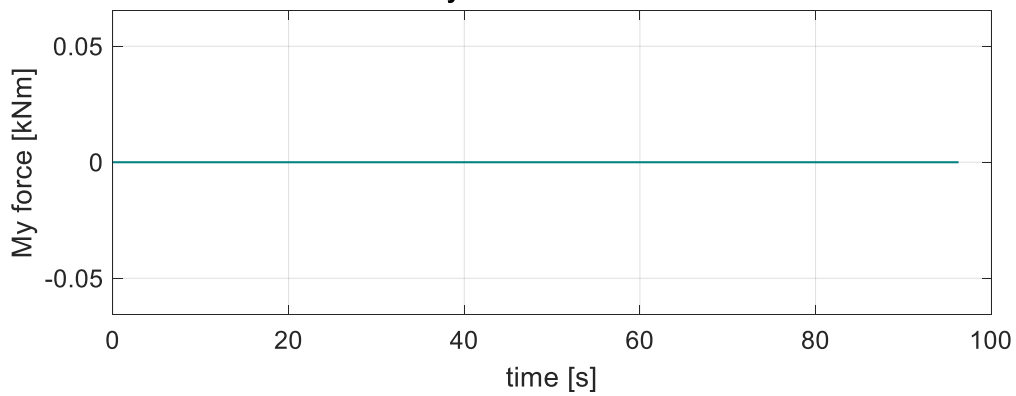
Test13 - N force stiffener8- z =49 cm



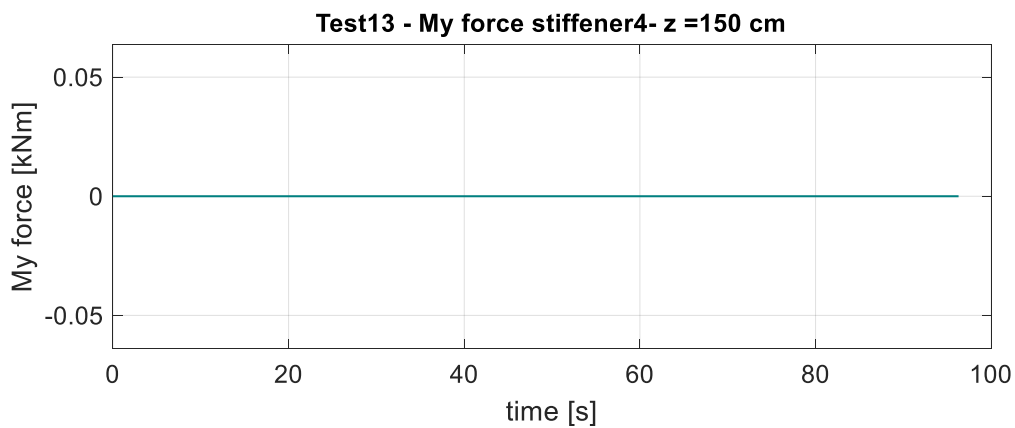
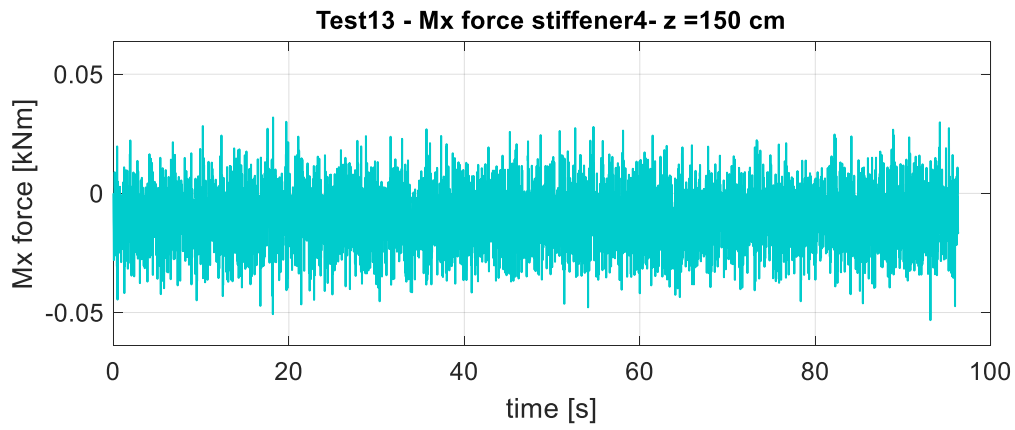
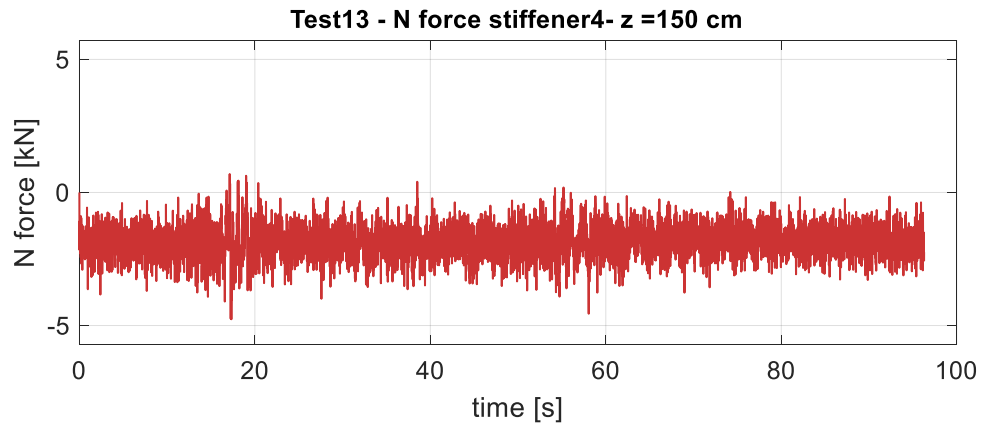
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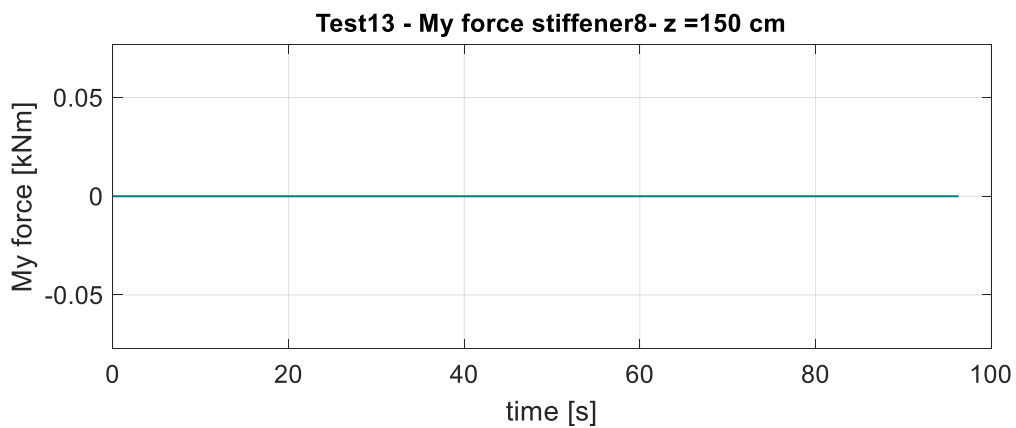
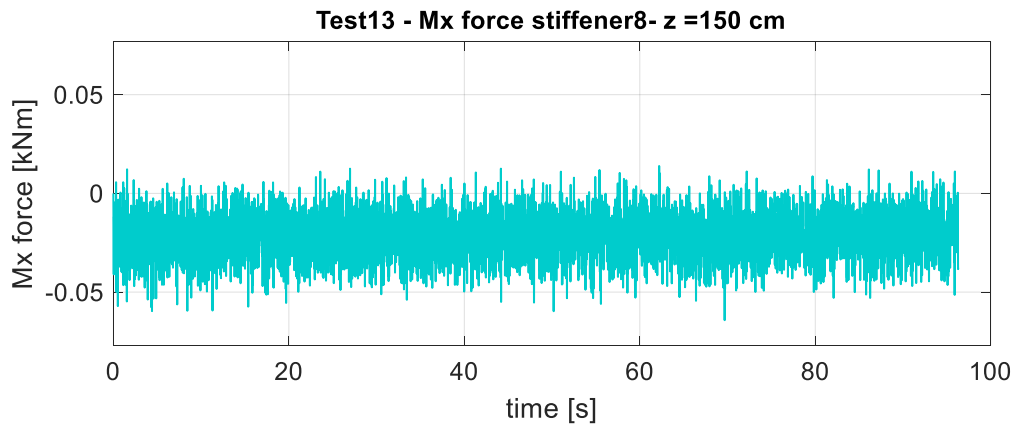
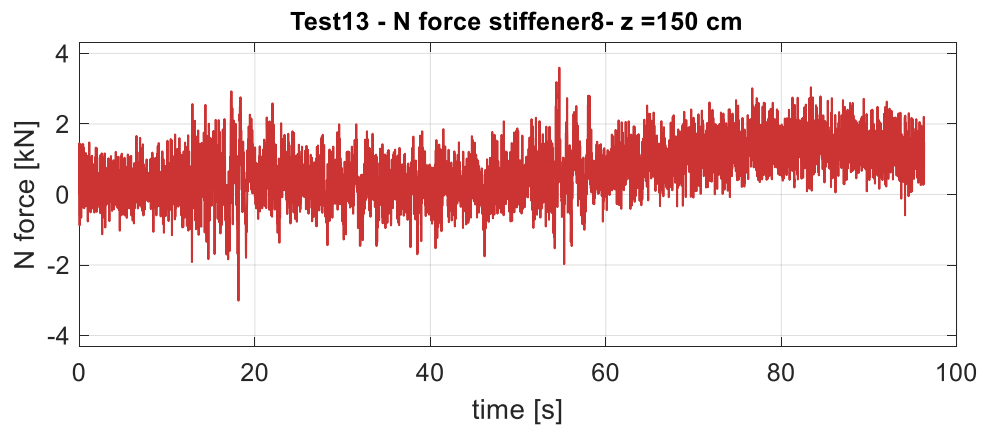
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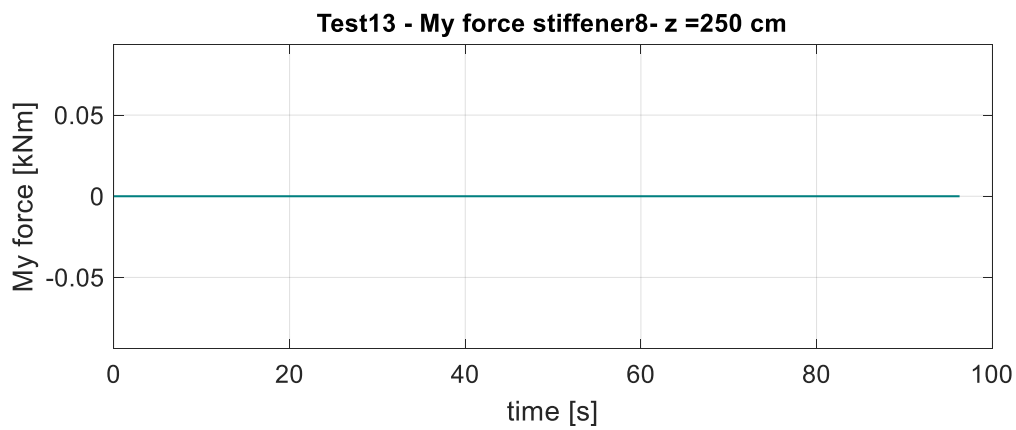
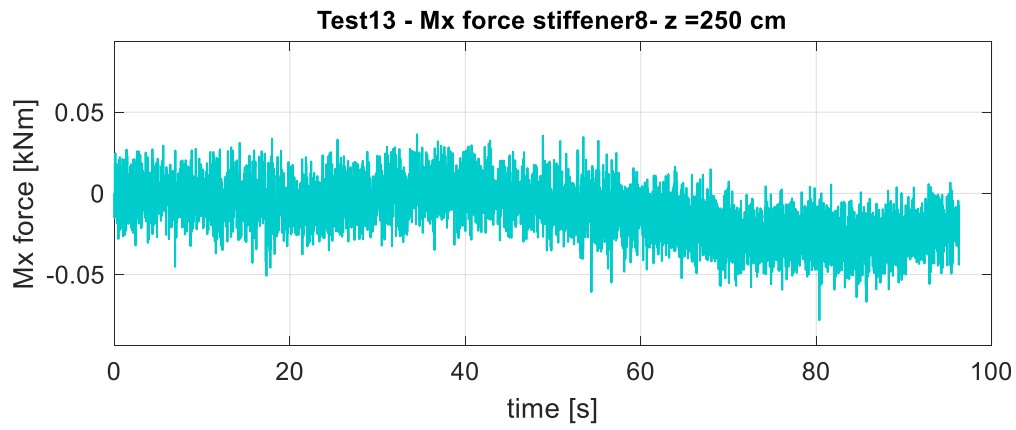
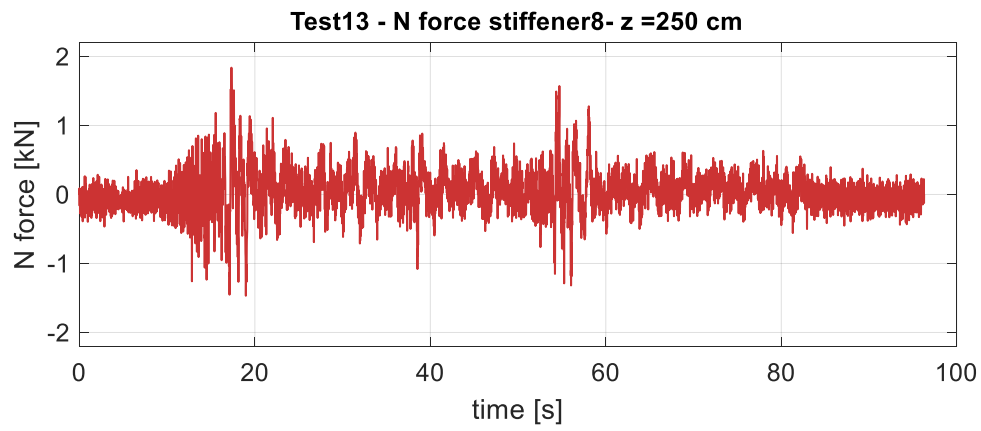
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

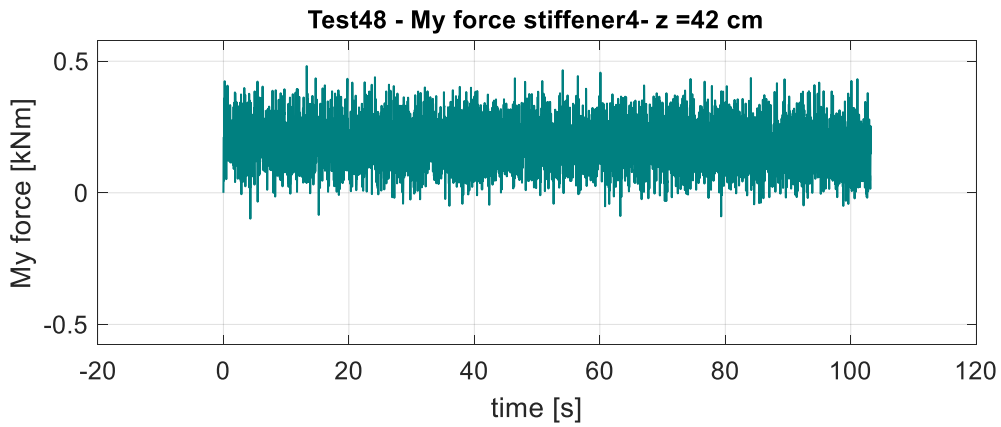
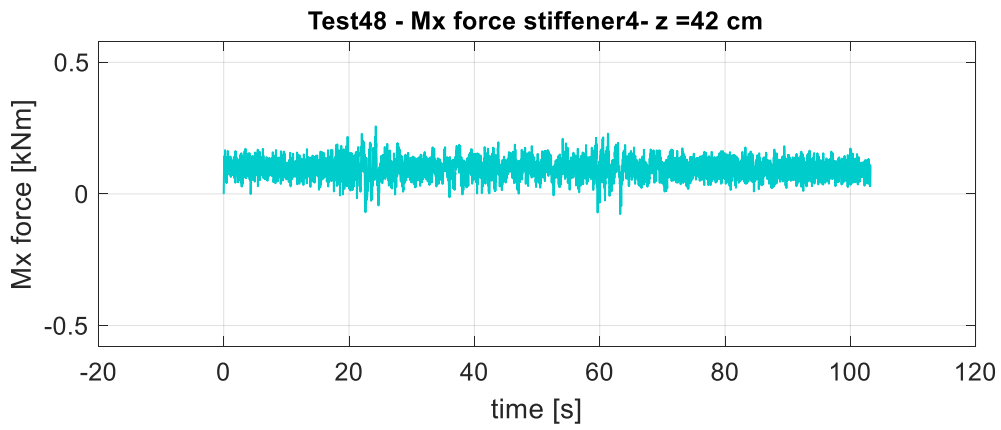
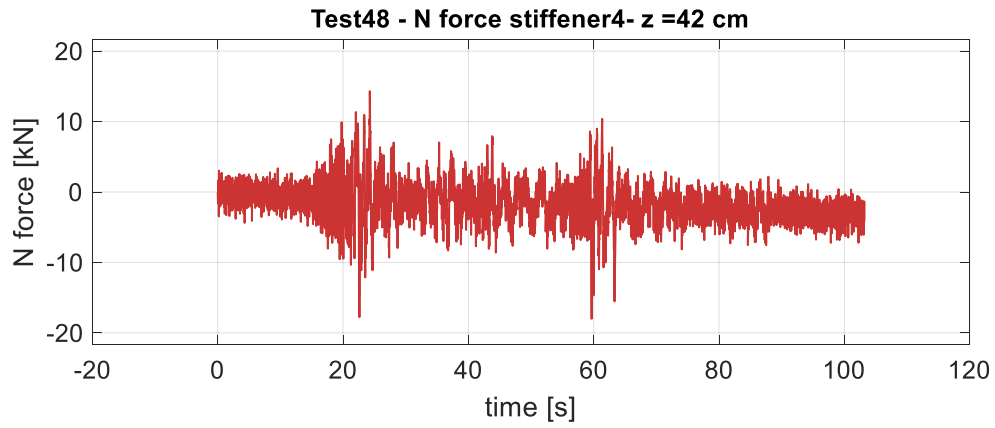


Quota Z = 250 cm: montante 8

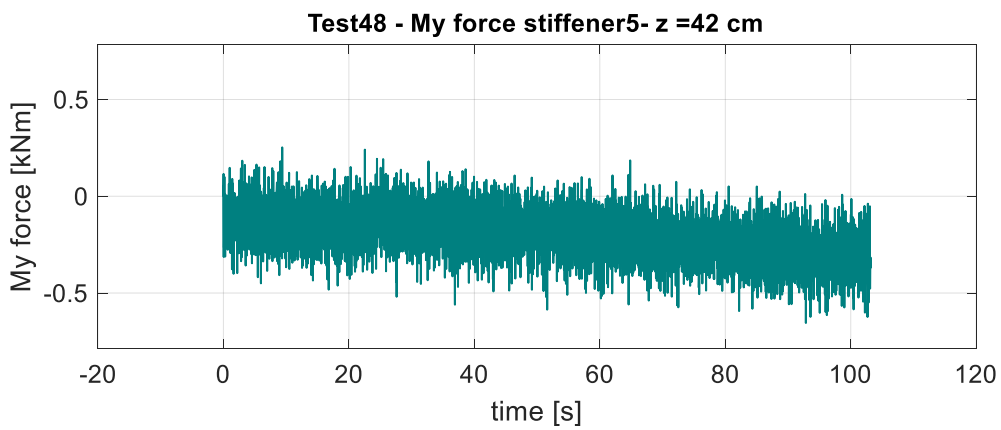
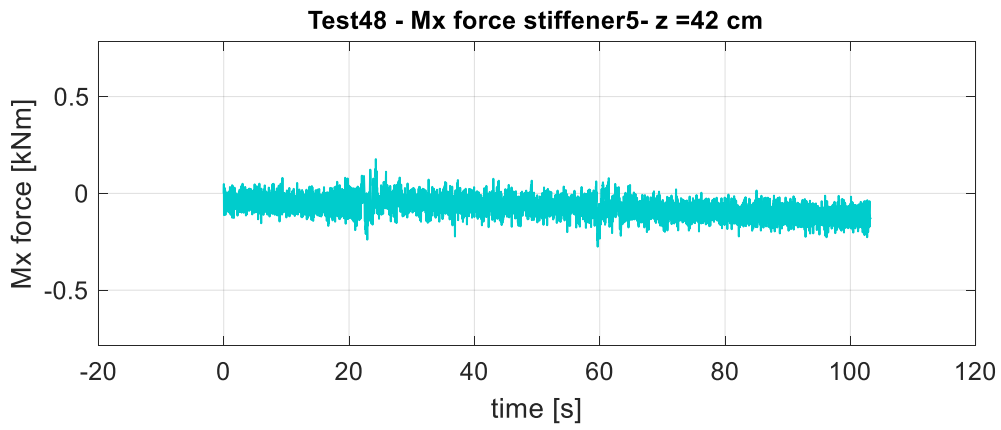
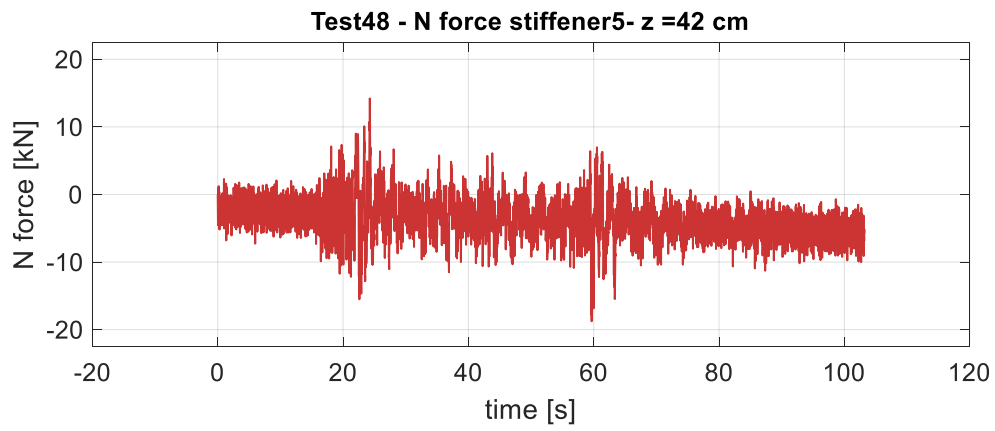


Earthquake input RS1 0.3 g: Test 48

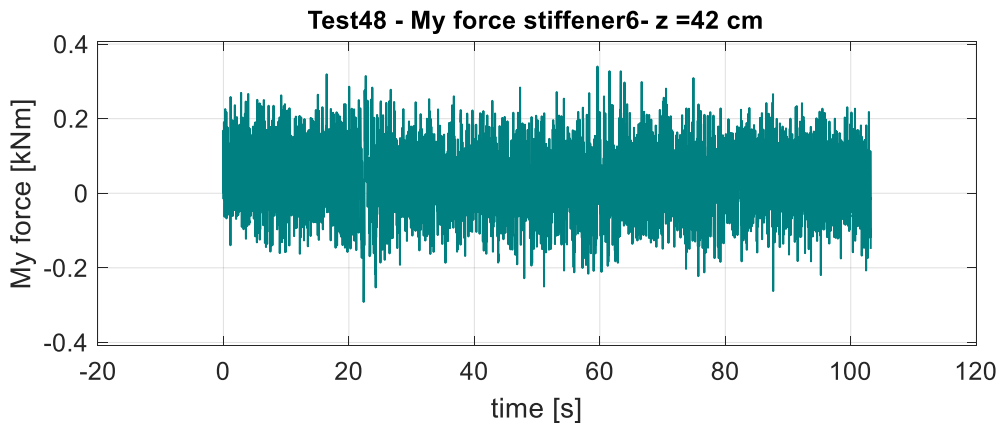
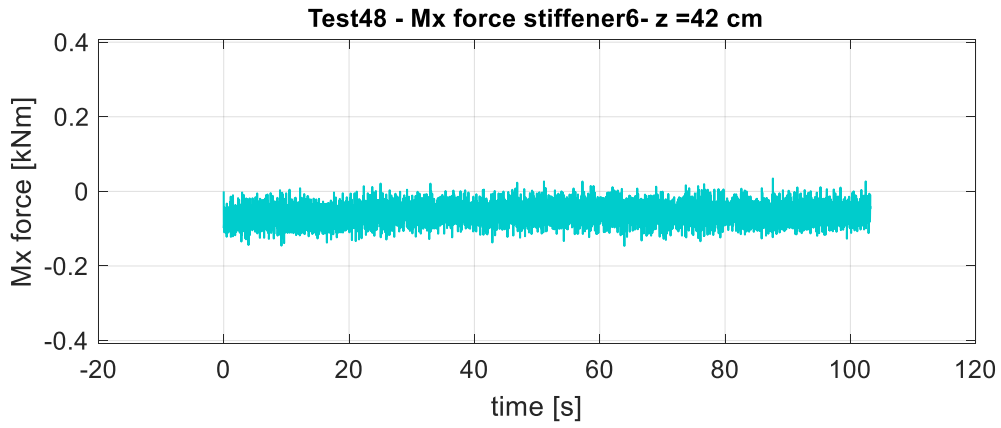
Quota Z = 42 cm: montante 4



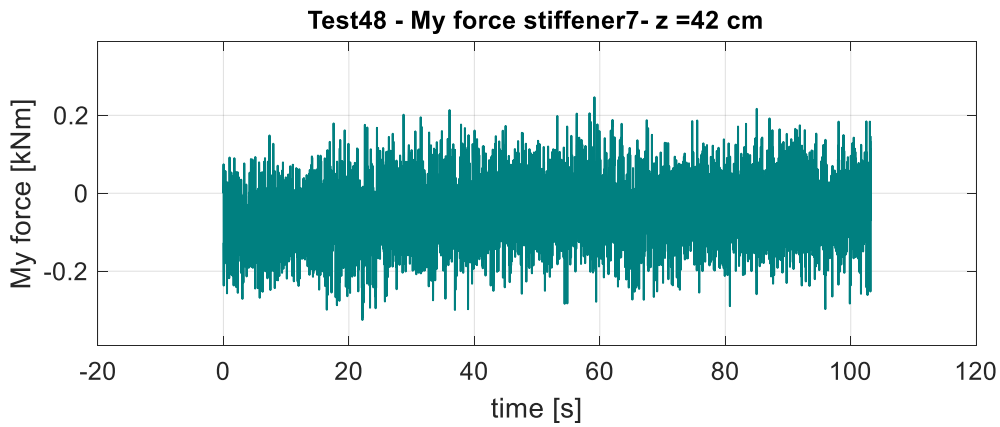
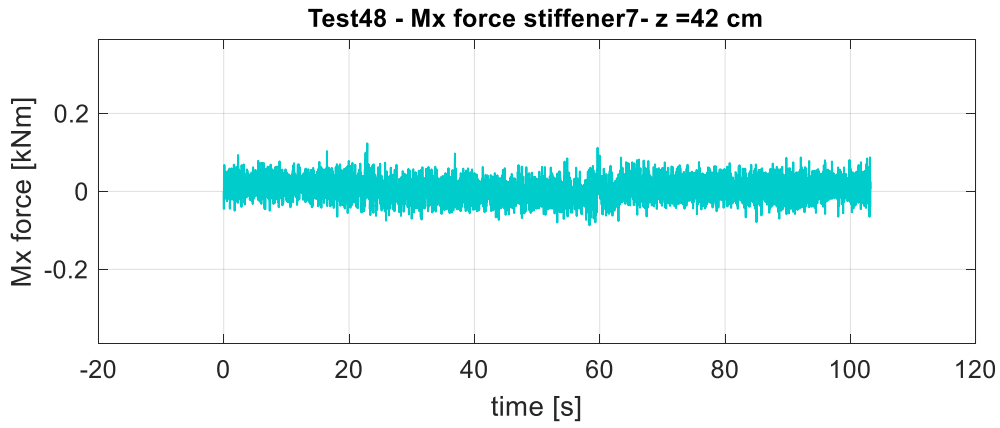
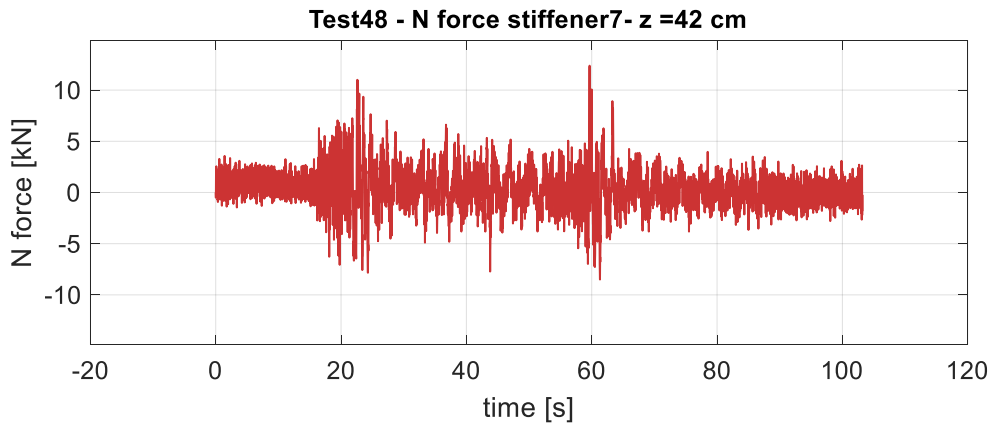
Quota Z = 42 cm: montante 5



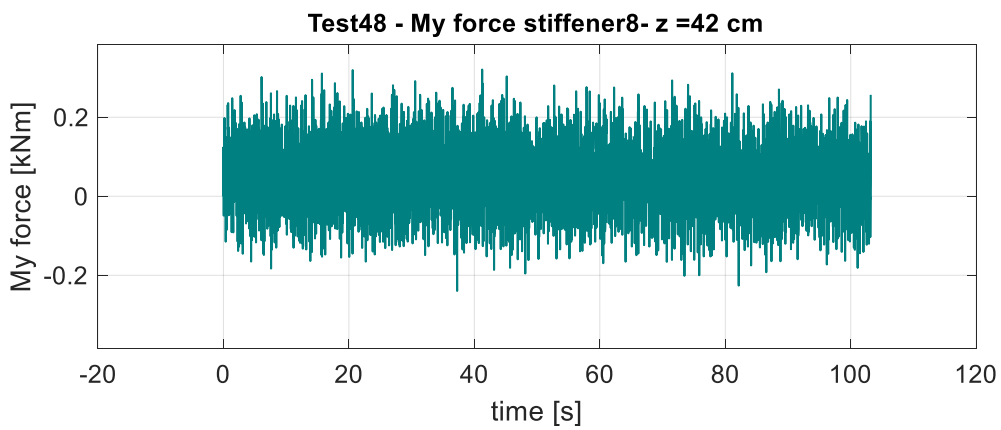
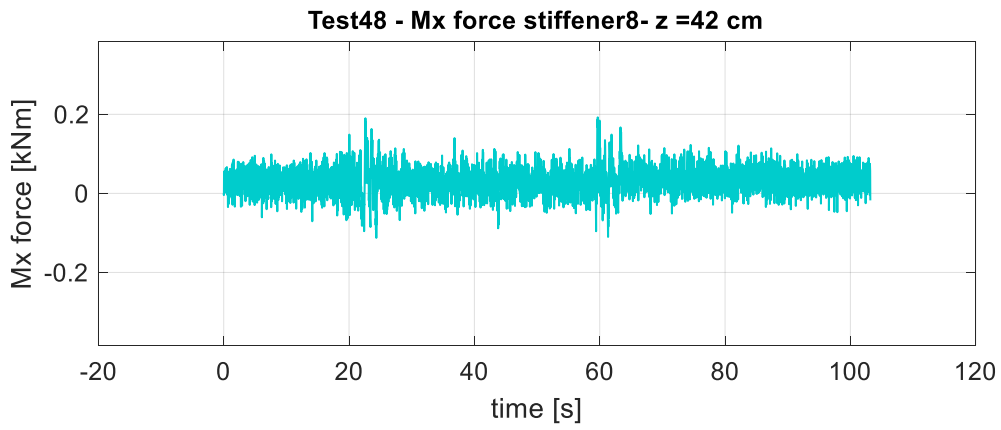
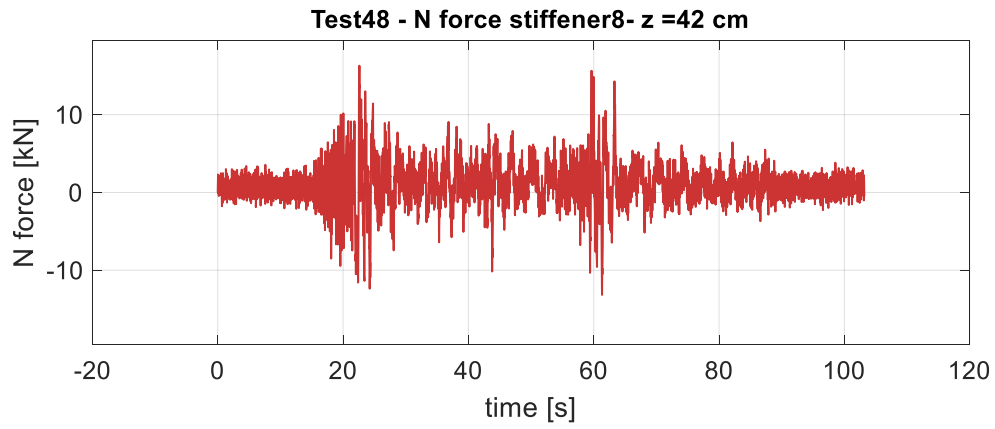
Quota Z = 42 cm: montante 6



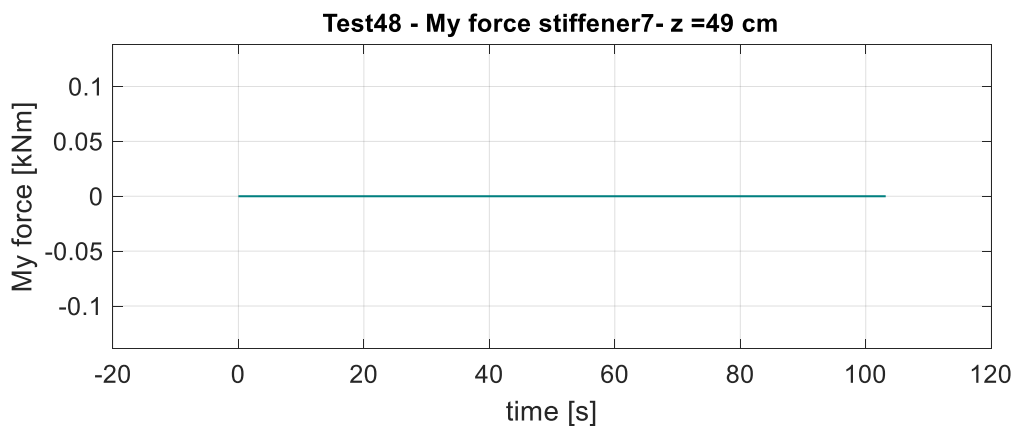
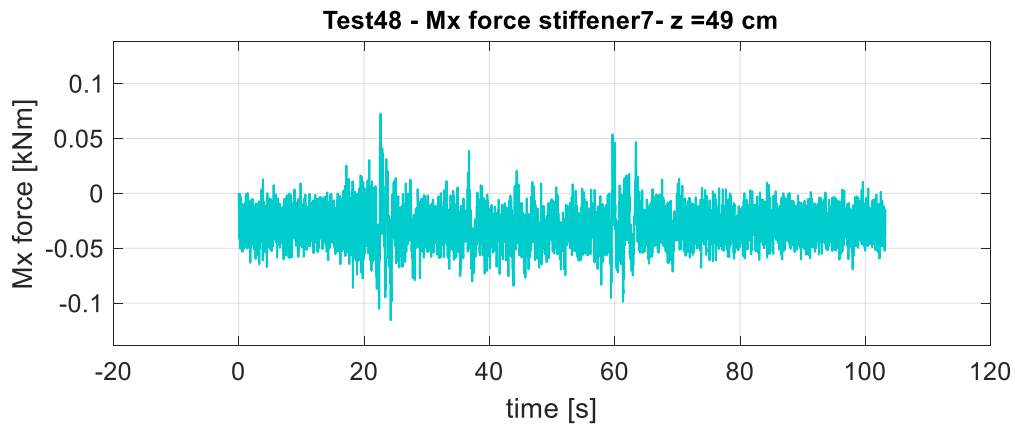
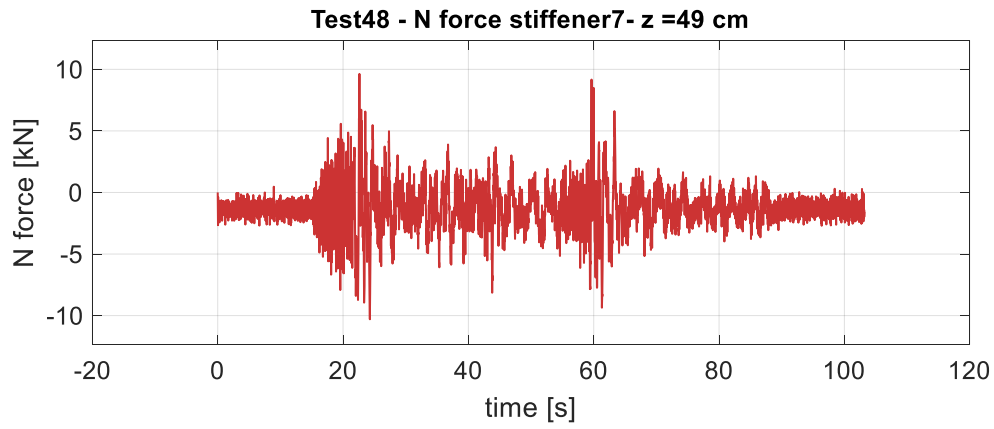
Quota Z = 42 cm: montante 7



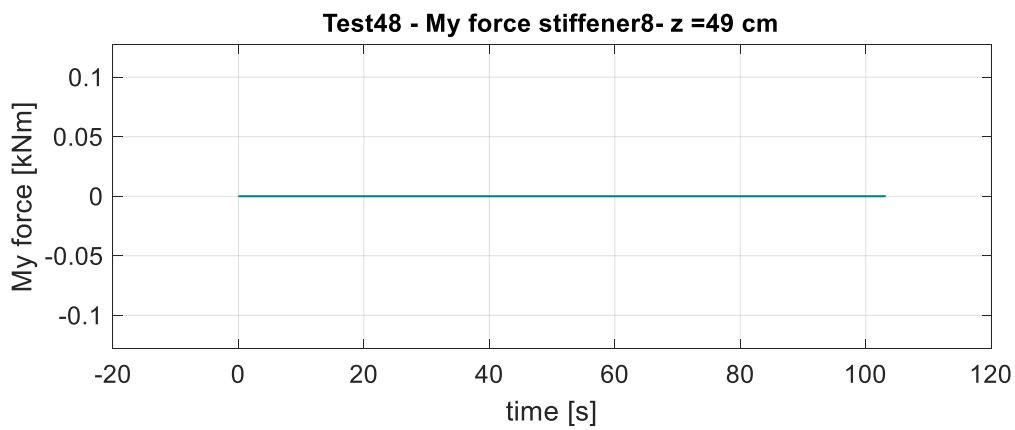
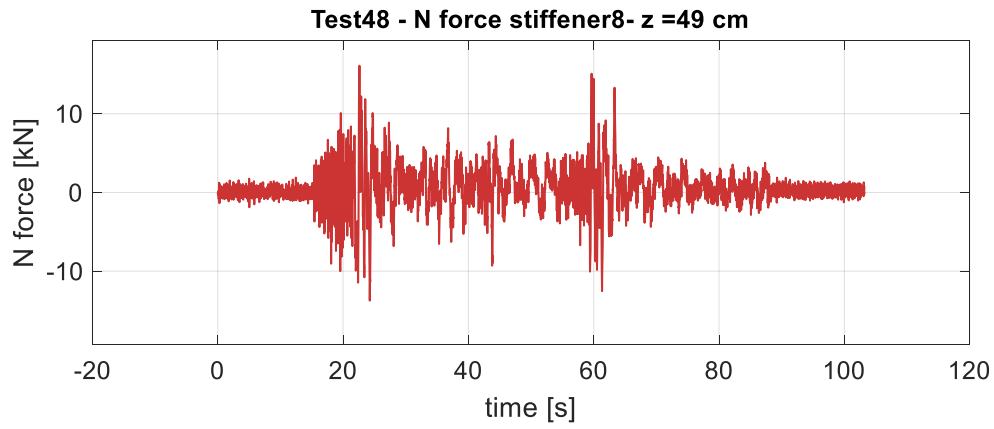
Quota Z = 42 cm: montante 8



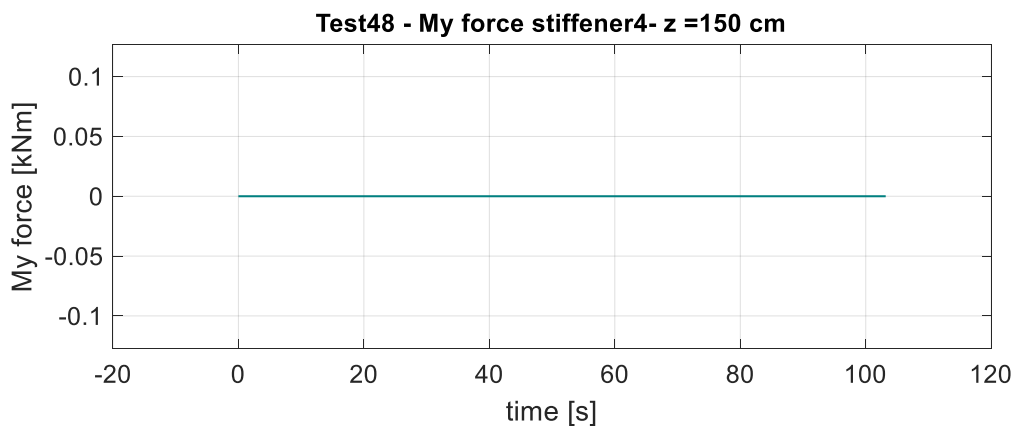
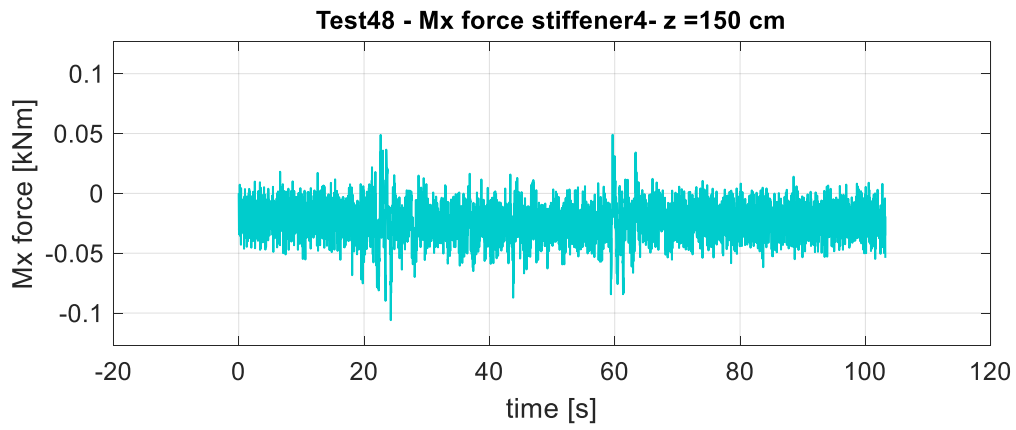
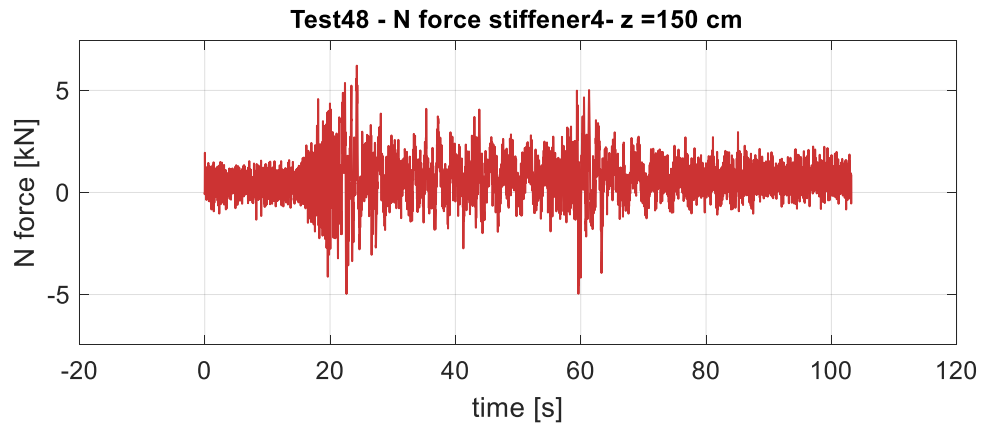
Quota Z = 49 cm: montante 7



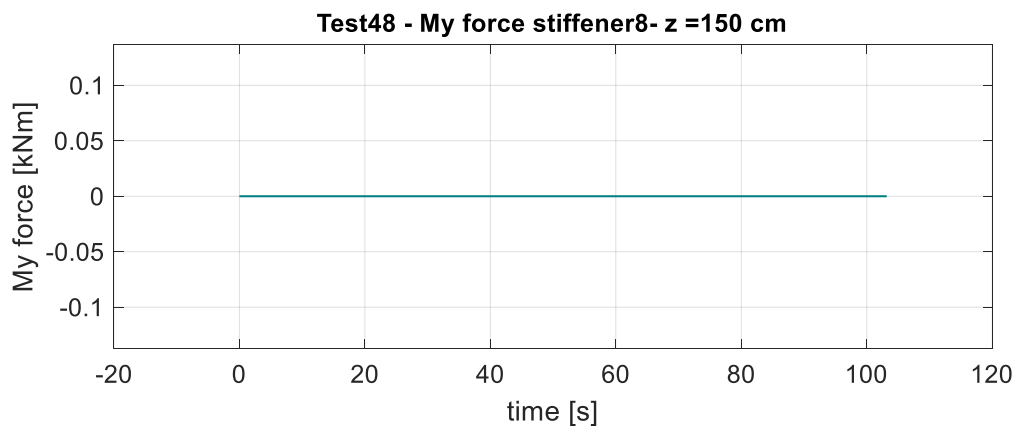
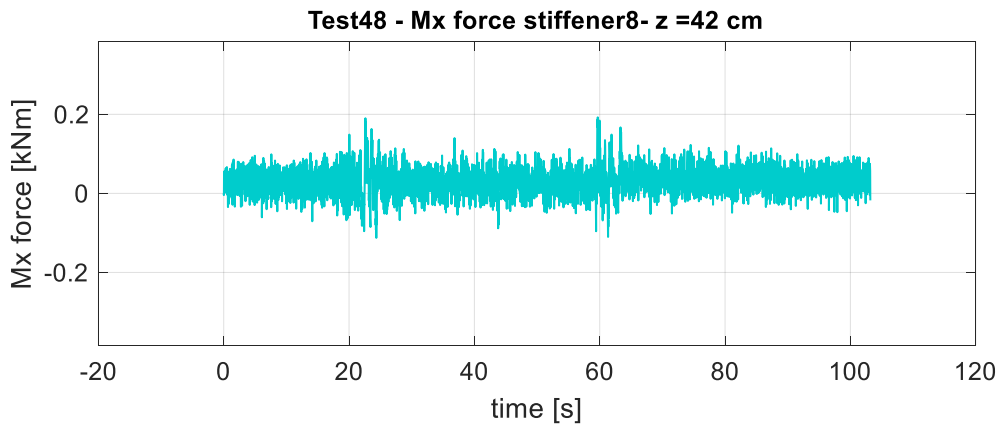
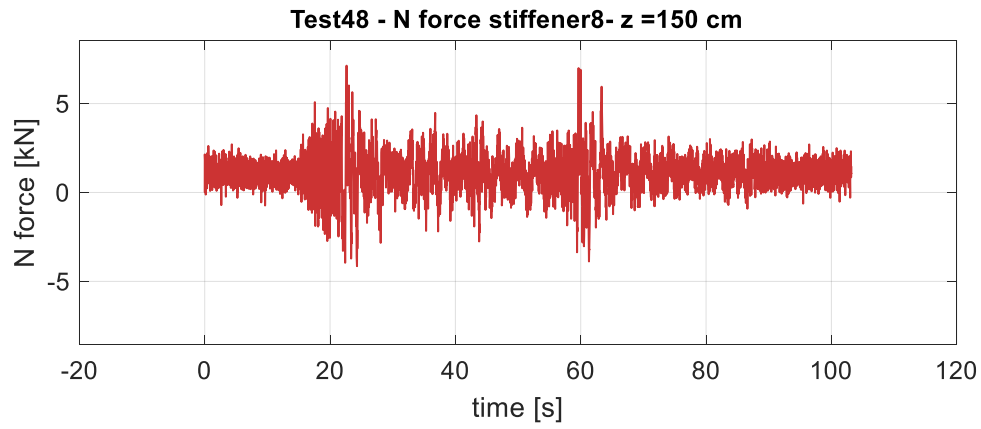
Quota Z = 49 cm: montante 8



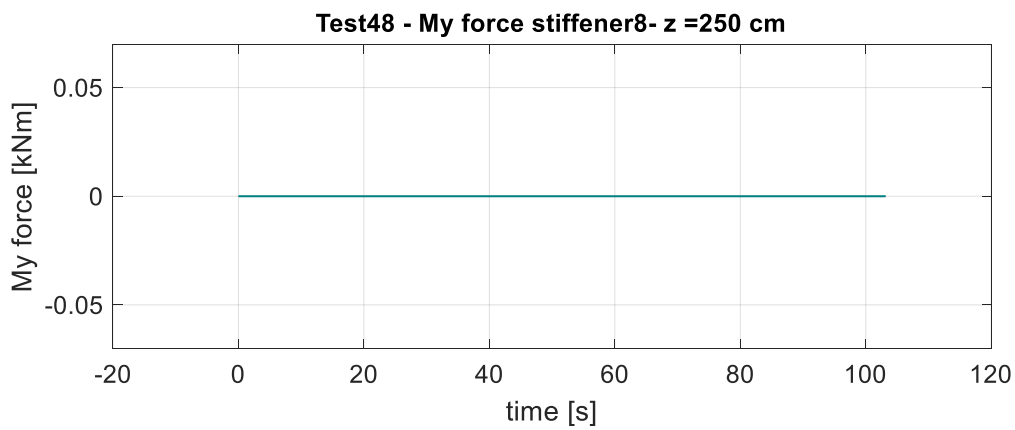
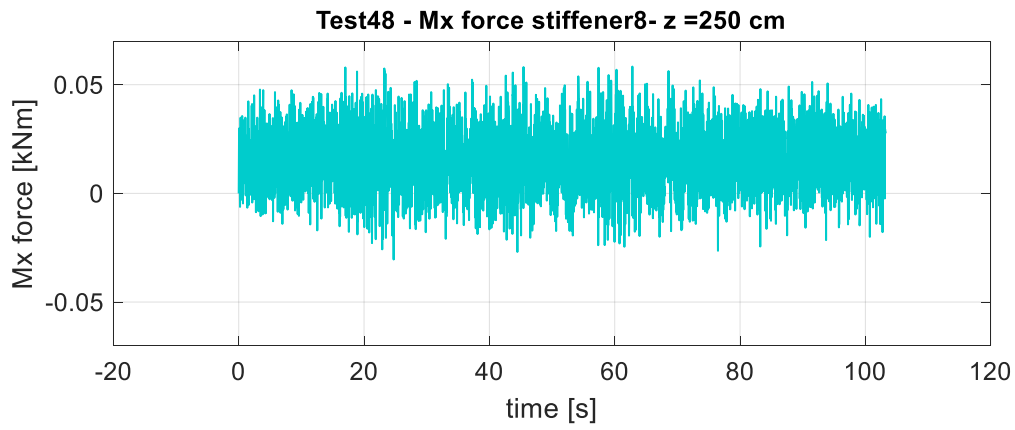
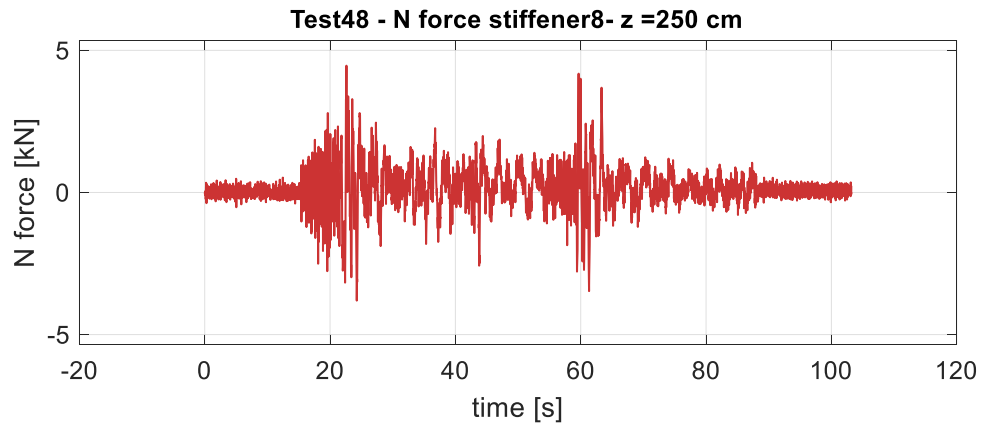
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

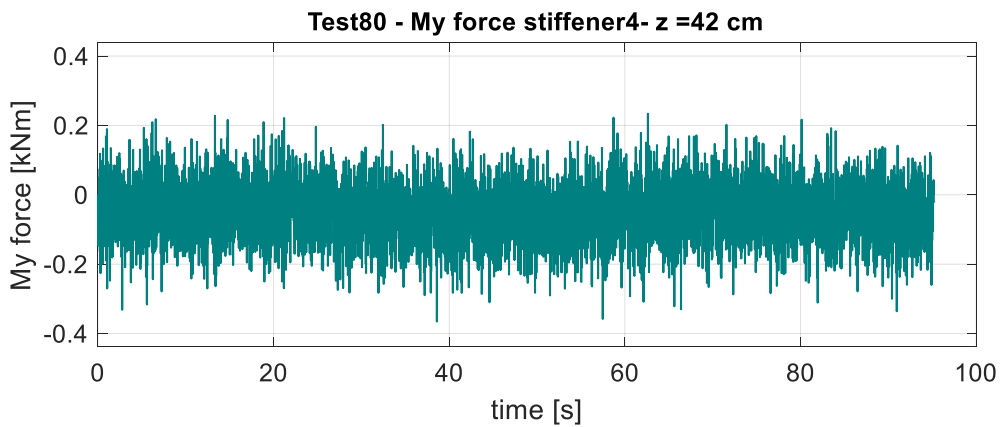
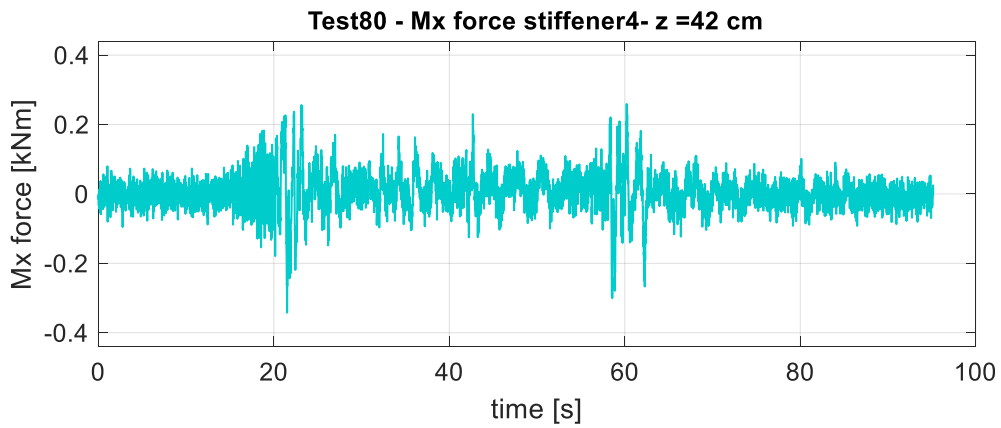
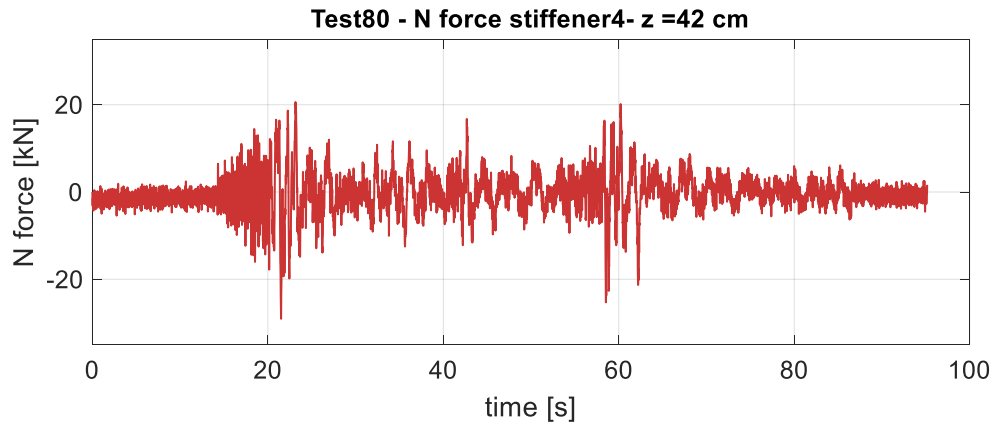


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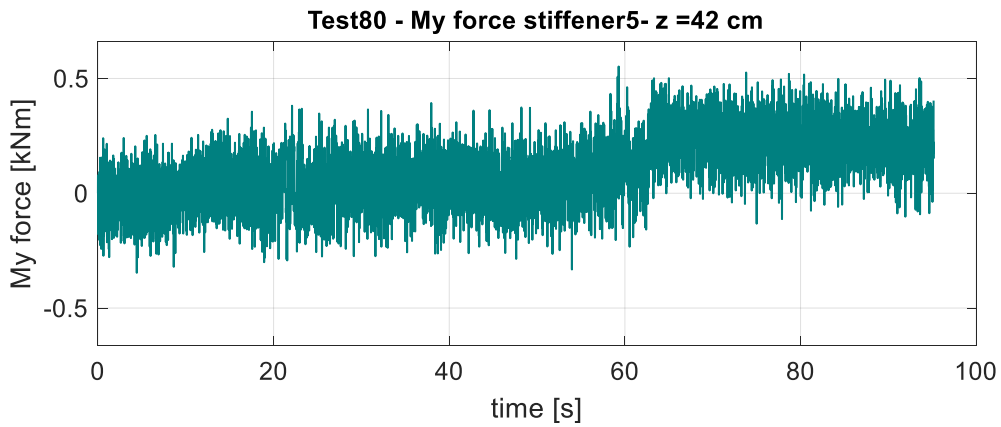
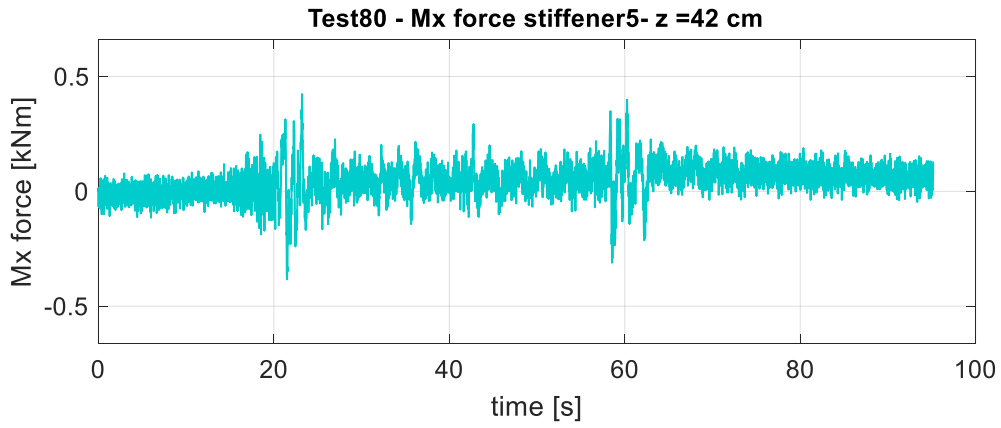
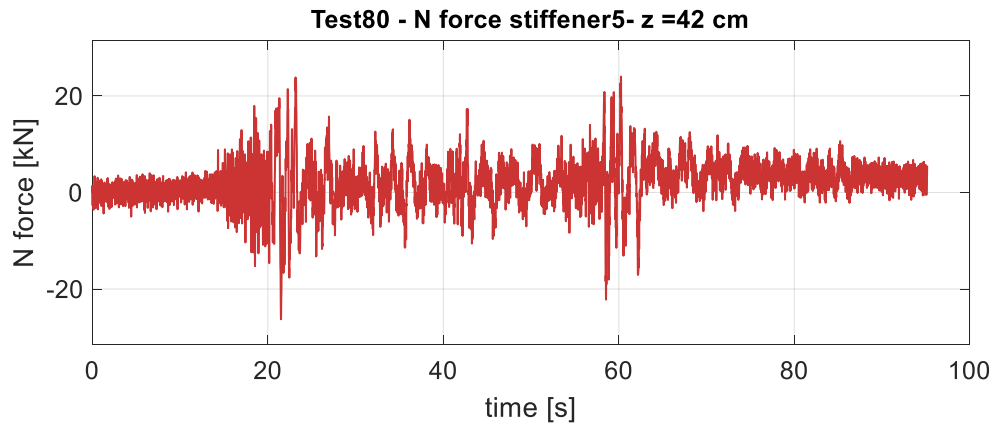


Earthquake input RS1 0.5 g: Test 80

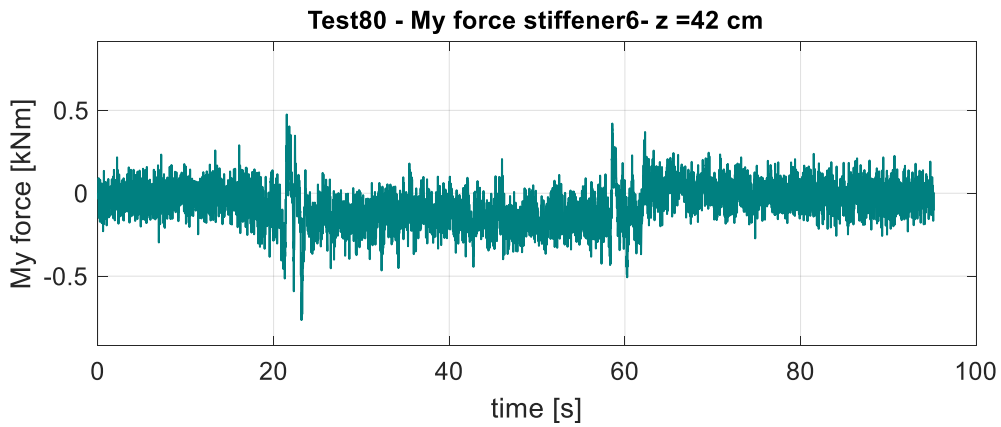
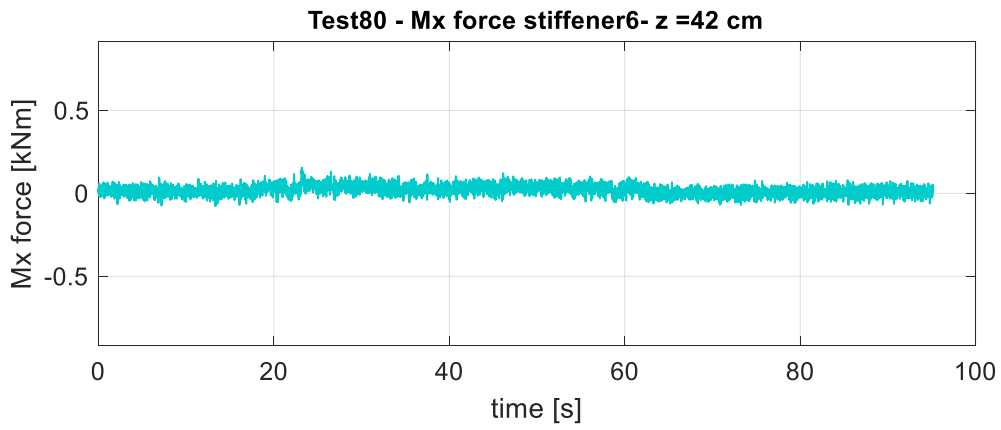
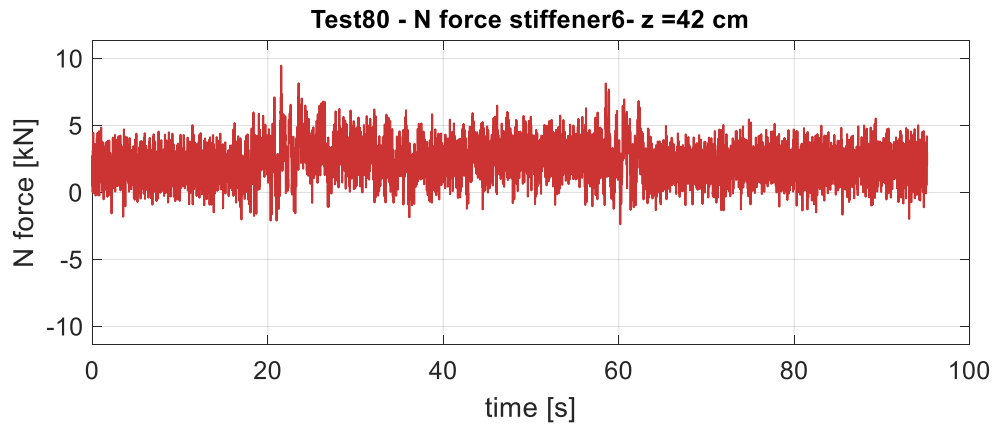
Quota Z = 42 cm: montante 4



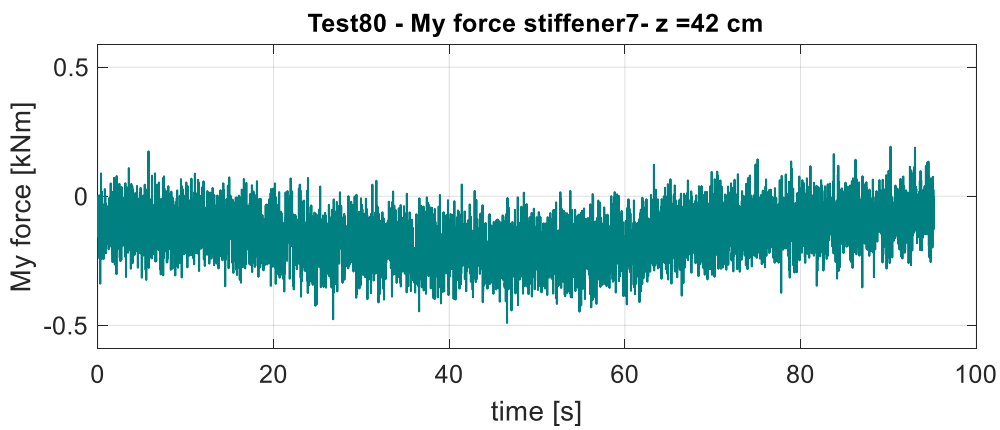
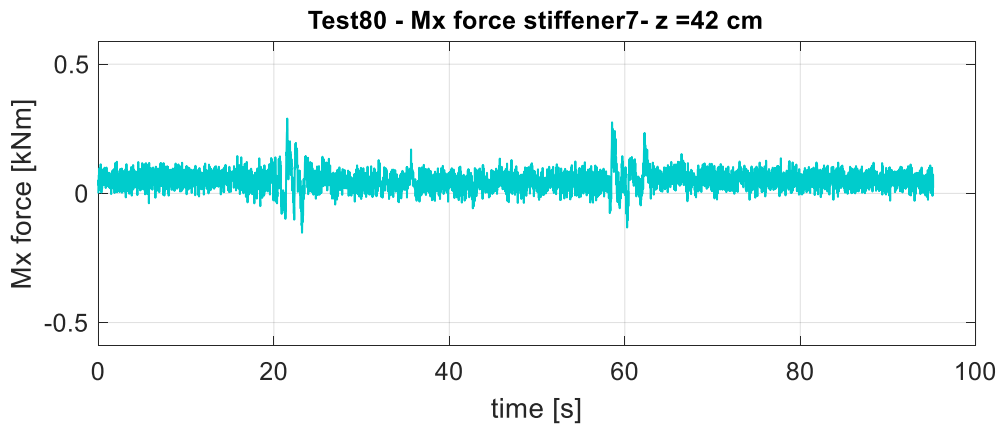
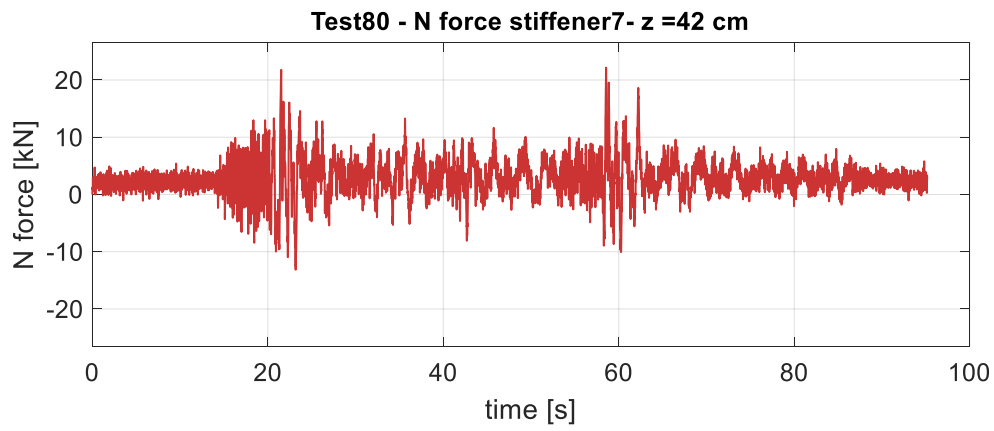
Quota Z = 42 cm: montante 5



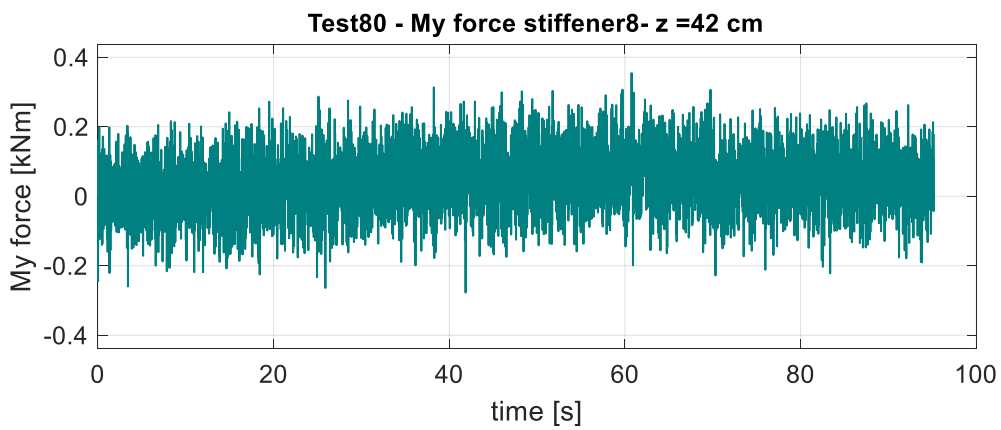
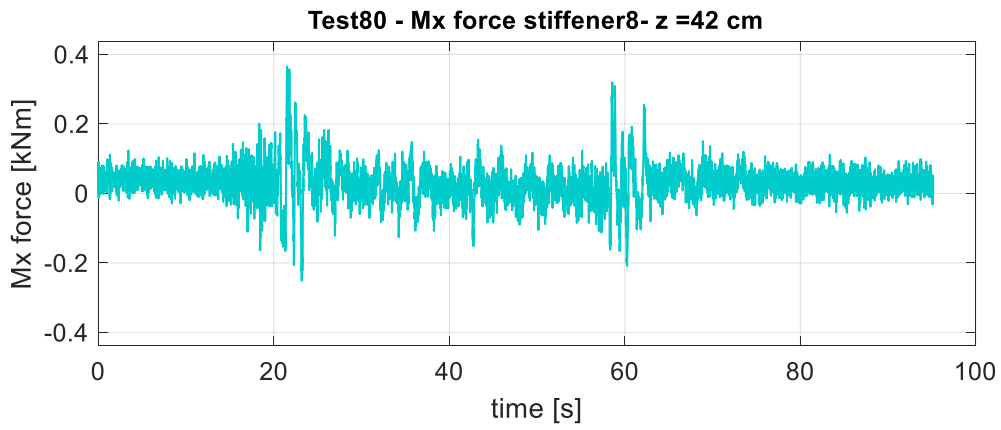
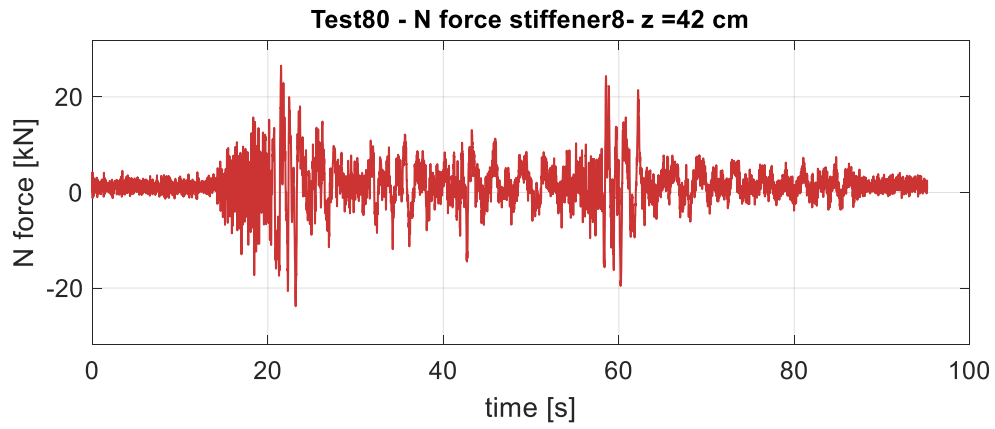
Quota Z = 42 cm: montante 6



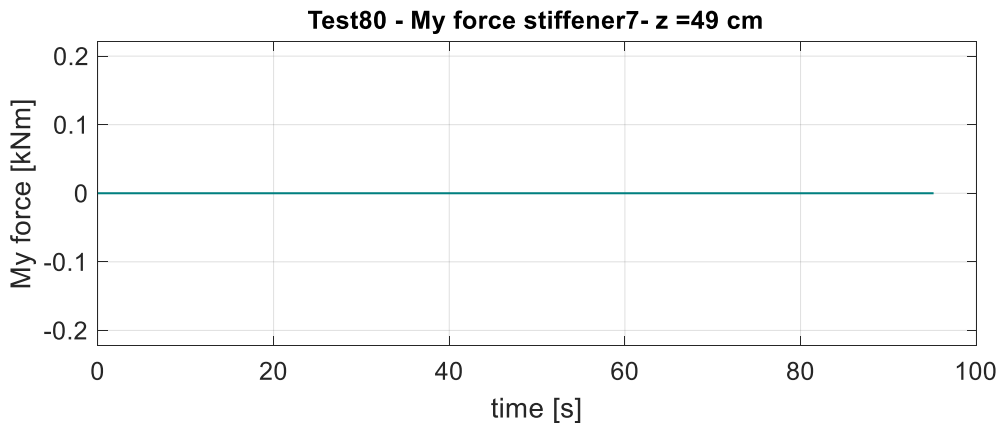
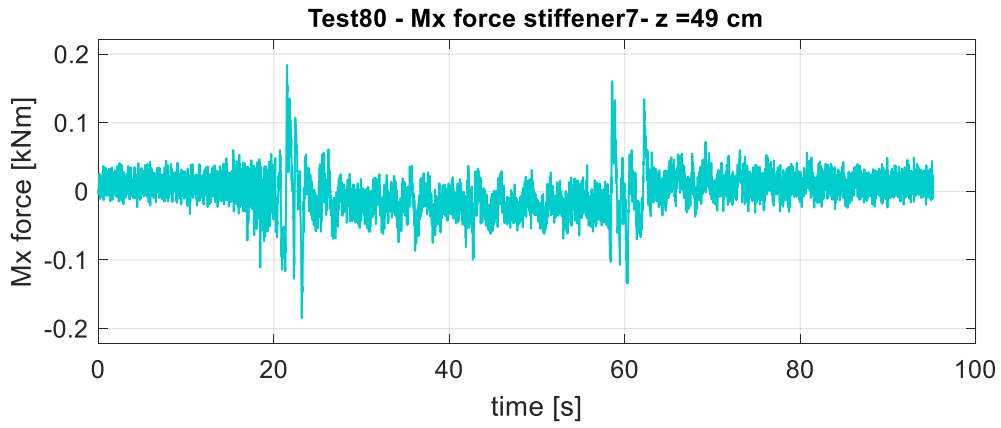
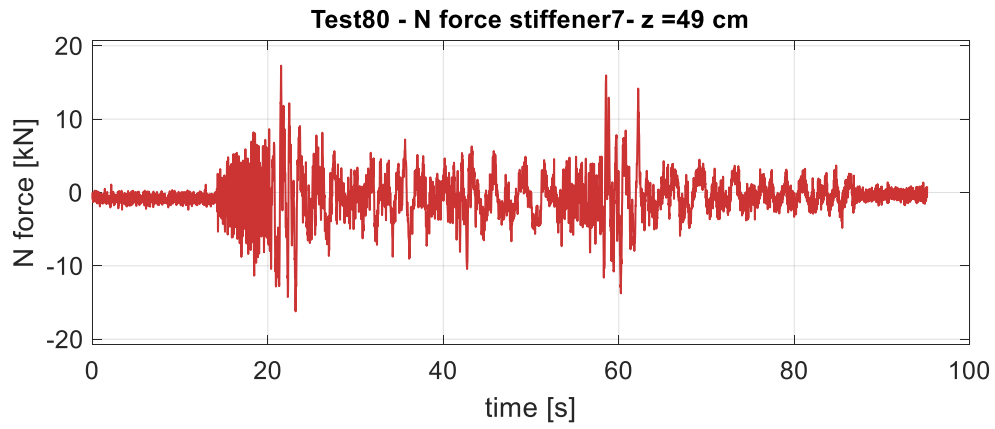
Quota Z = 42 cm: montante 7



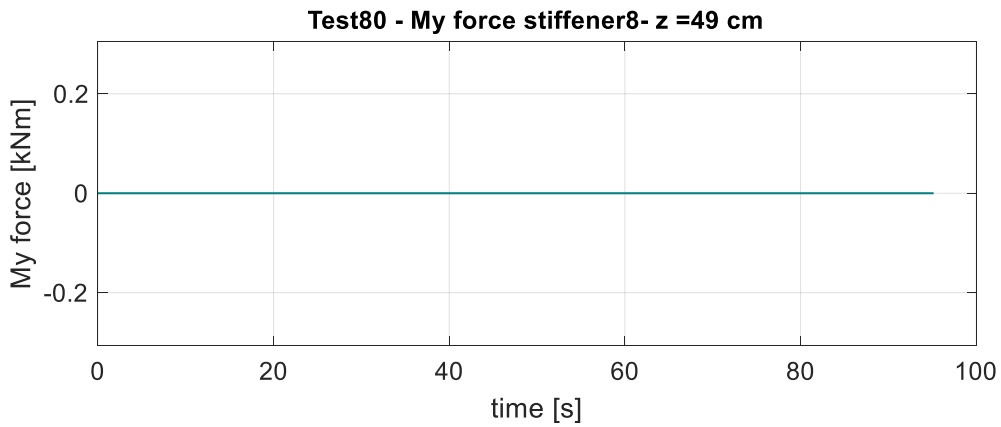
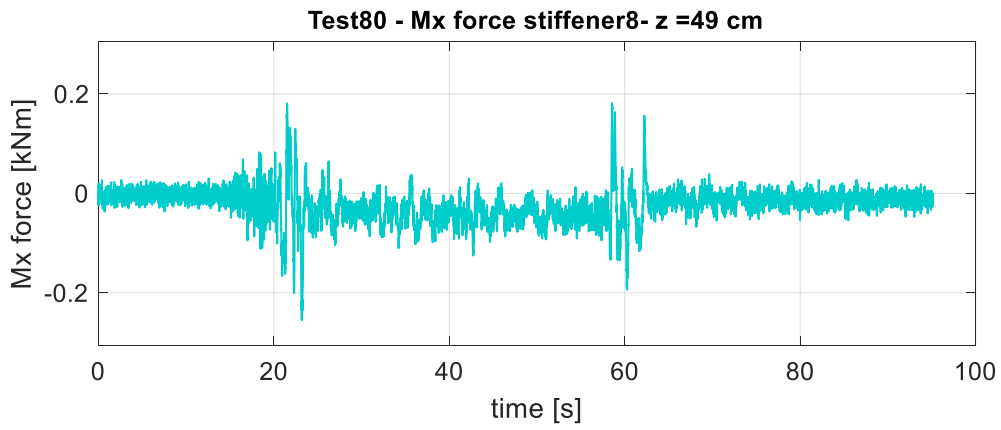
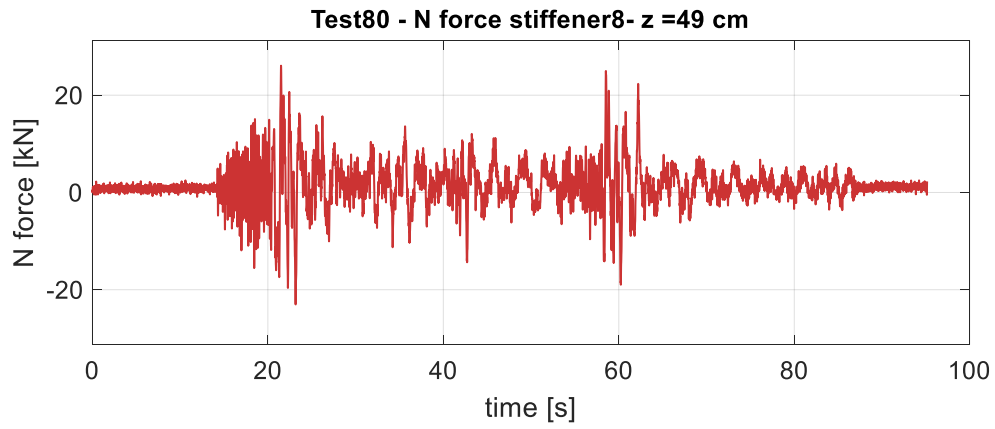
Quota Z = 42 cm: montante 8



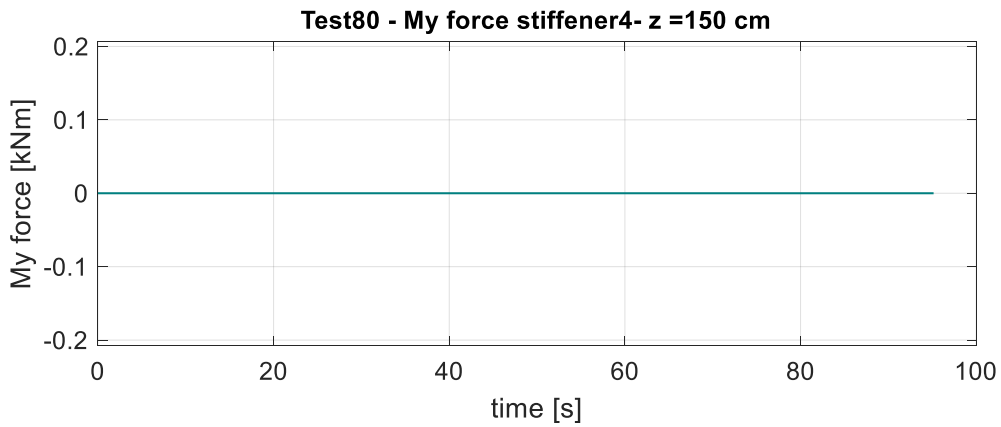
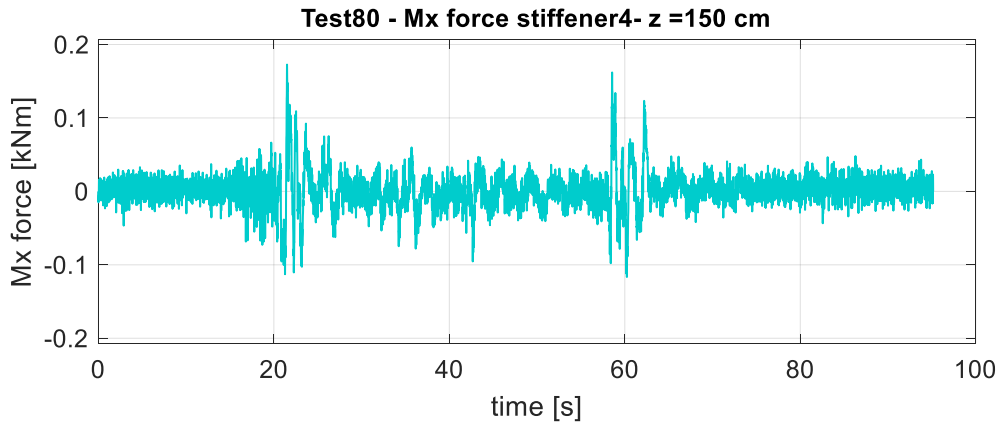
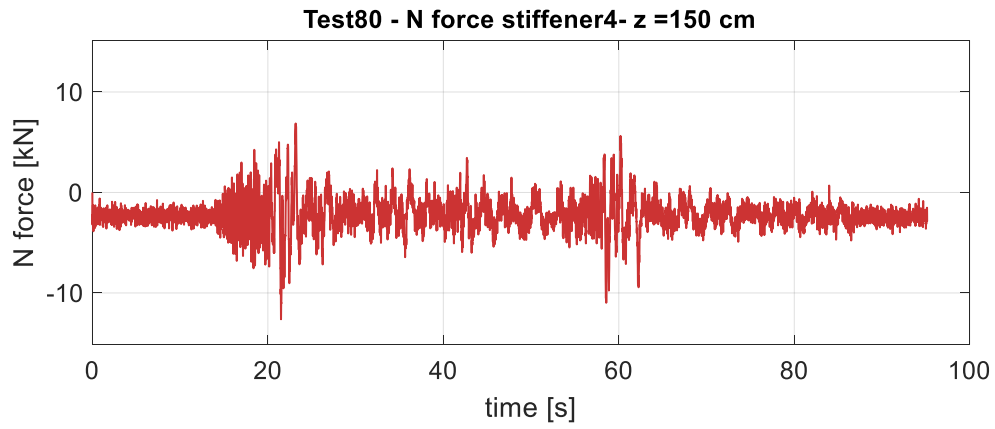
Quota Z = 49 cm: montante 7



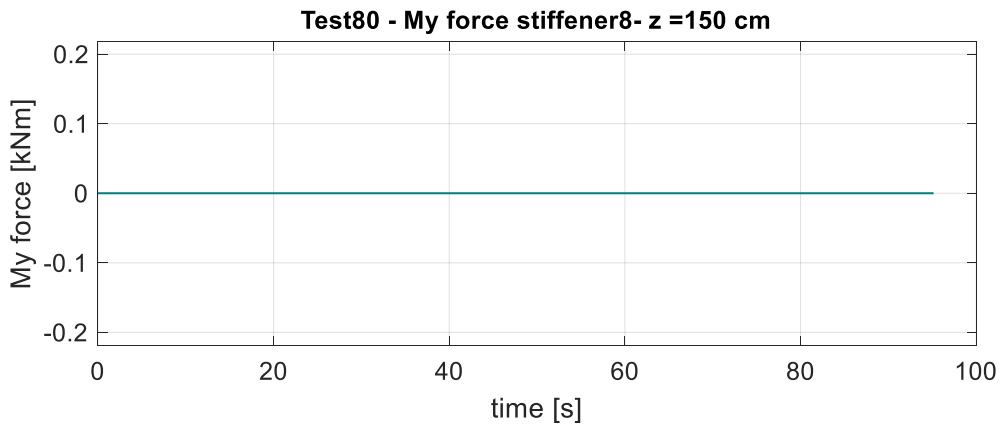
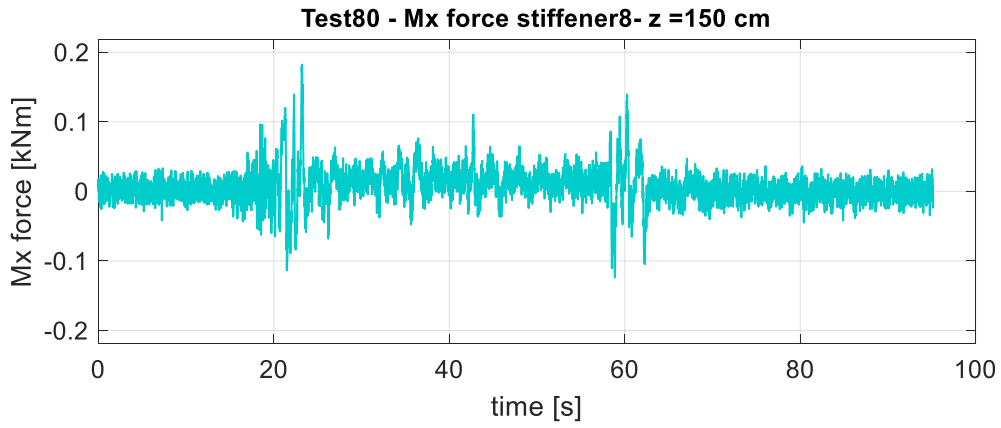
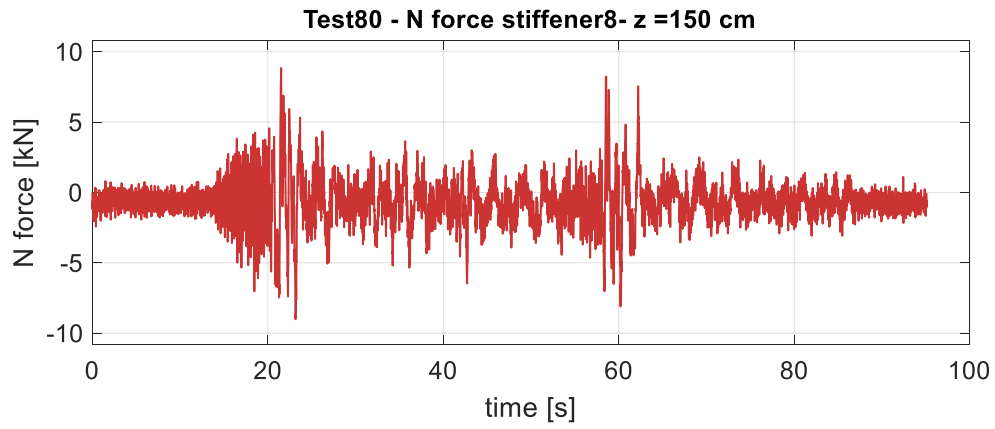
Quota Z = 49 cm: montante 8



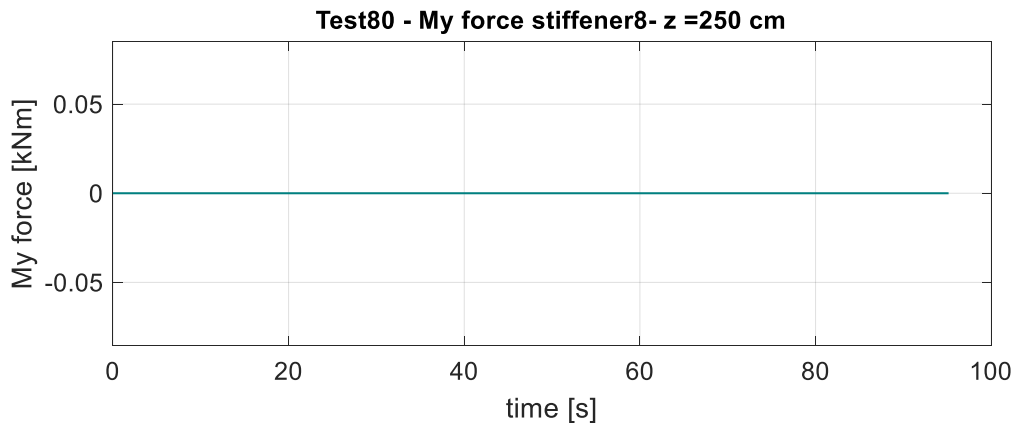
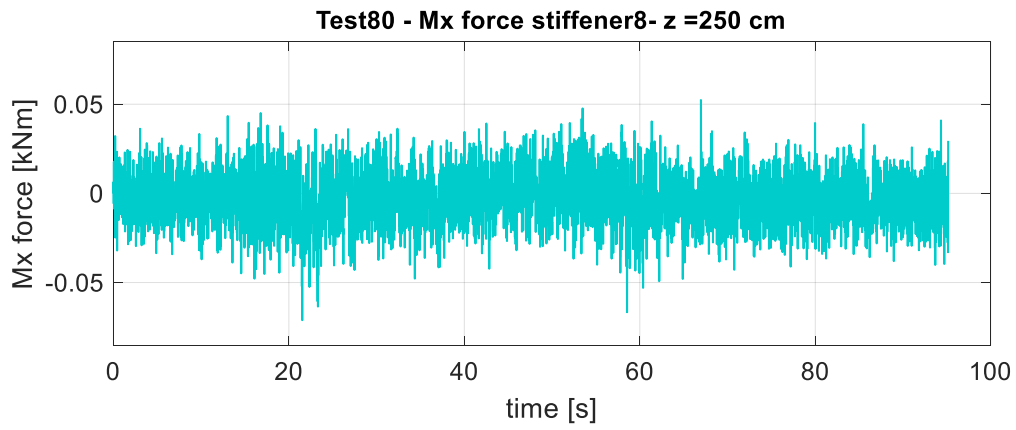
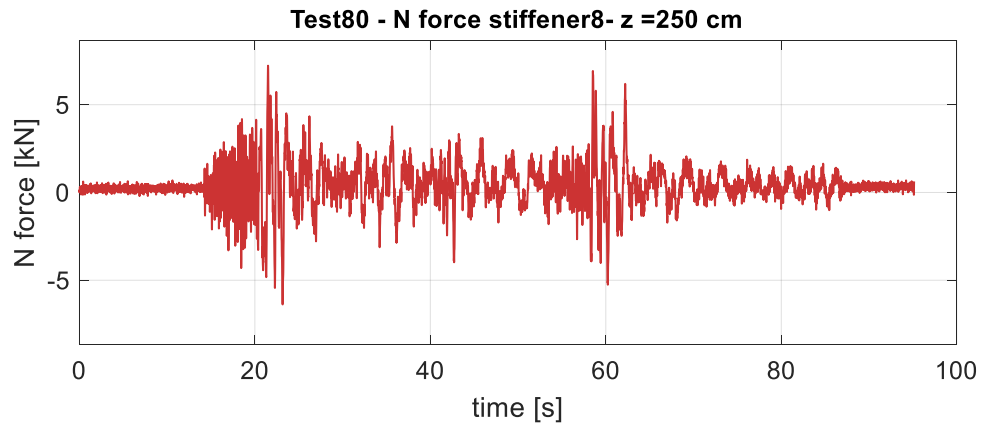
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

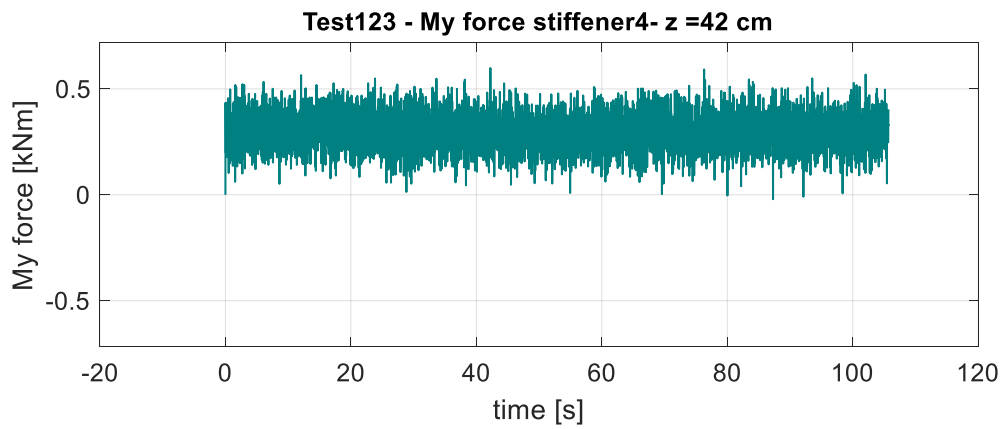
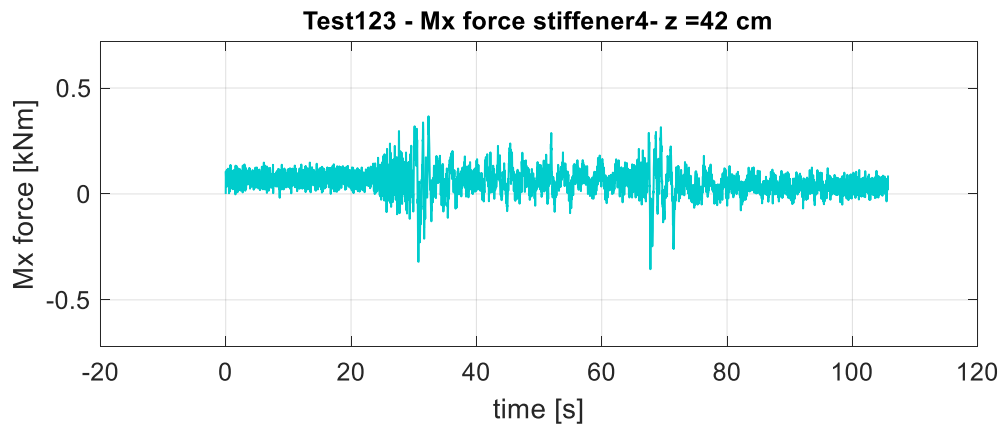
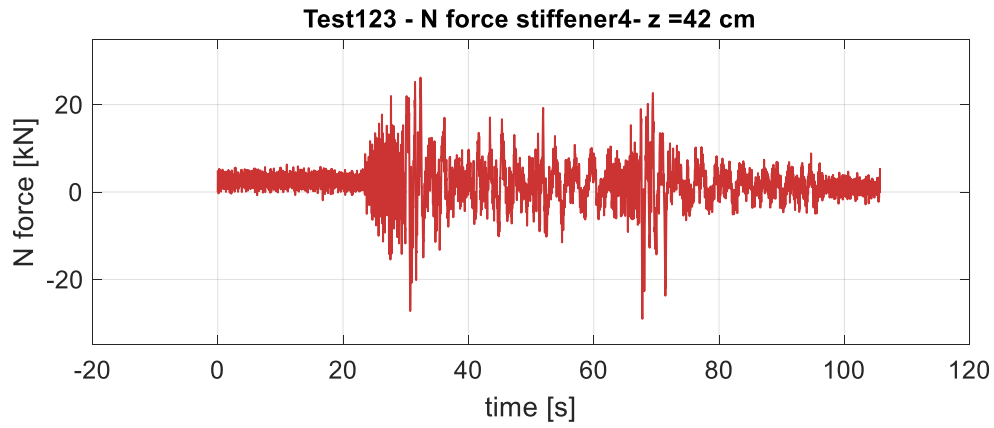


Quota Z = 250 cm: montante 8

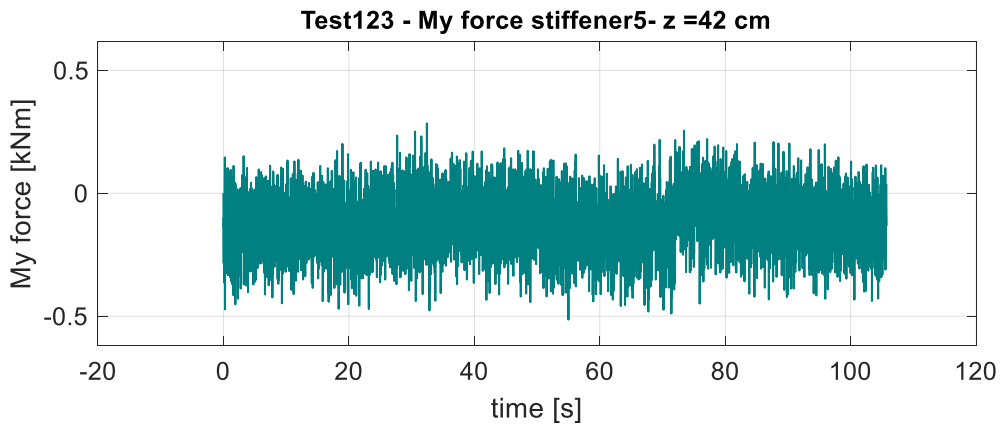
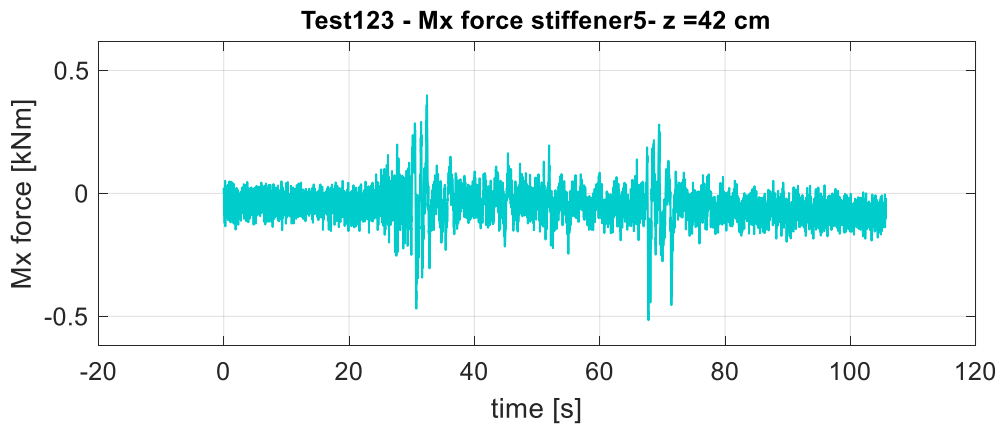
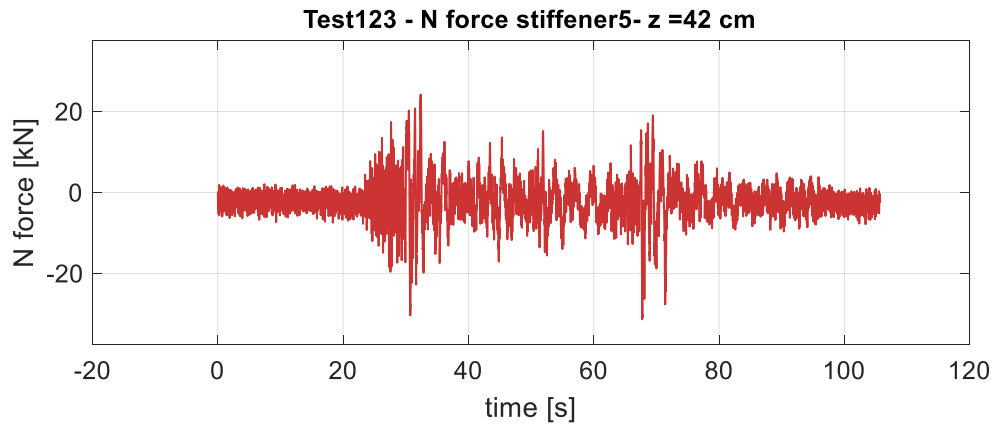


Earthquake input RS1 0.6 g: Test 123

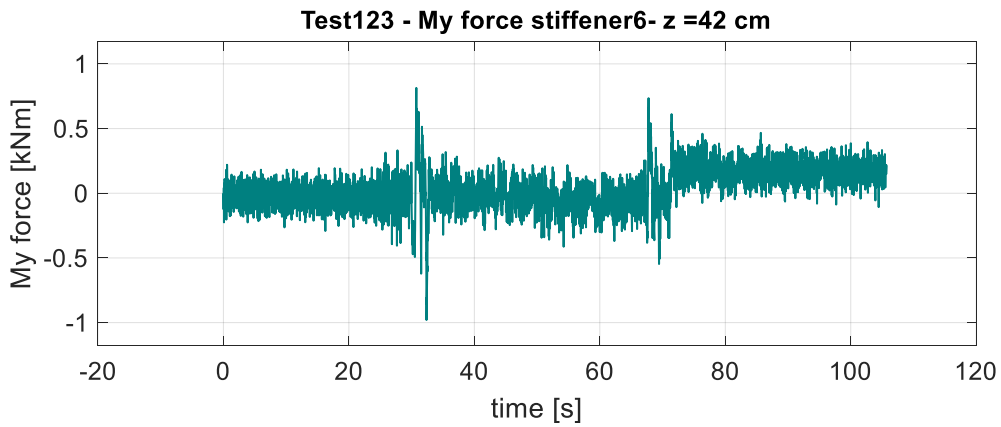
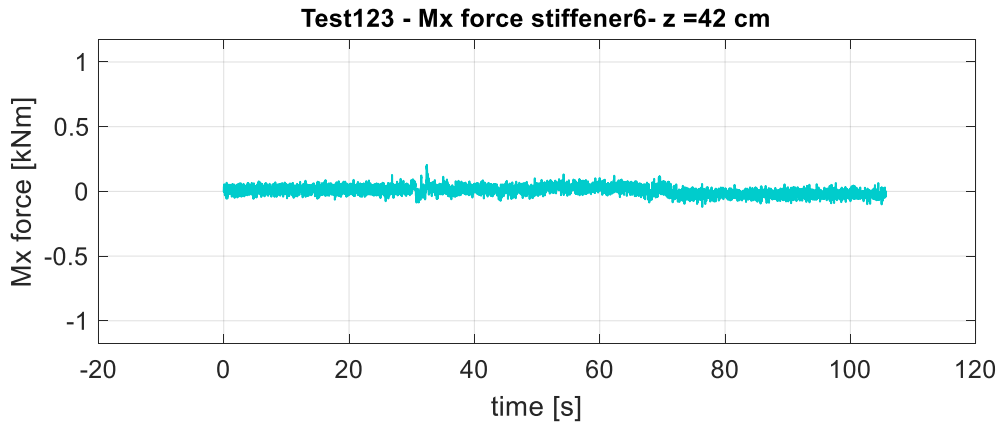
Quota Z = 42 cm: montante 4



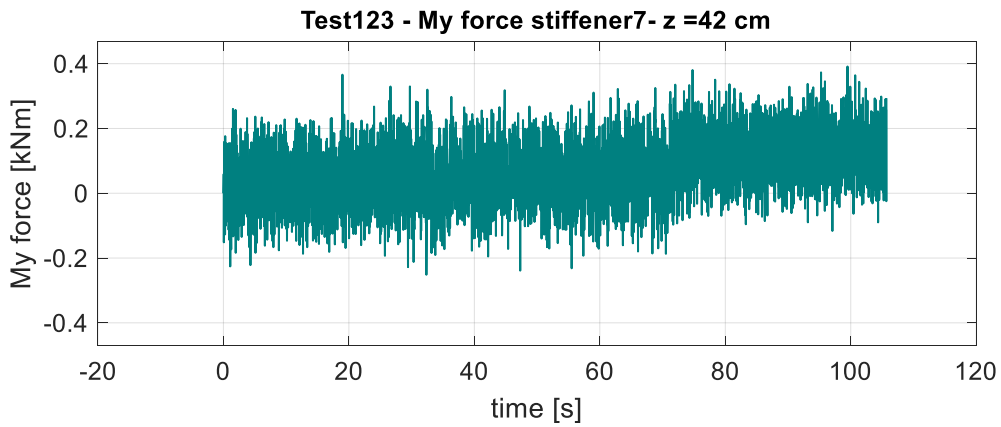
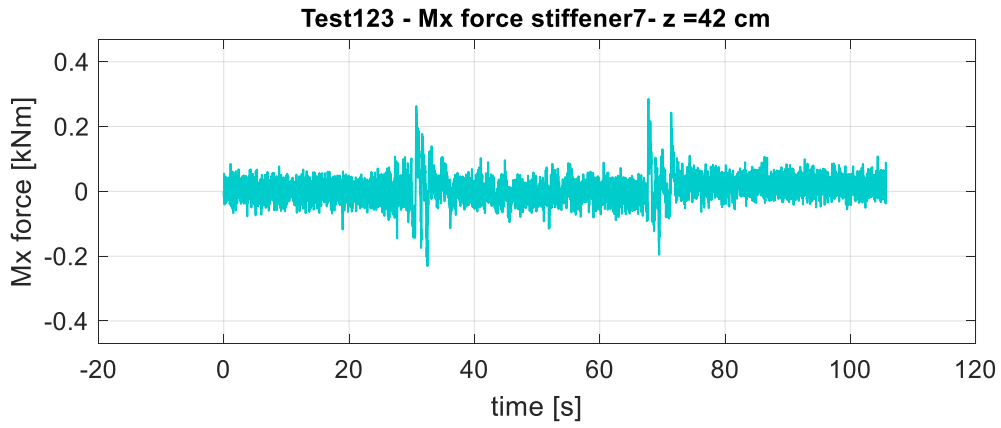
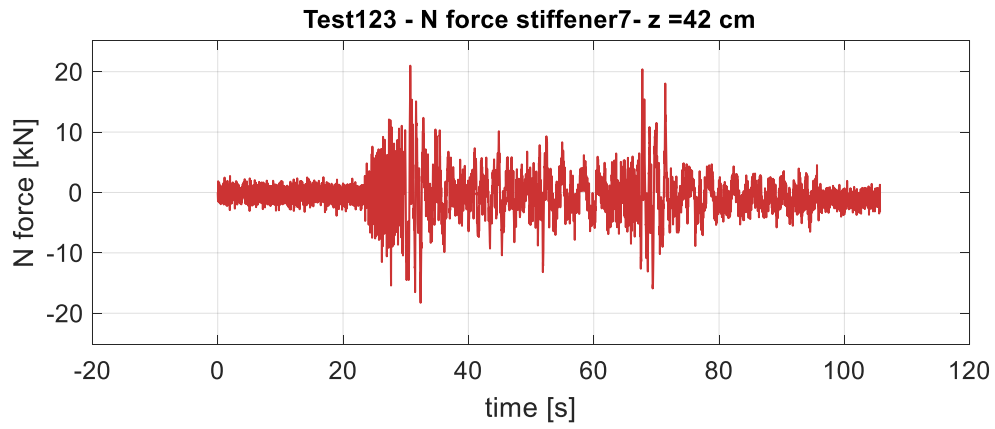
Quota Z = 42 cm: montante 5



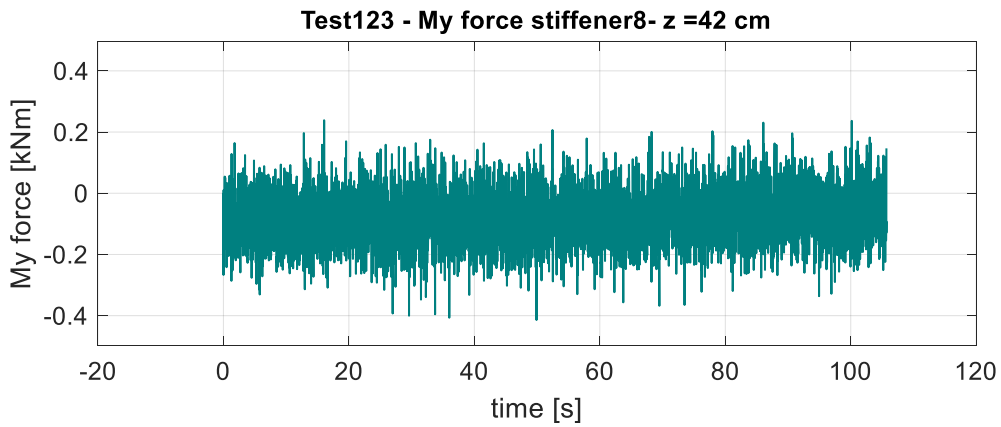
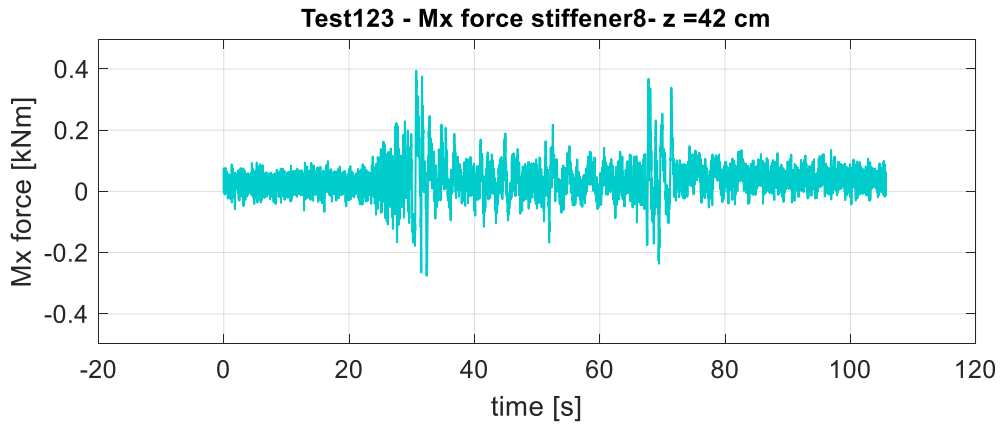
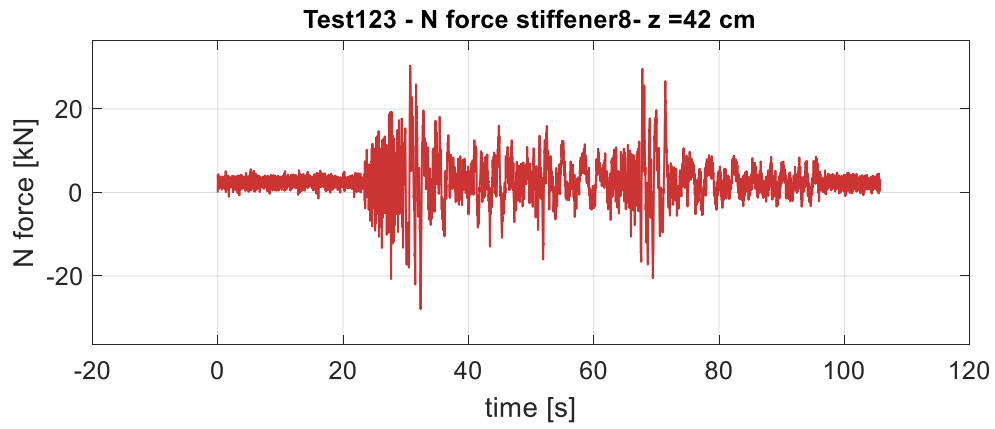
Quota Z = 42 cm: montante 6



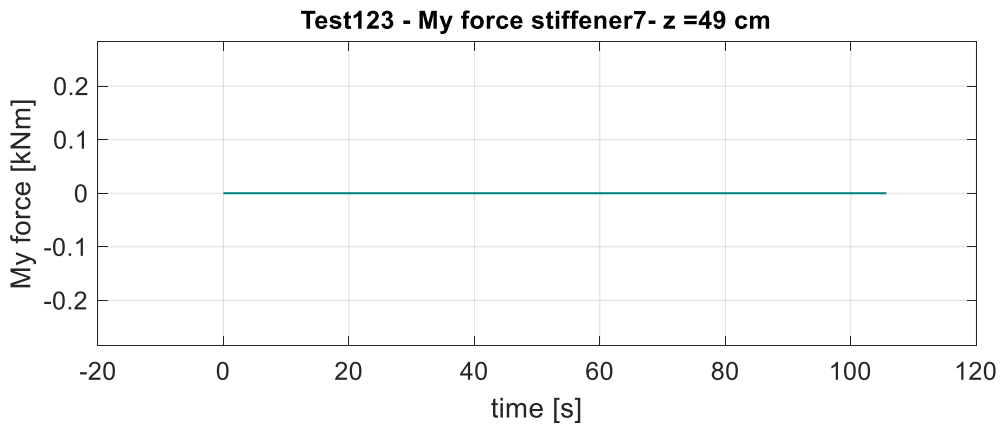
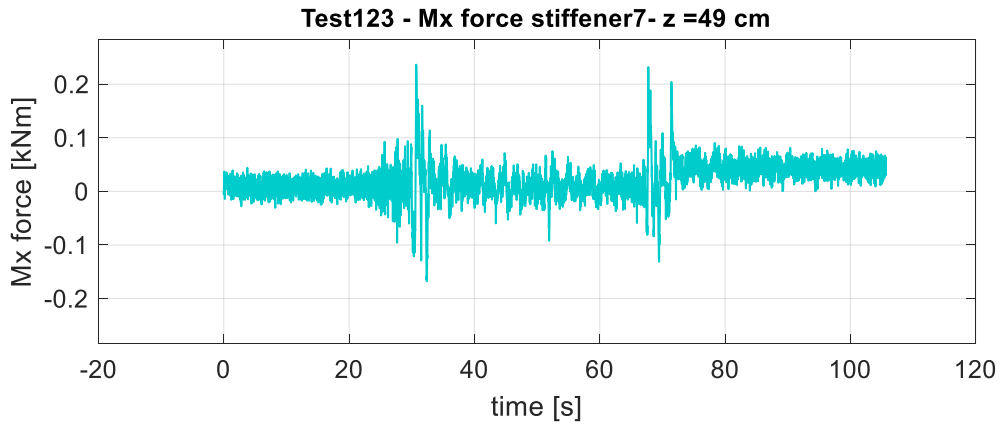
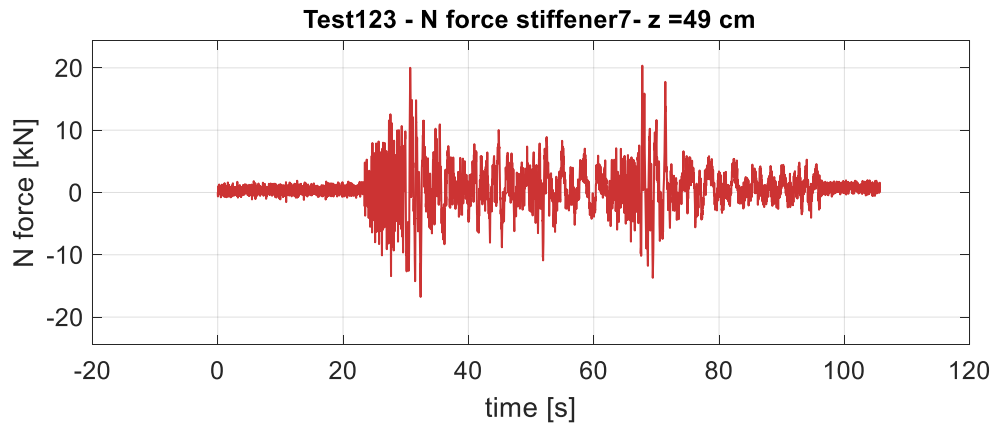
Quota Z = 42 cm: montante 7



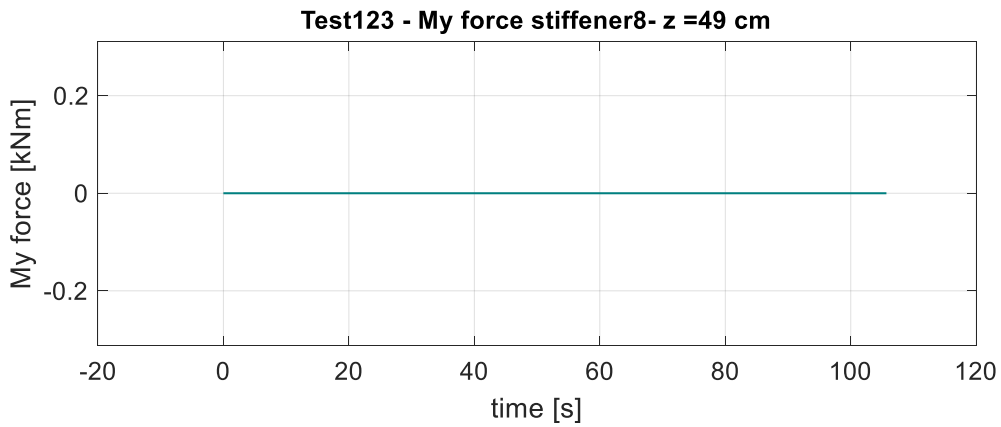
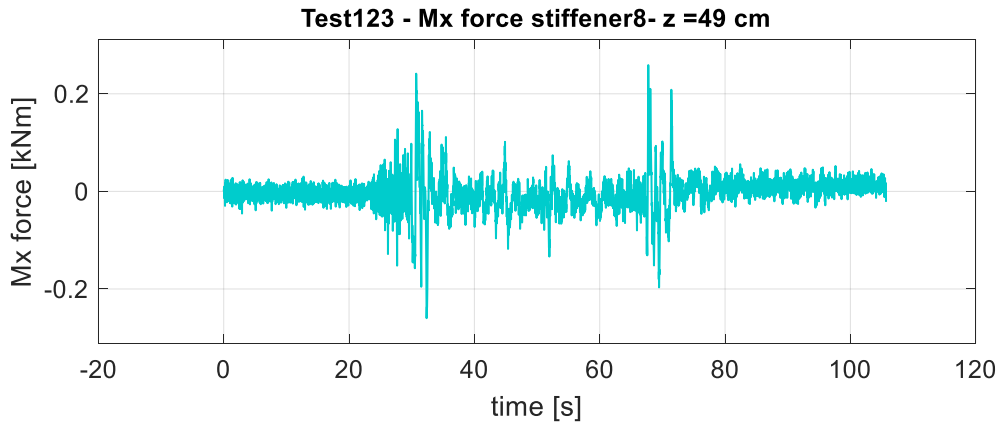
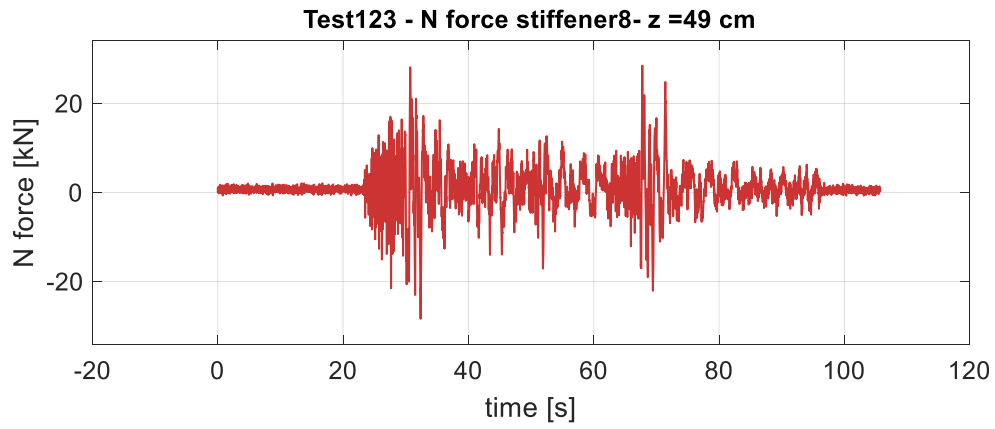
Quota Z = 42 cm: montante 8



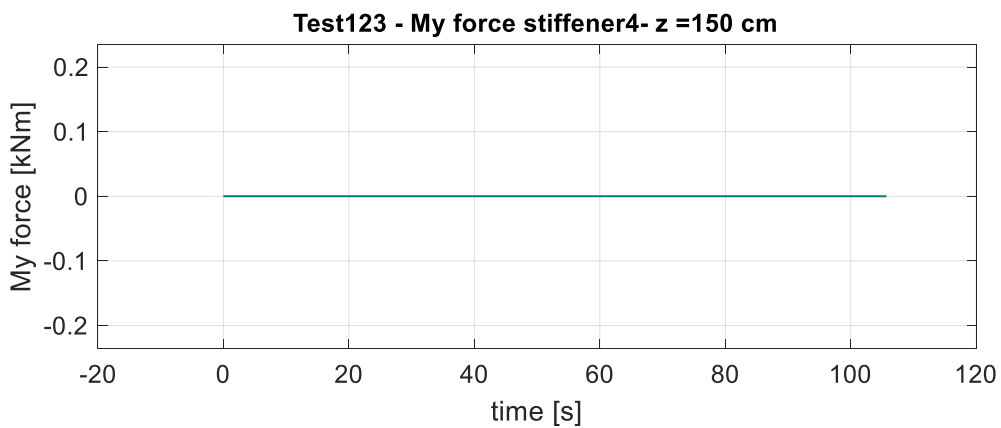
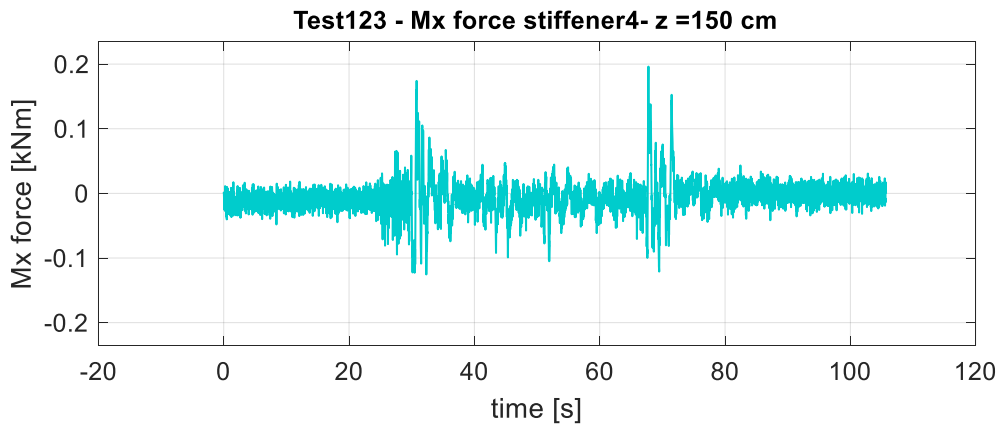
Quota Z = 49 cm: montante 7



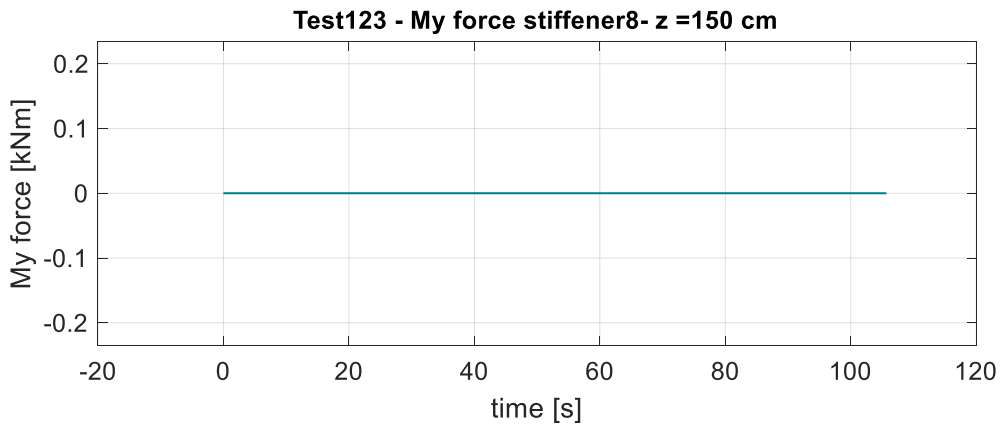
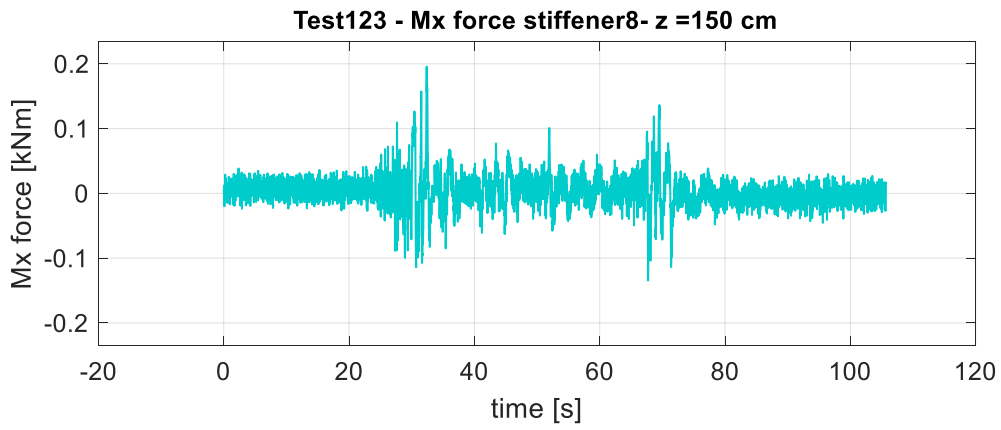
Quota Z = 49 cm: montante 8



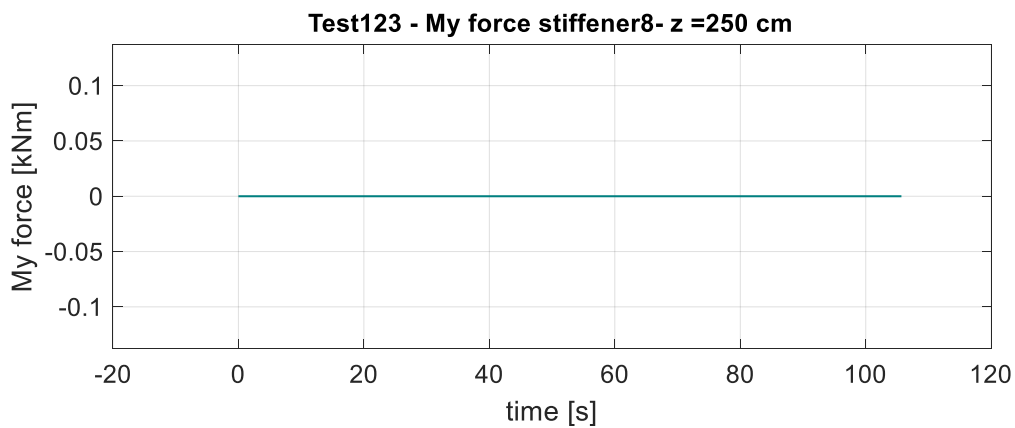
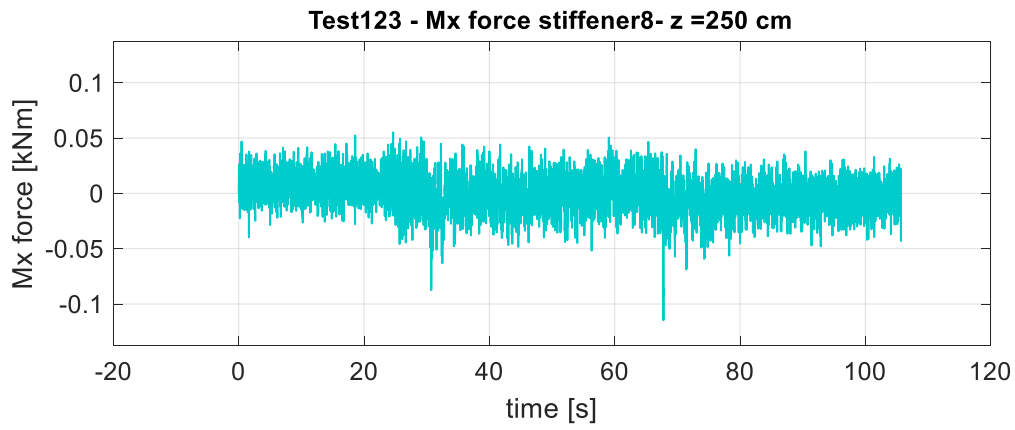
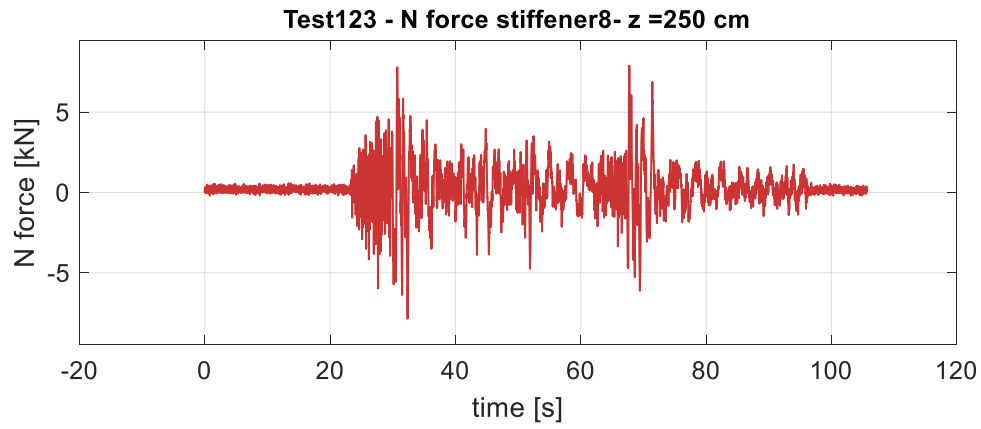
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

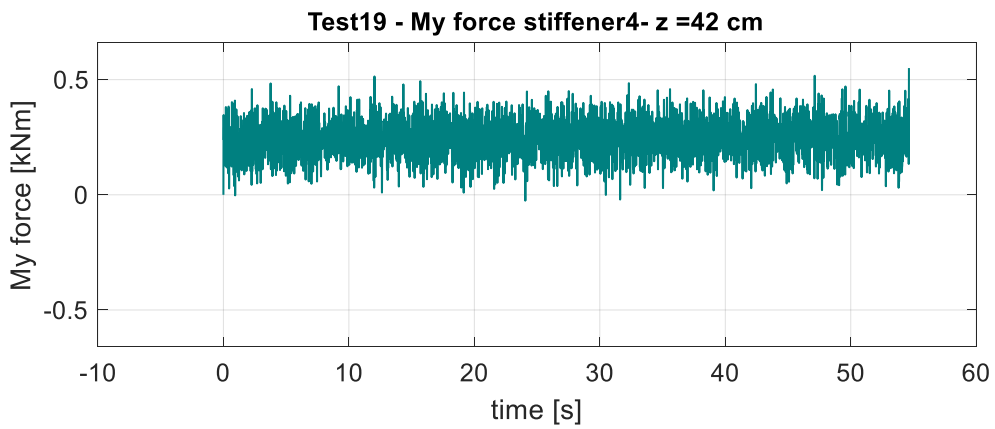
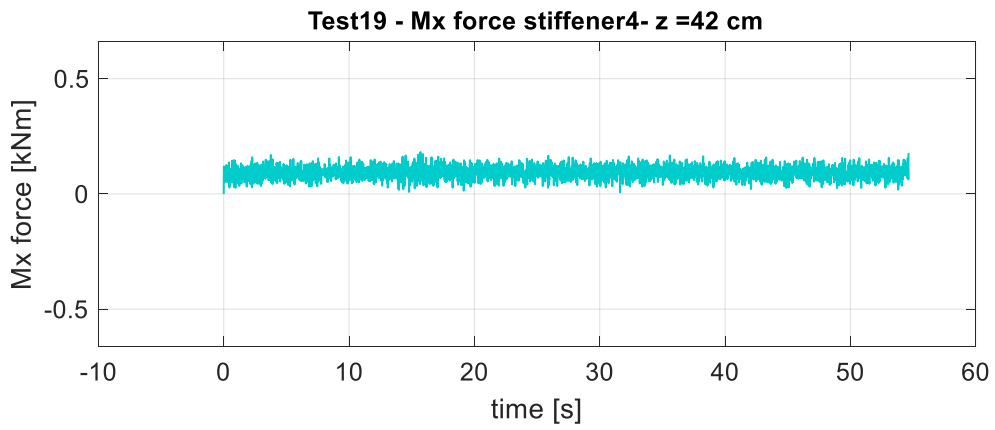
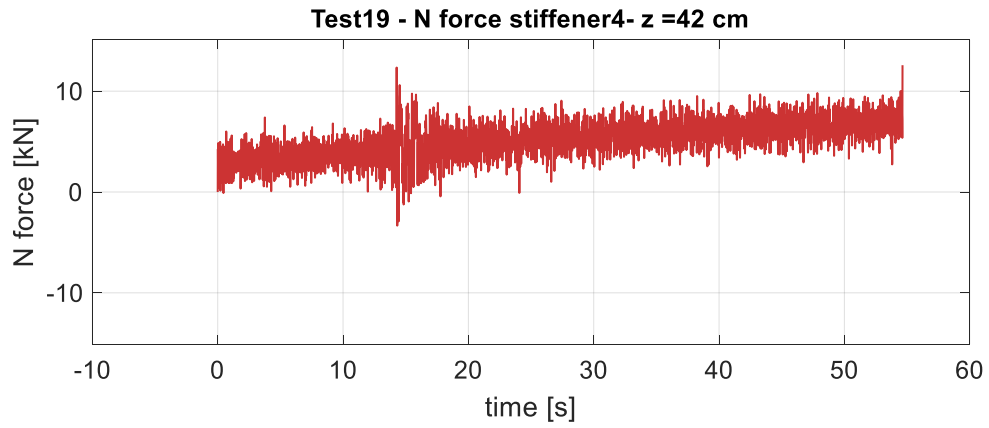


Quota Z = 250 cm: montante 8

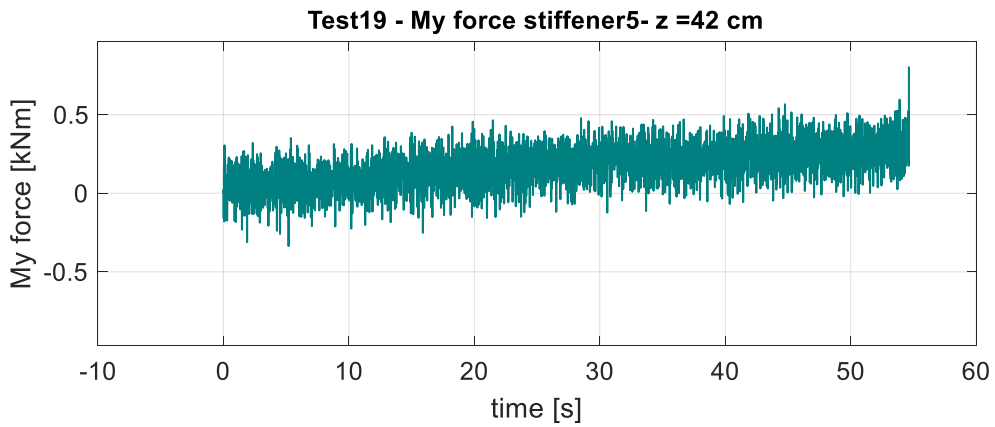
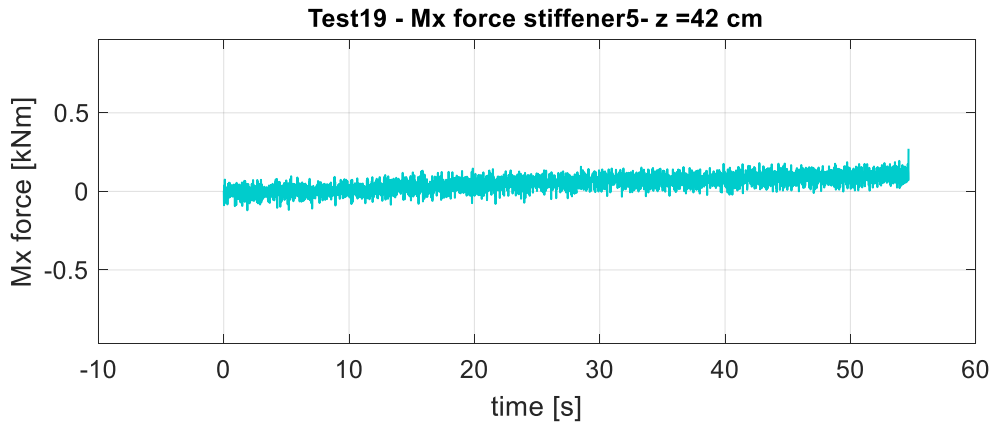
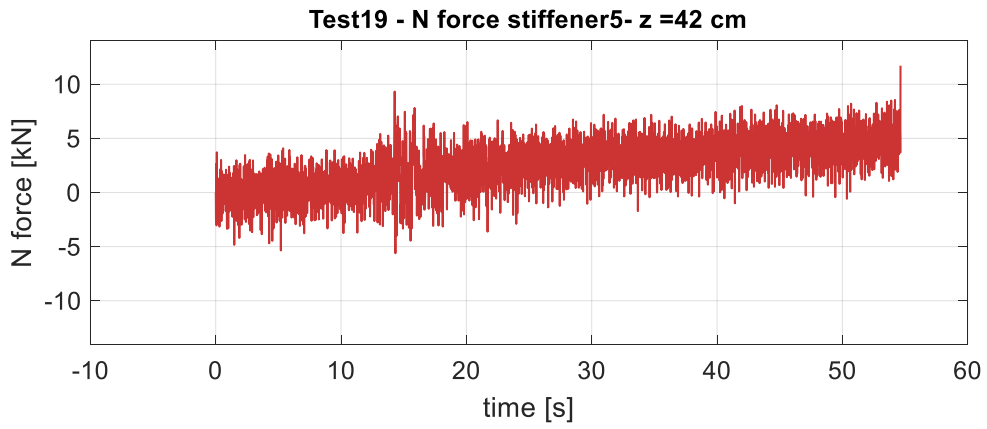


Earthquake input RS3 0.1 g: Test 19

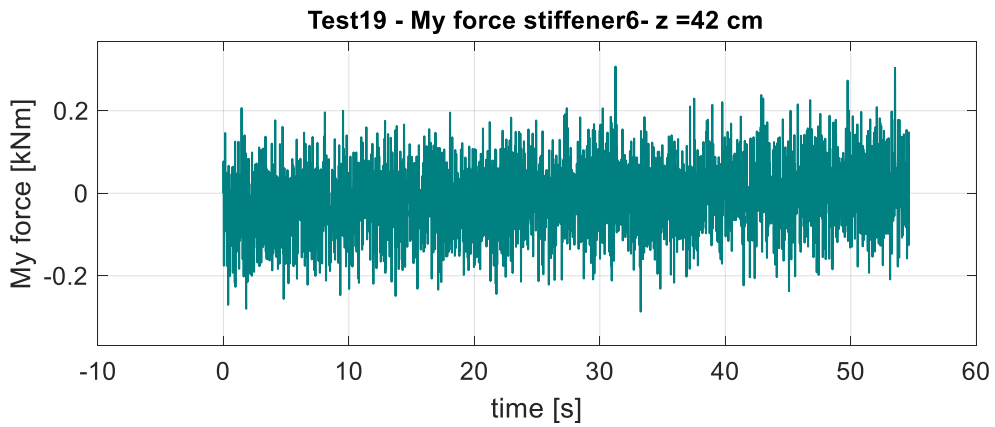
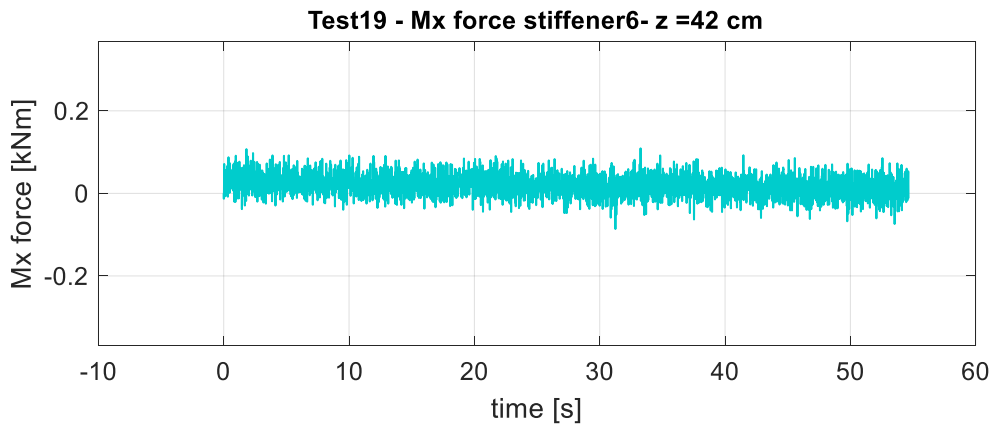
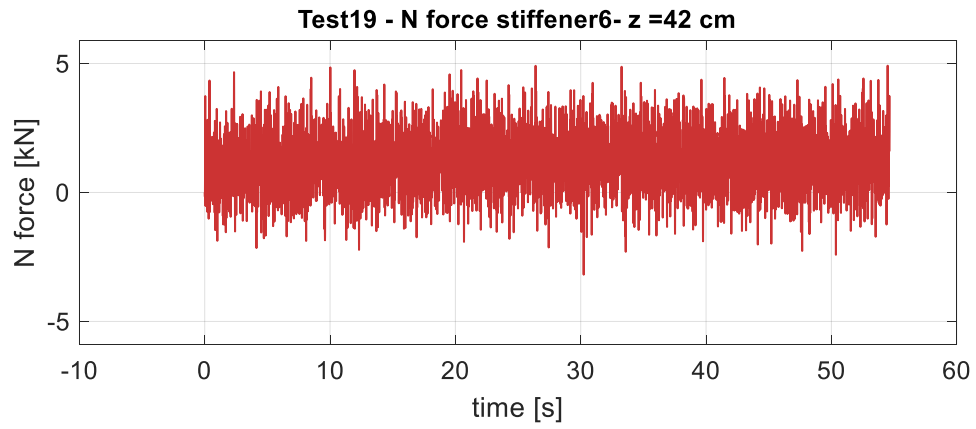
Quota Z = 42 cm: montante 4



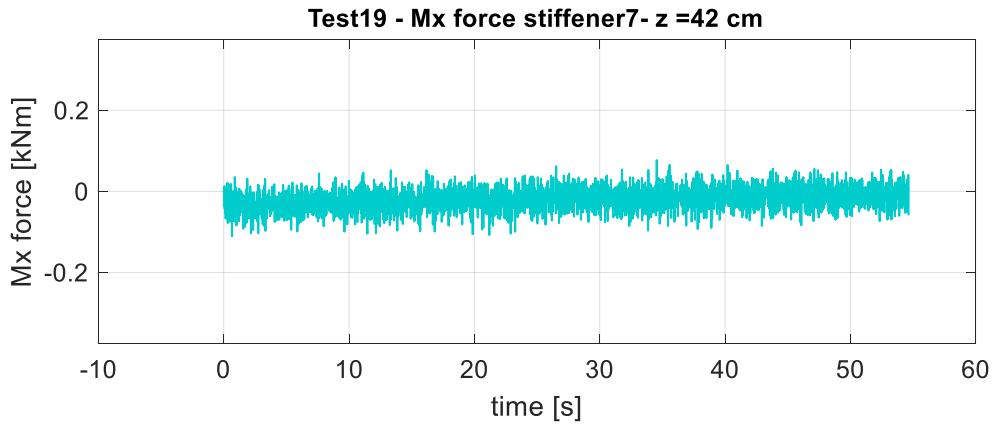
Quota Z = 42 cm: montante 5



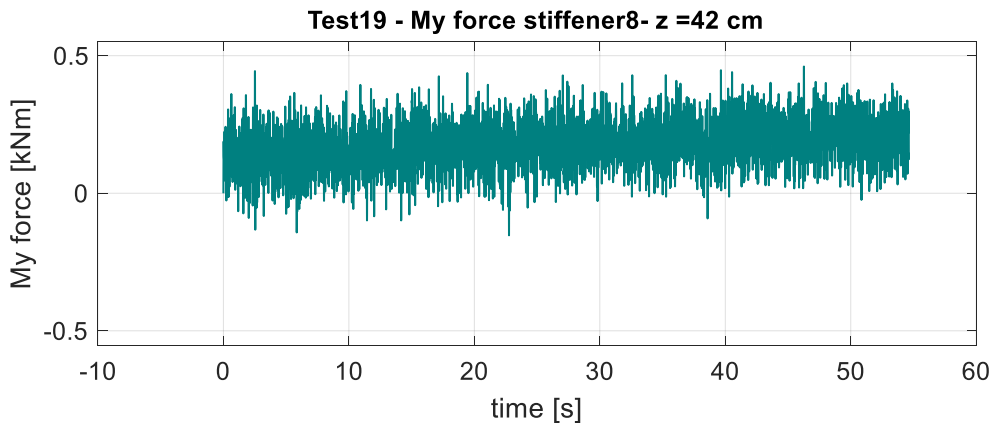
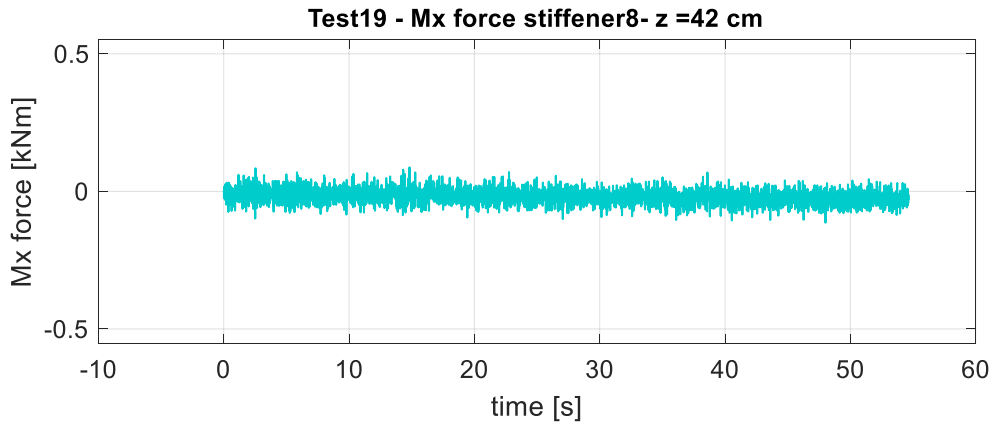
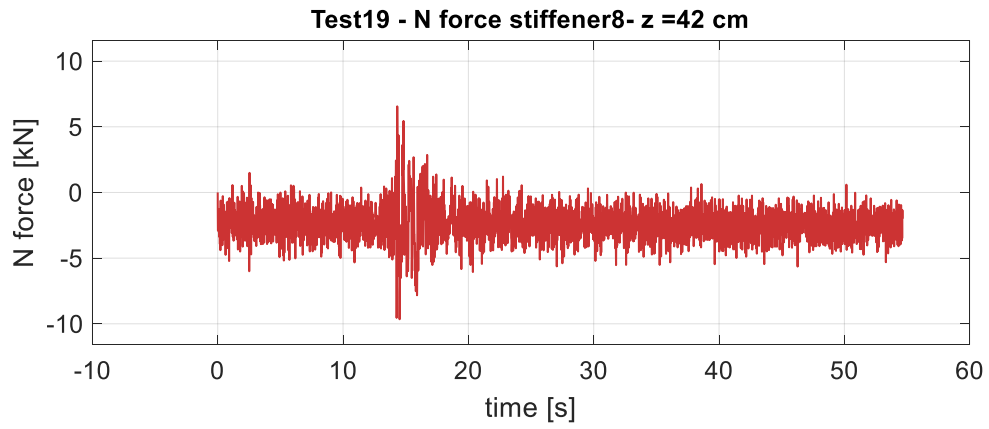
Quota Z = 42 cm: montante 6



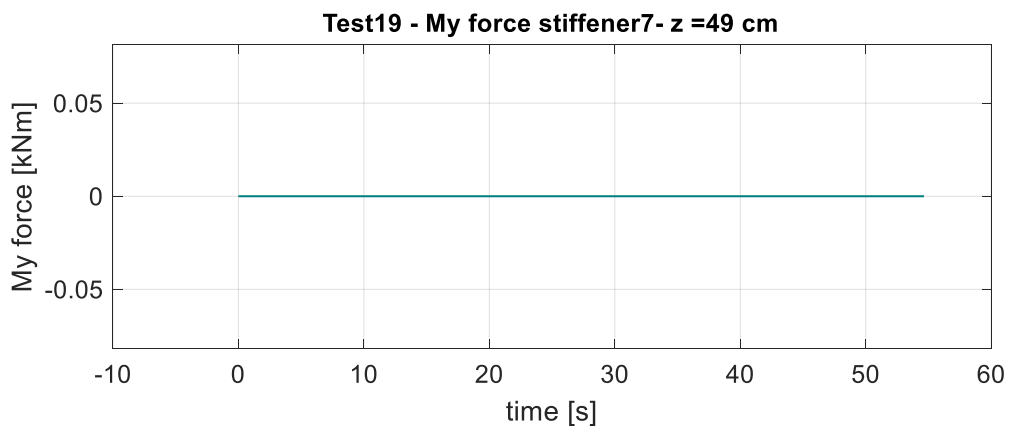
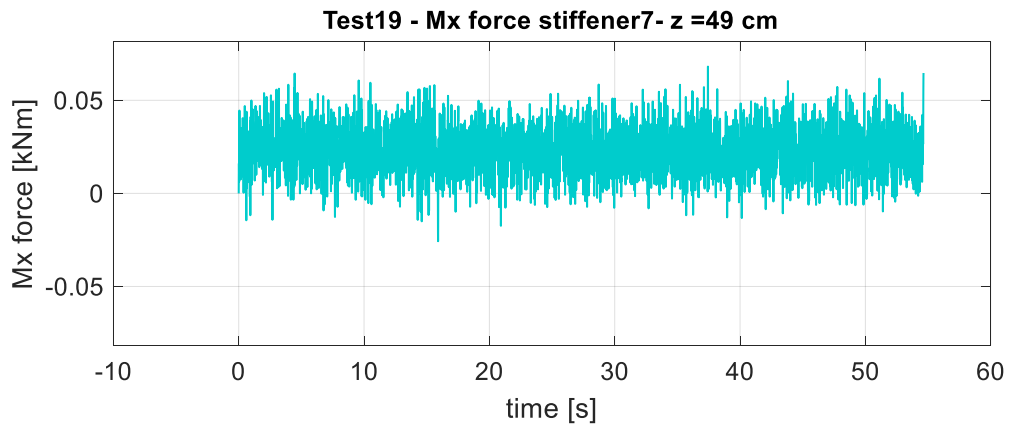
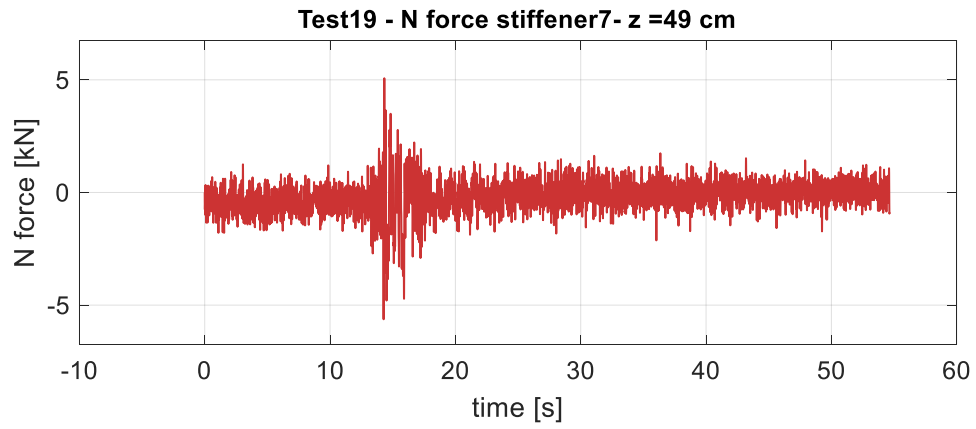
Quota Z = 42 cm: montante 7



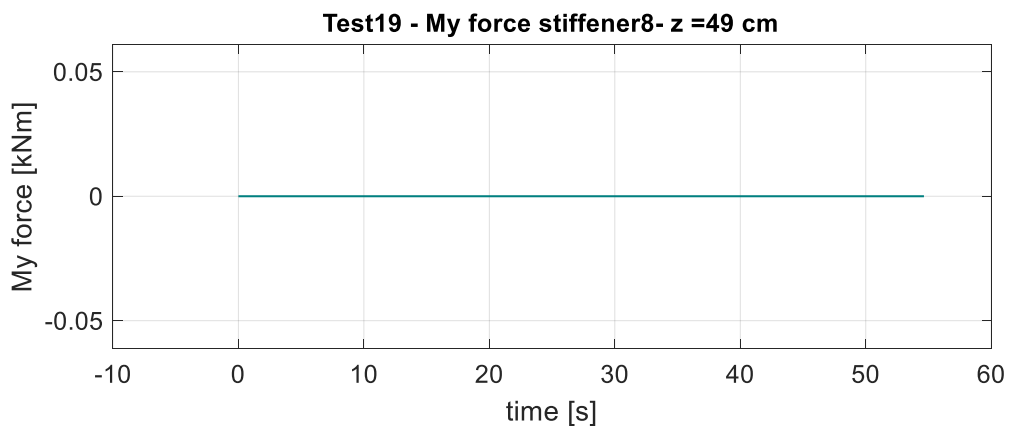
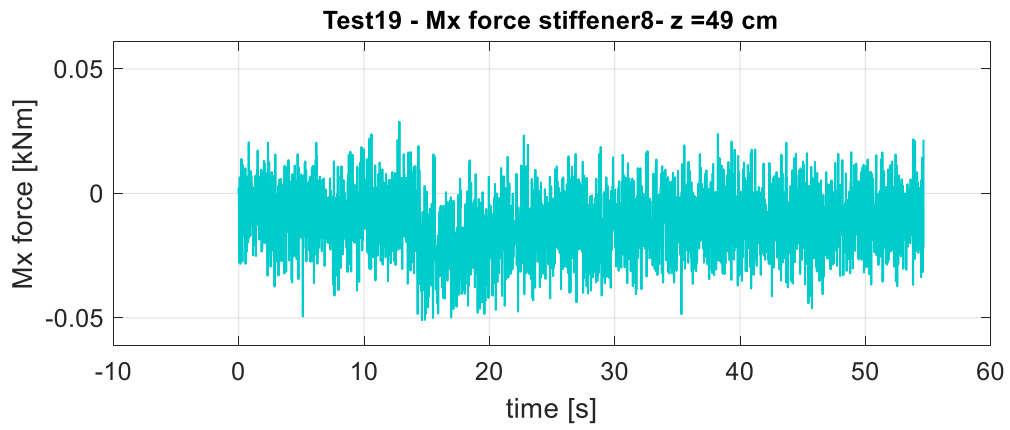
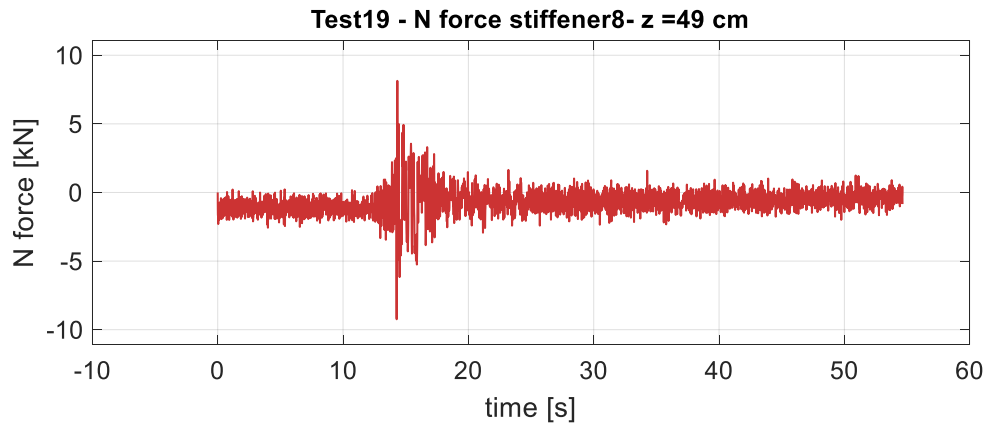
Quota Z = 42 cm: montante 8



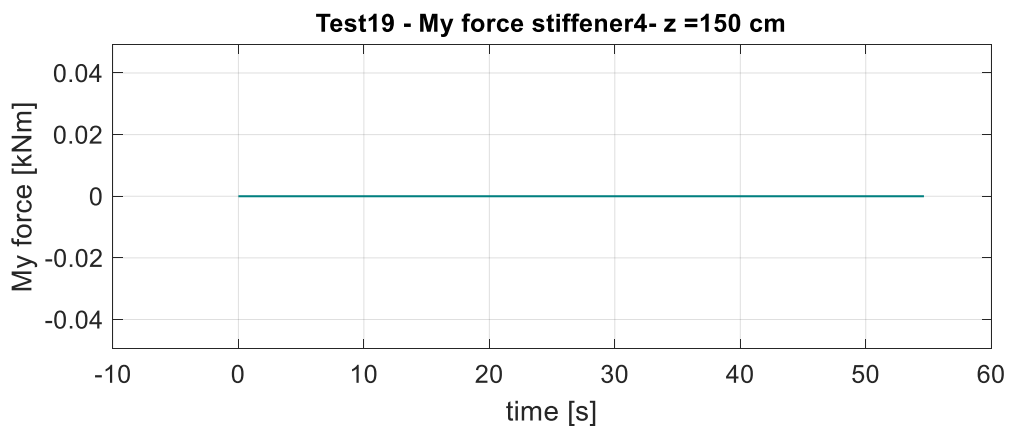
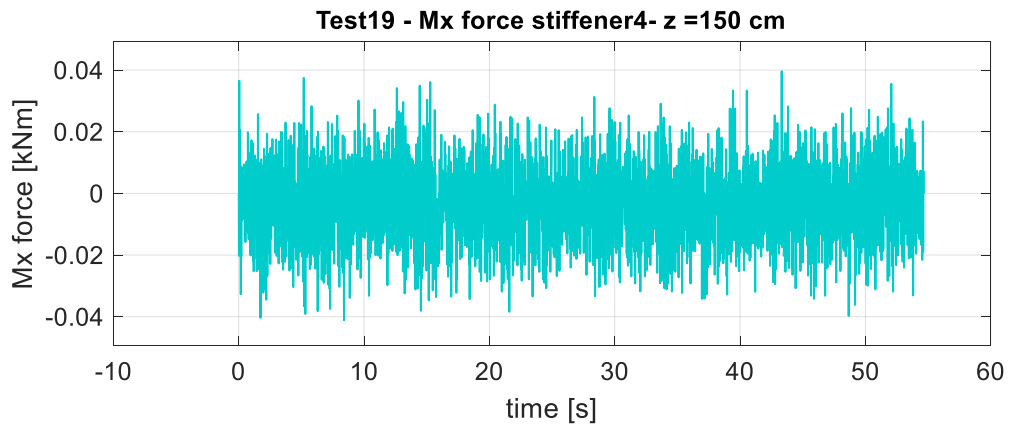
Quota Z = 49 cm: montante 7



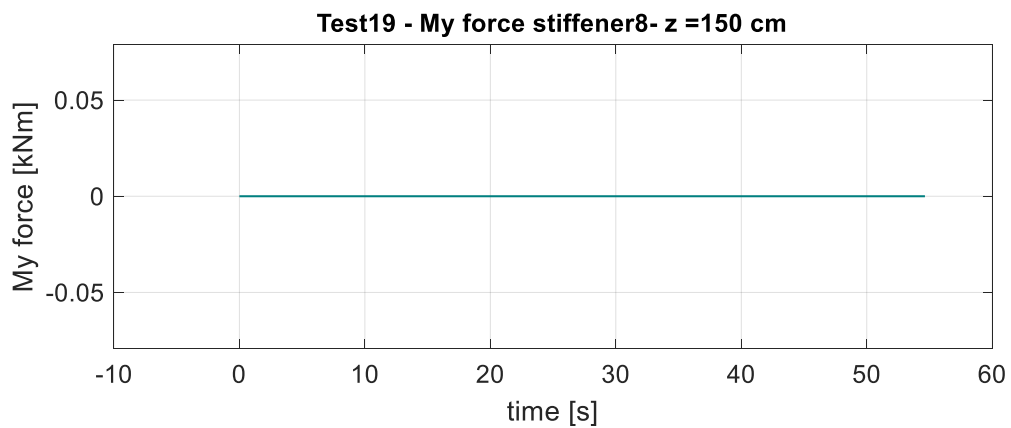
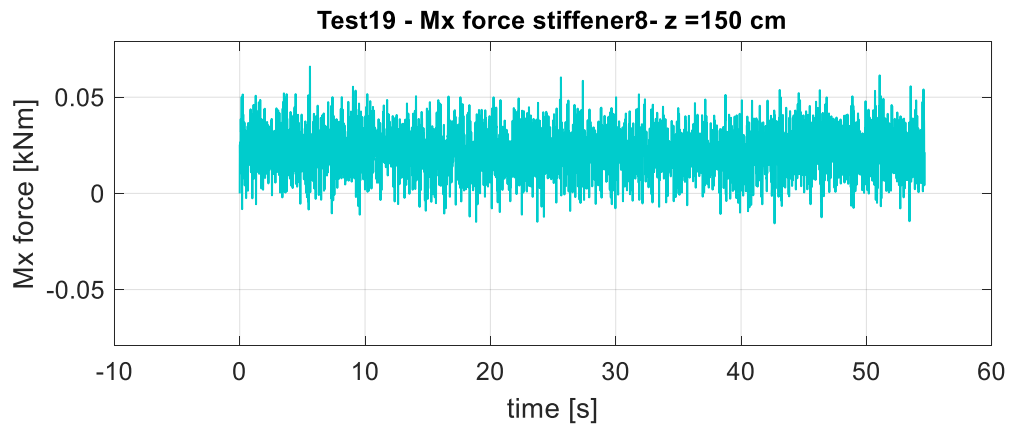
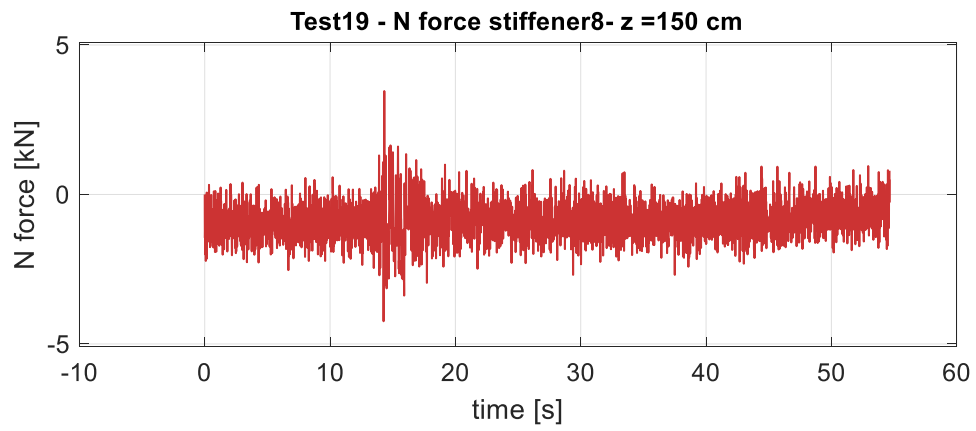
Quota Z = 49 cm: montante 8



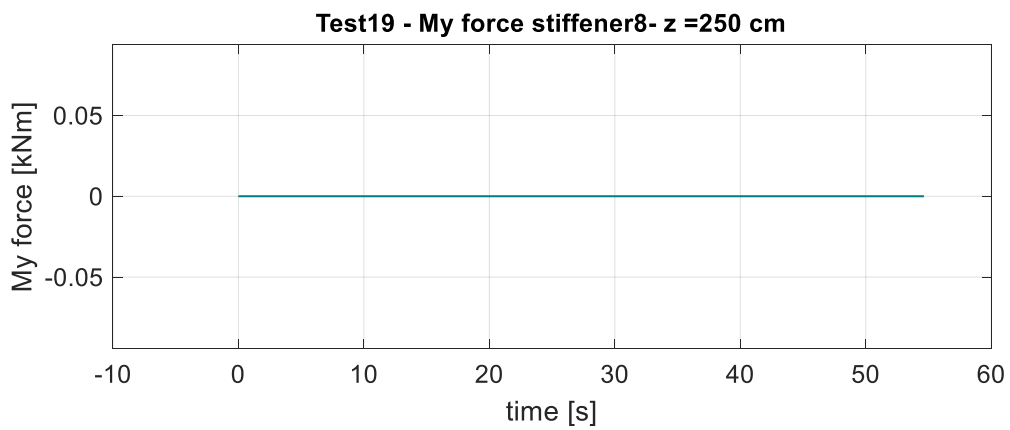
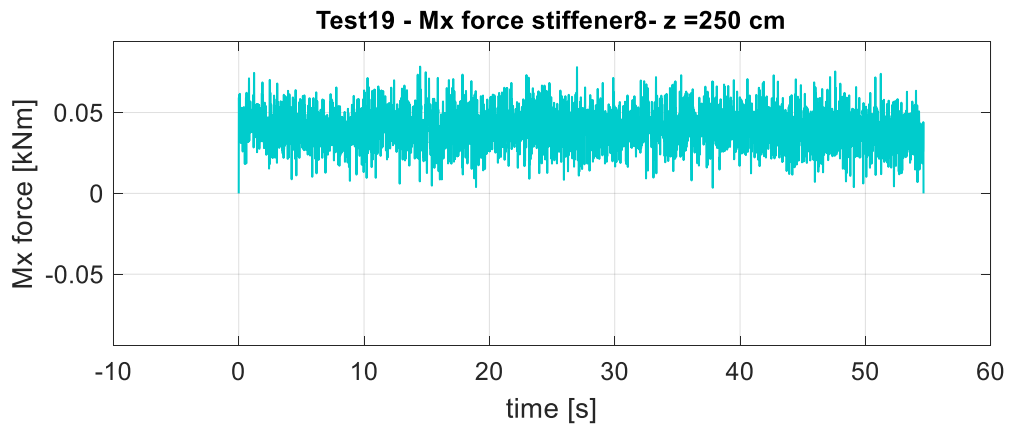
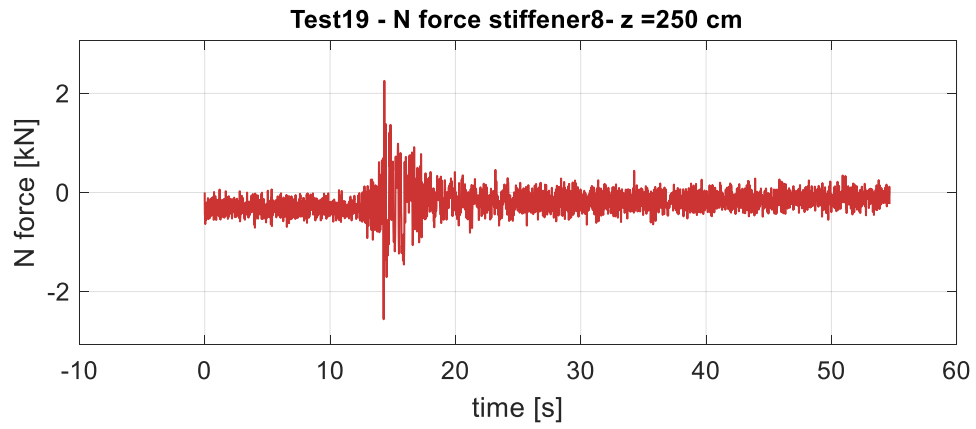
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

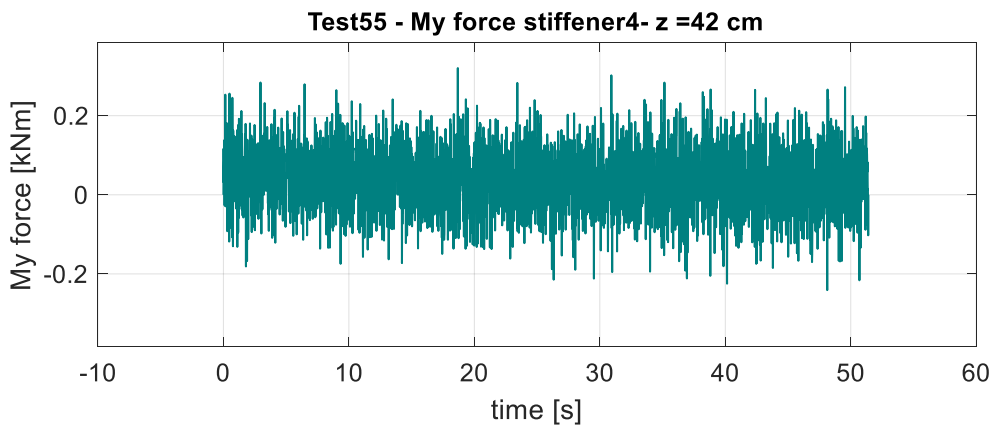
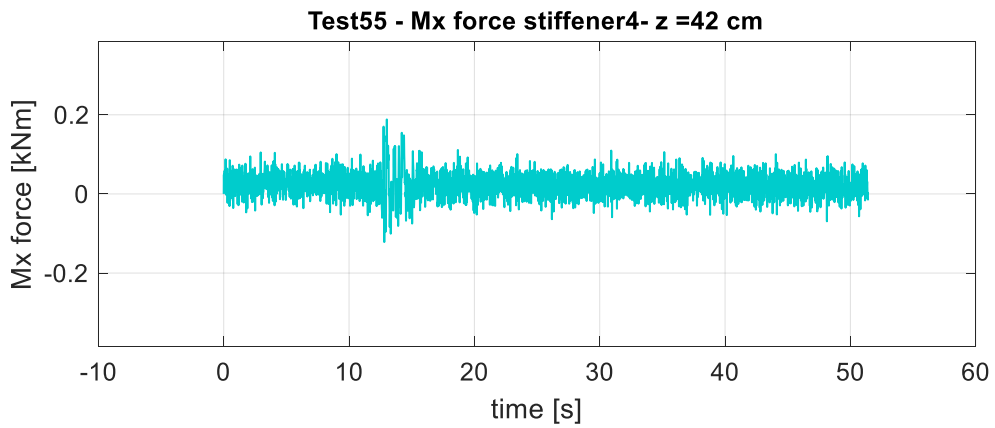
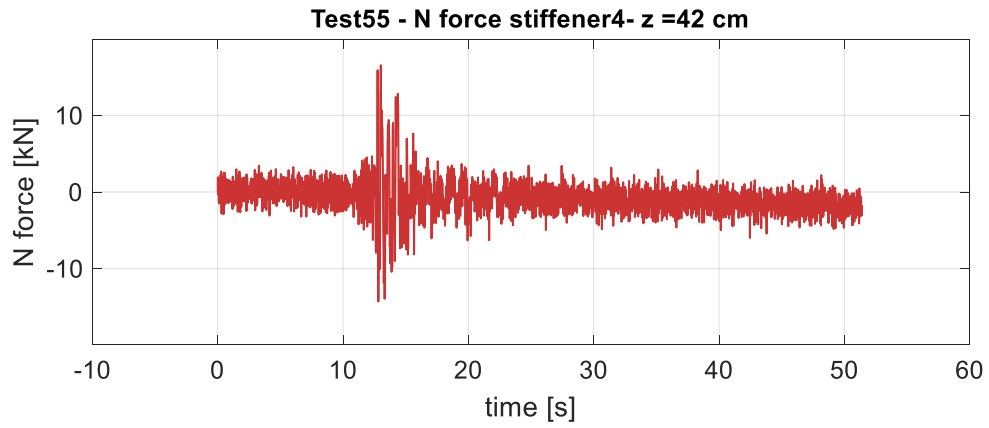


Quota Z = 250 cm: montante 8

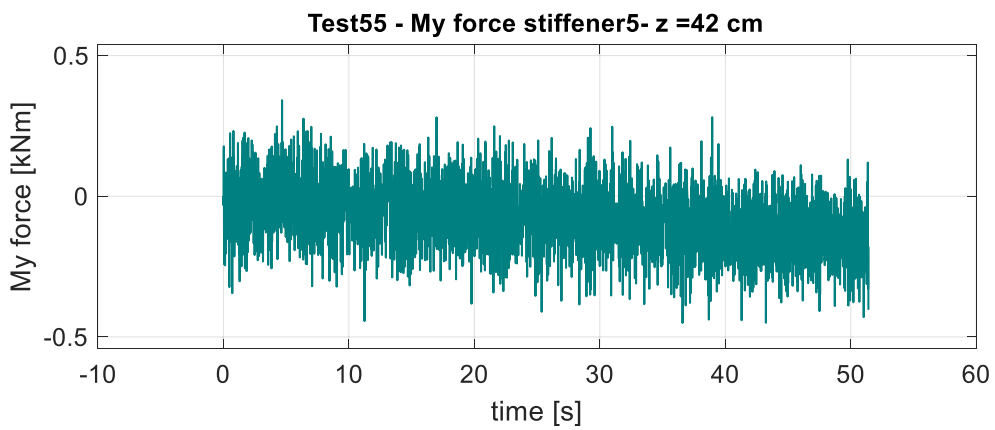
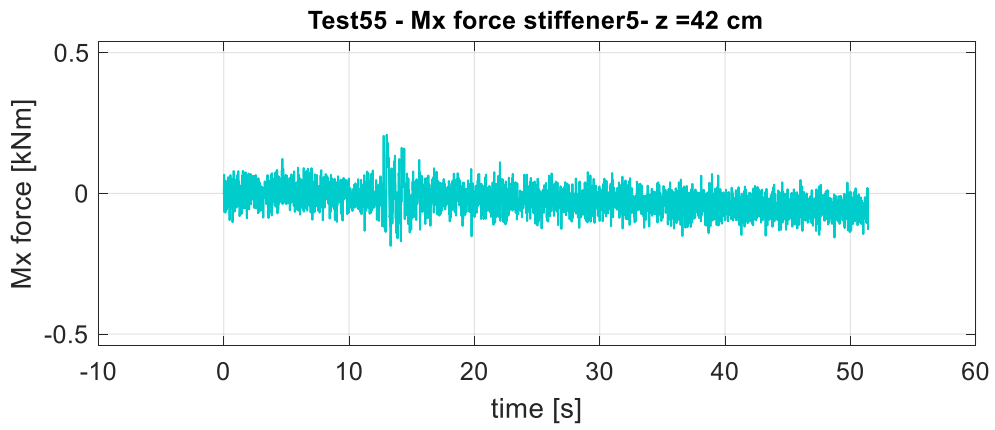
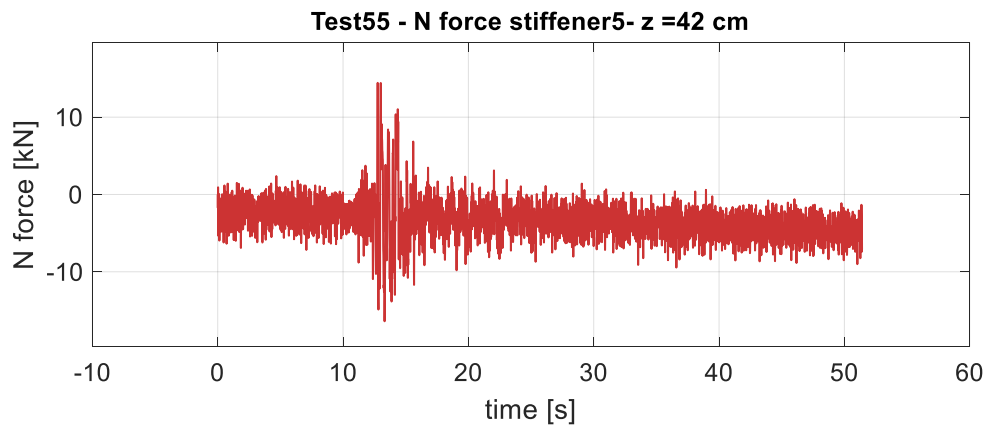


Earthquake input RS3 0.3 g: Test 55

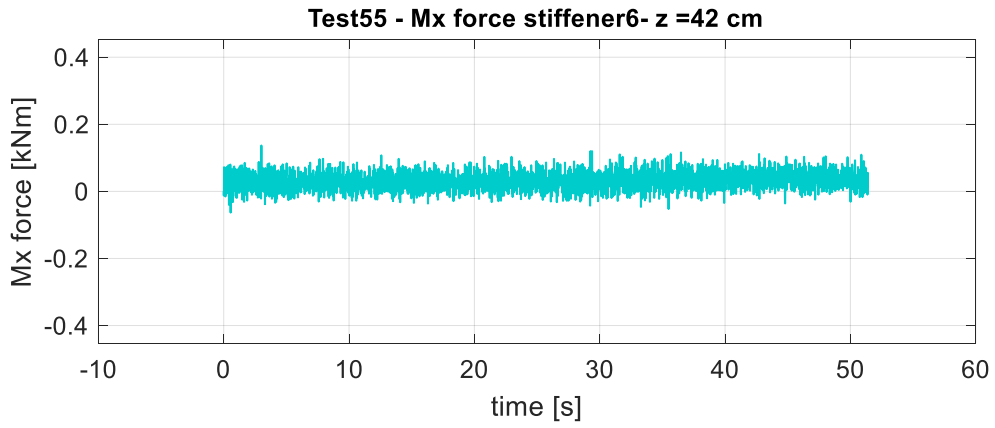
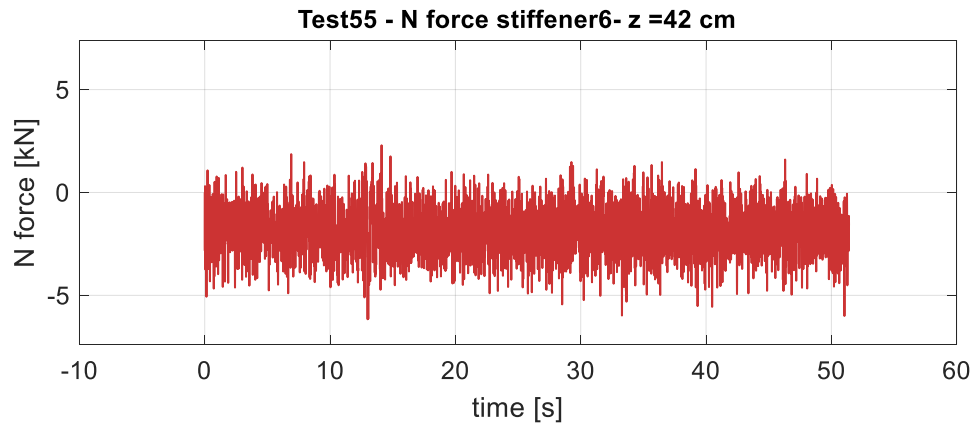
Quota Z = 42 cm: montante 4



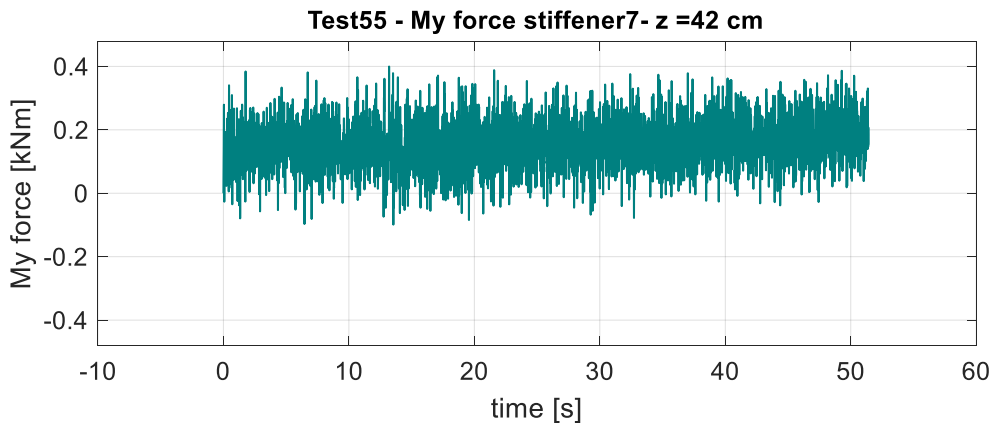
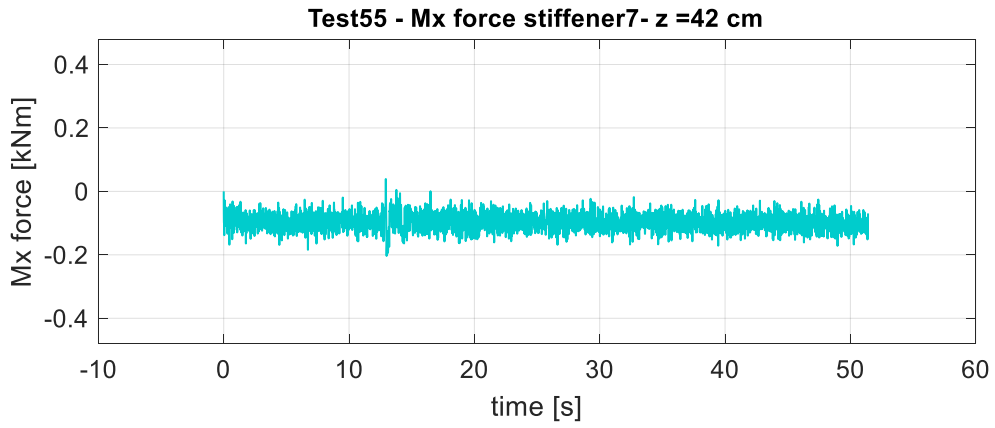
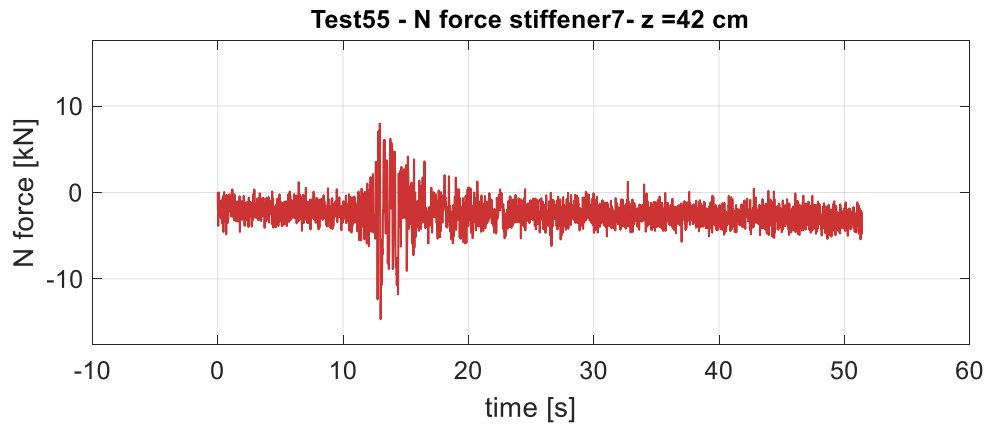
Quota Z = 42 cm: montante 5



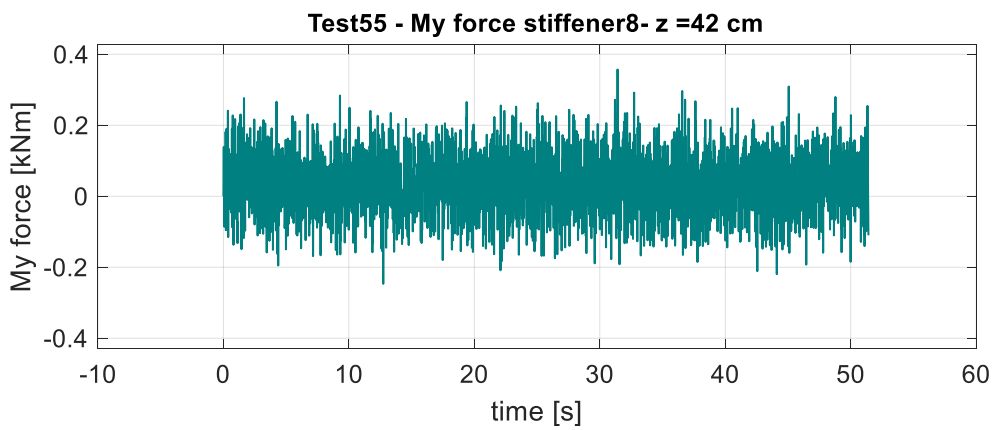
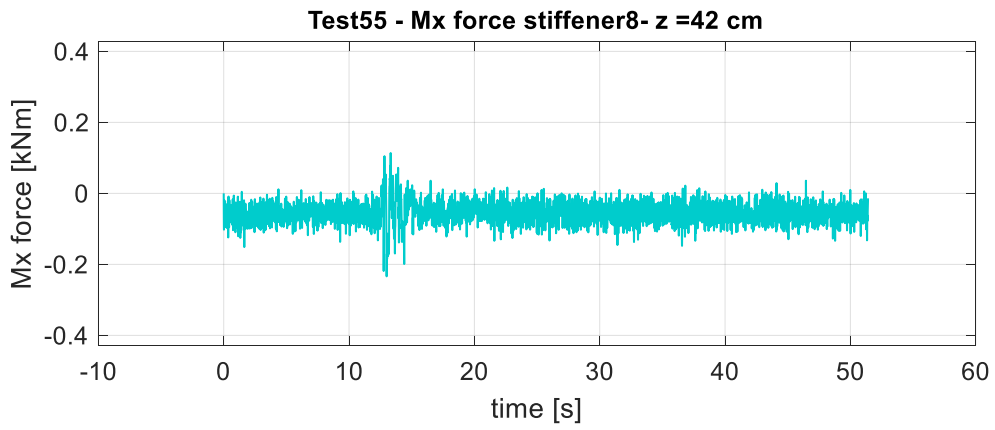
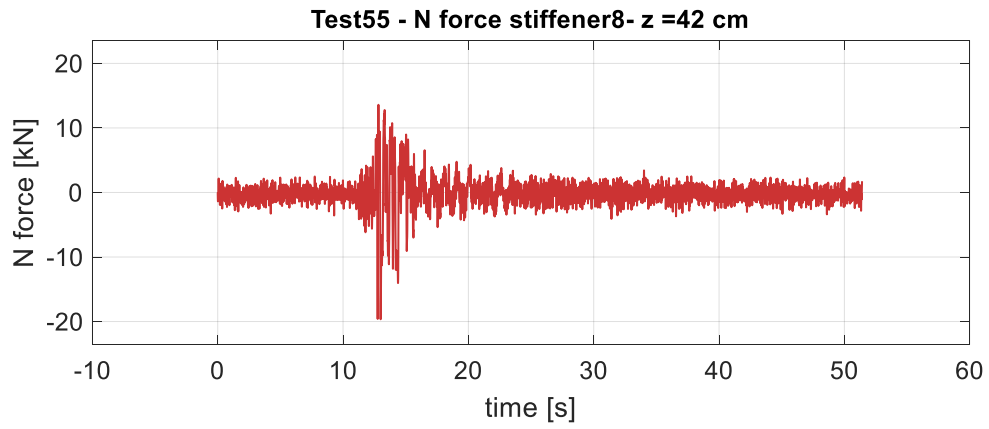
Quota Z = 42 cm: montante 6



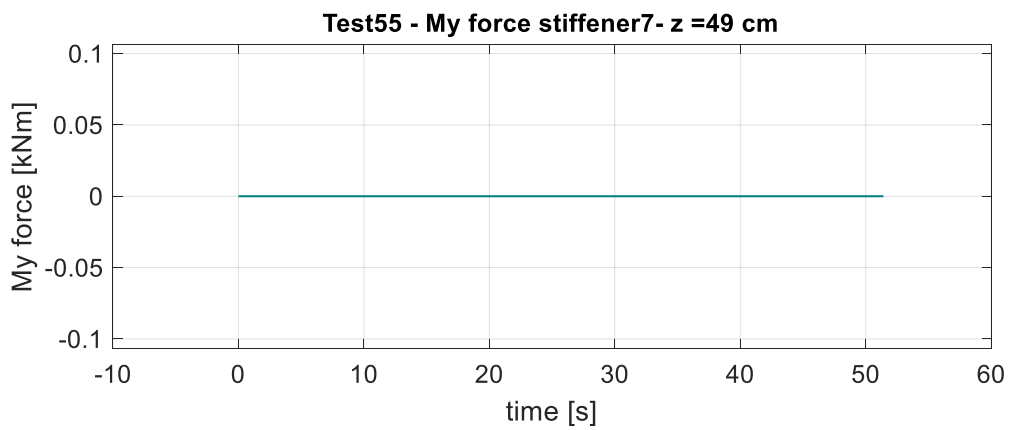
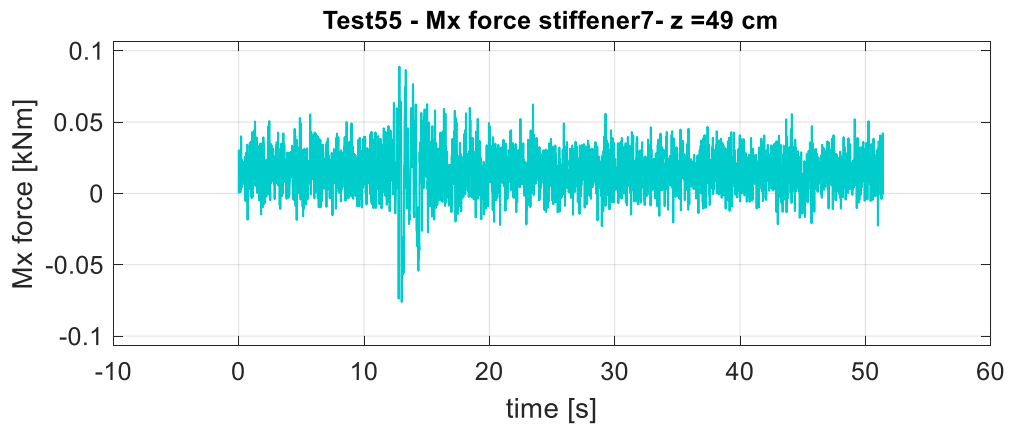
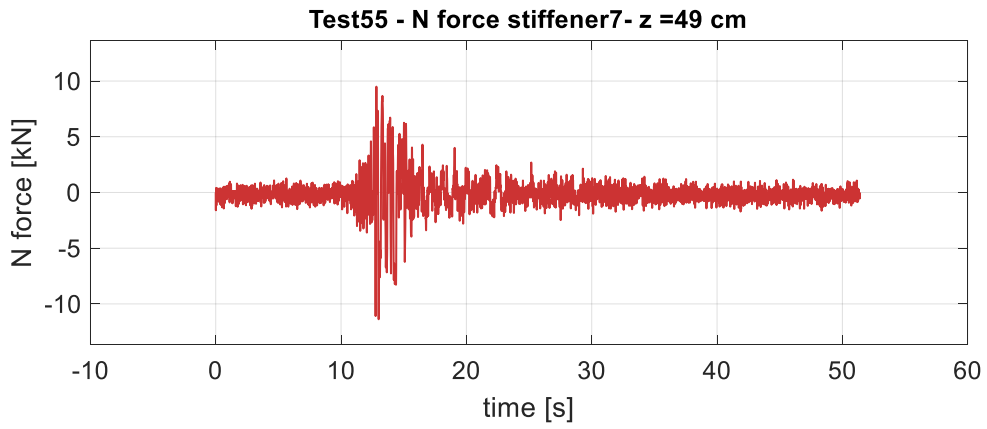
Quota Z = 42 cm: montante 7



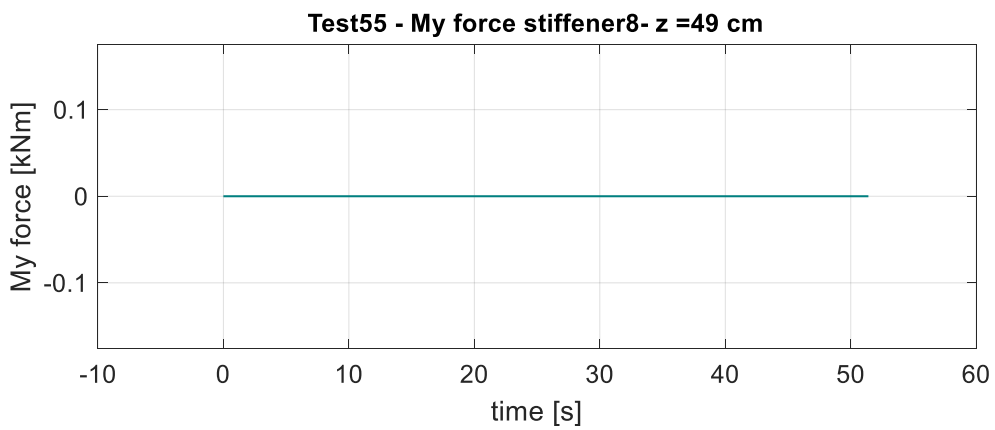
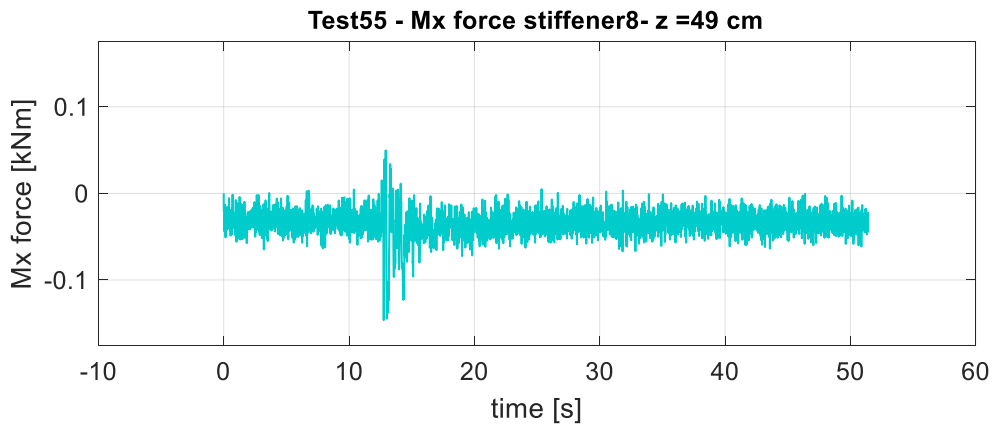
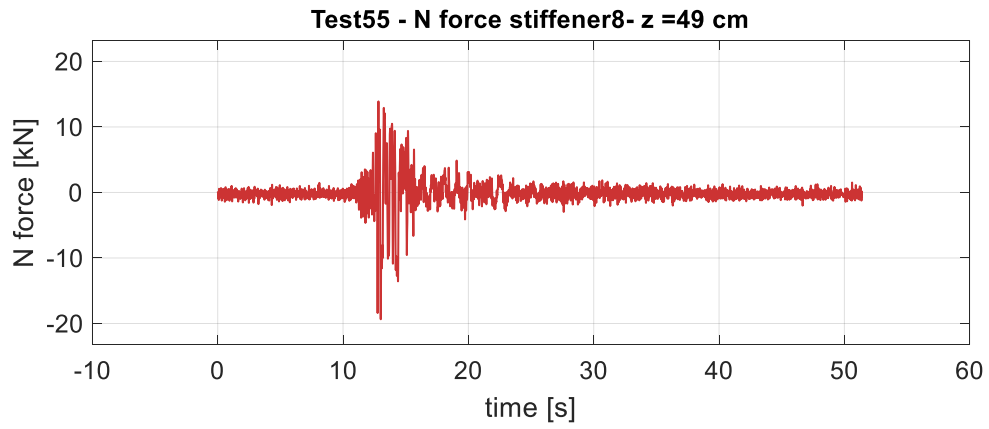
Quota Z = 42 cm: montante 8



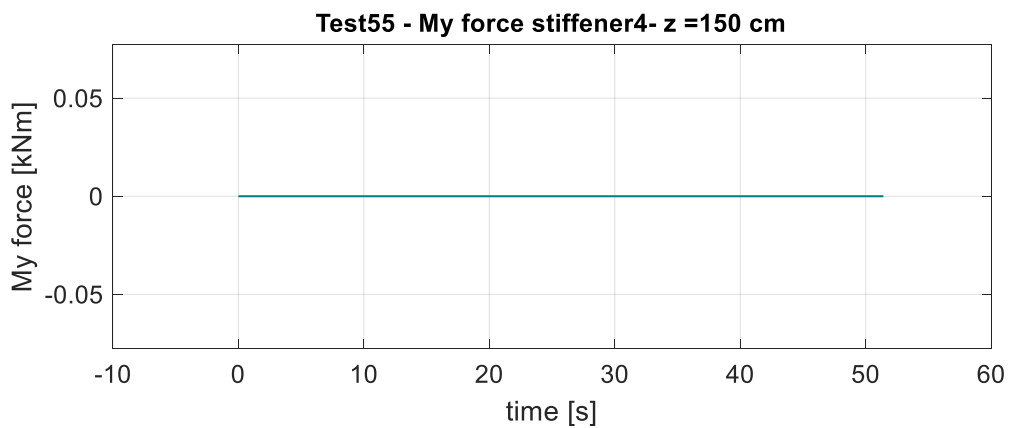
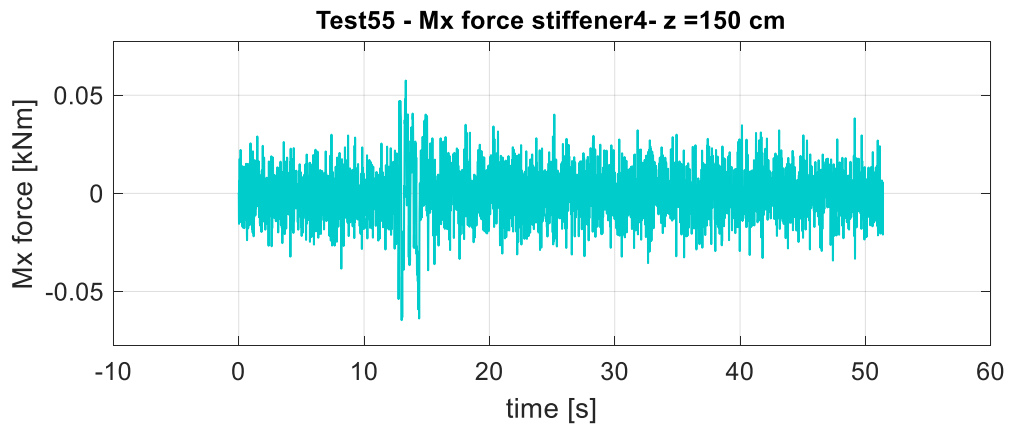
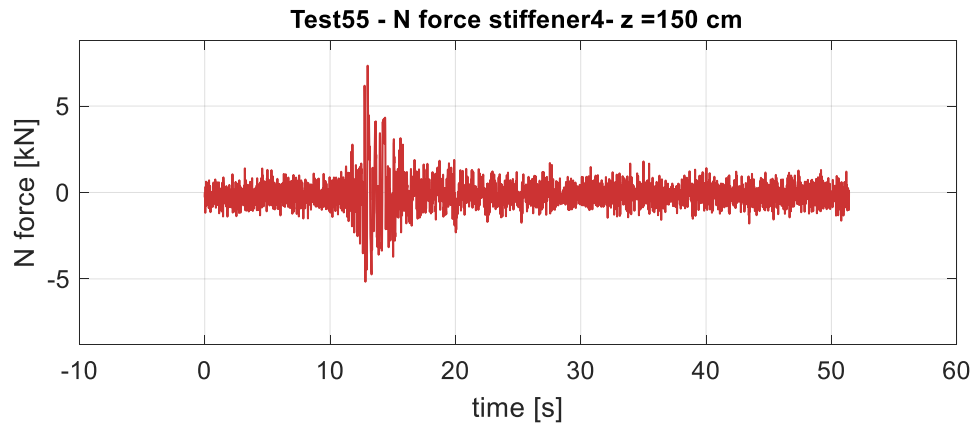
Quota Z = 49 cm: montante 7



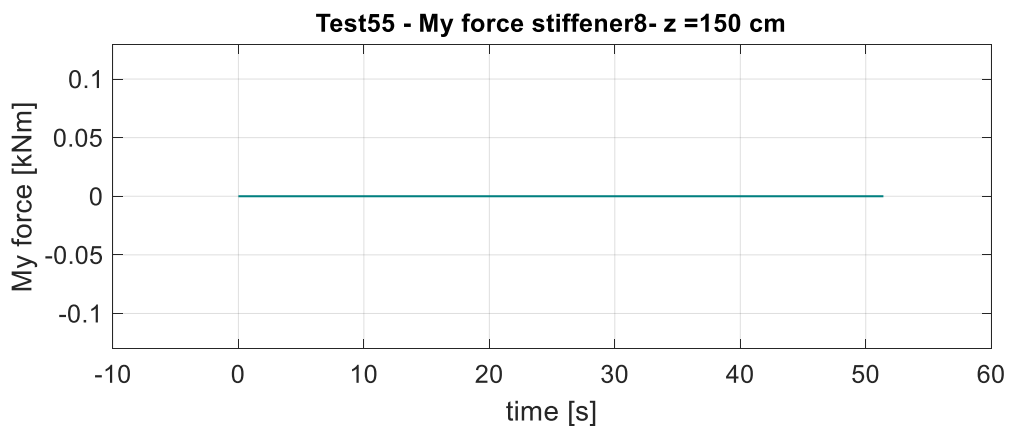
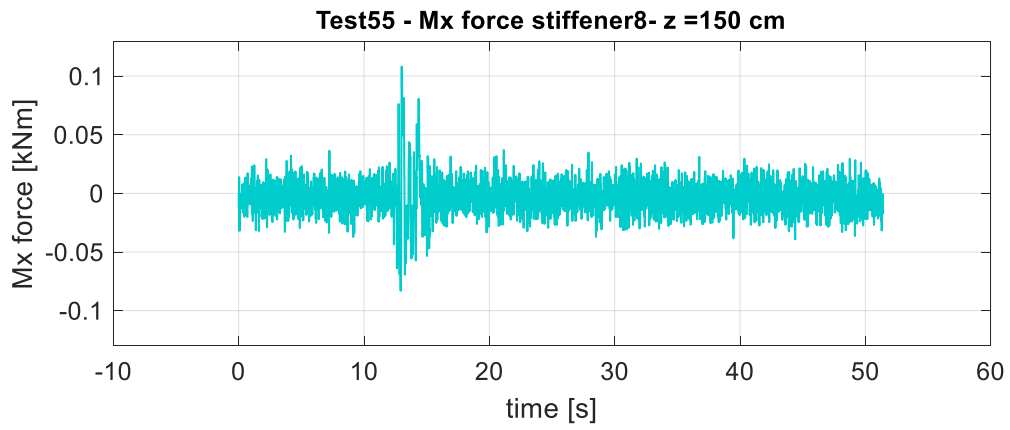
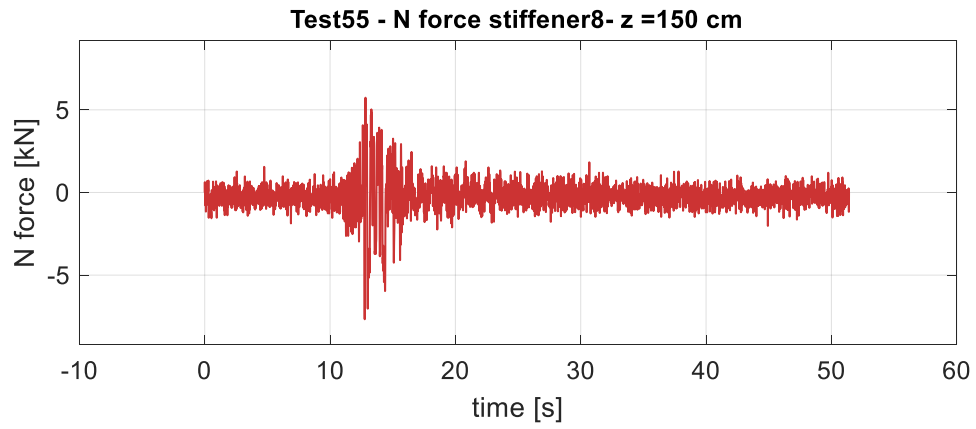
Quota Z = 49 cm: montante 8



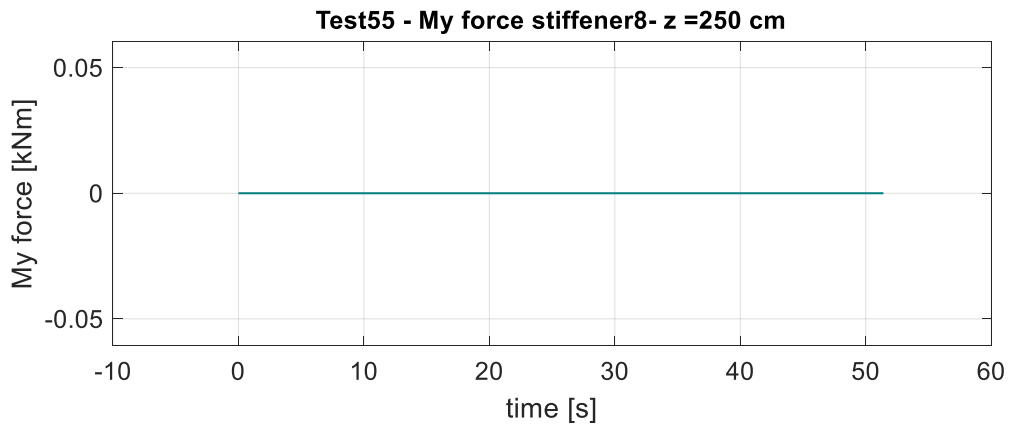
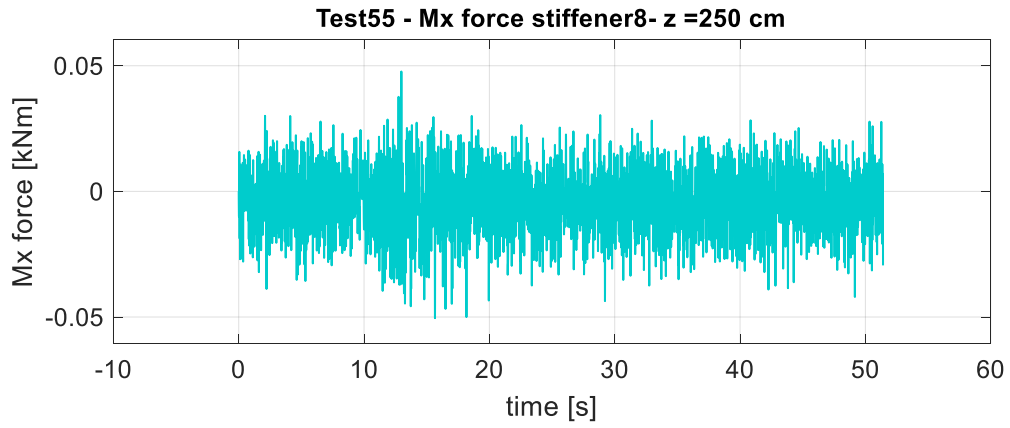
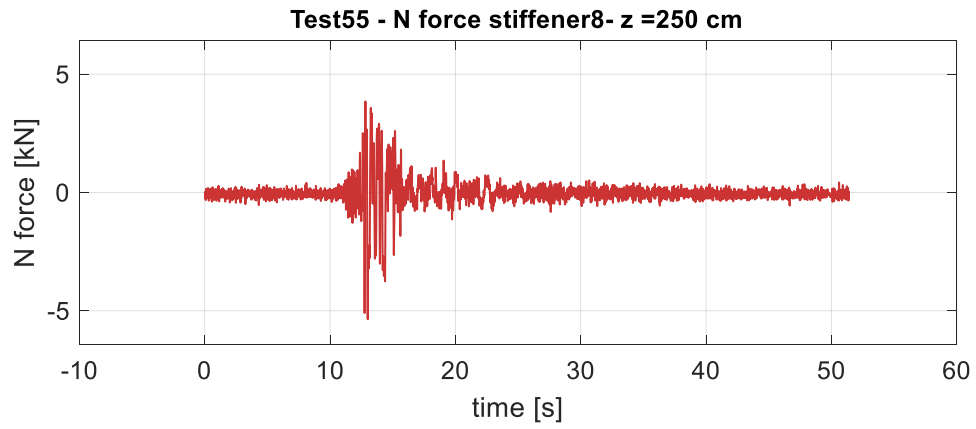
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

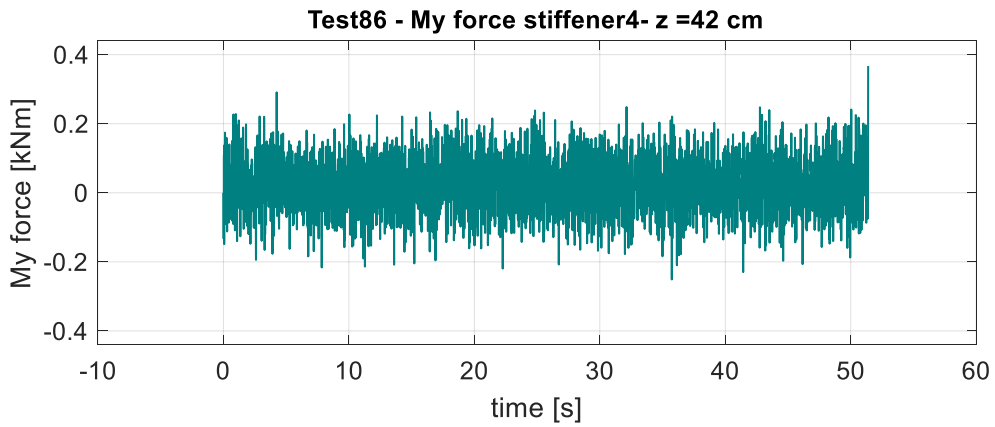
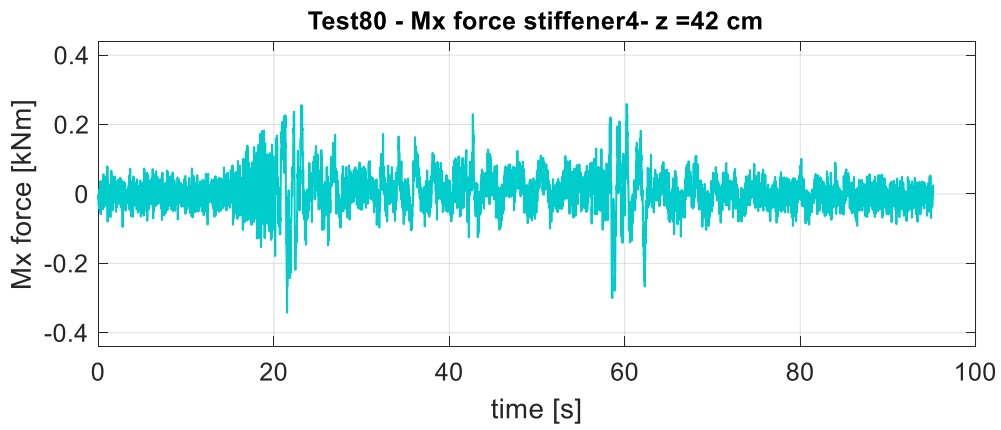
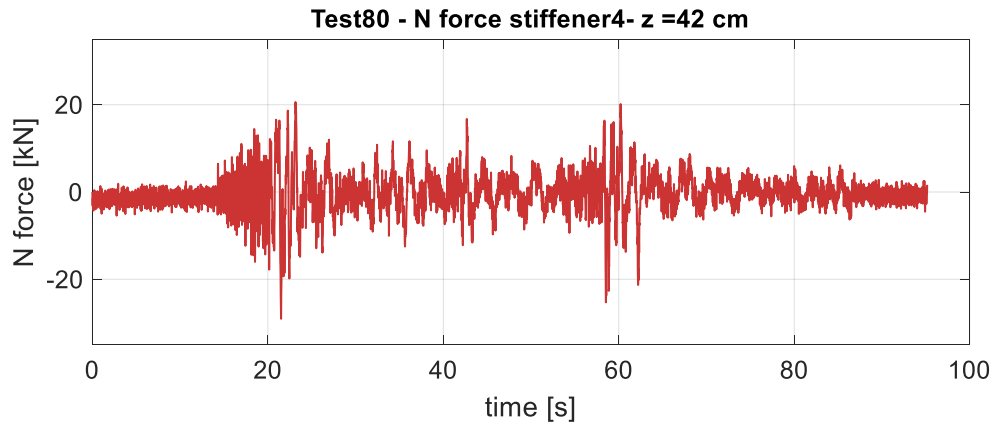


Quota Z = 250 cm: montante 8

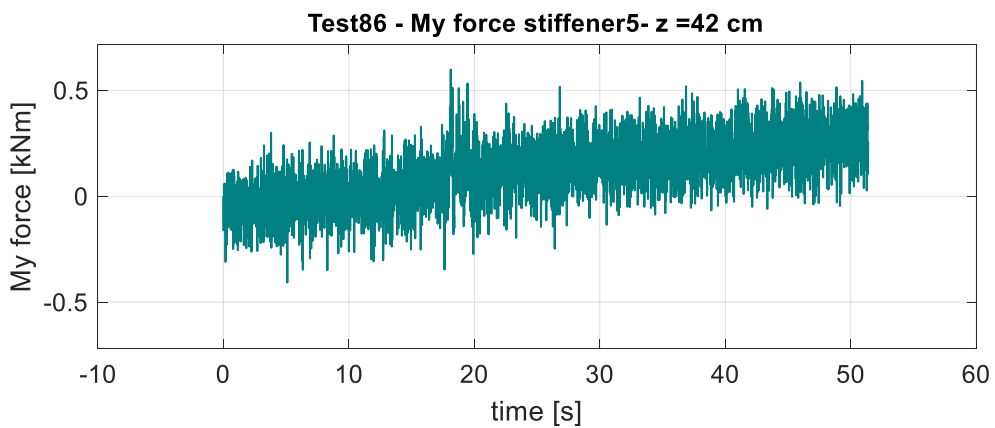
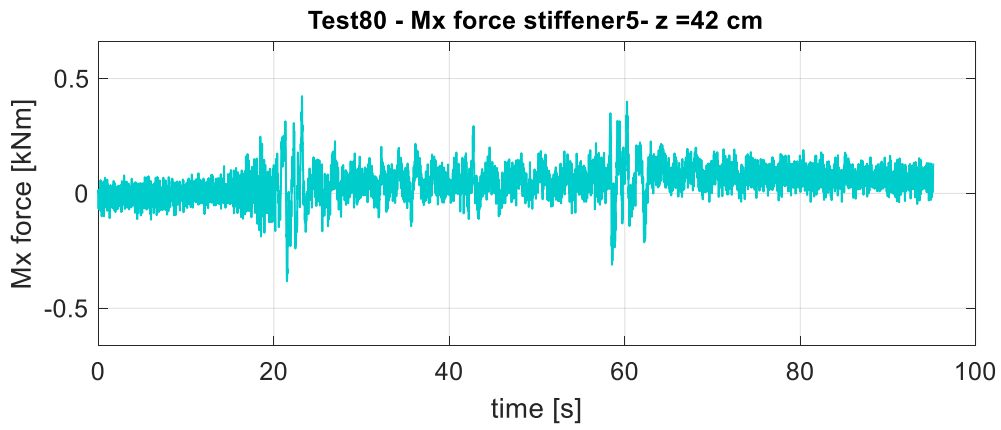
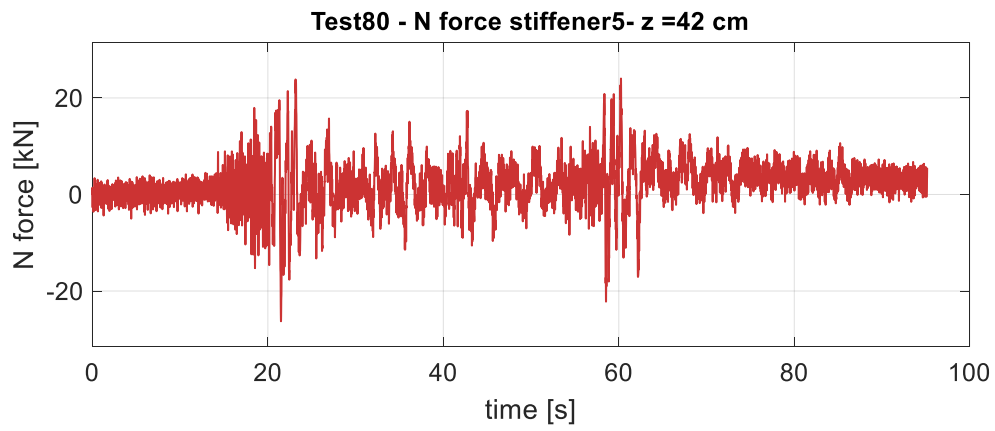


Earthquake input RS3 0.5 g: Test 86

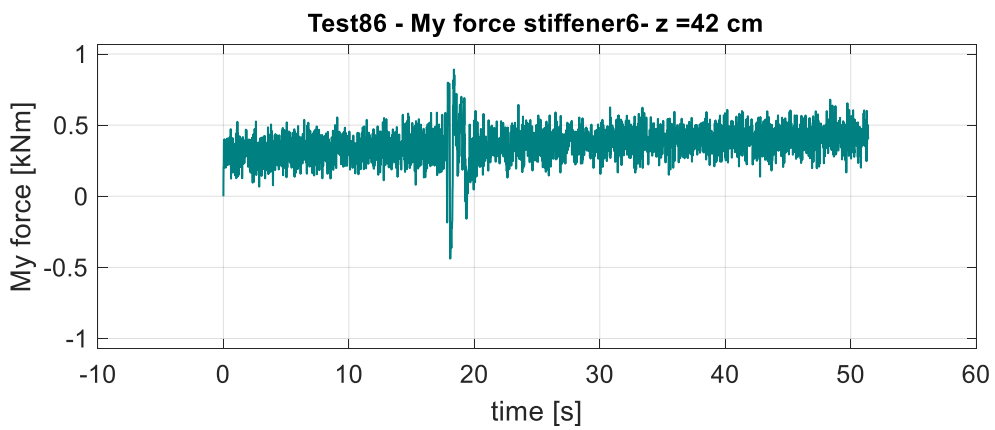
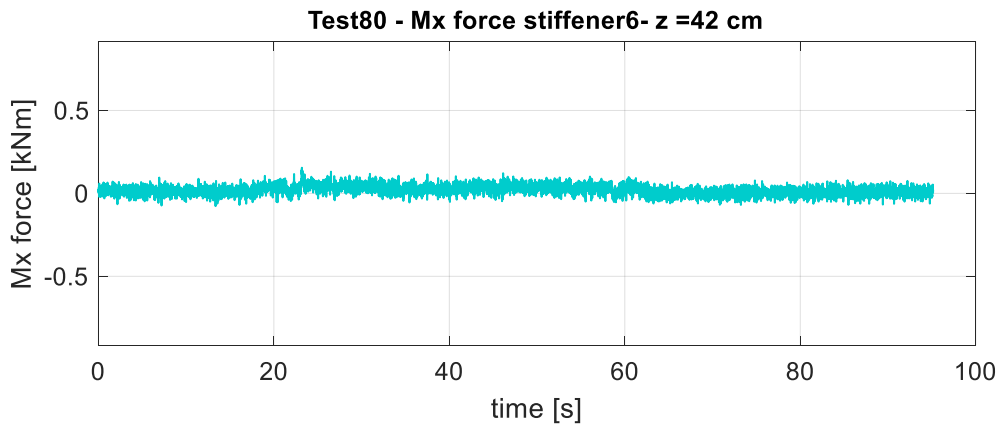
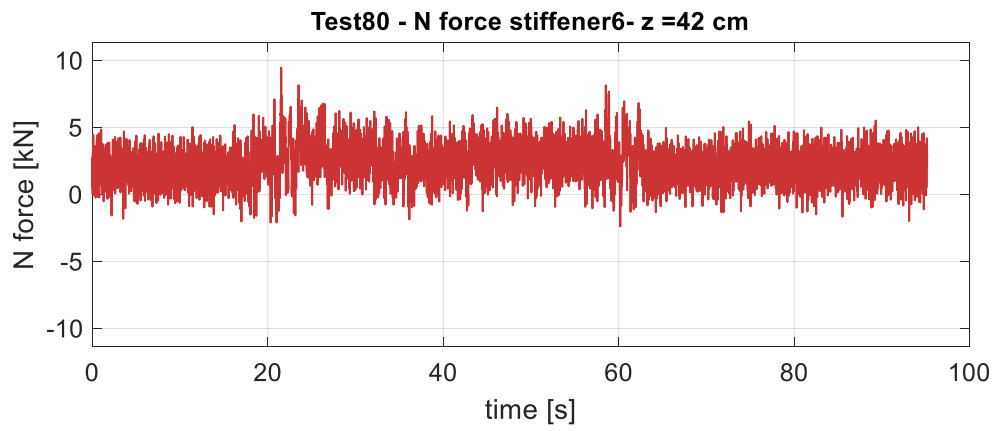
Quota Z = 42 cm: montante 4



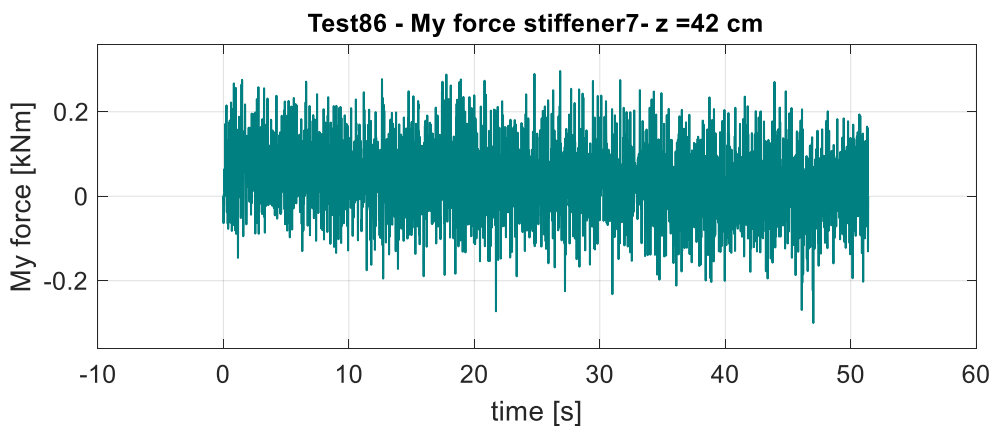
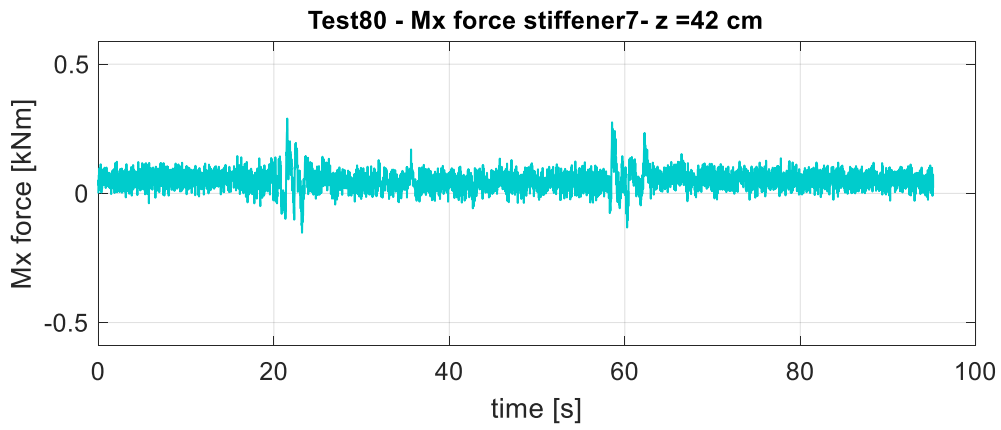
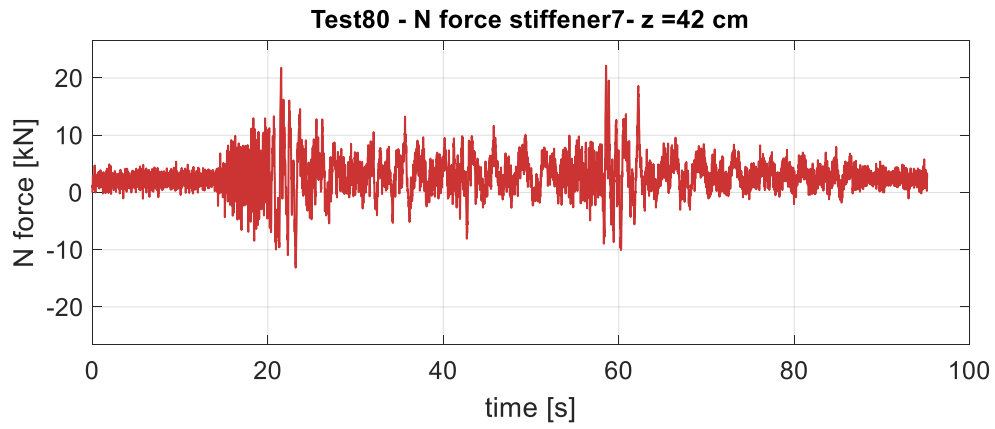
Quota Z = 42 cm: montante 5



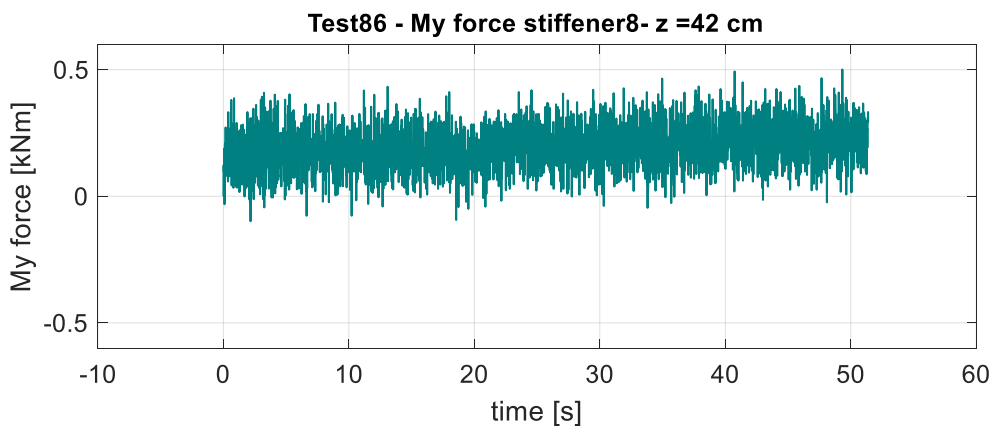
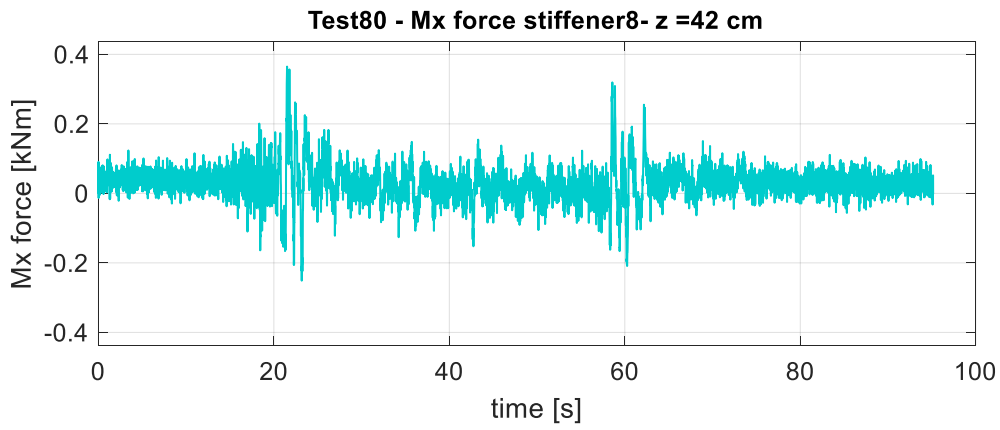
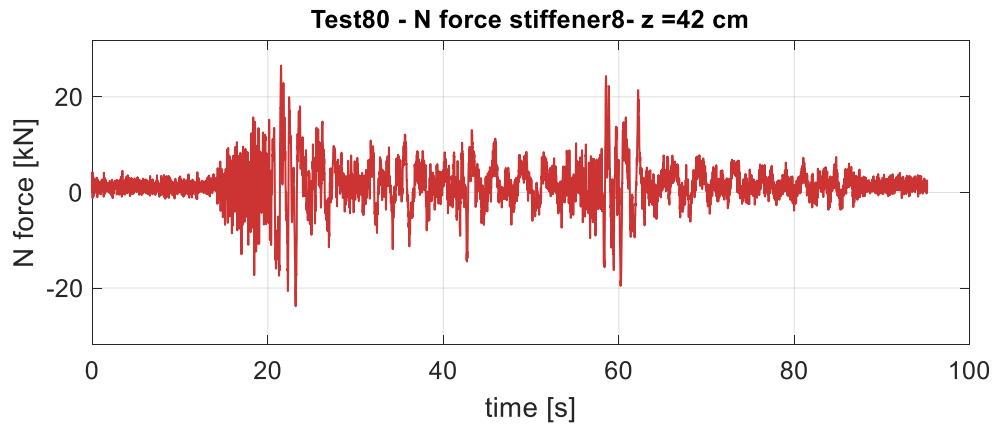
Quota Z = 42 cm: montante 6



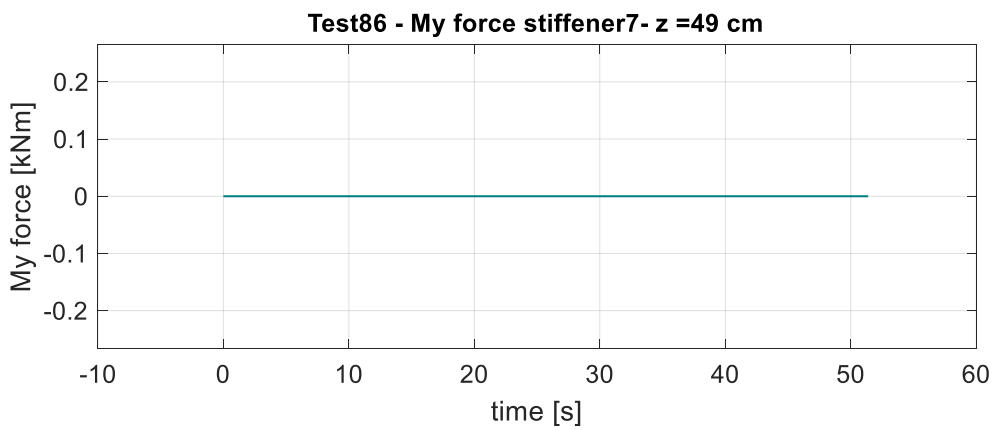
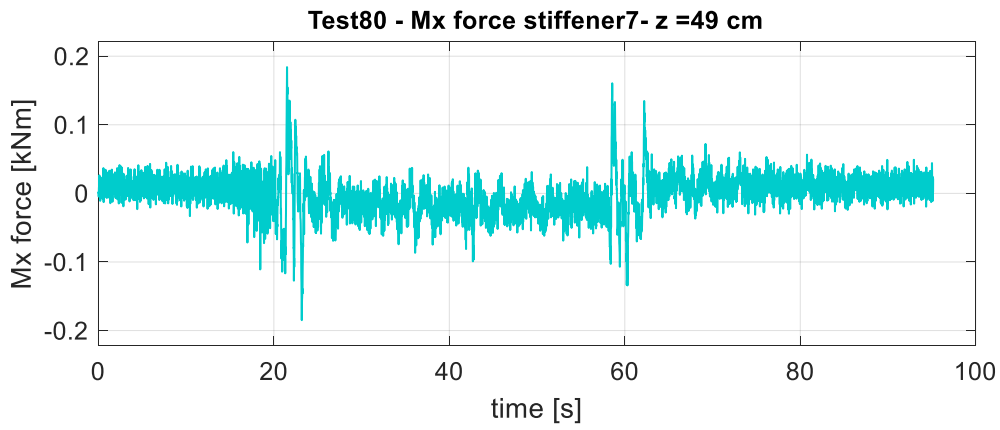
Quota Z = 42 cm: montante 7



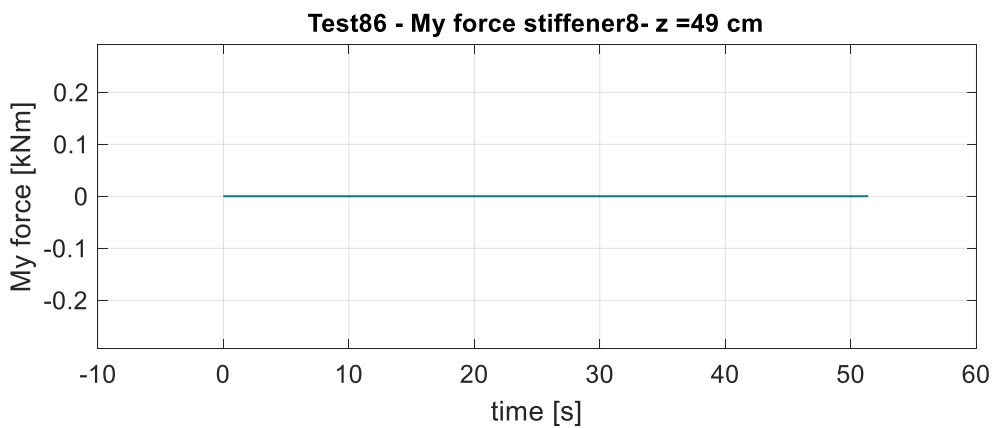
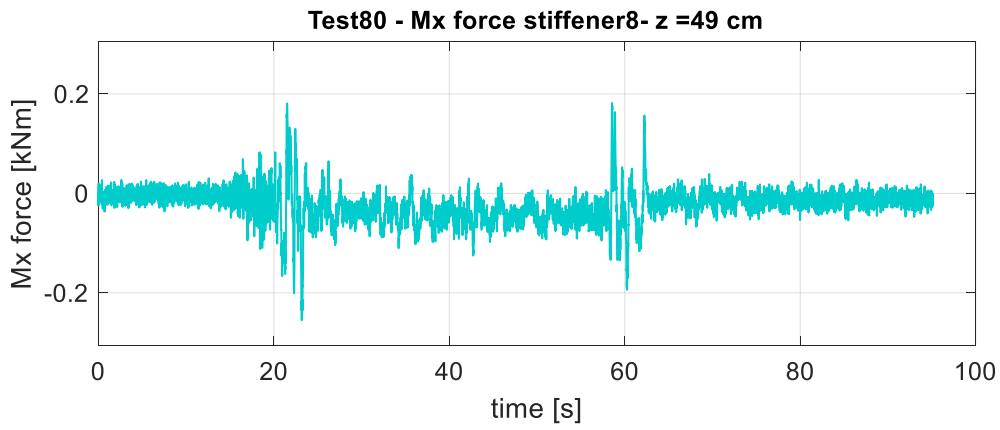
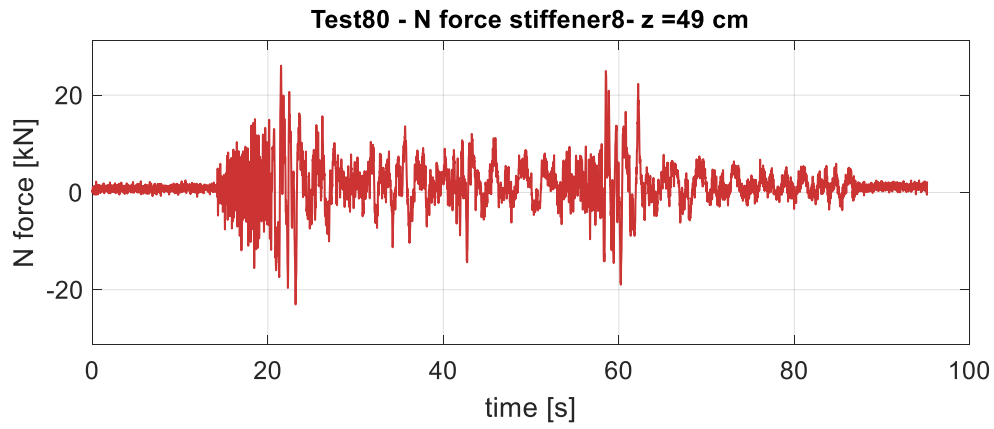
Quota Z = 42 cm: montante 8



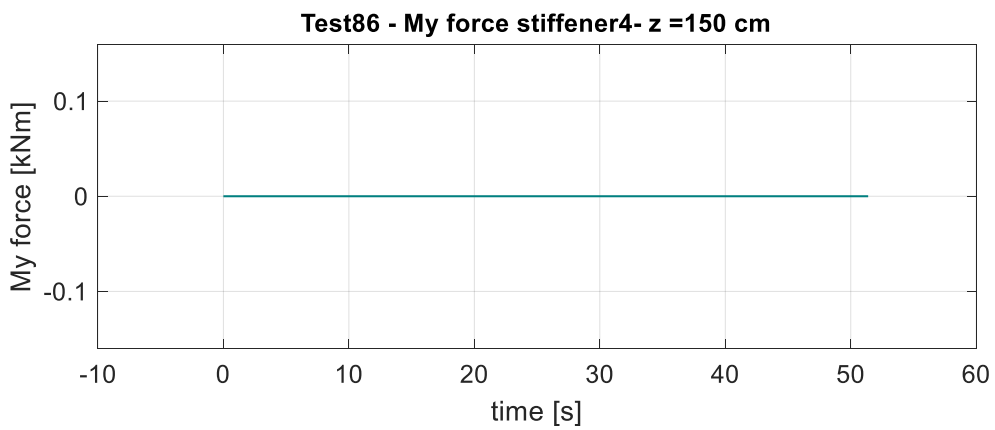
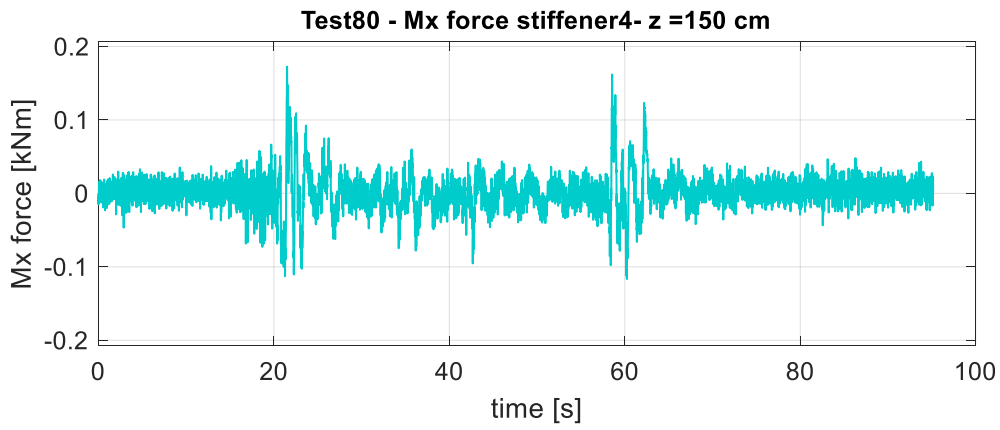
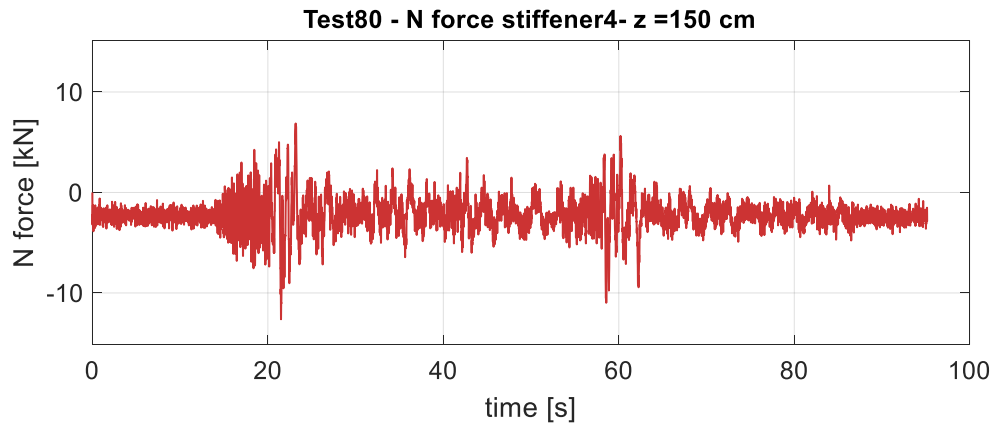
Quota Z = 49 cm: montante 7



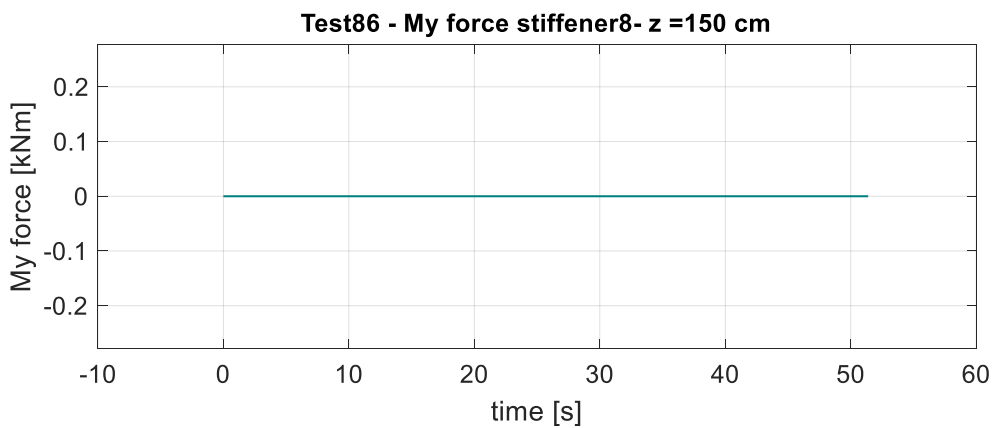
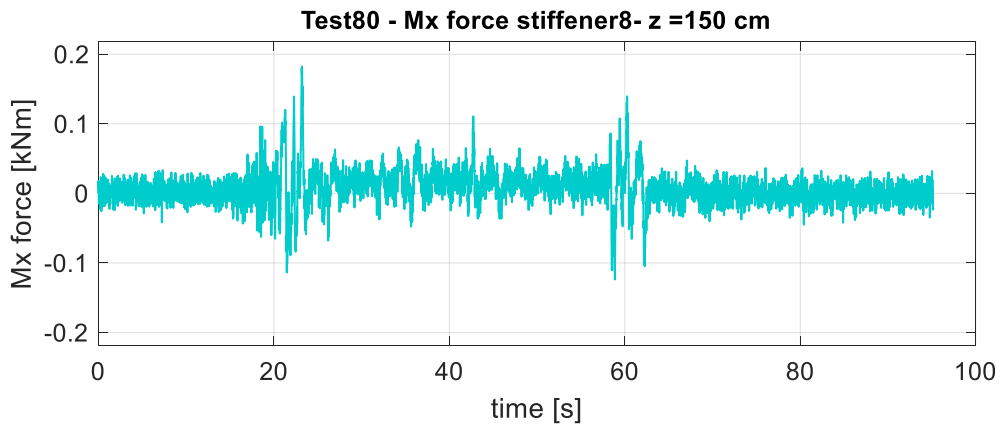
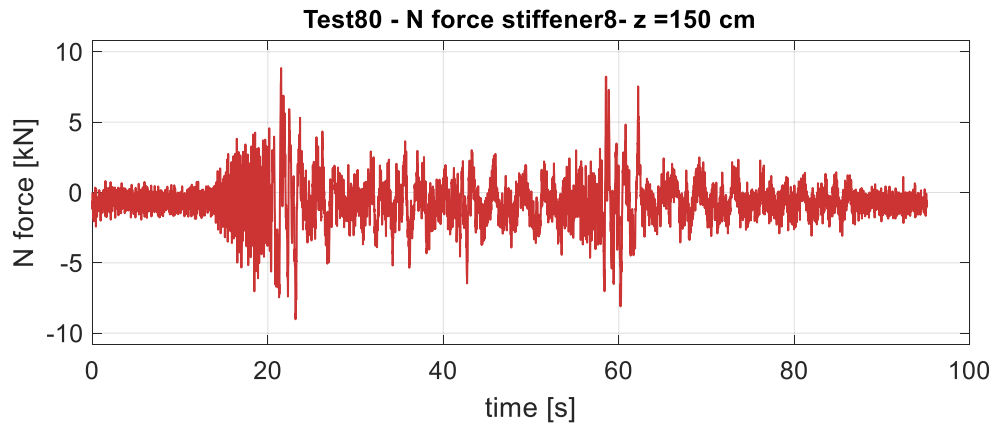
Quota Z = 49 cm: montante 8



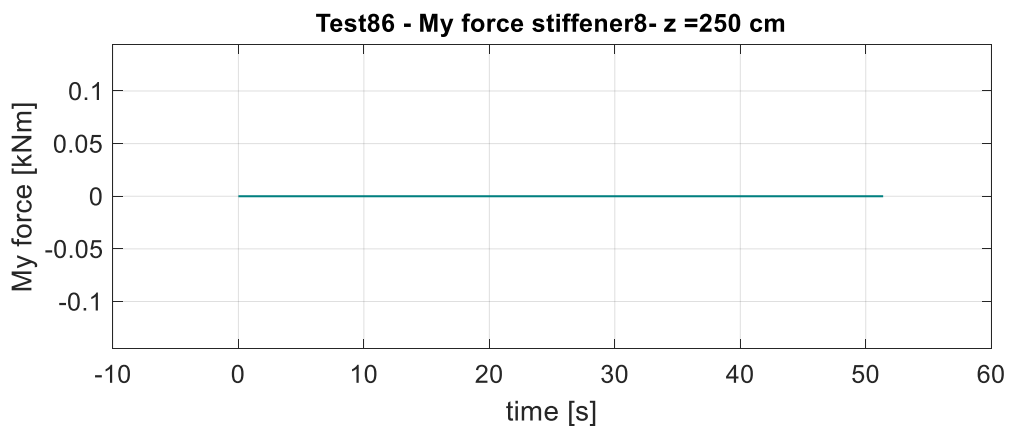
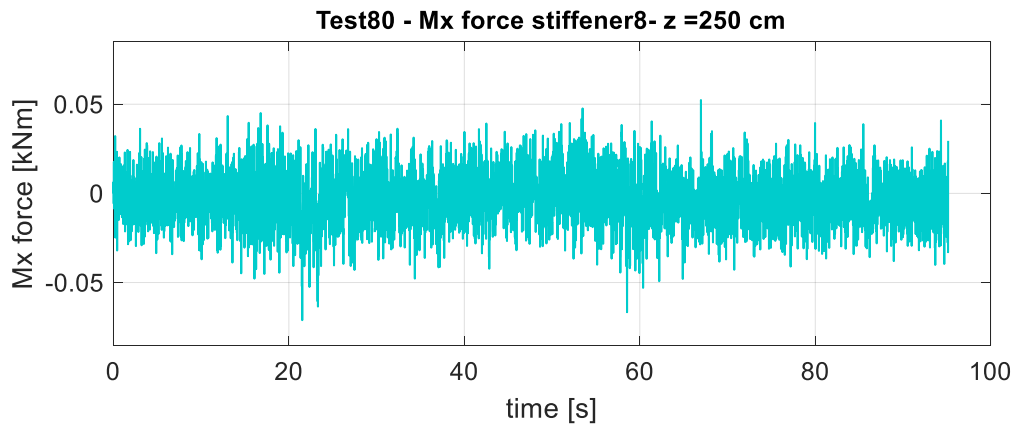
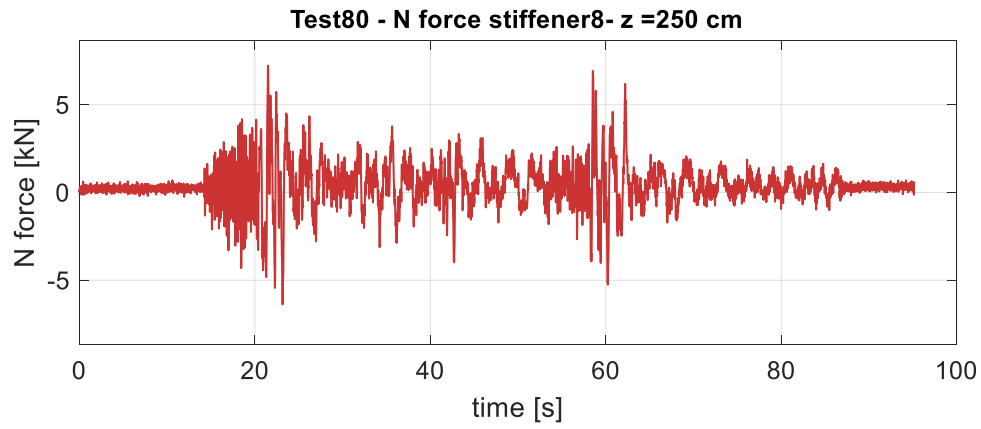
Quota Z = 150 cm: montante 4



Quota Z = 150 cm: montante 8

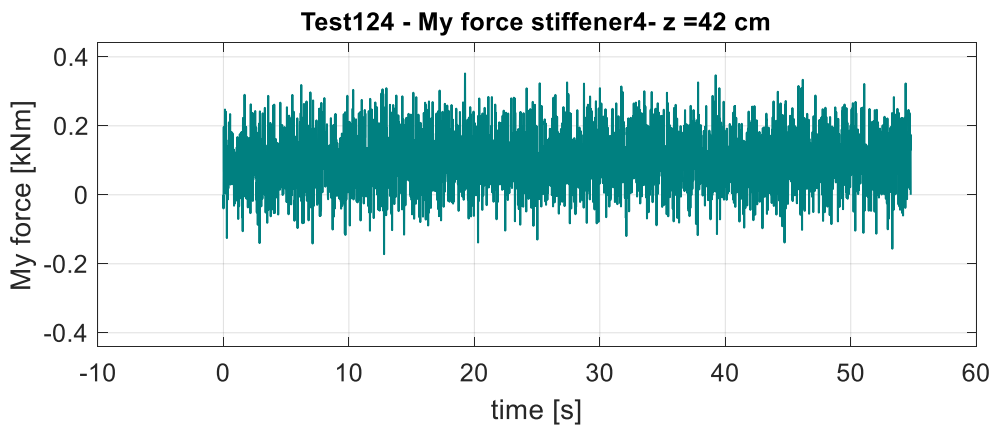
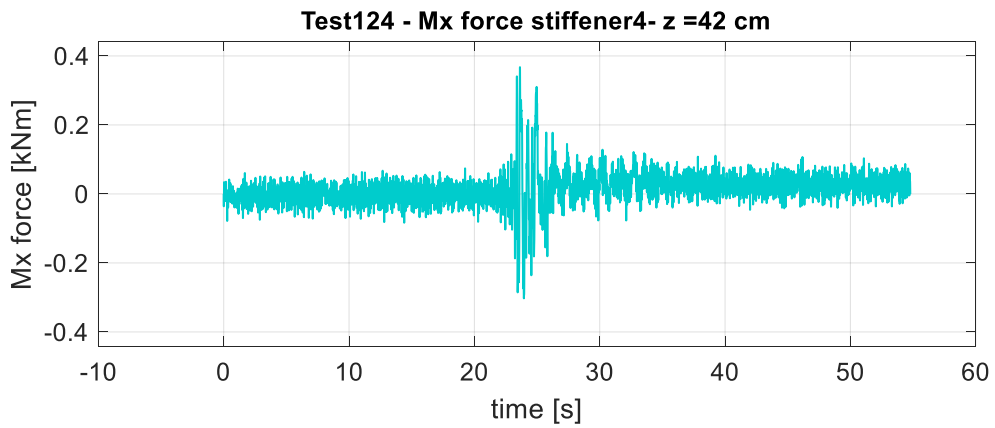
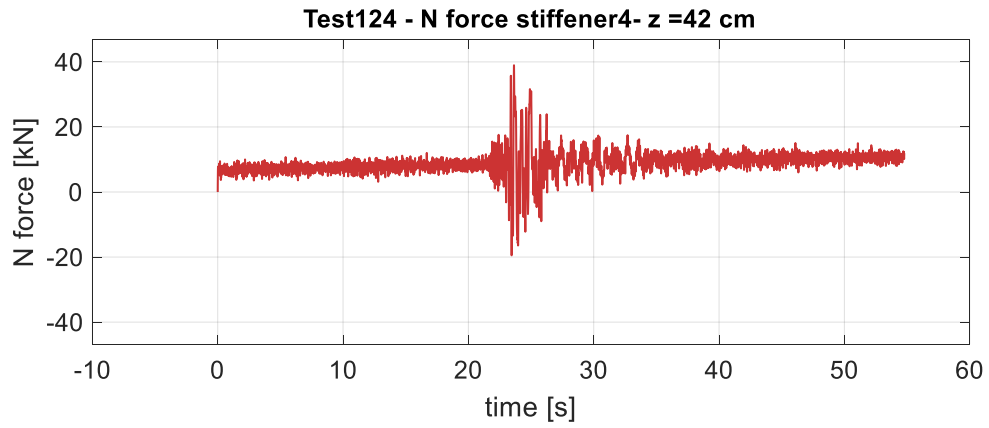


Quota Z = 250 cm: montante 8

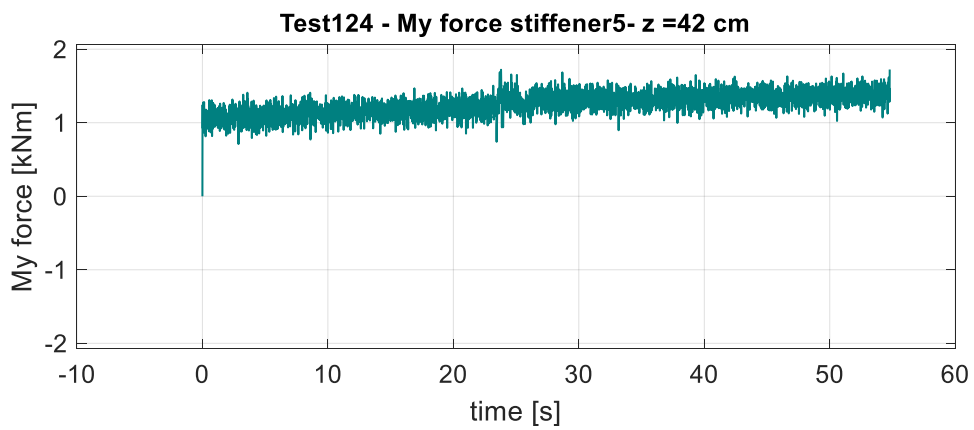
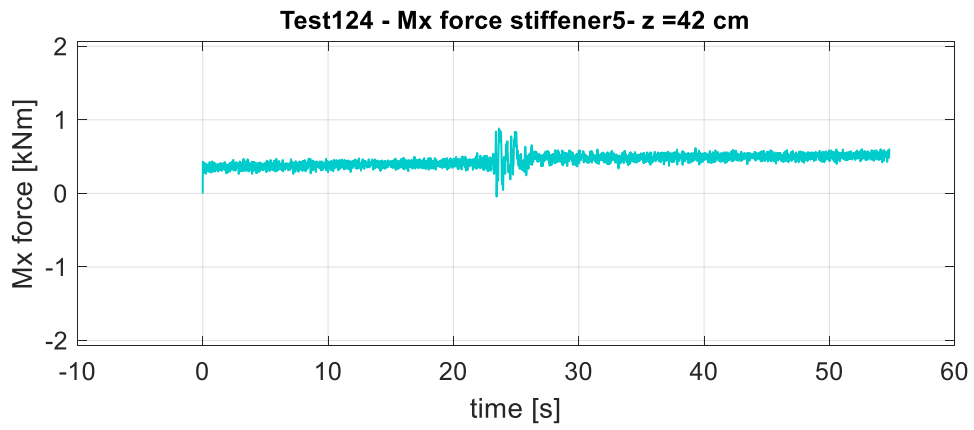
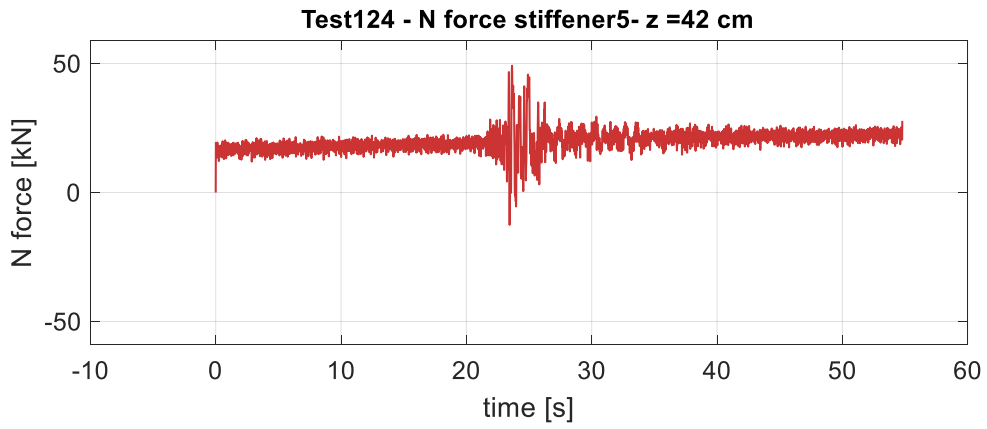


Earthquake input RS3 0.6 g: Test 124

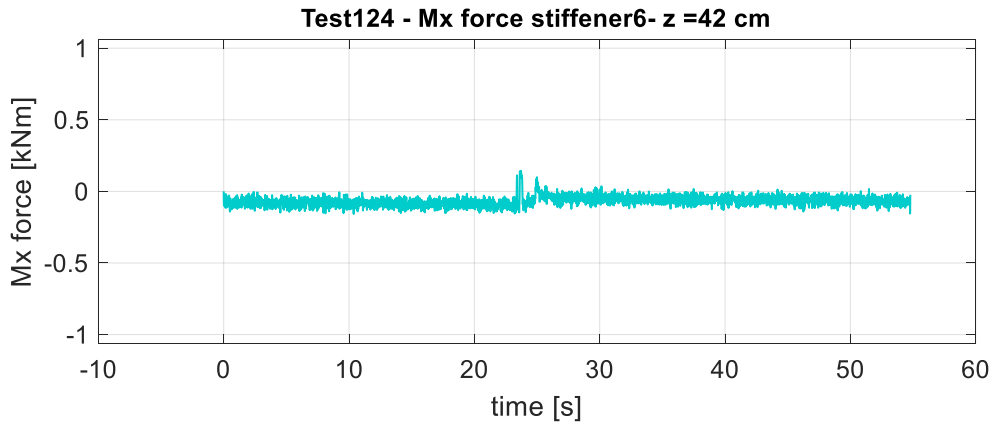
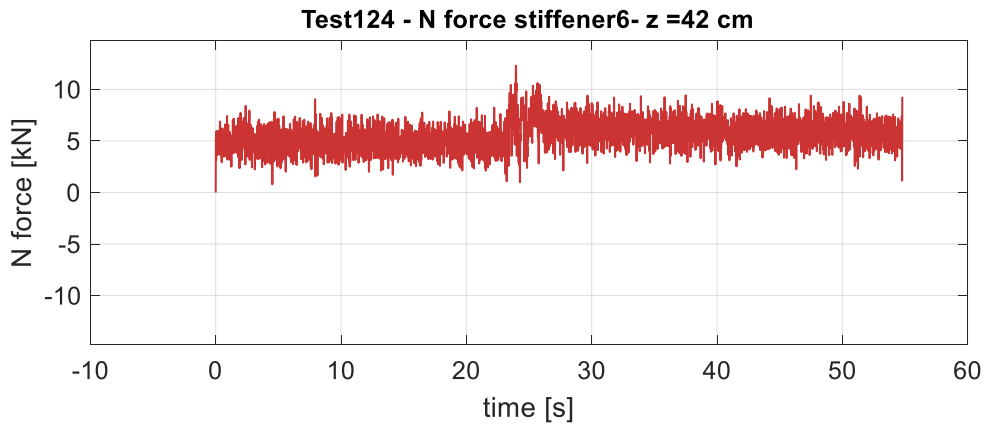
Quota Z = 42 cm: montante 4



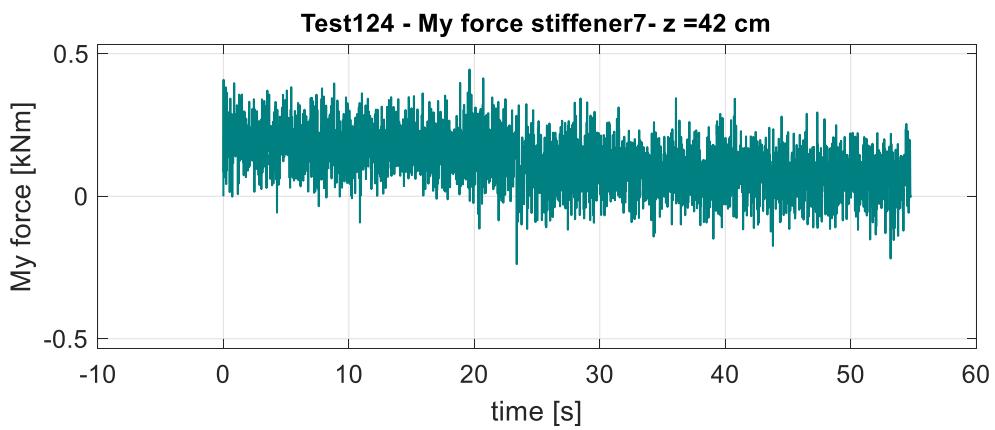
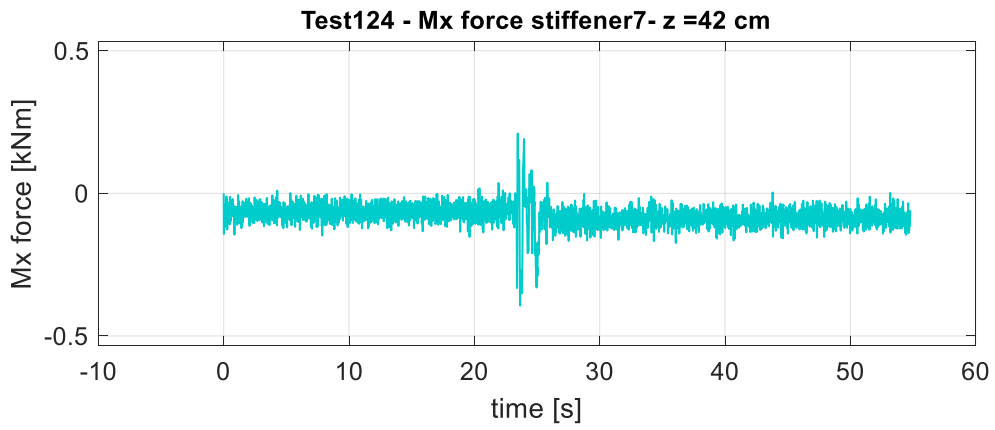
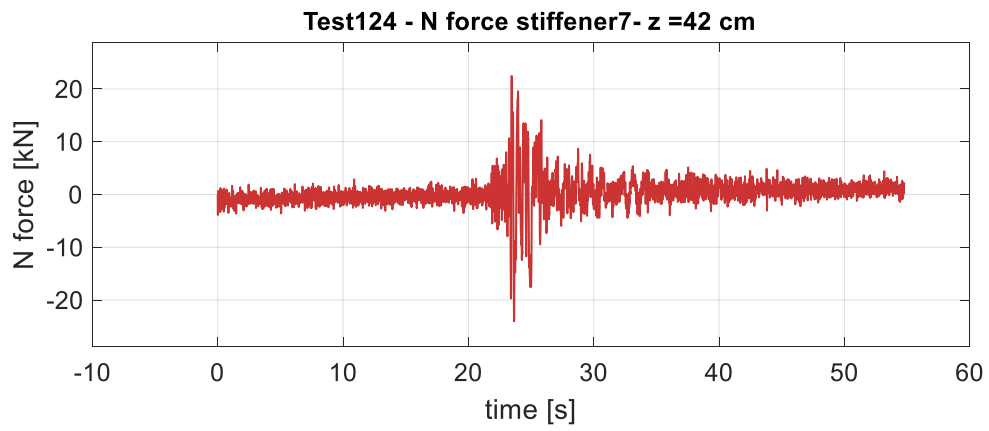
Quota Z = 42 cm: montante 5



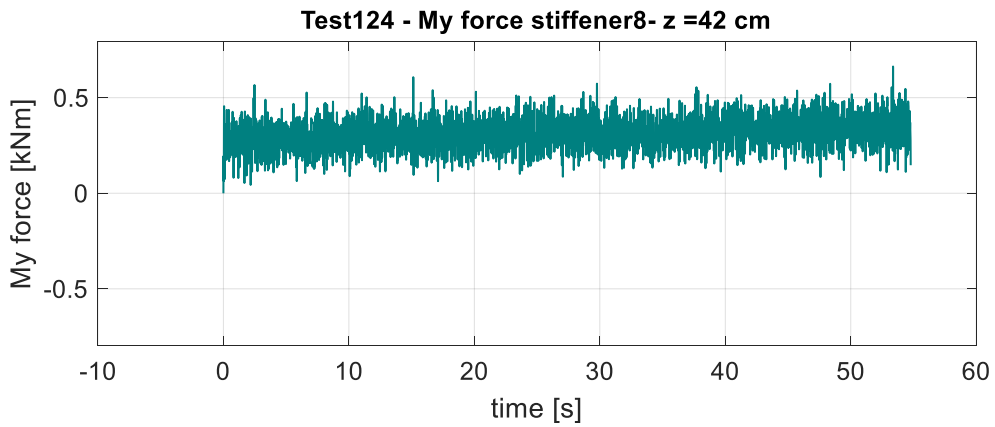
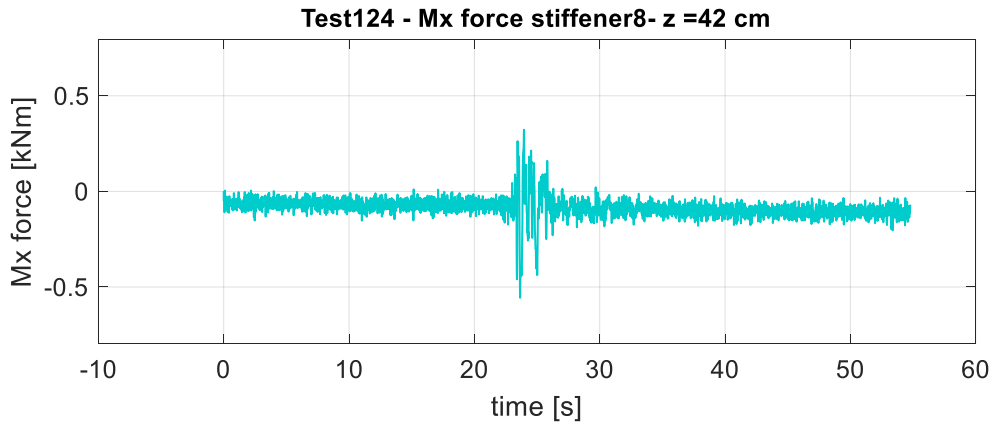
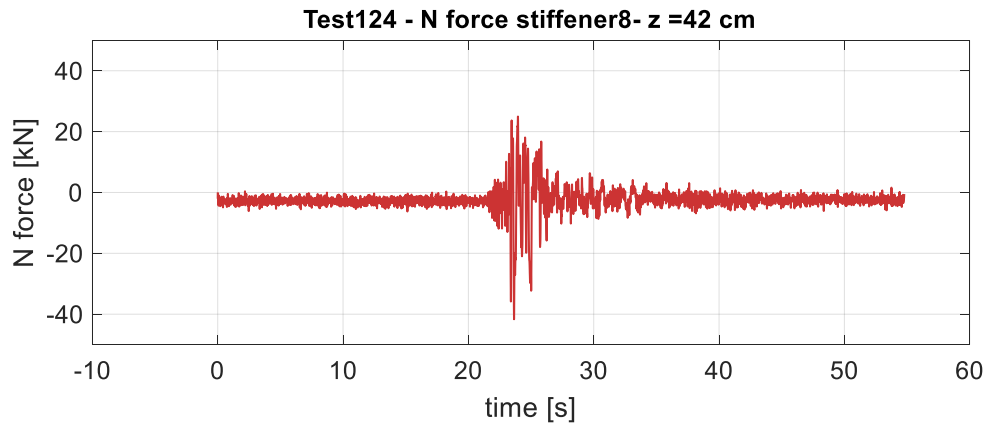
Quota Z = 42 cm: montante 6



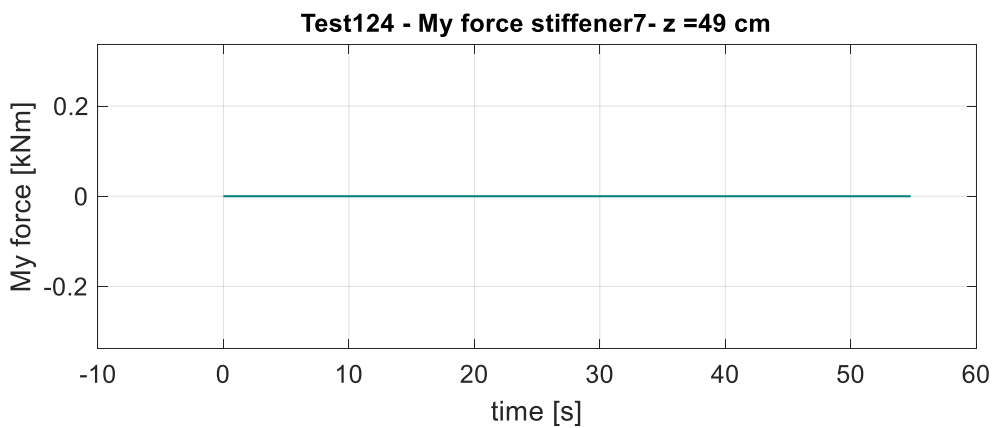
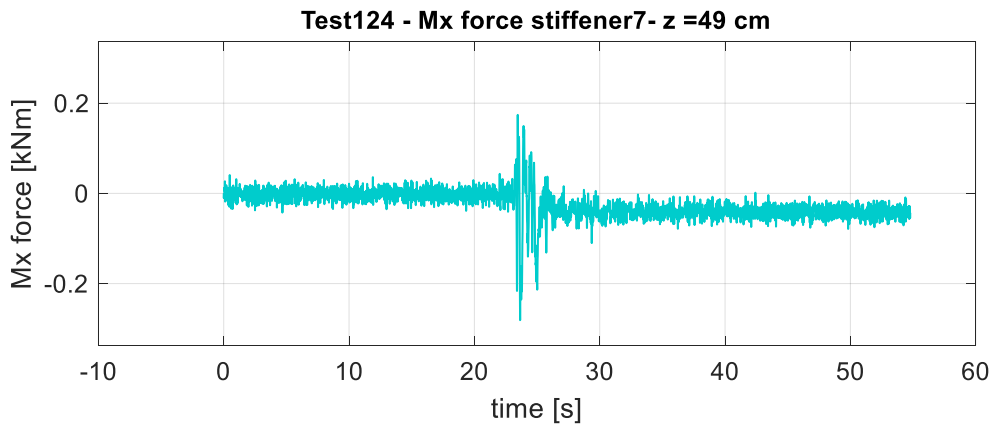
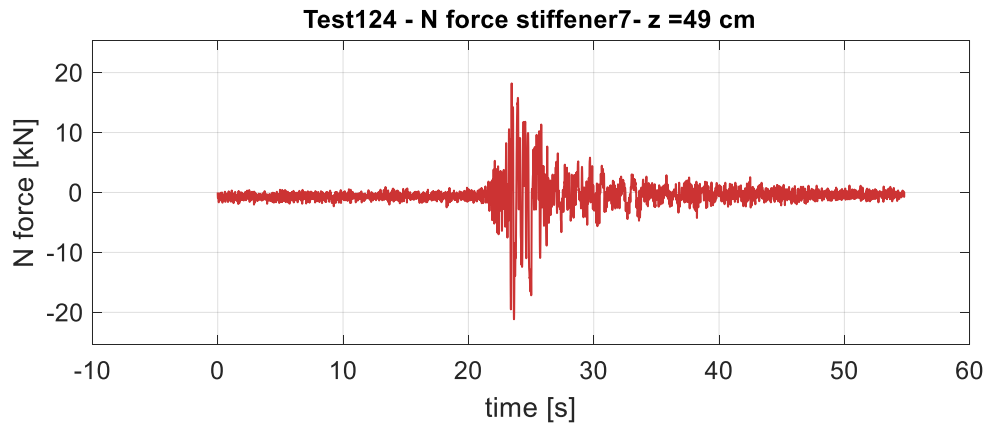
Quota Z = 42 cm: montante 7



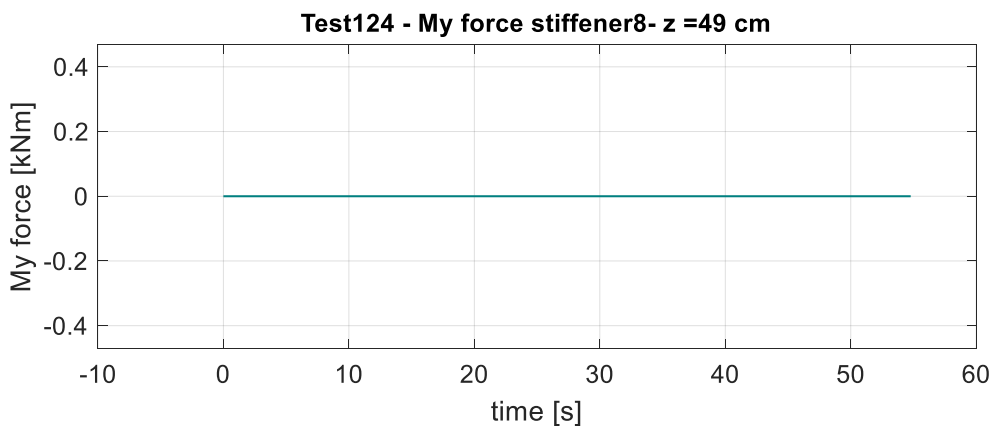
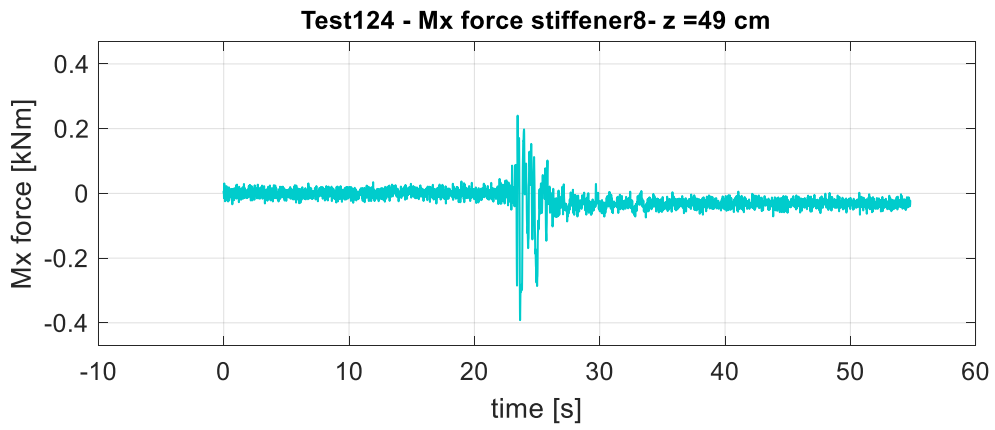
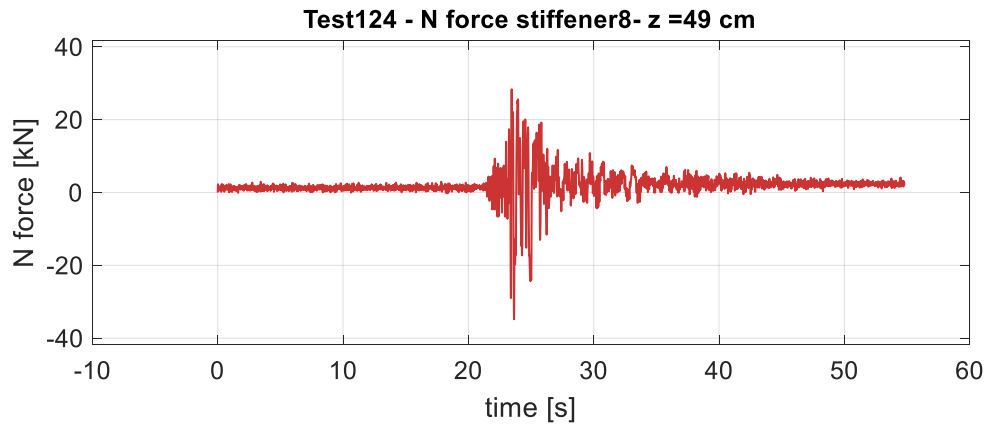
Quota Z = 42 cm: montante 8



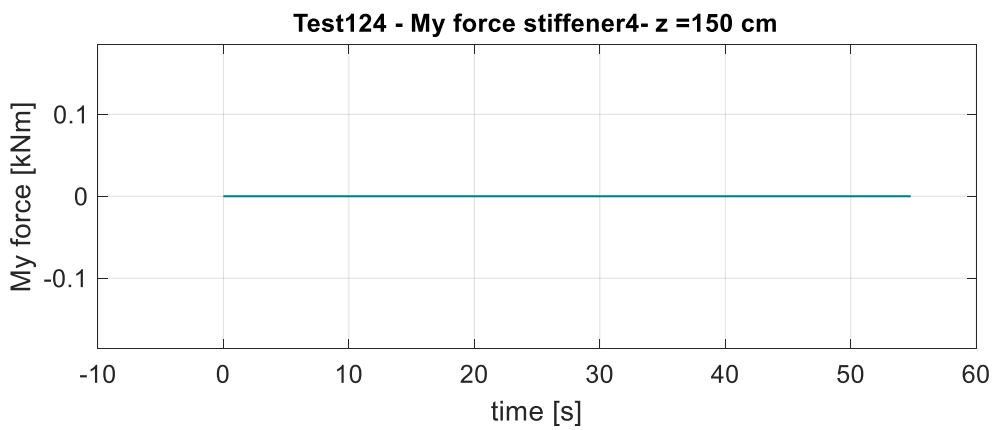
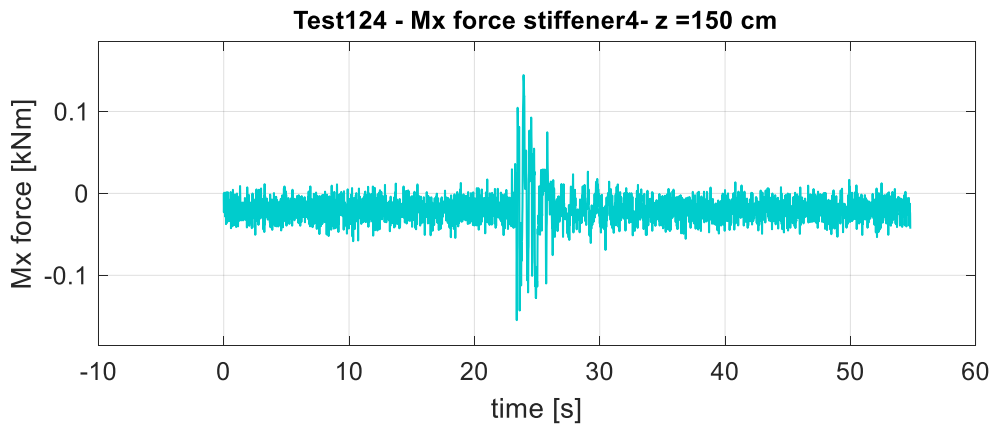
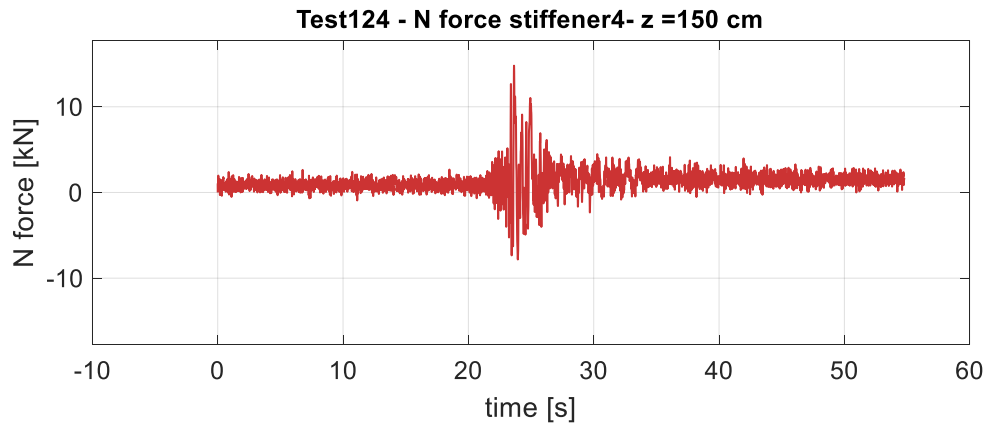
Quota Z = 49 cm: montante 7



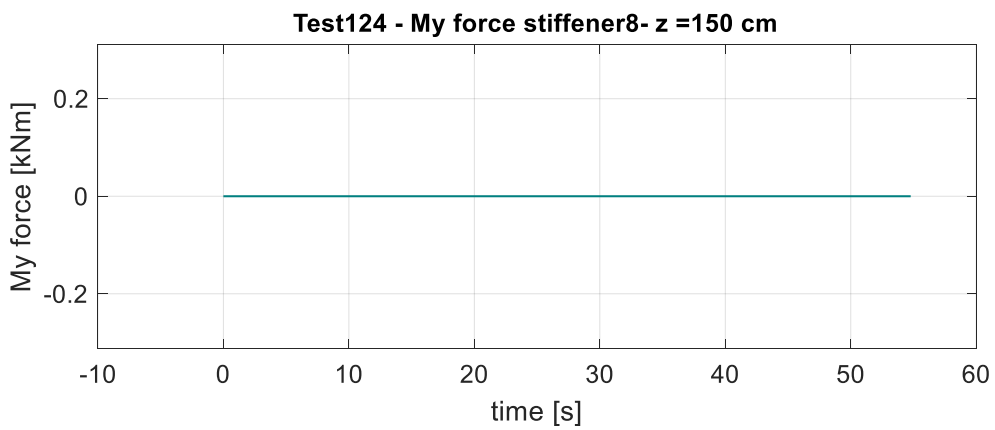
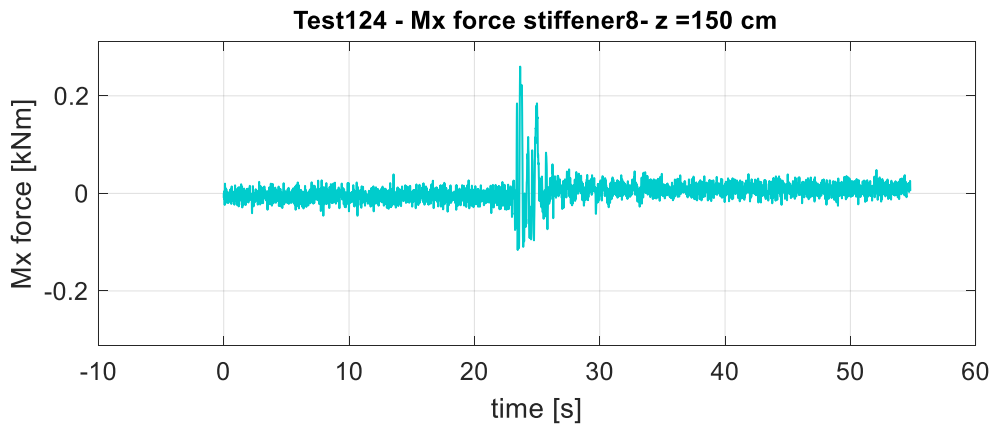
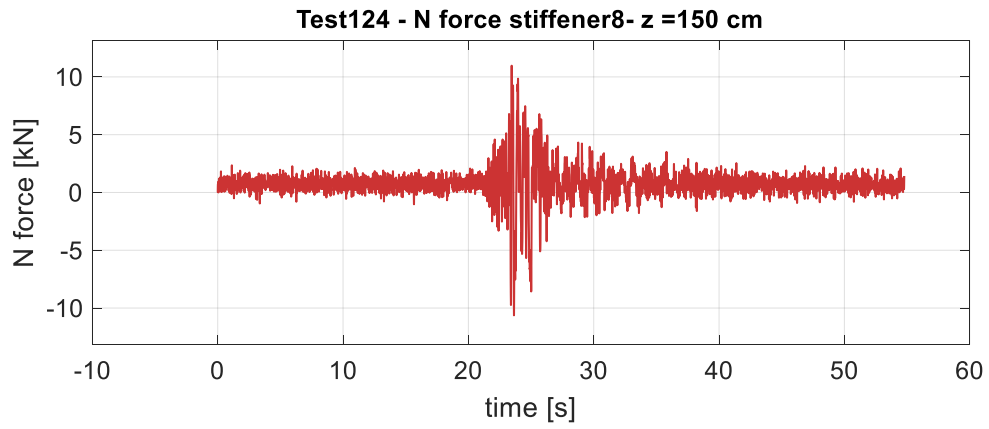
Quota Z = 49 cm: montante 8



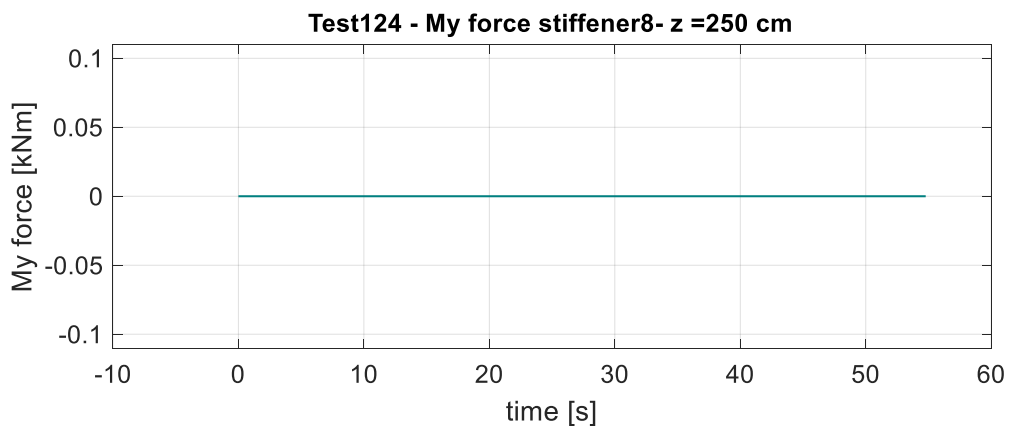
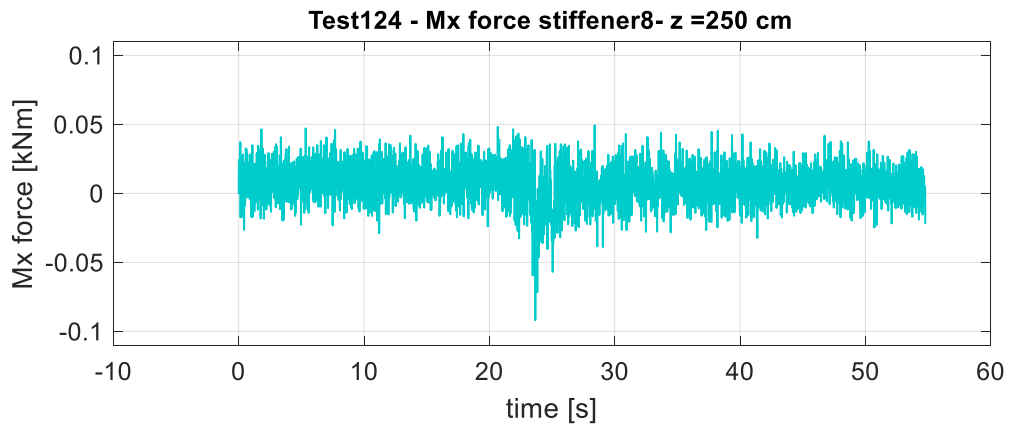
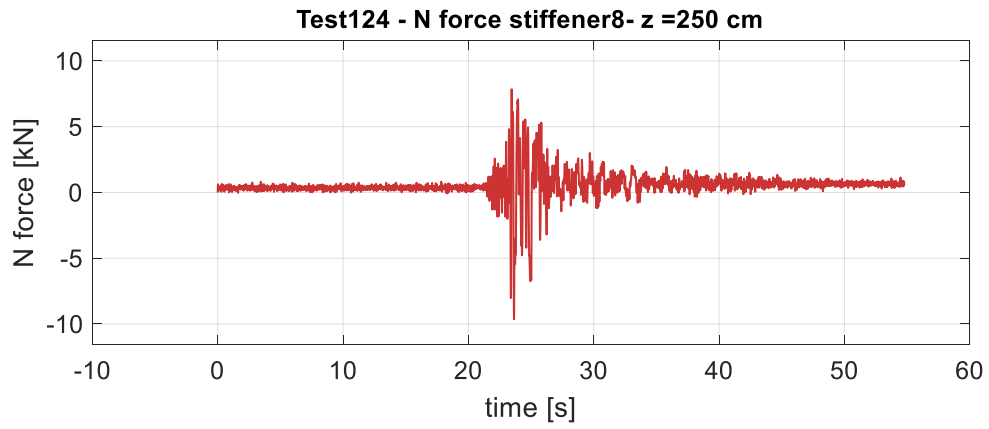
Quota Z = 150 cm: montante 4



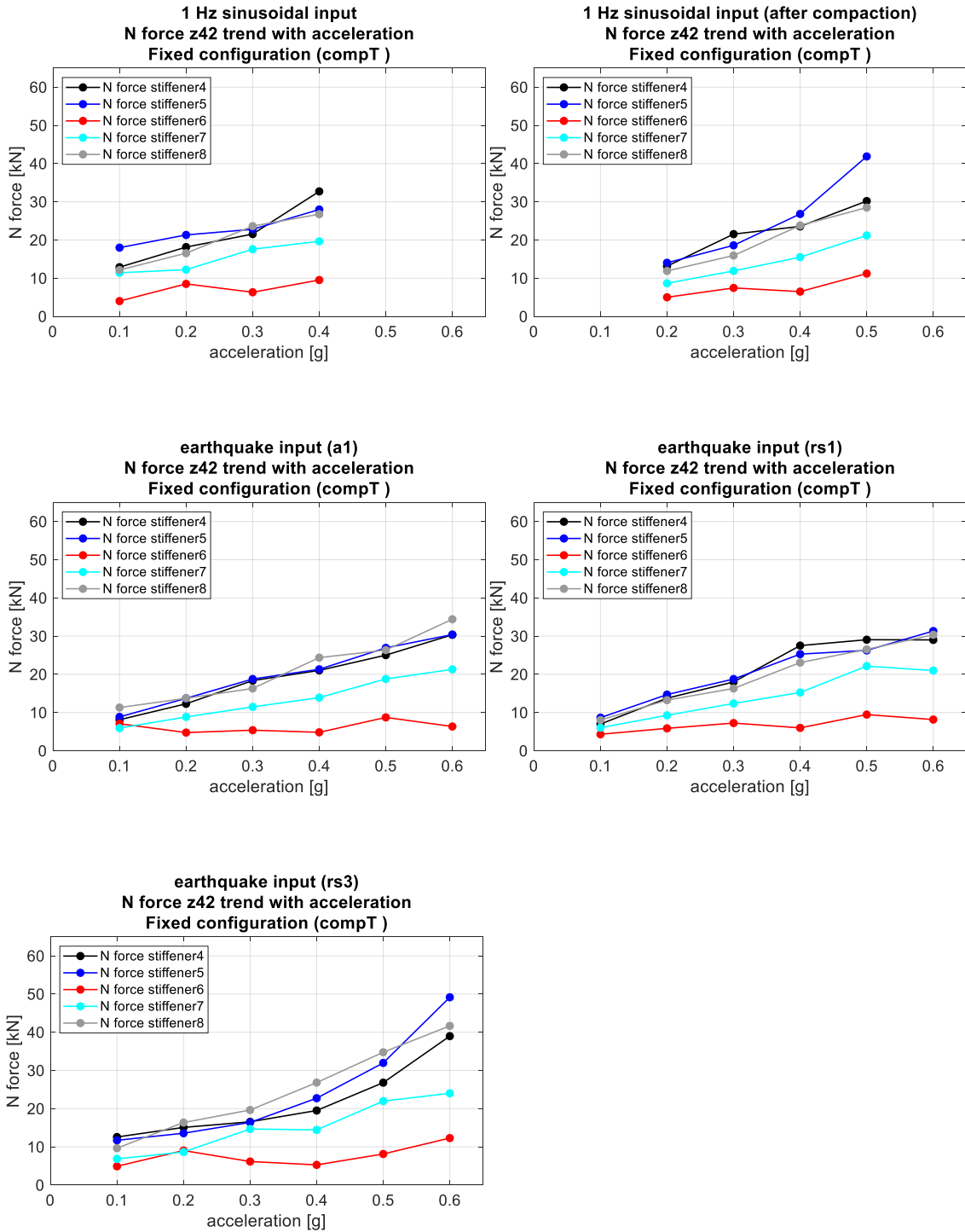
Quota Z = 150 cm: montante 8



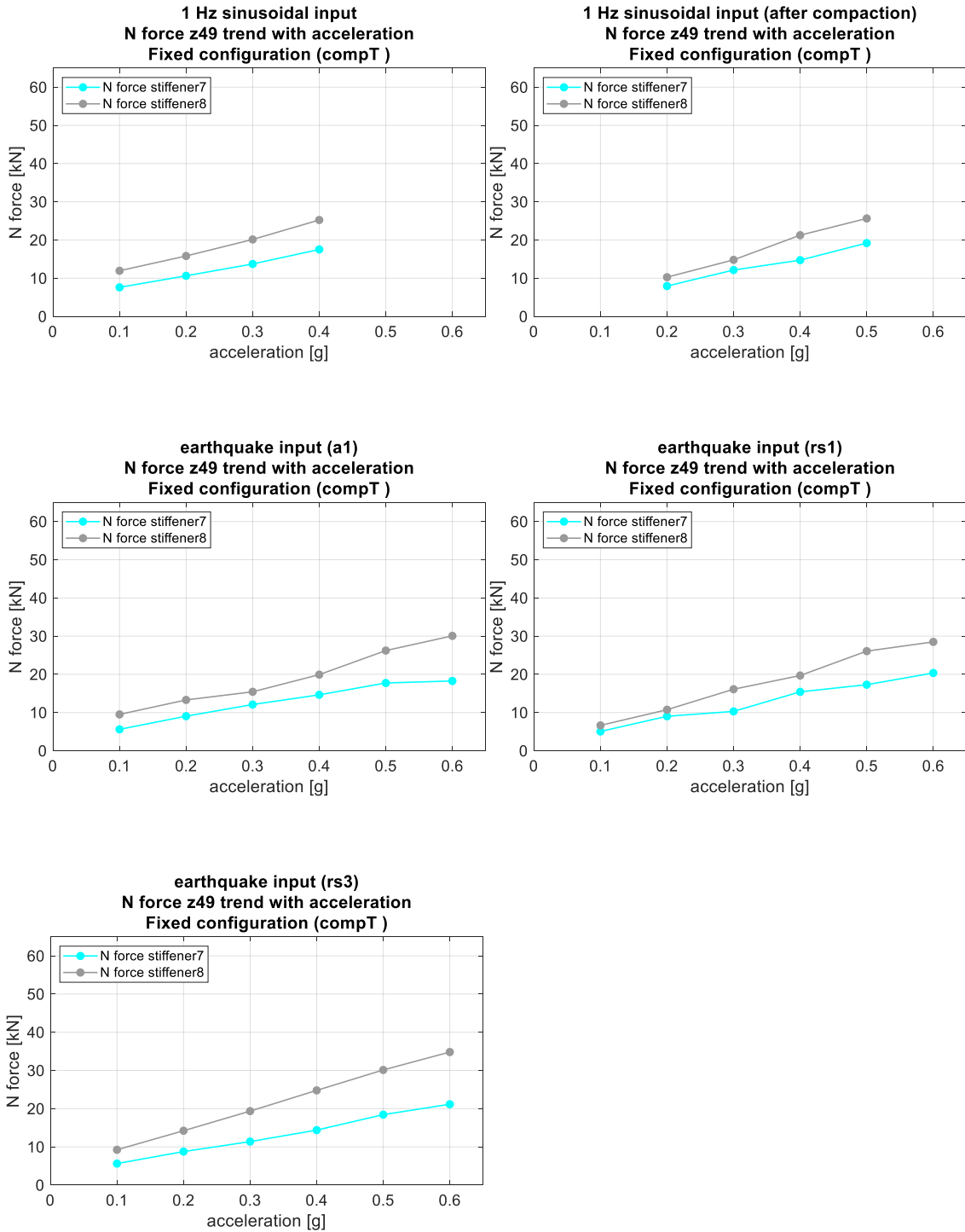
Quota Z = 250 cm: montante 8



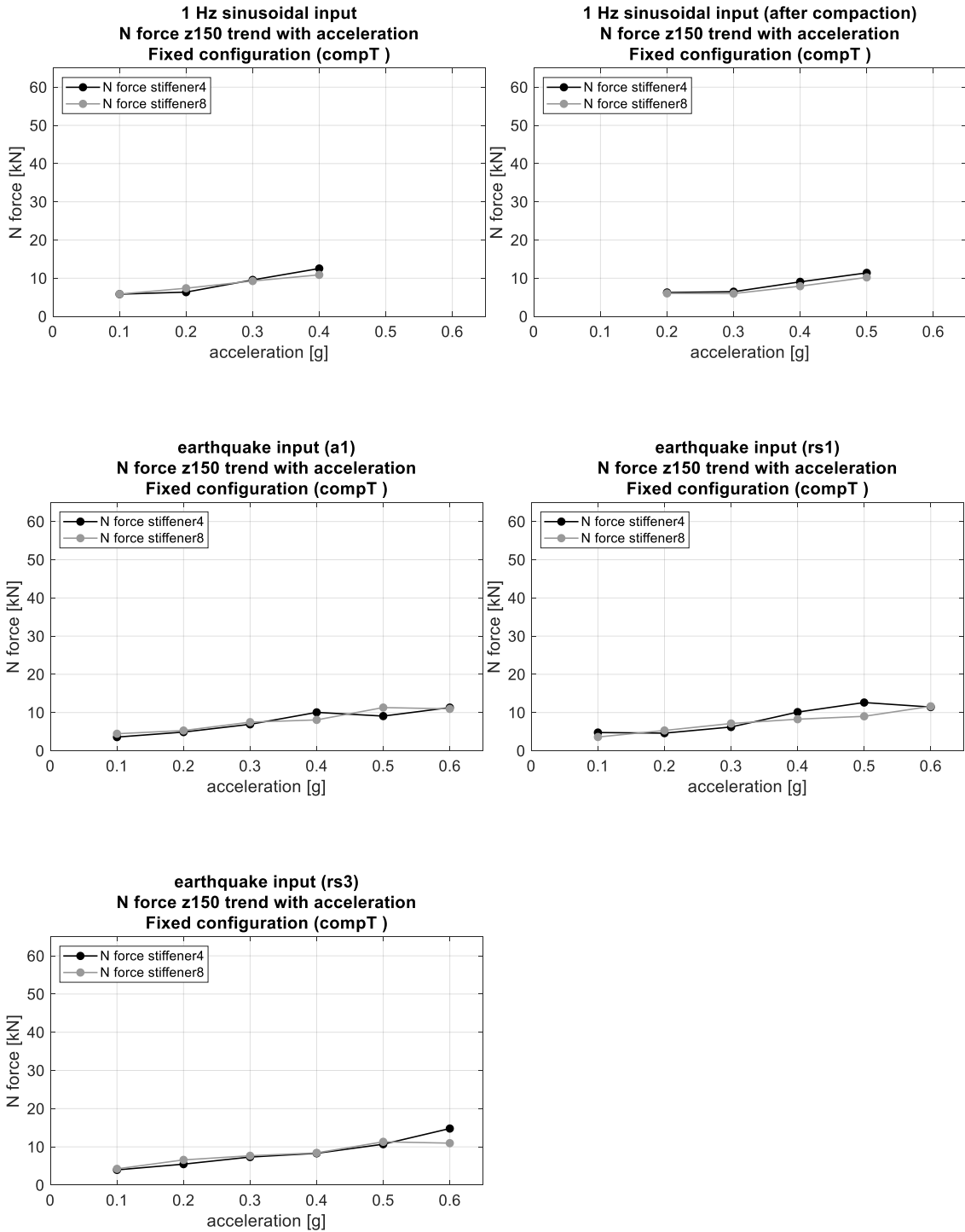
Quota Z = 42 cm



Quota Z = 49 cm

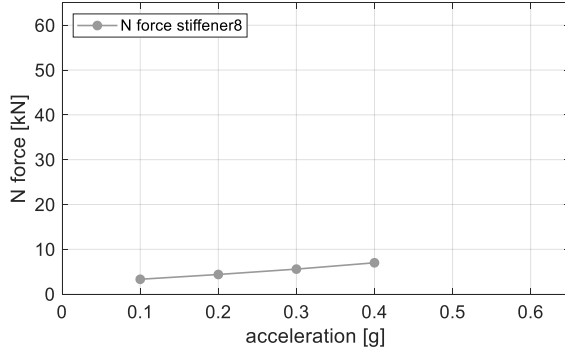


Quota Z = 150 cm

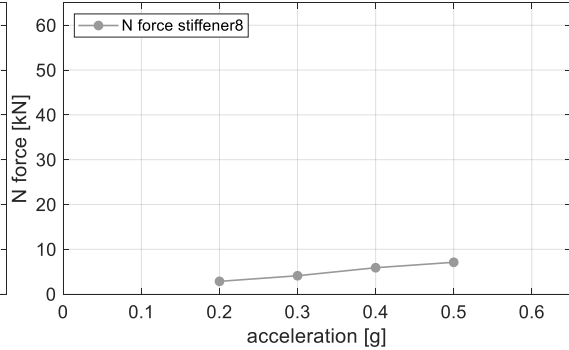


Quota Z = 250 cm

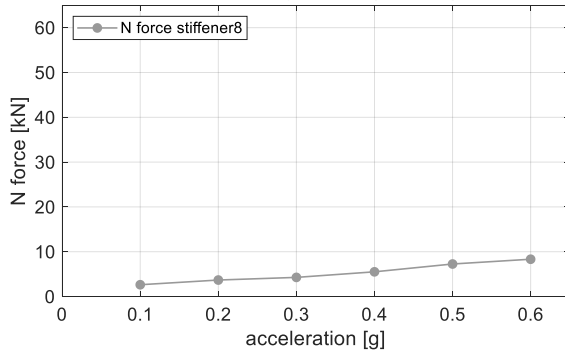
1 Hz sinusoidal input
N force z250 trend with acceleration
Fixed configuration (compT)



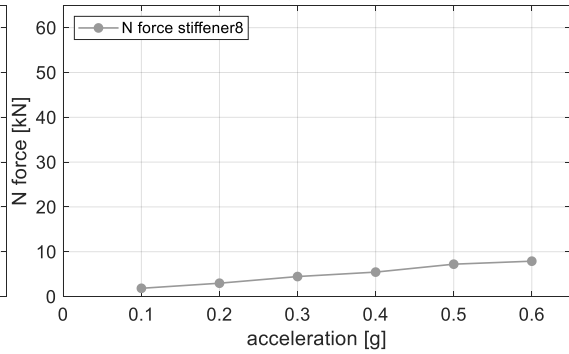
1 Hz sinusoidal input (after compaction)
N force z250 trend with acceleration
Fixed configuration (compT)



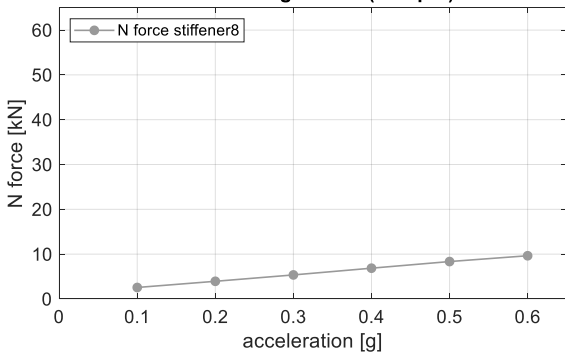
earthquake input (a1)
N force z250 trend with acceleration
Fixed configuration (compT)



earthquake input (rs1)
N force z250 trend with acceleration
Fixed configuration (compT)

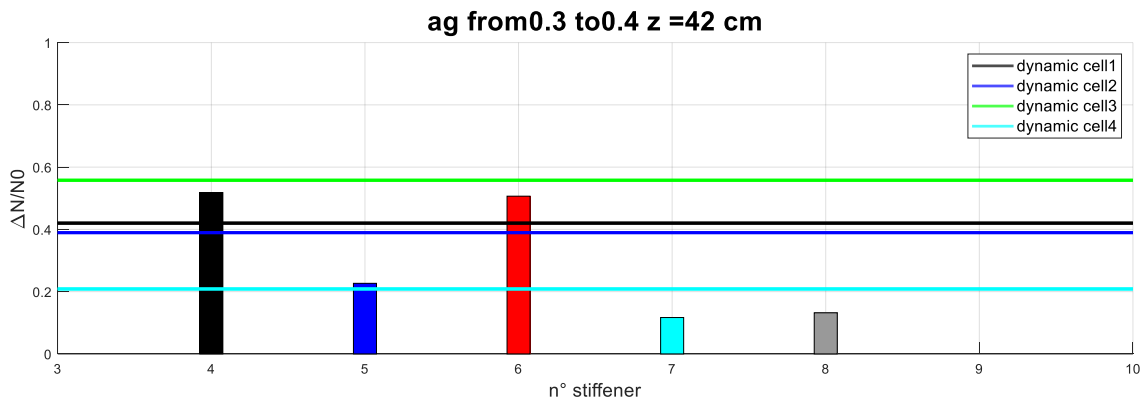
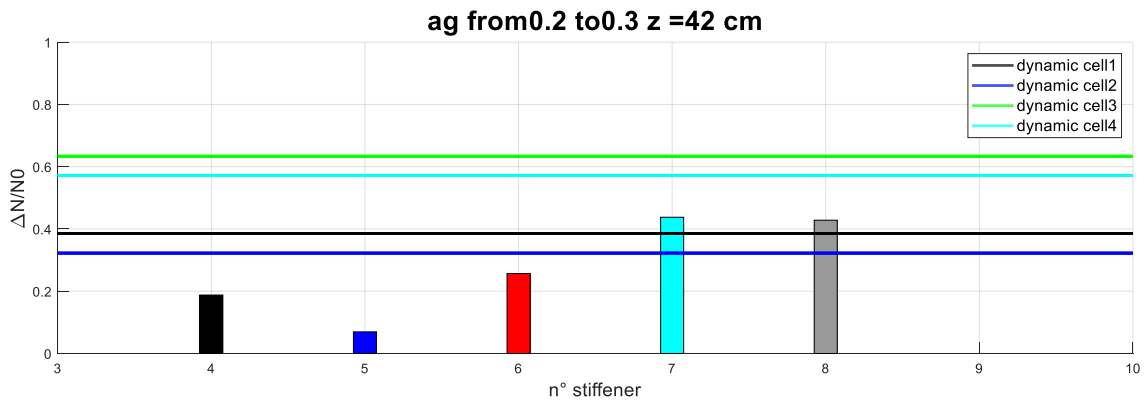
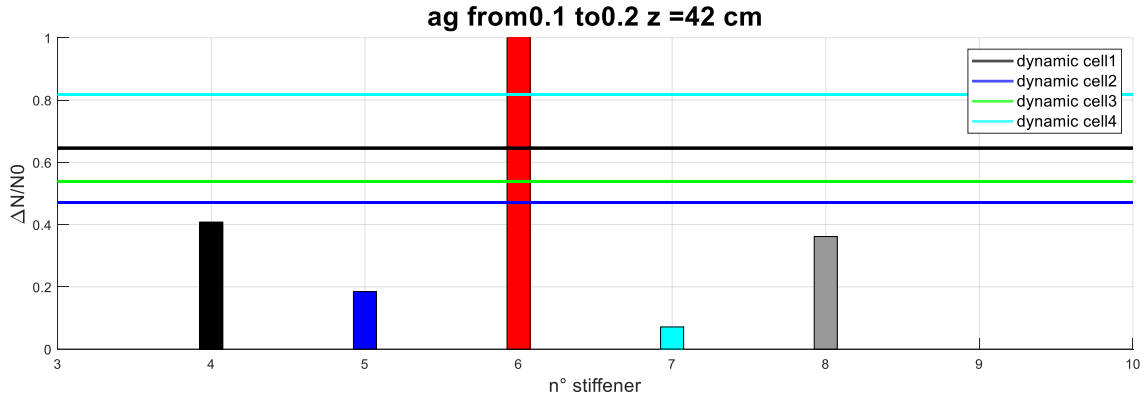


earthquake input (rs3)
N force z250 trend with acceleration
Fixed configuration (compT)

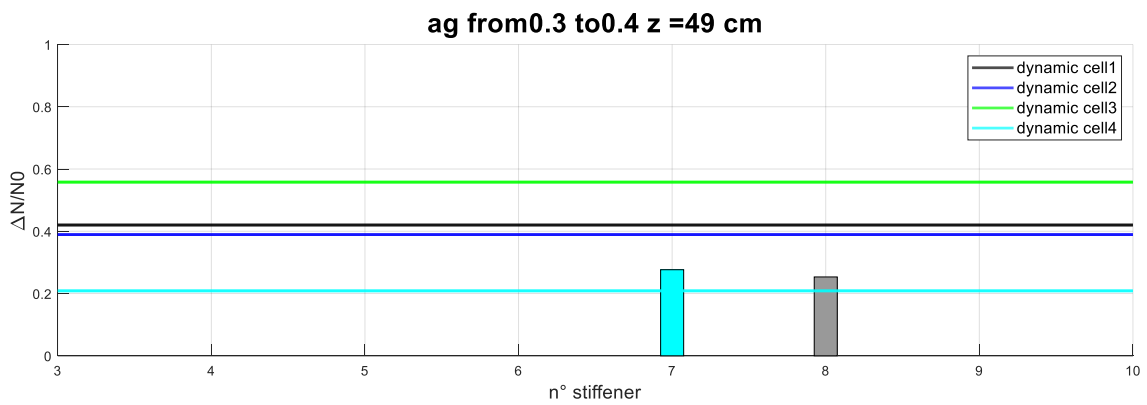
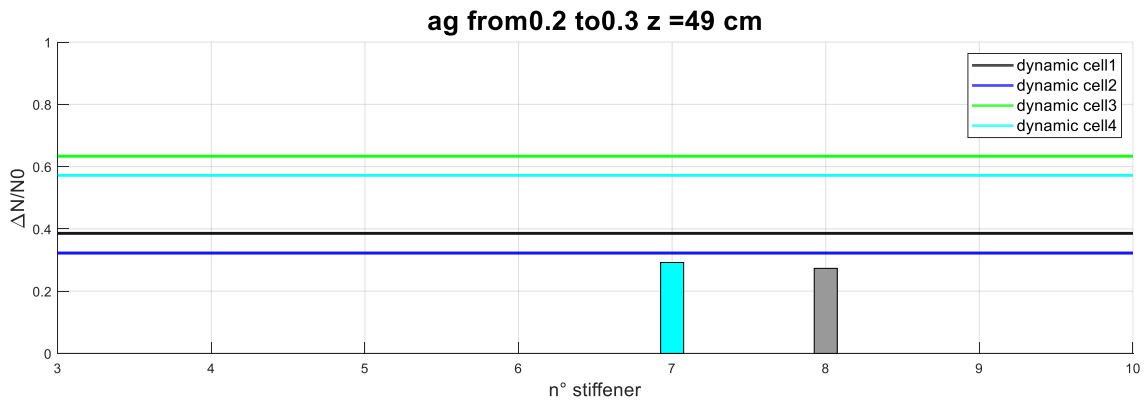
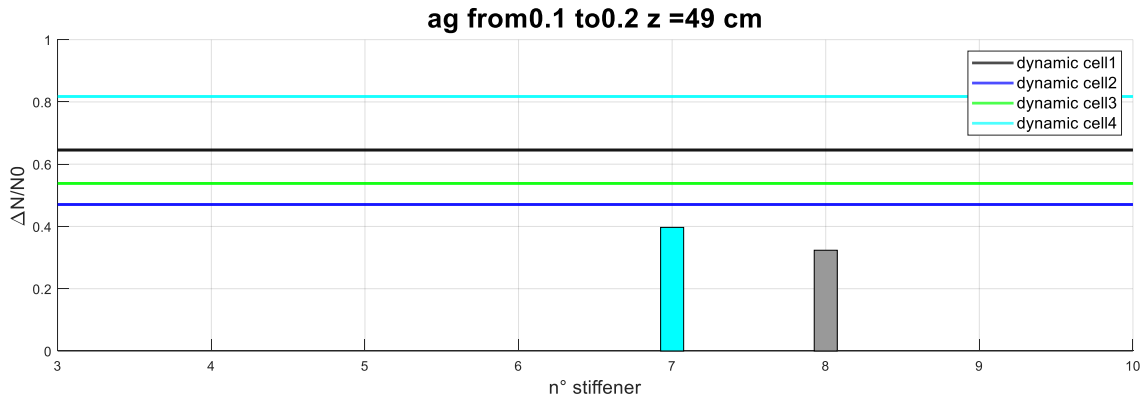


Sinusoidal input 1 Hz pre – compaction

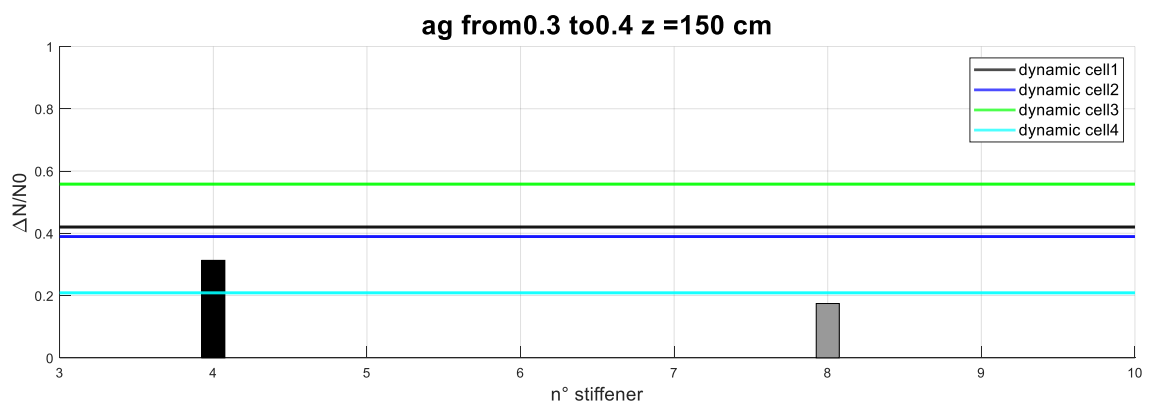
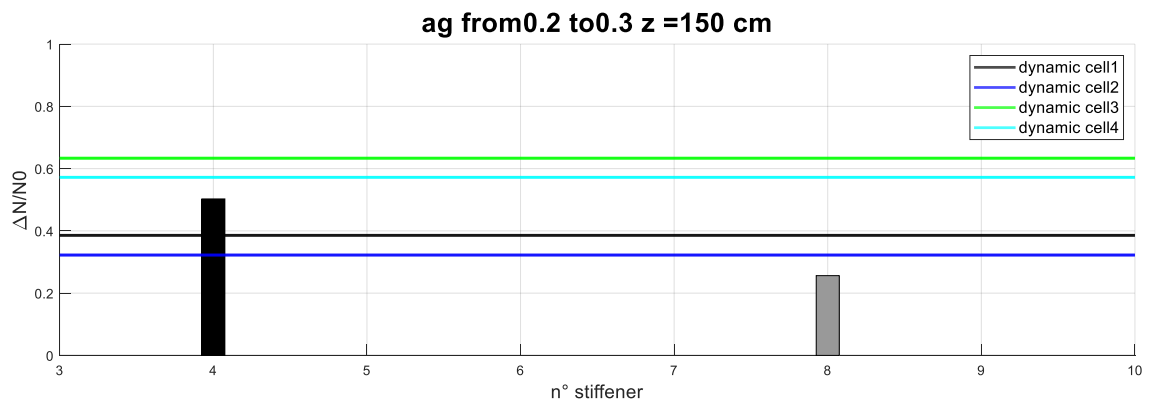
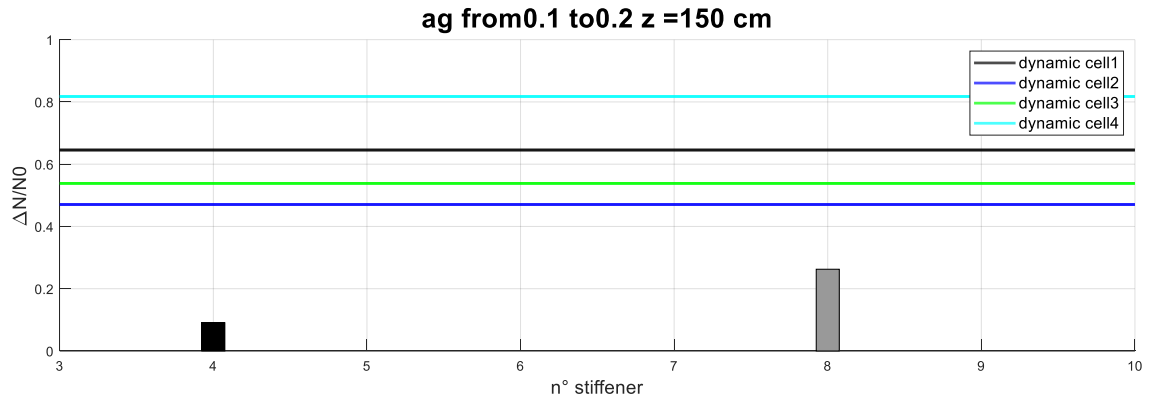
Quota Z = 42 cm



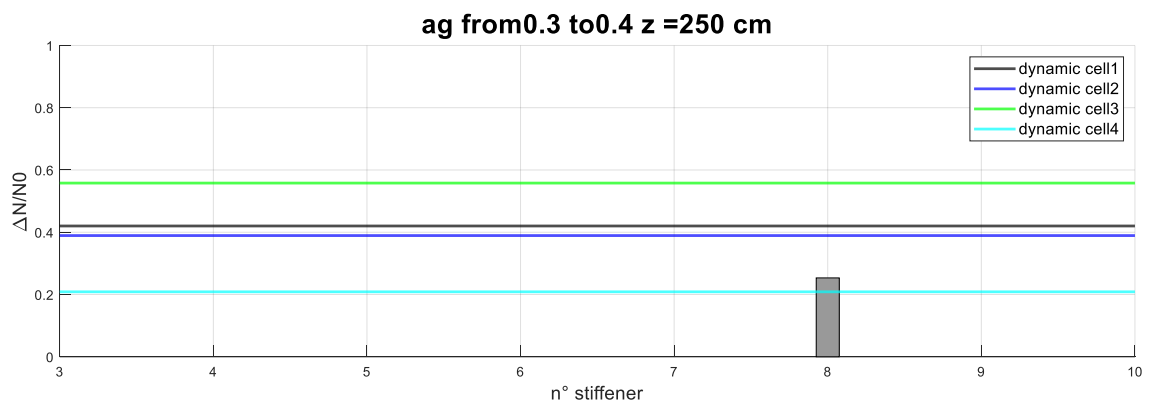
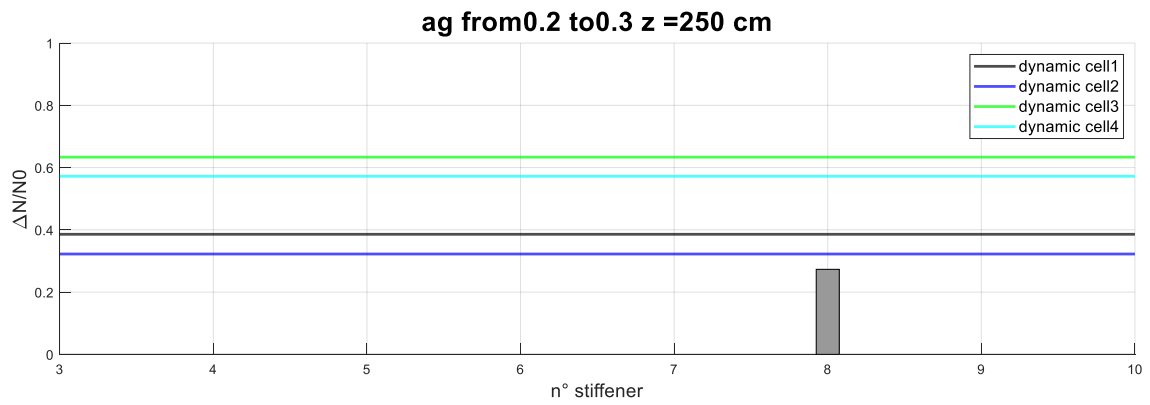
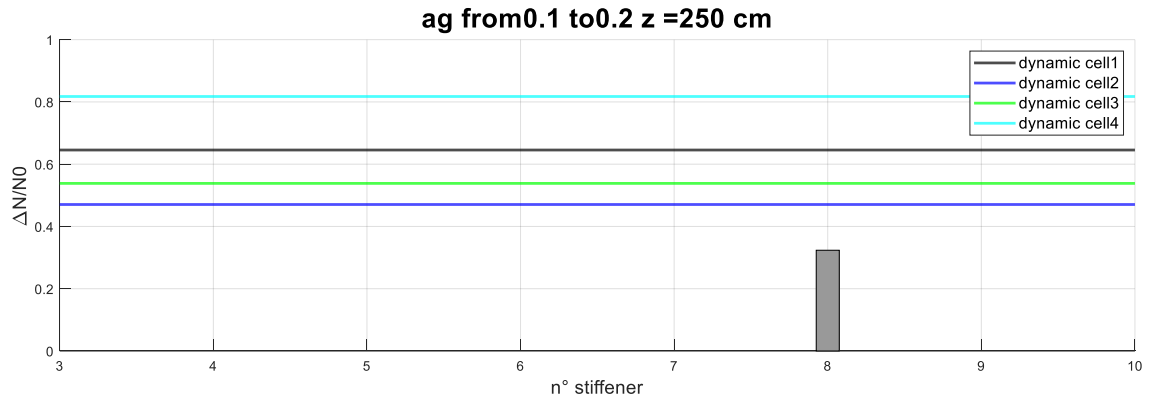
Quota Z = 49 cm



Quota Z = 150 cm

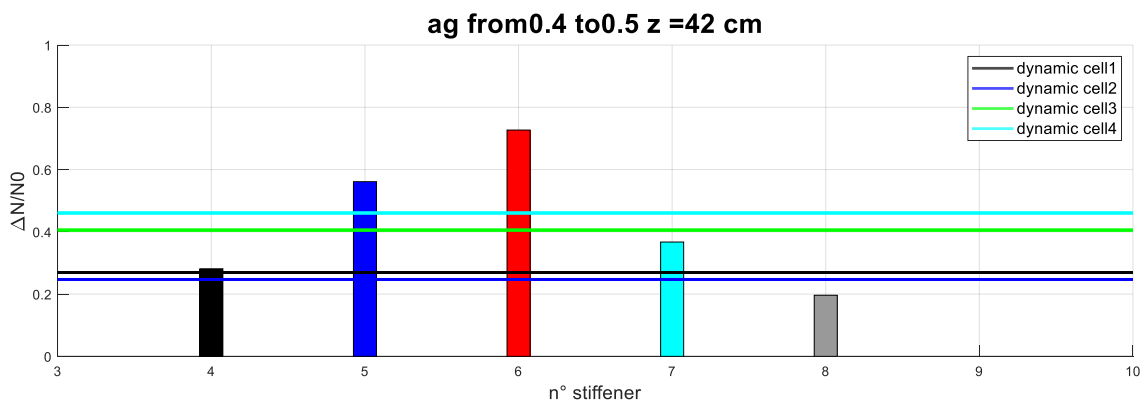
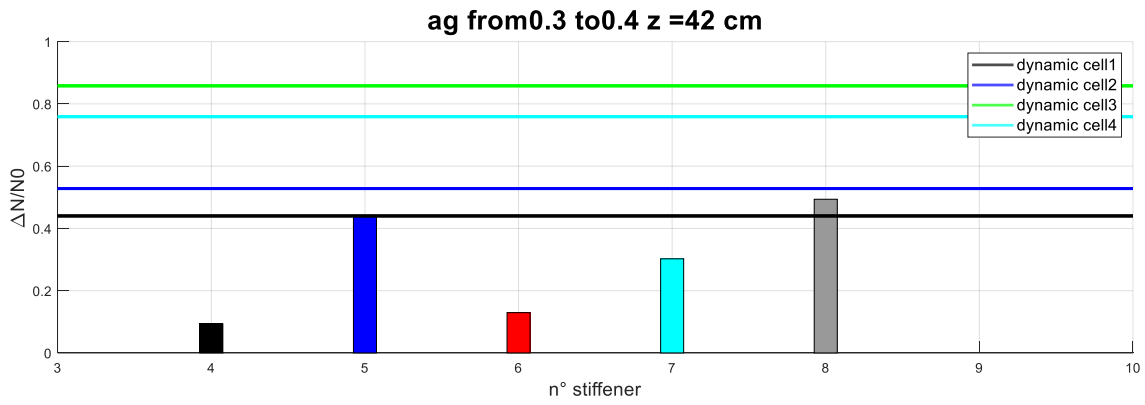
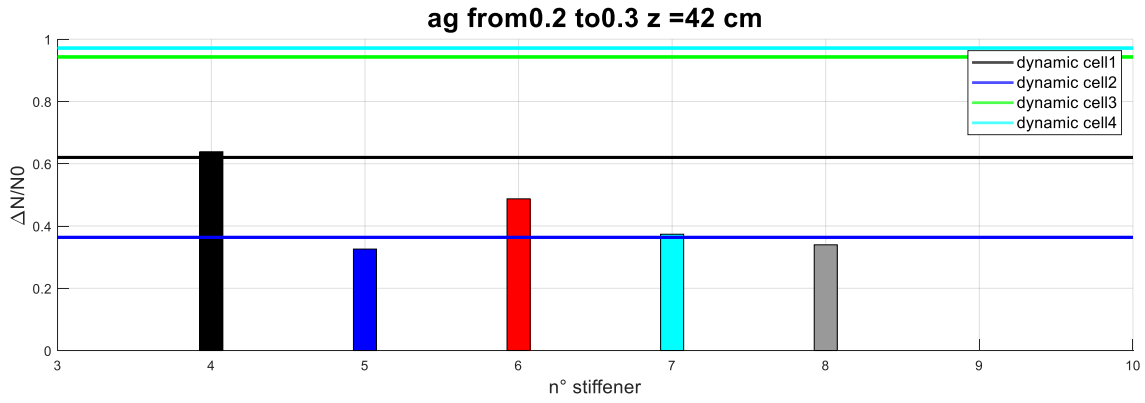


Quota Z = 250 cm

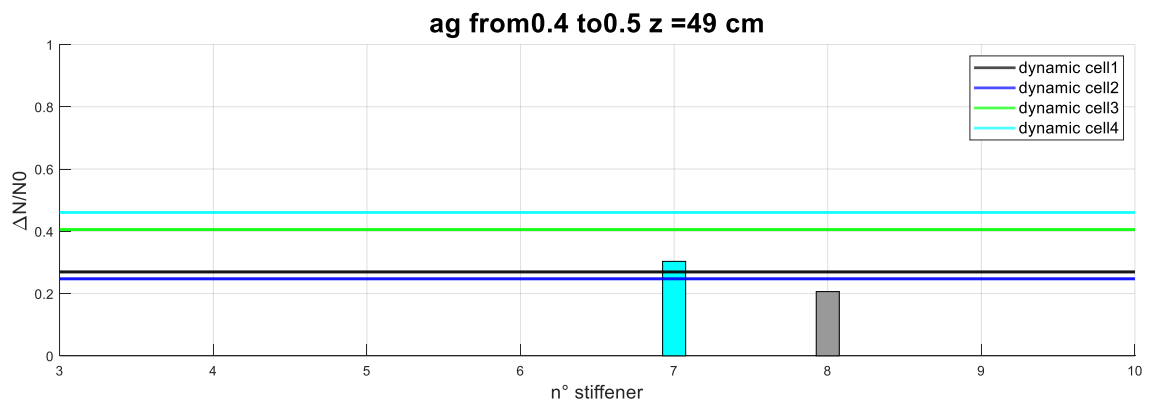
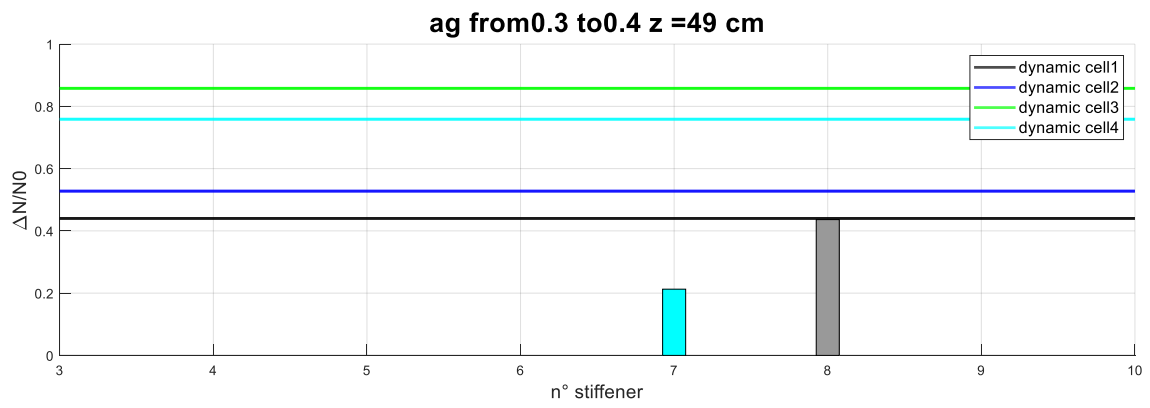
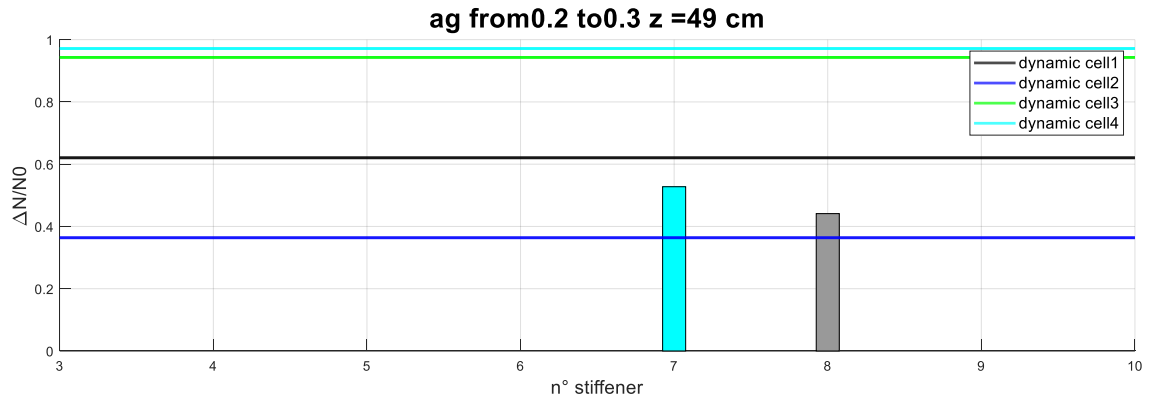


Sinusoidal input 1 Hz post – compaction

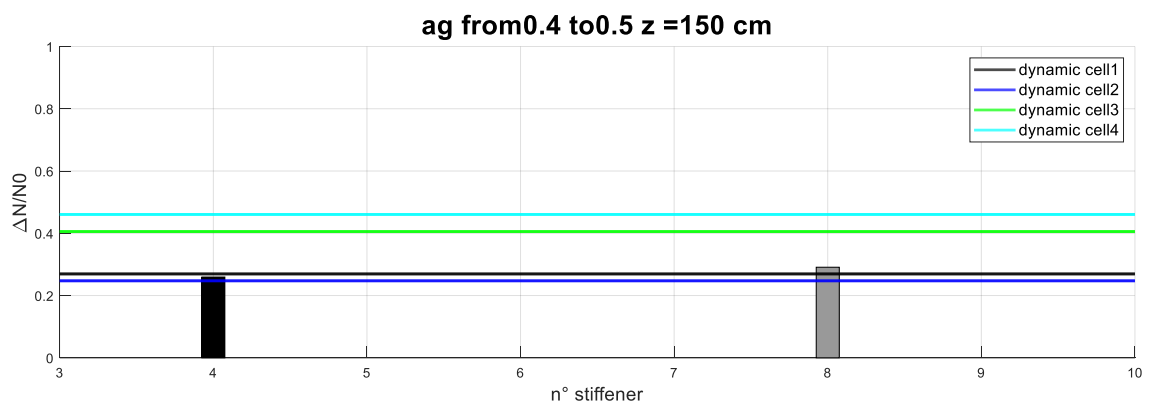
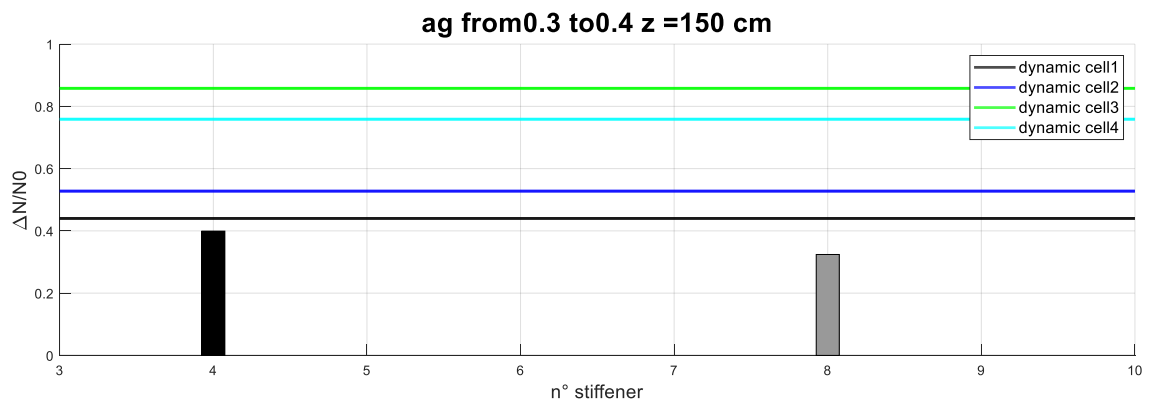
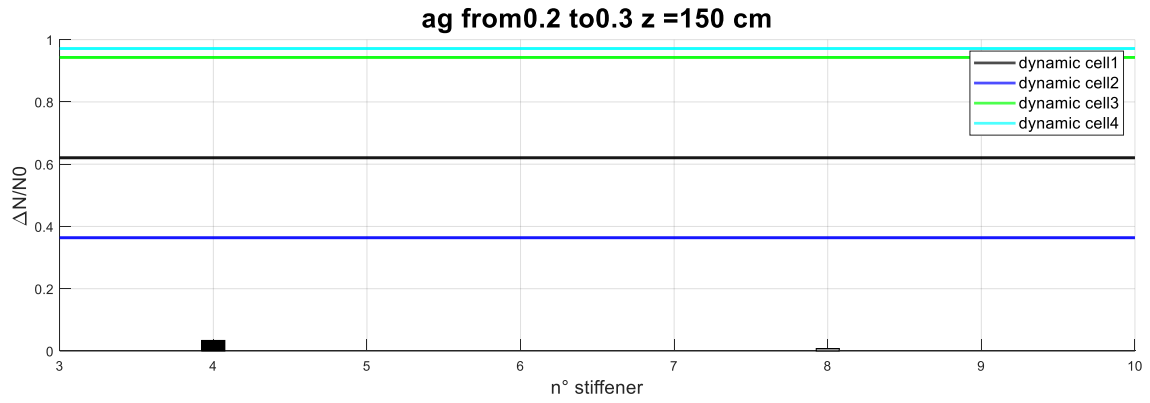
Quota Z = 42 cm



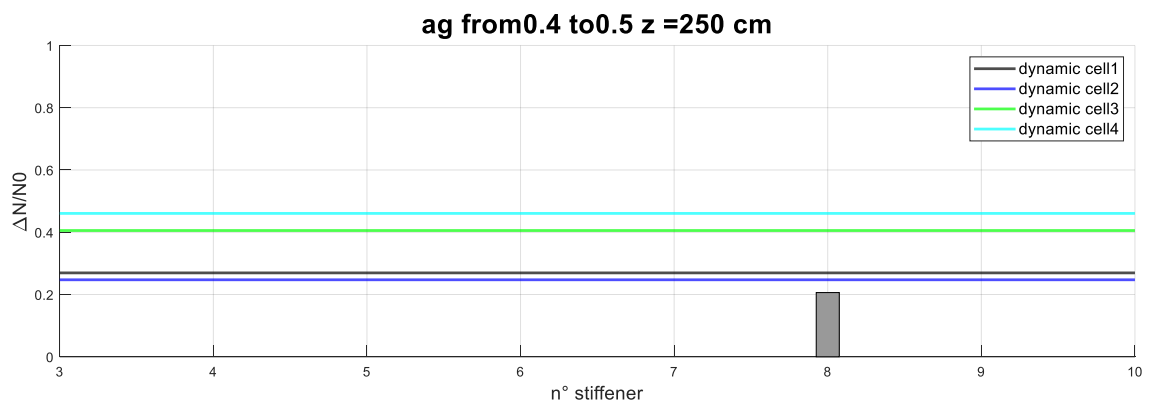
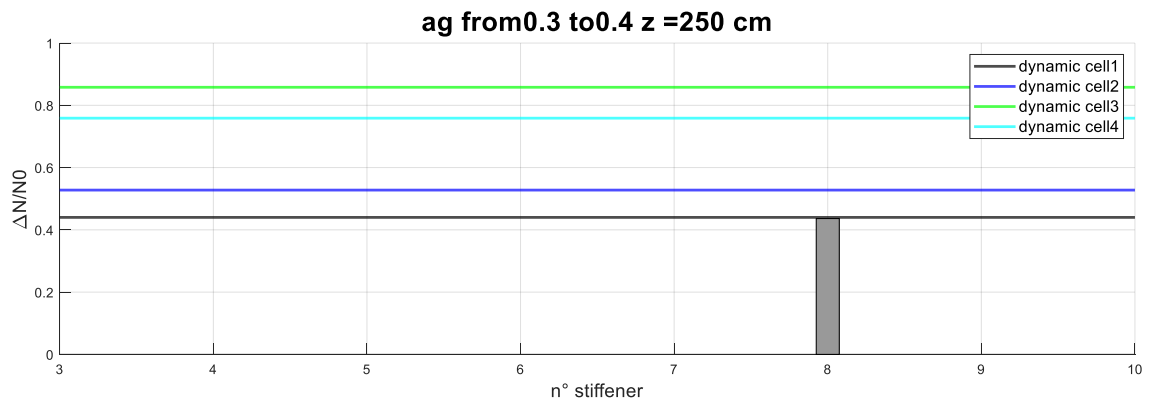
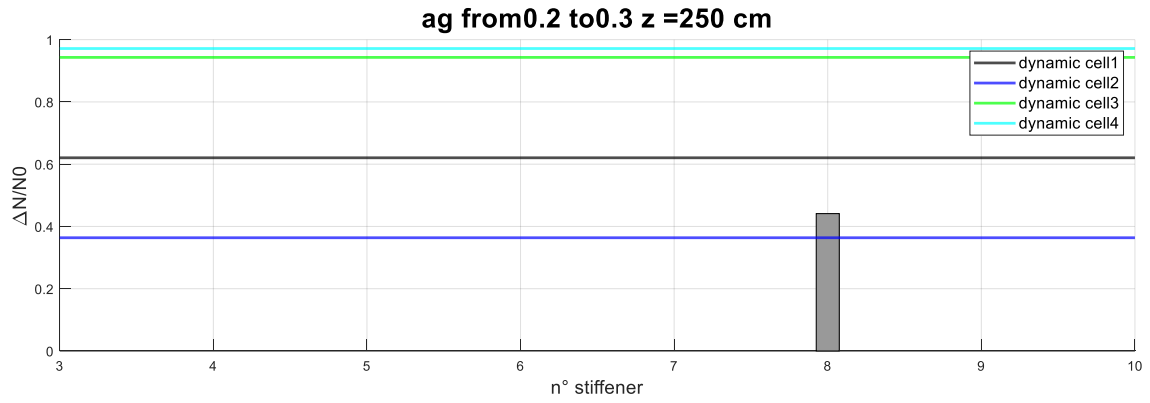
Quota Z = 49 cm



Quota Z = 150 cm

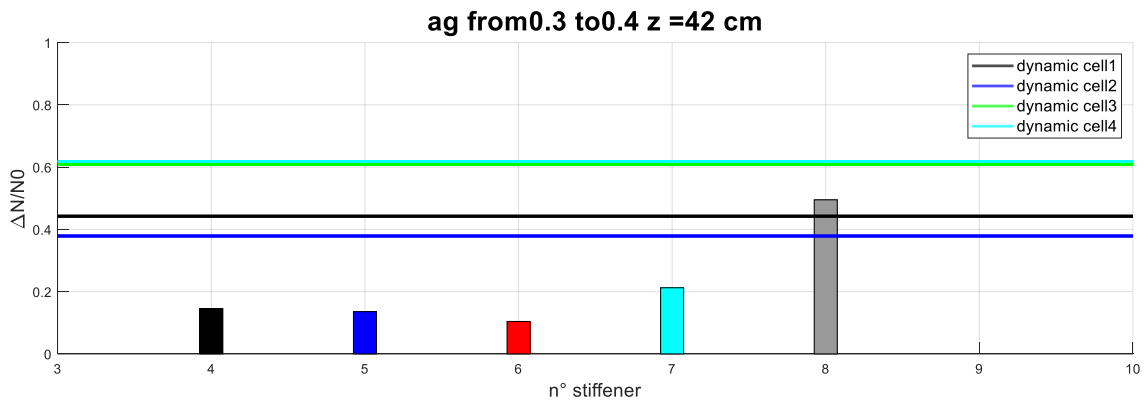
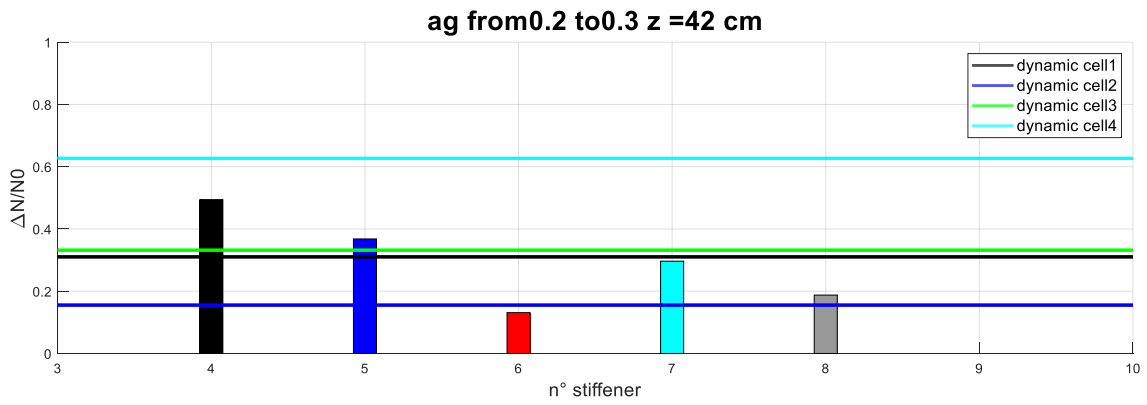
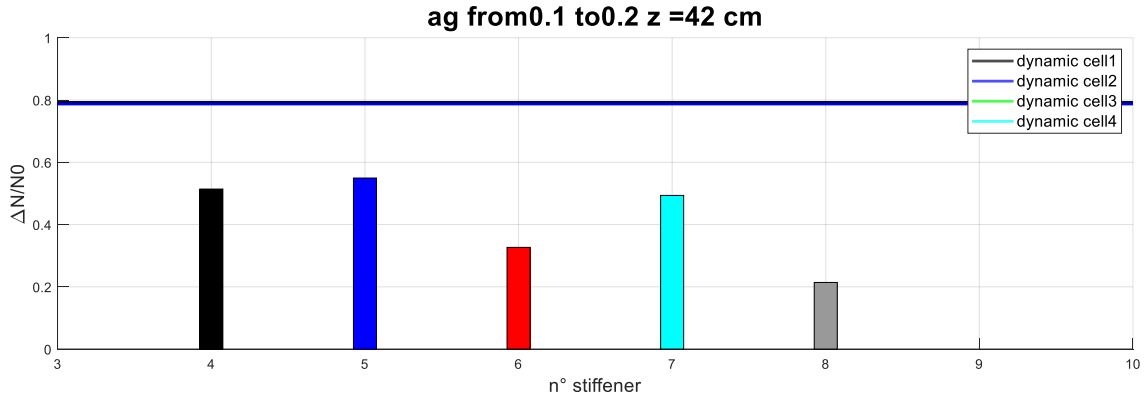


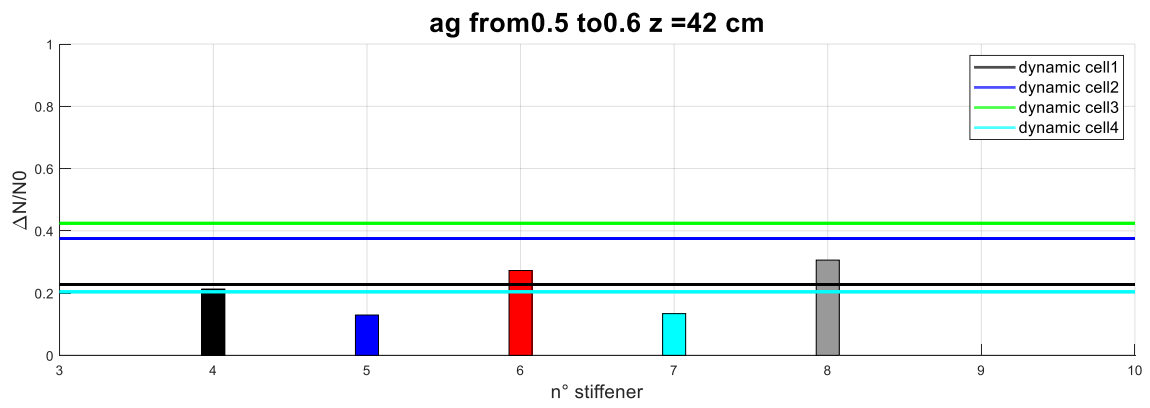
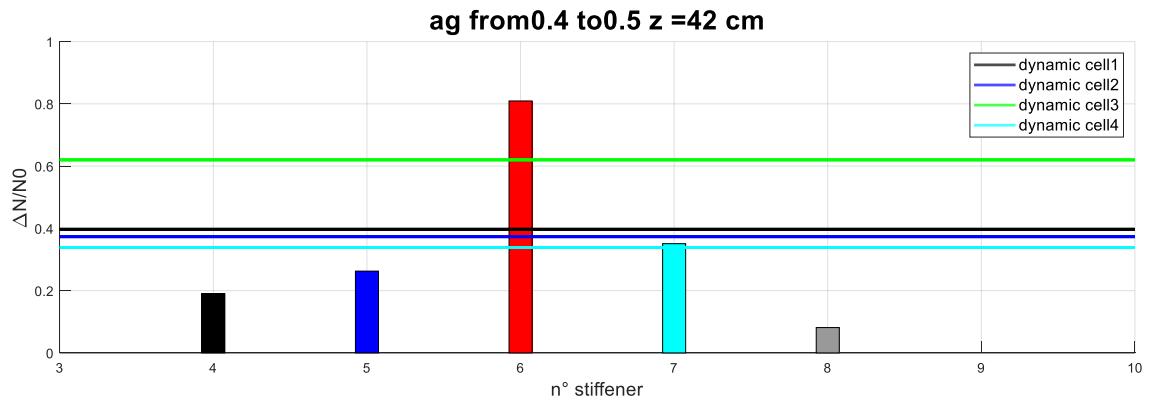
Quota Z = 250 cm



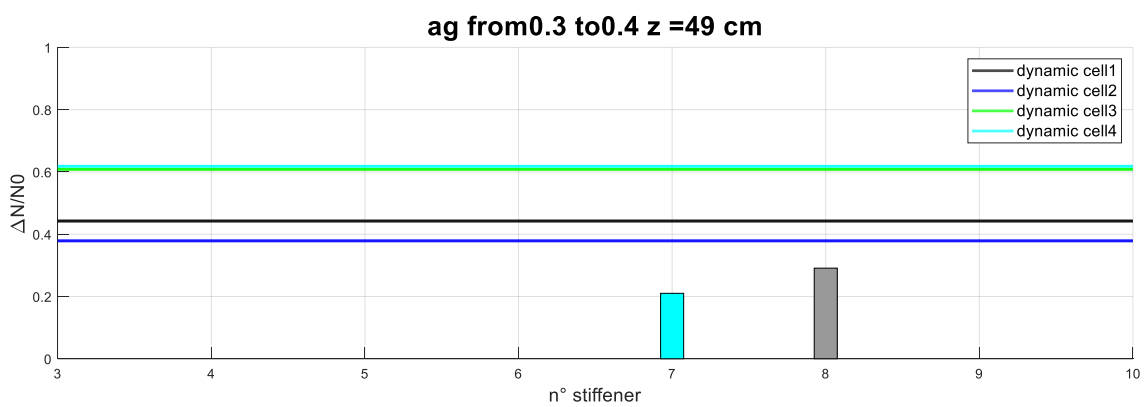
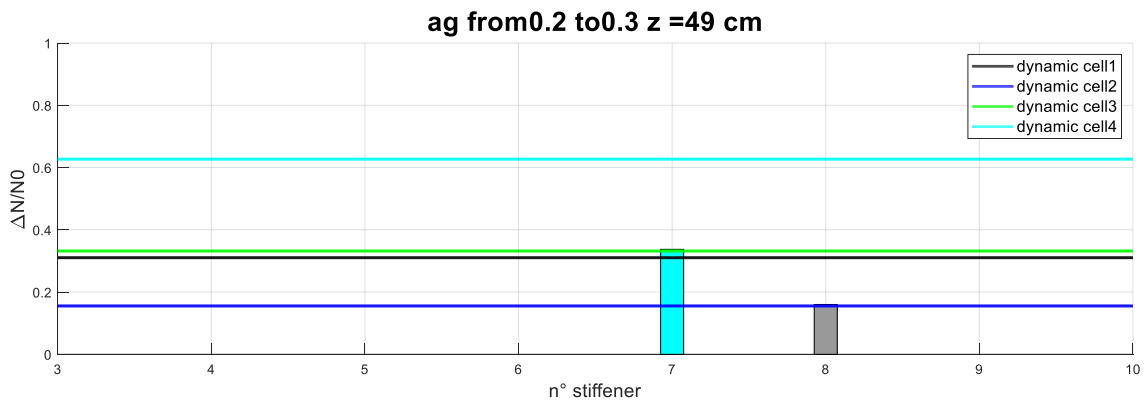
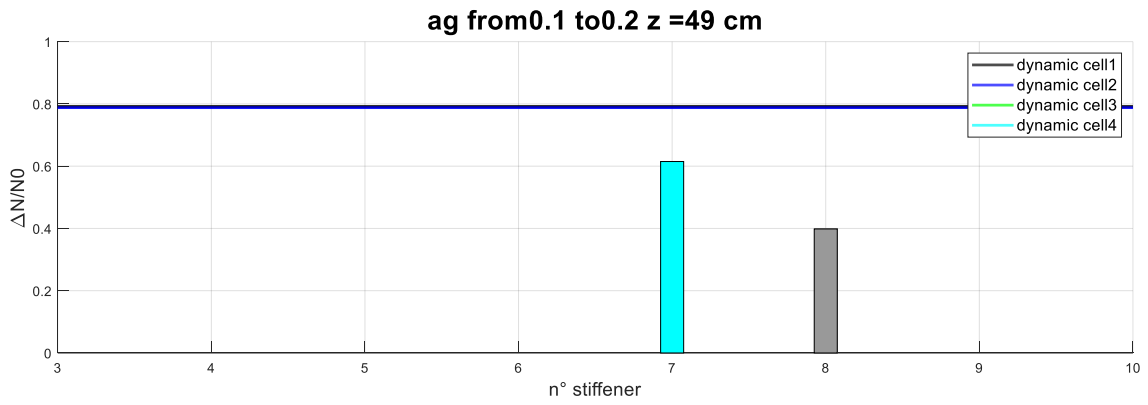
Earthquake input A1

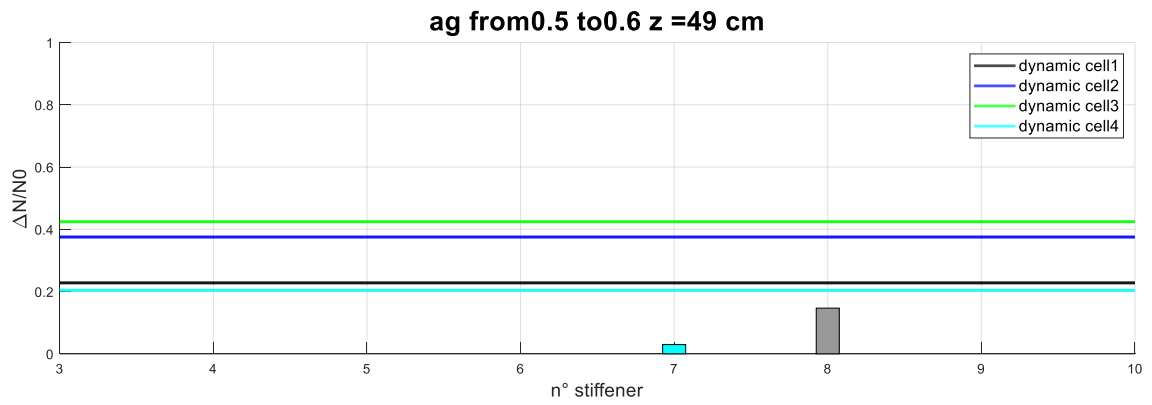
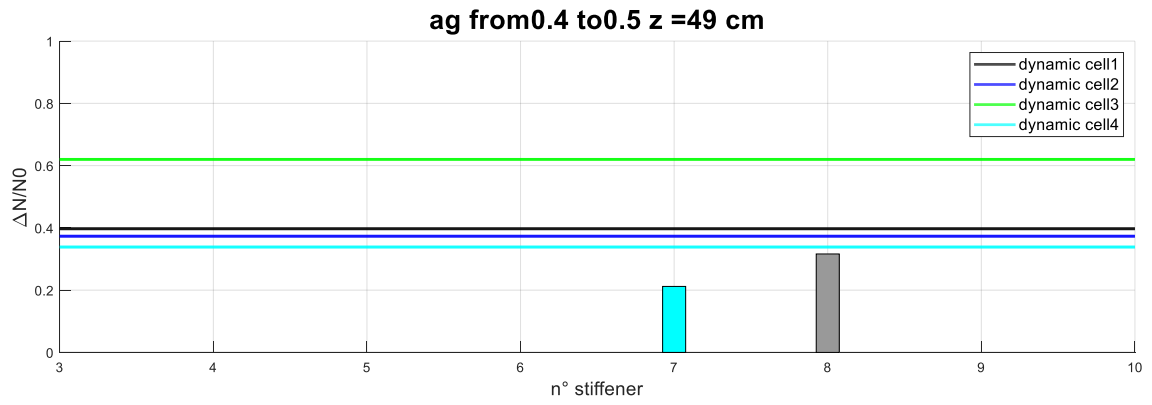
Quota Z = 42 cm



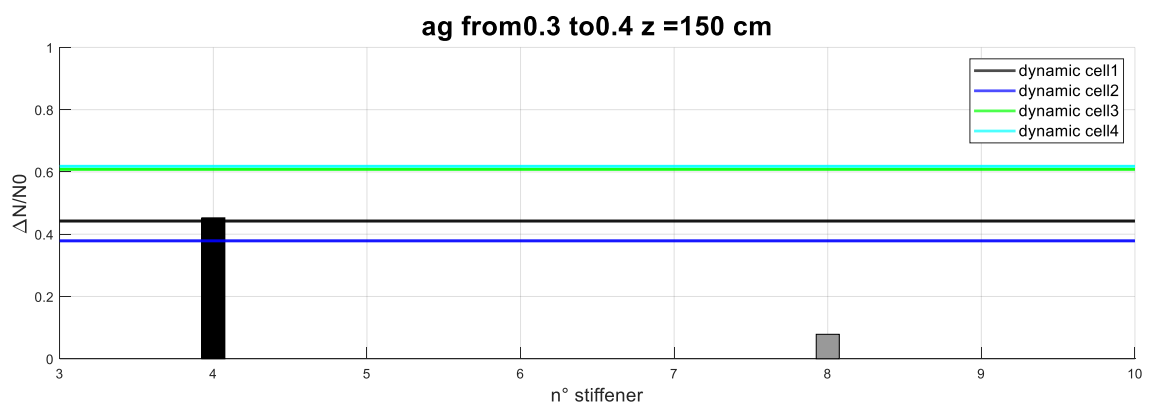
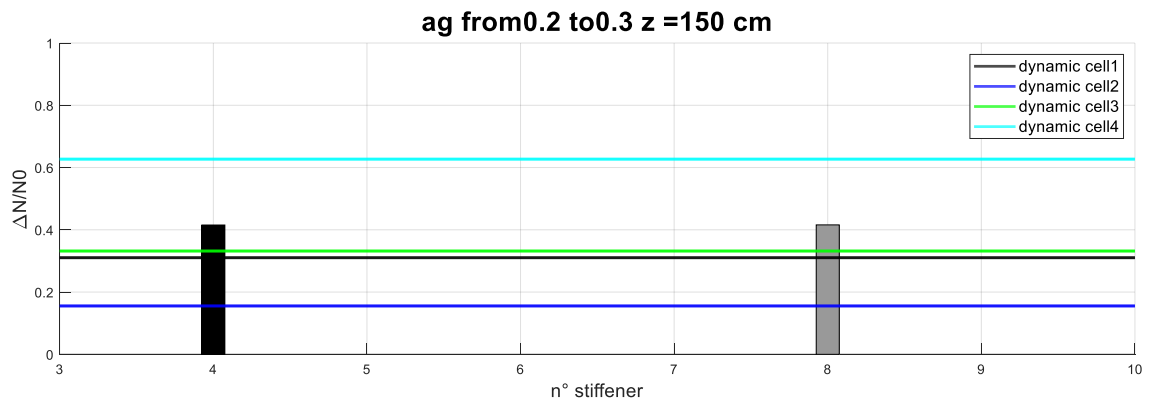
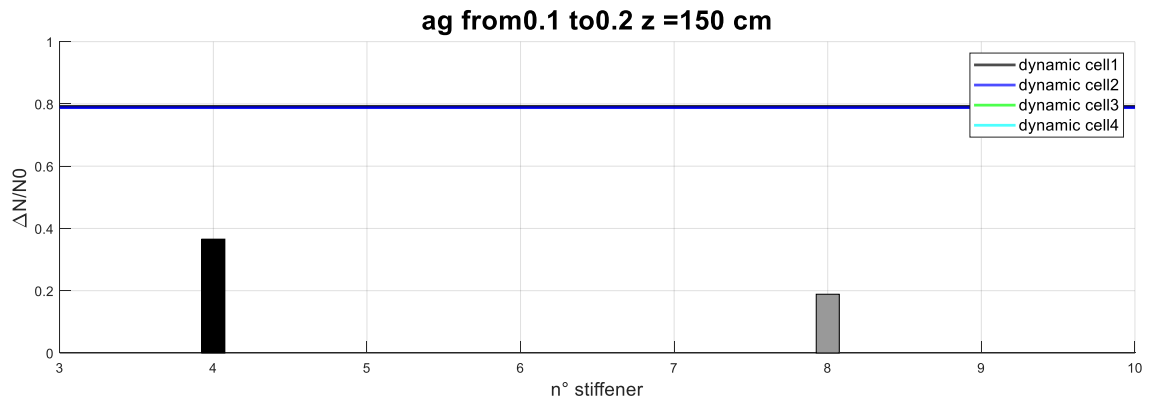


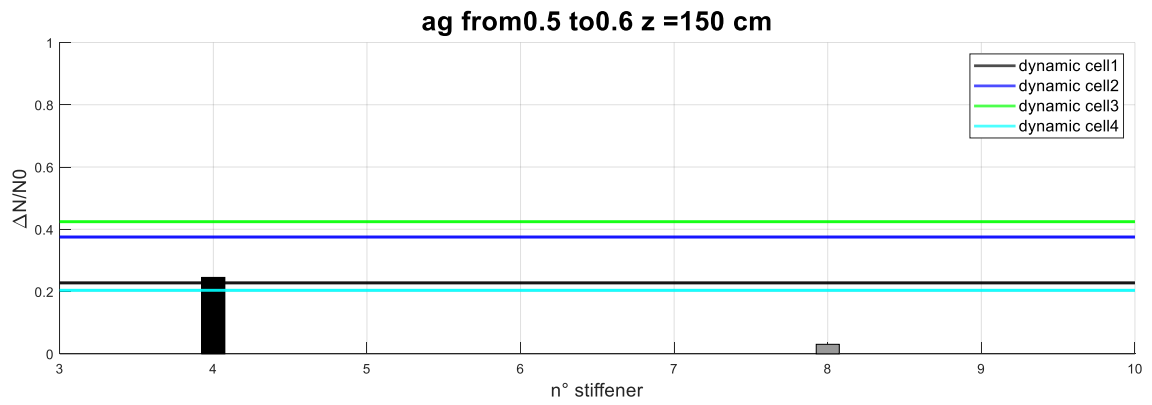
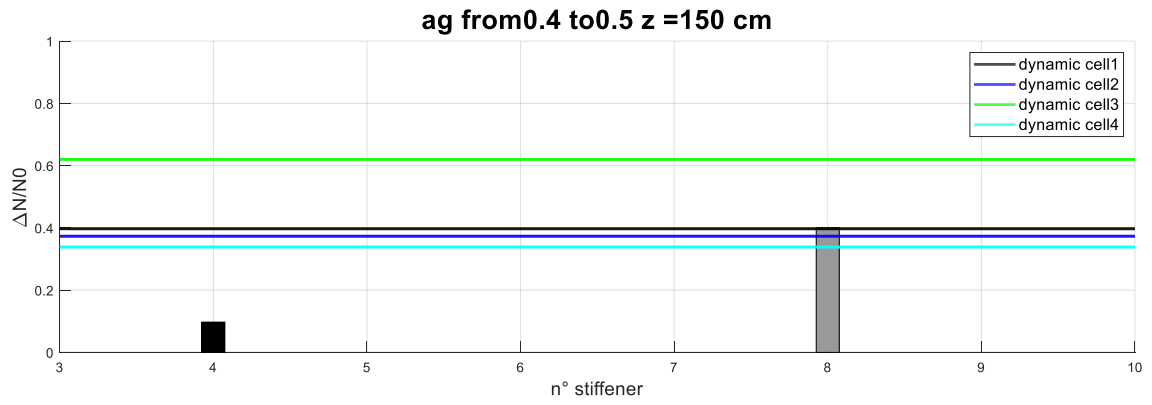
Quota Z = 49 cm



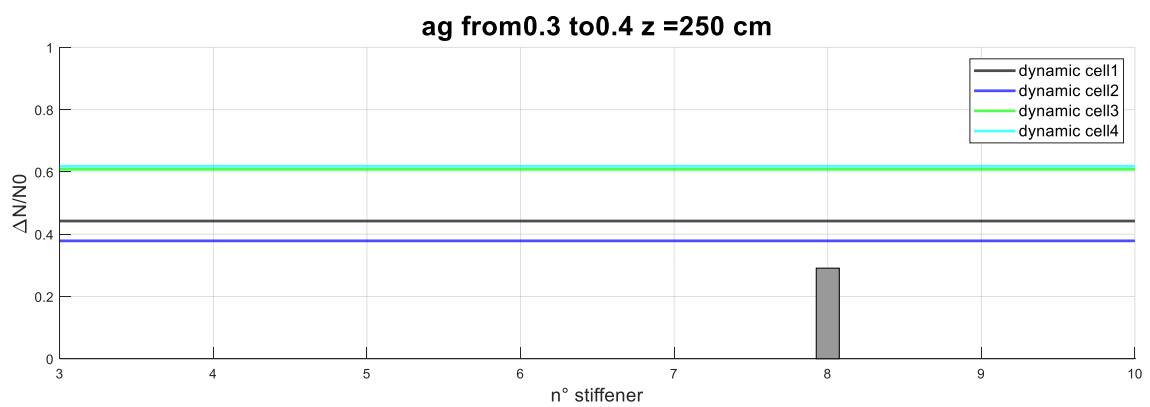
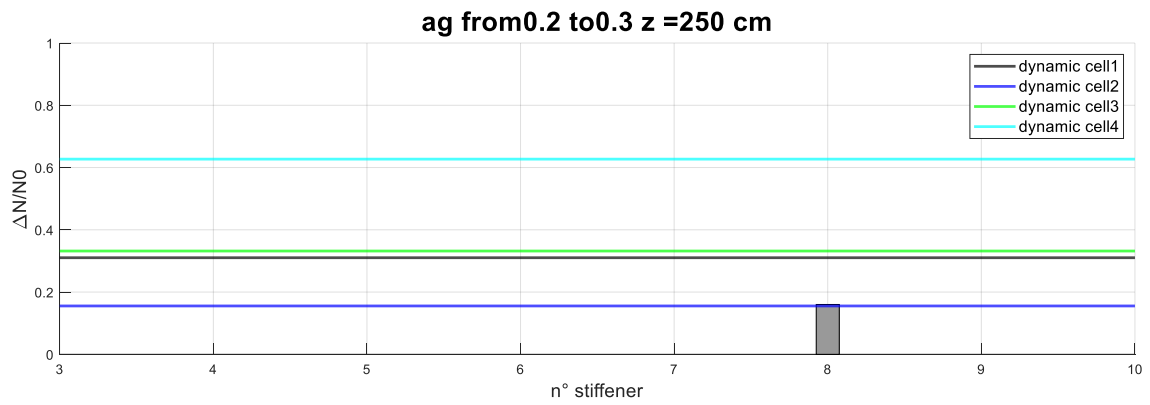
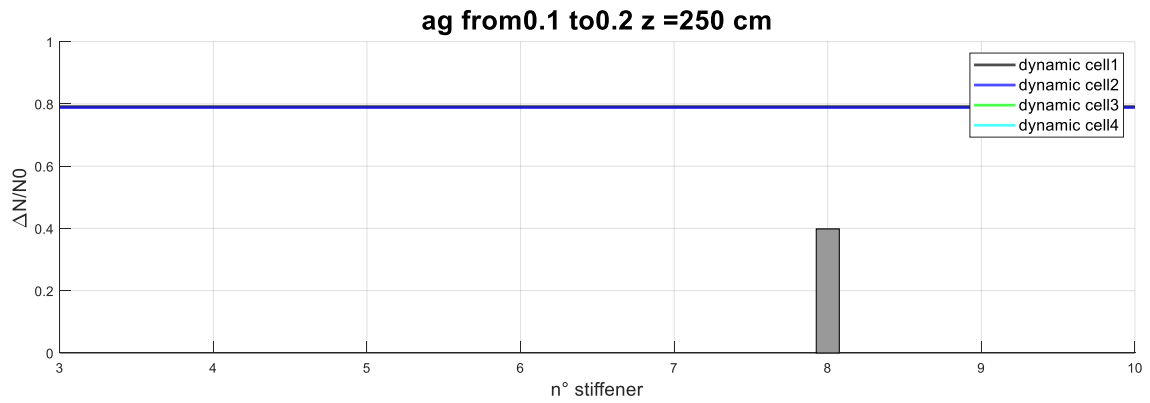


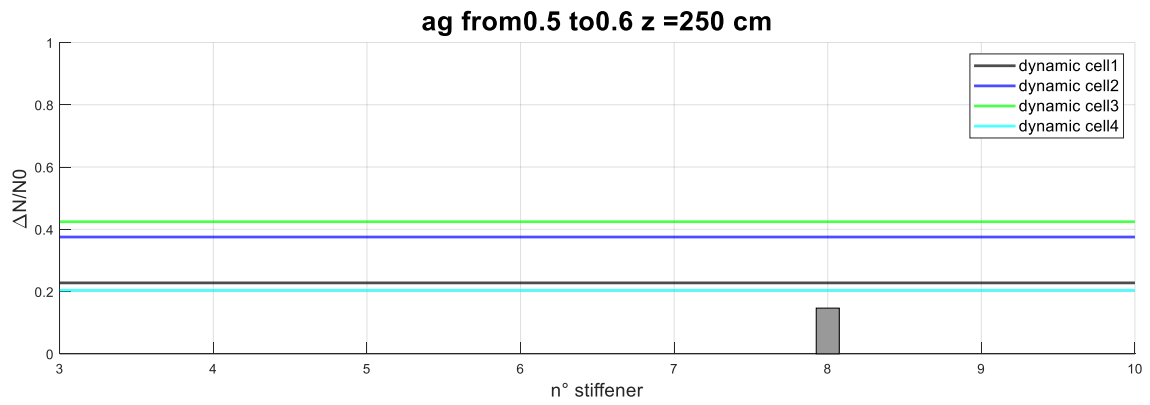
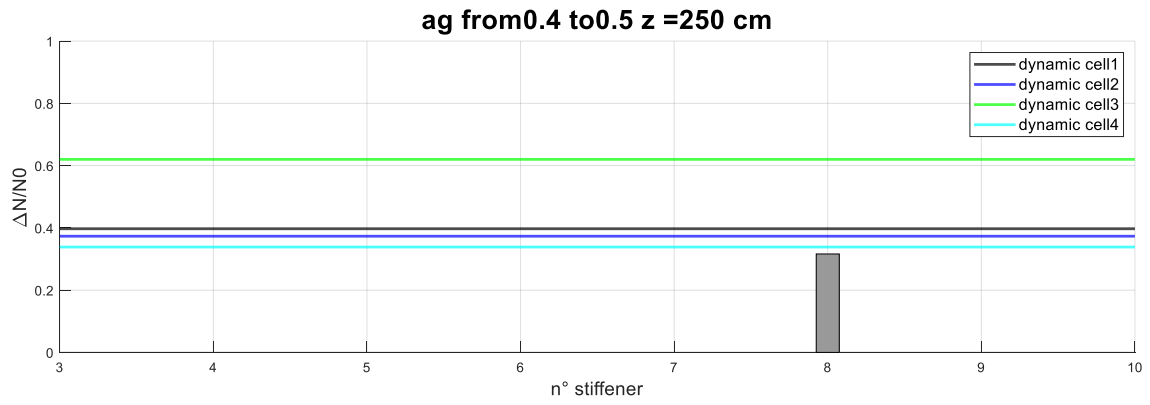
Quota Z = 150 cm





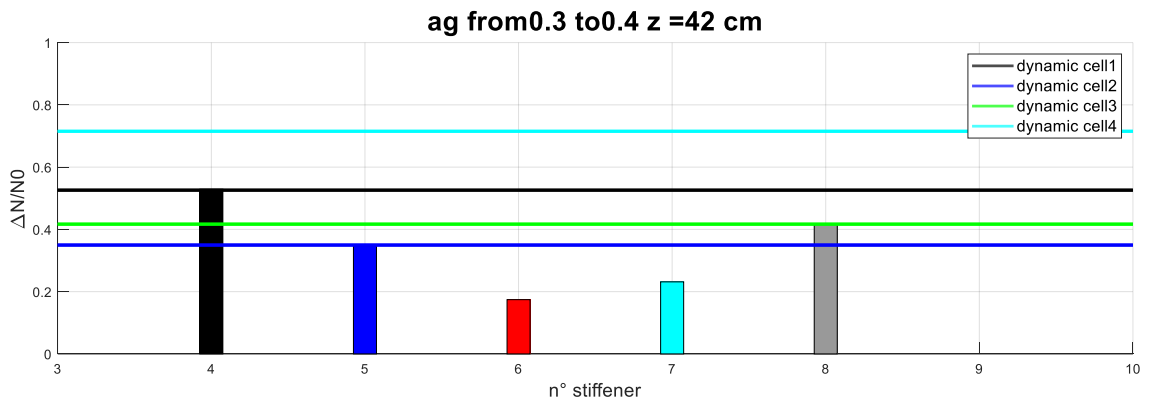
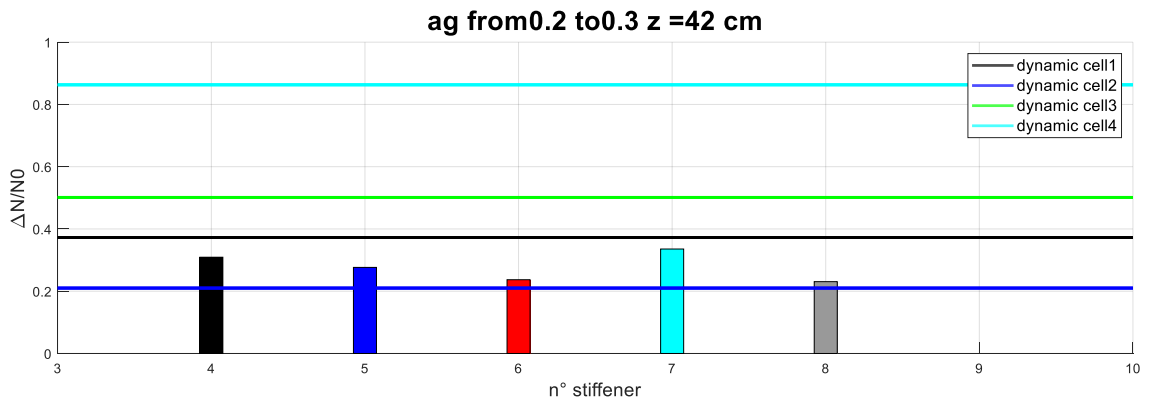
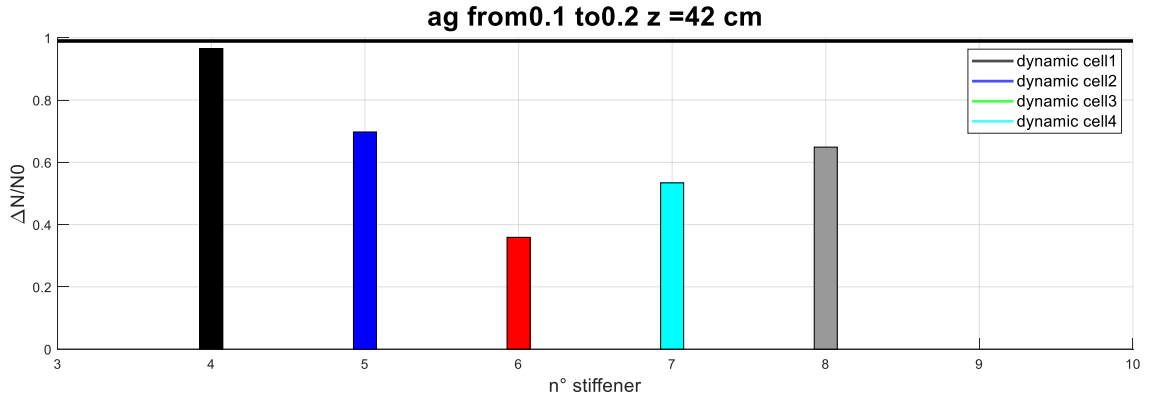
Quota Z = 250 cm

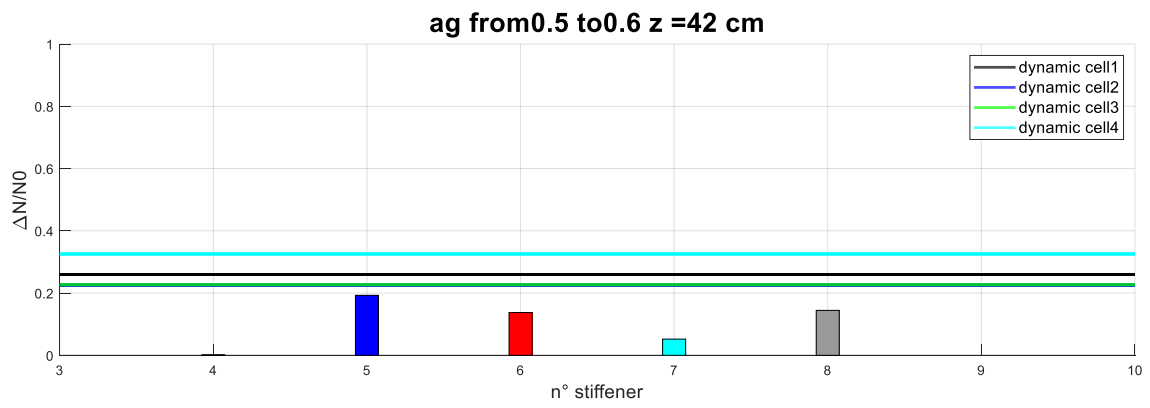
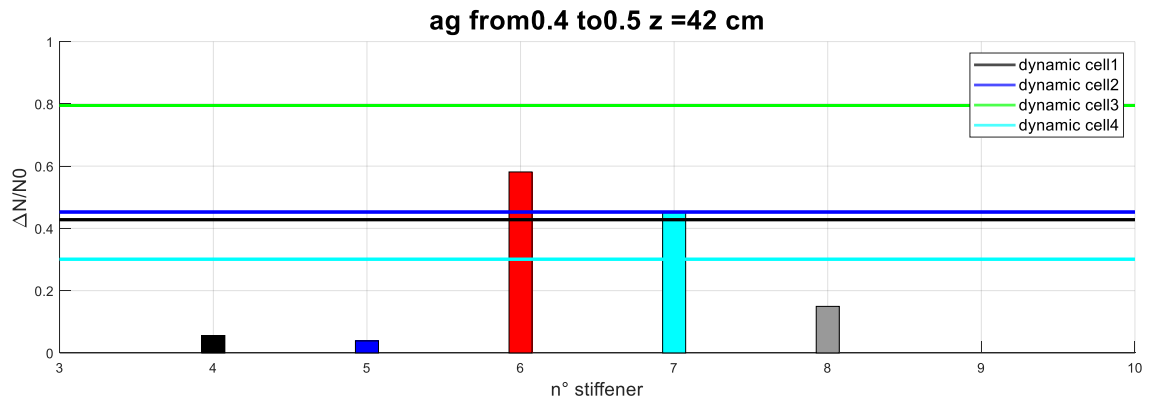




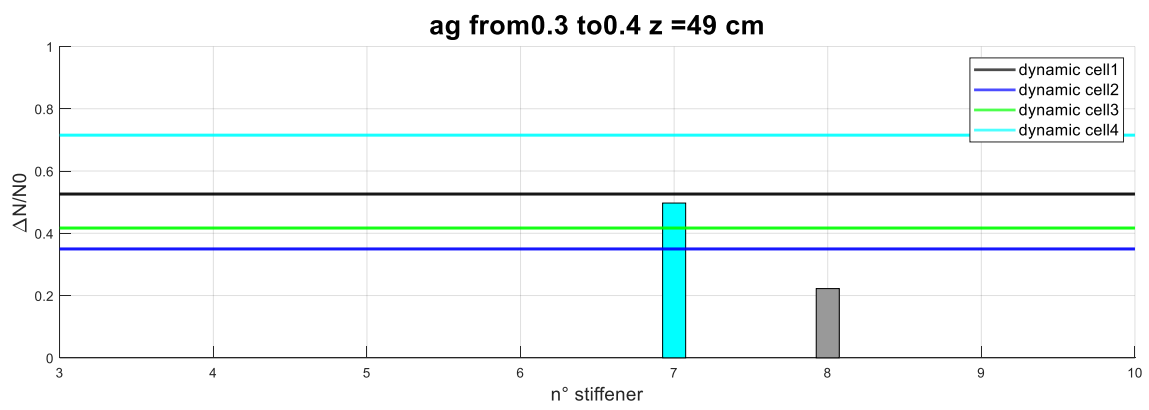
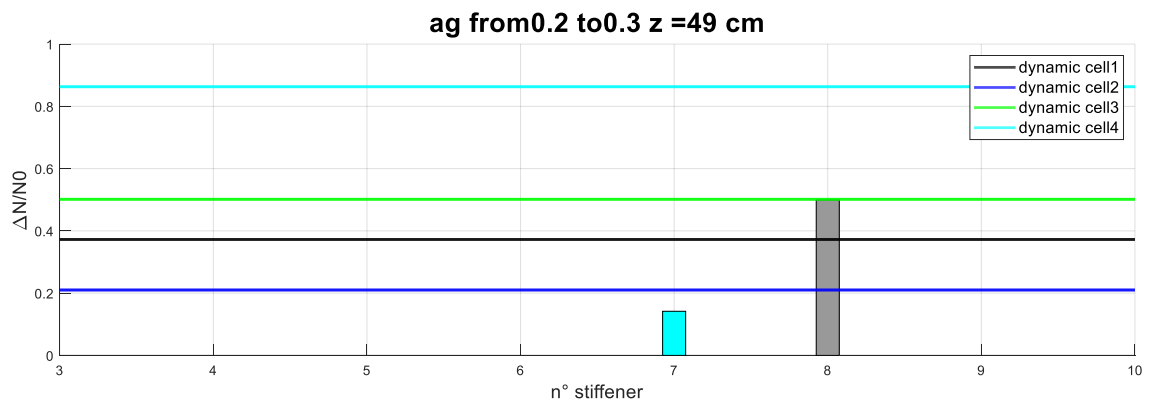
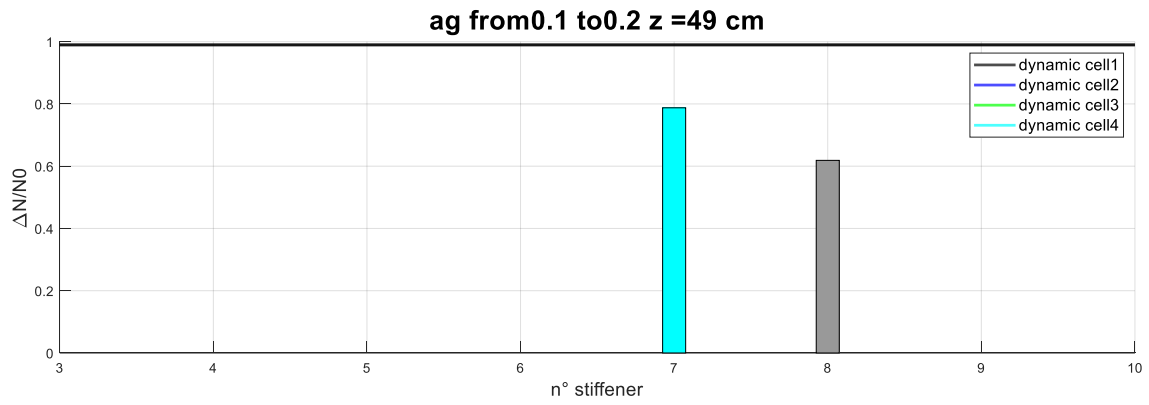
Earthquake input RS1

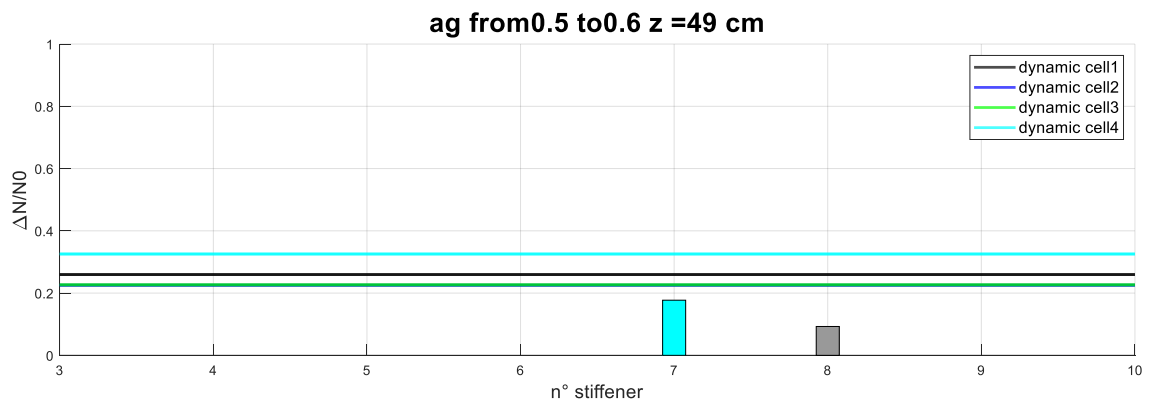
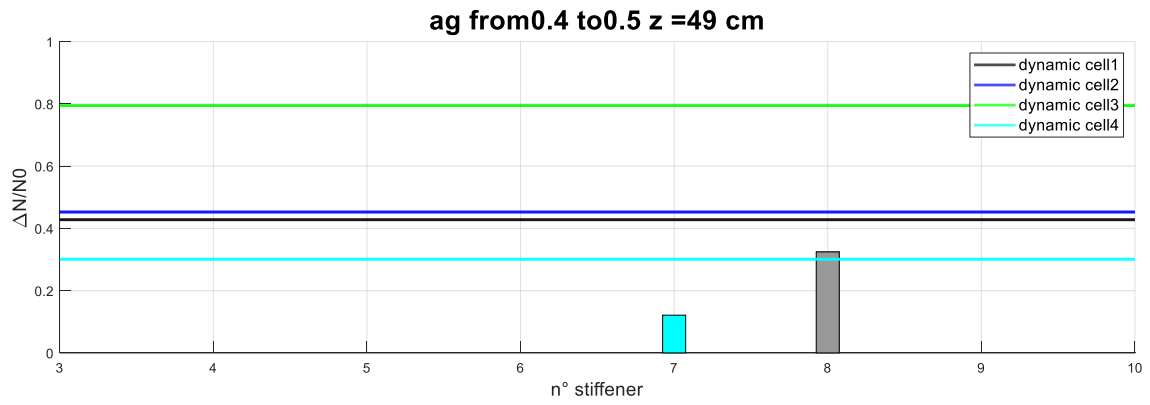
Quota Z = 42 cm



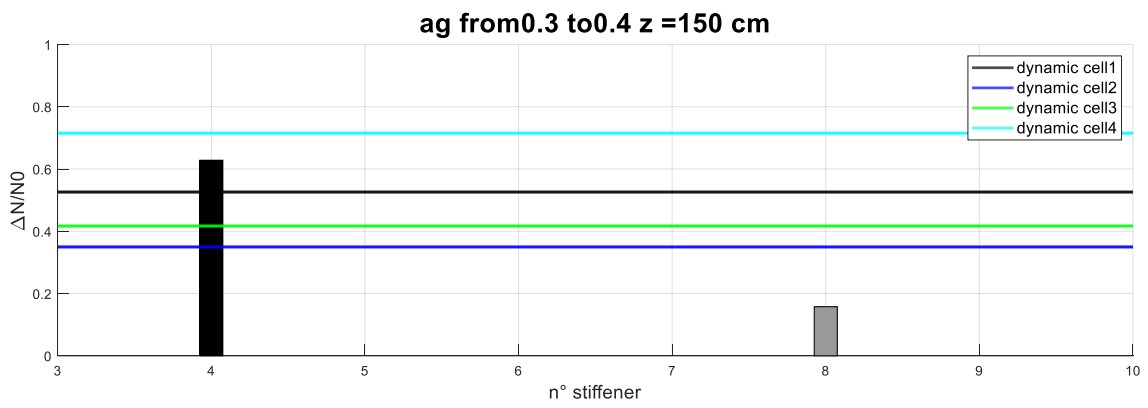
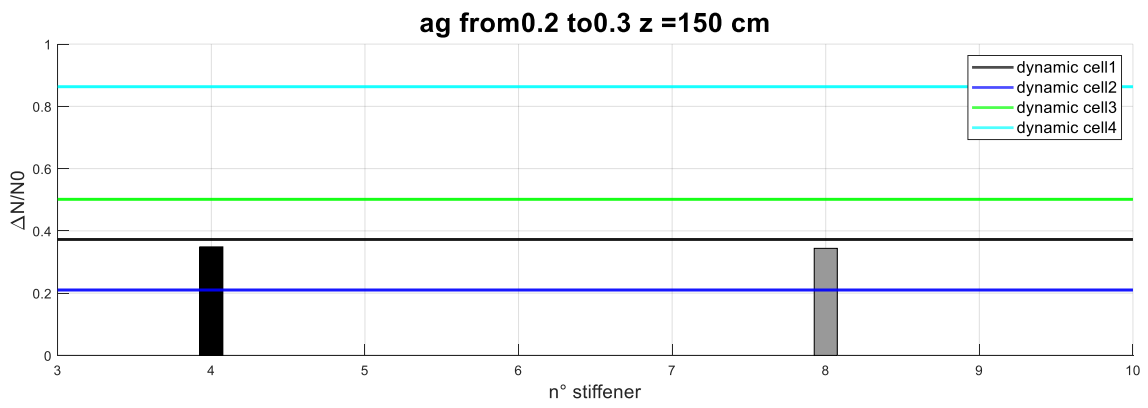
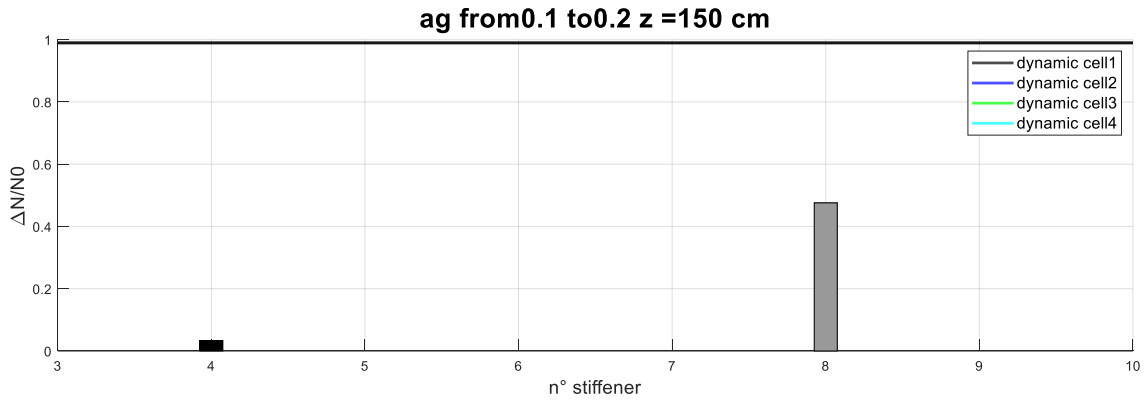


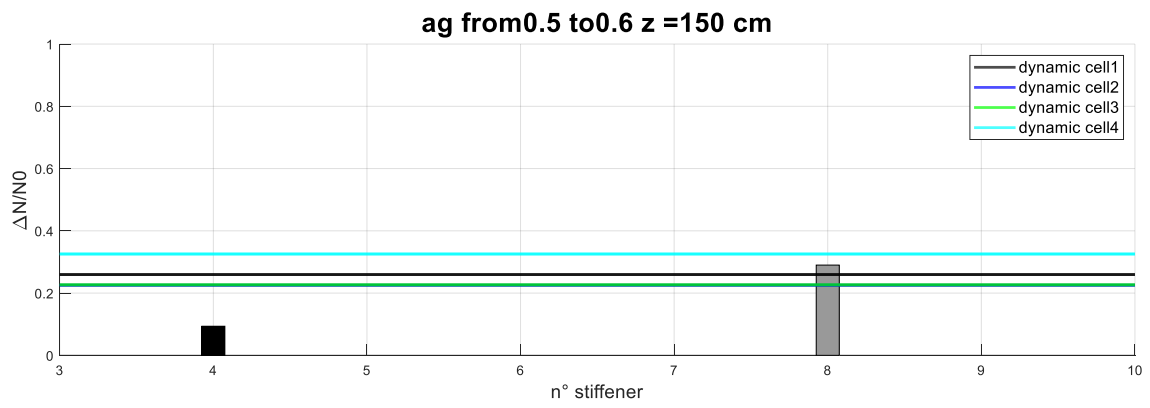
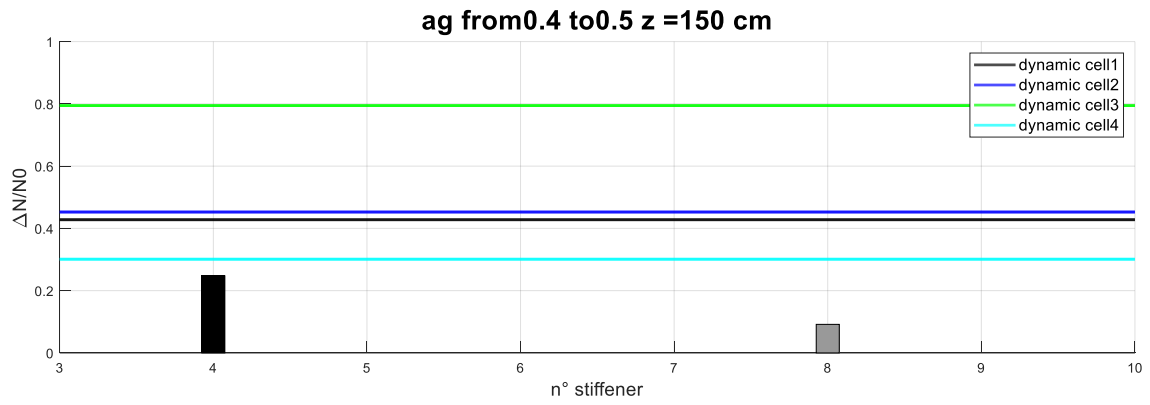
Quota Z = 49 cm



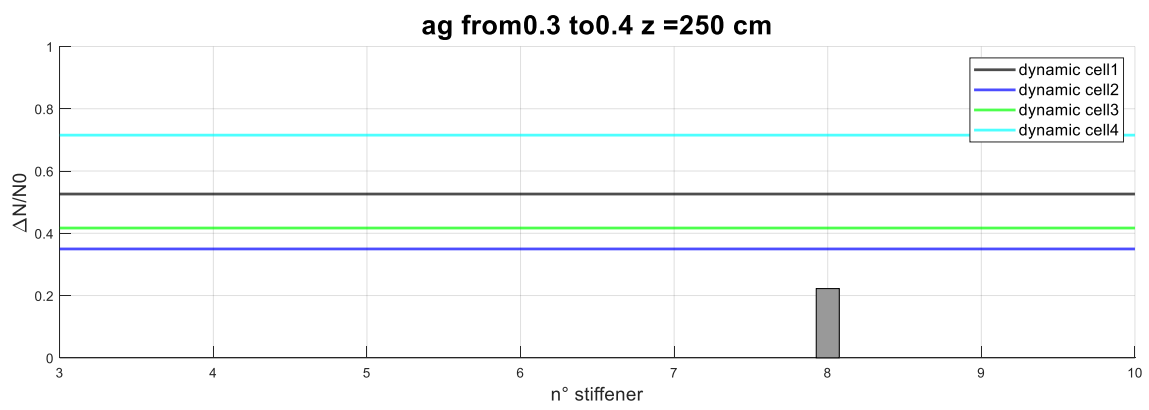
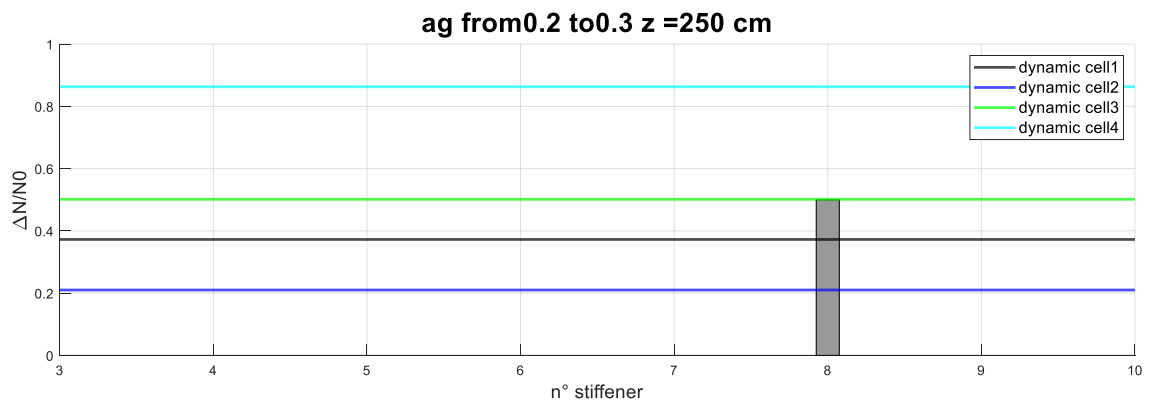
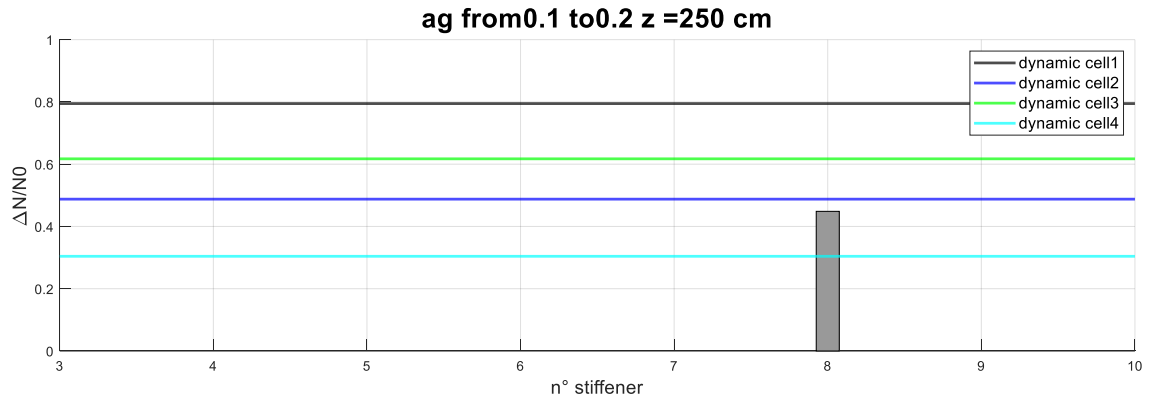


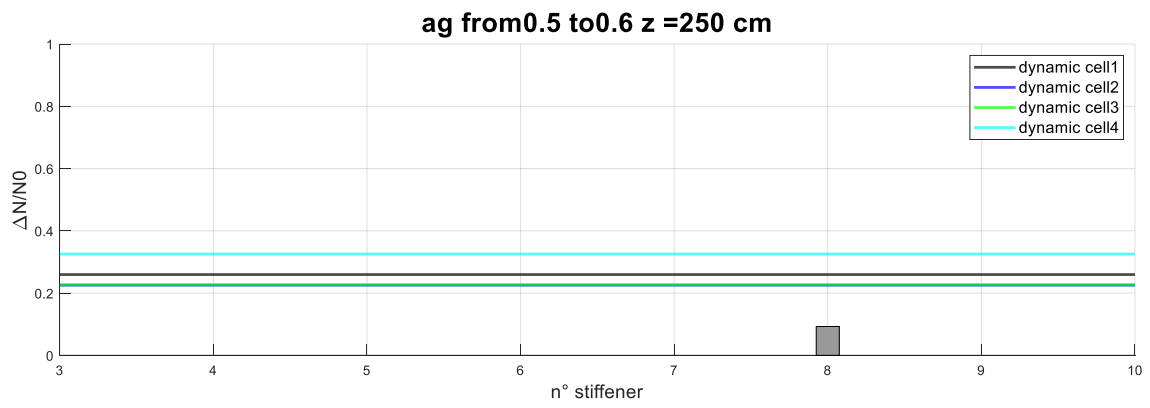
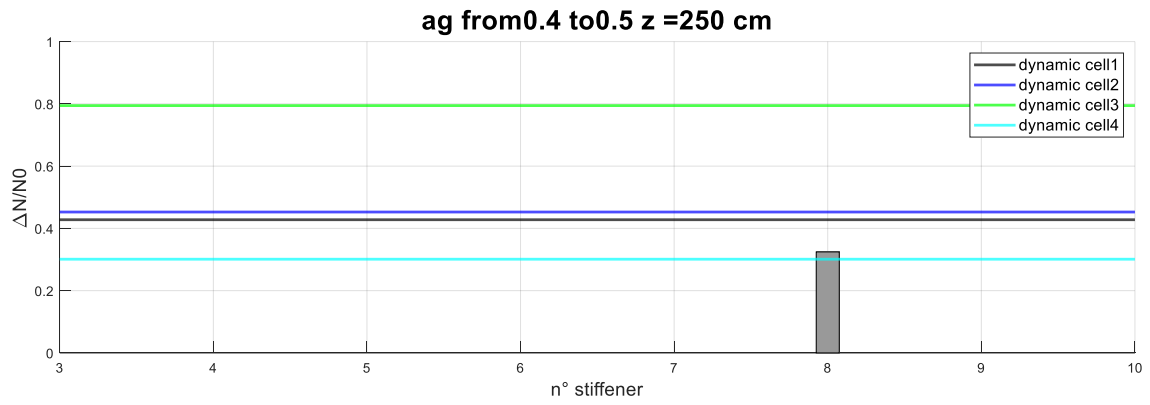
Quota Z = 150 cm





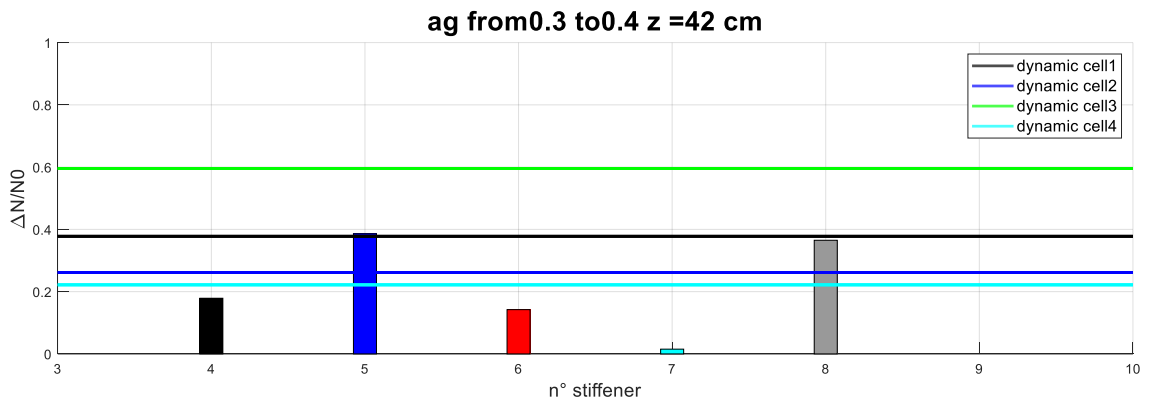
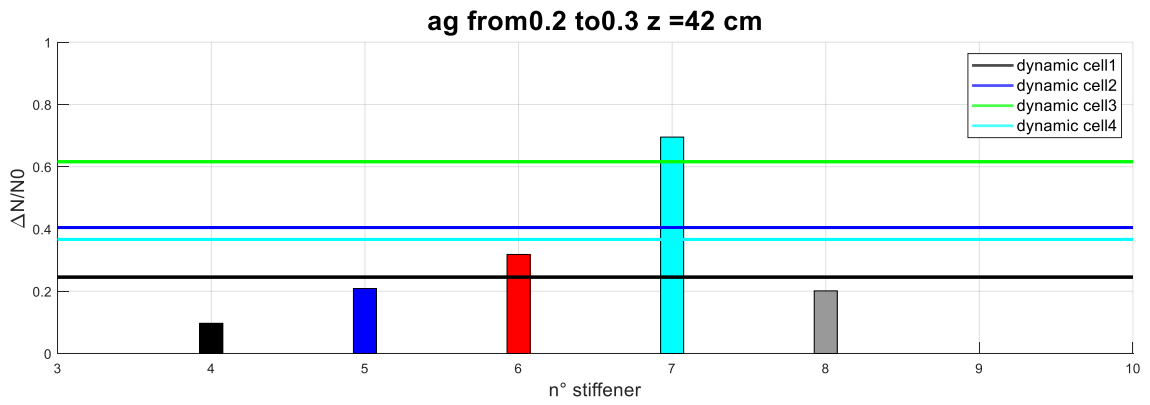
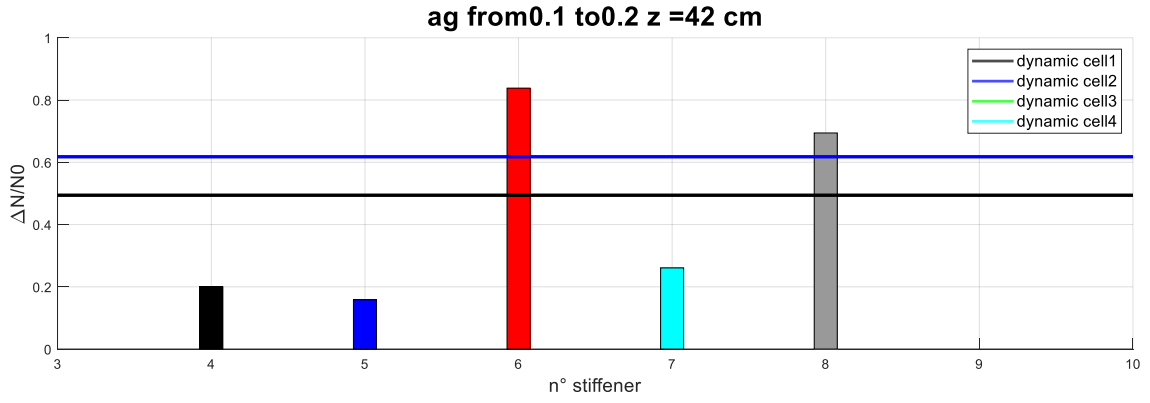
Quota Z = 250 cm

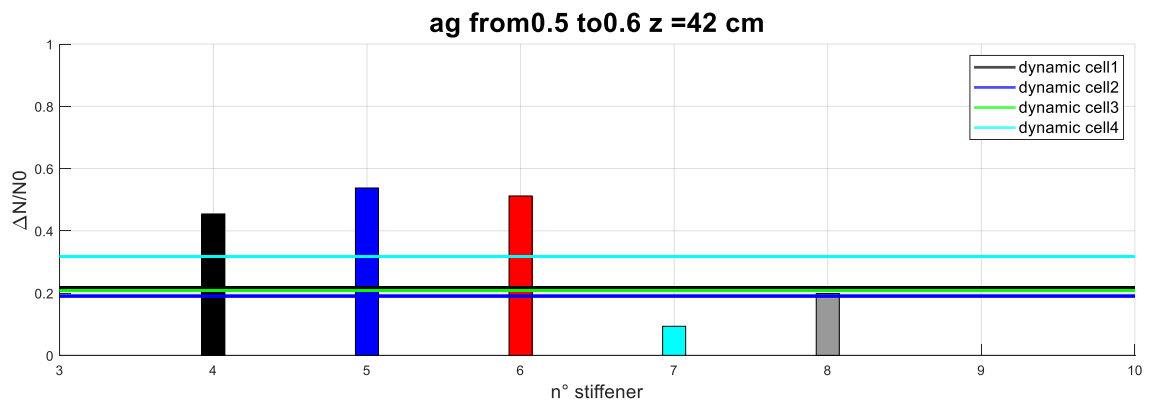
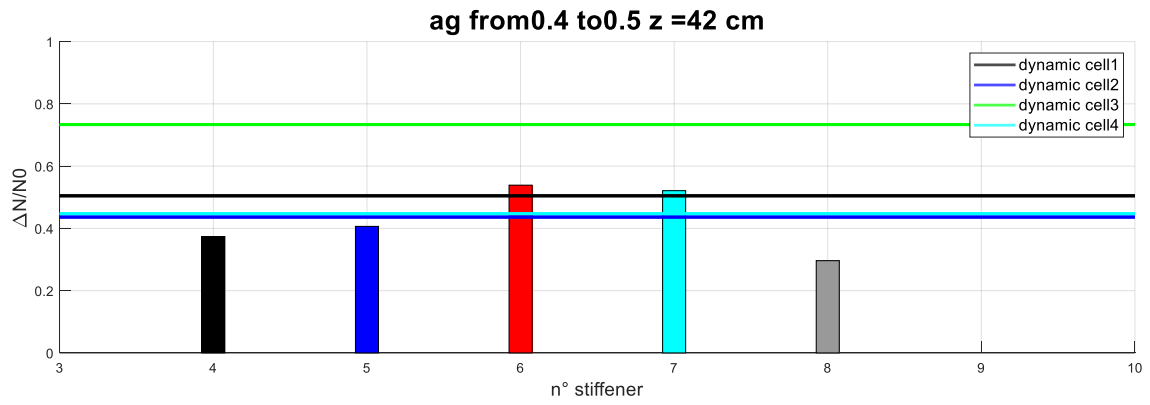




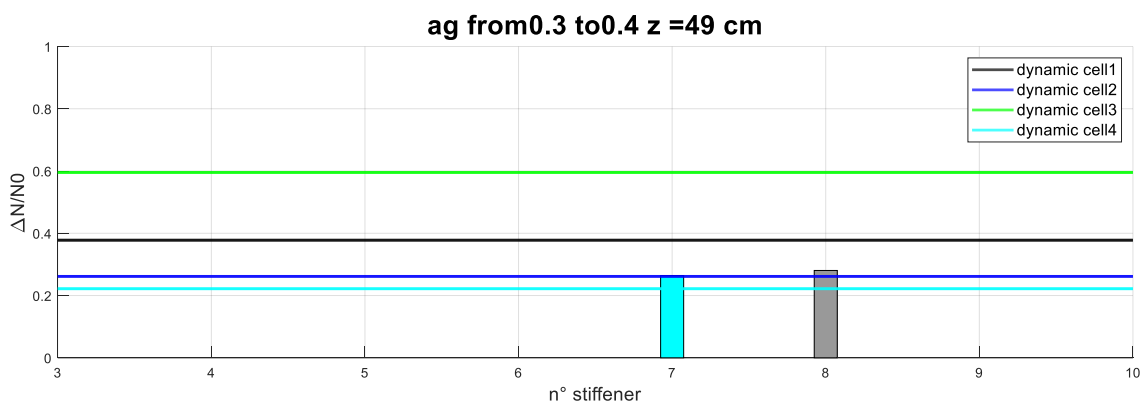
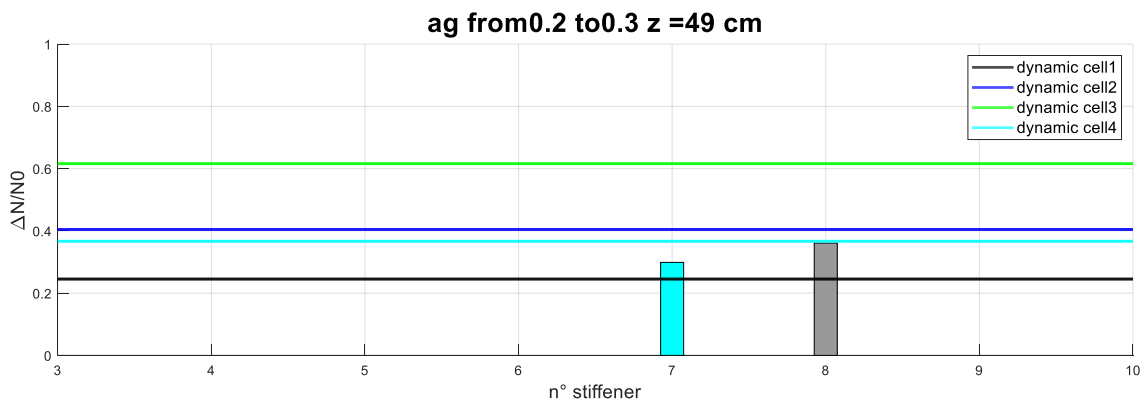
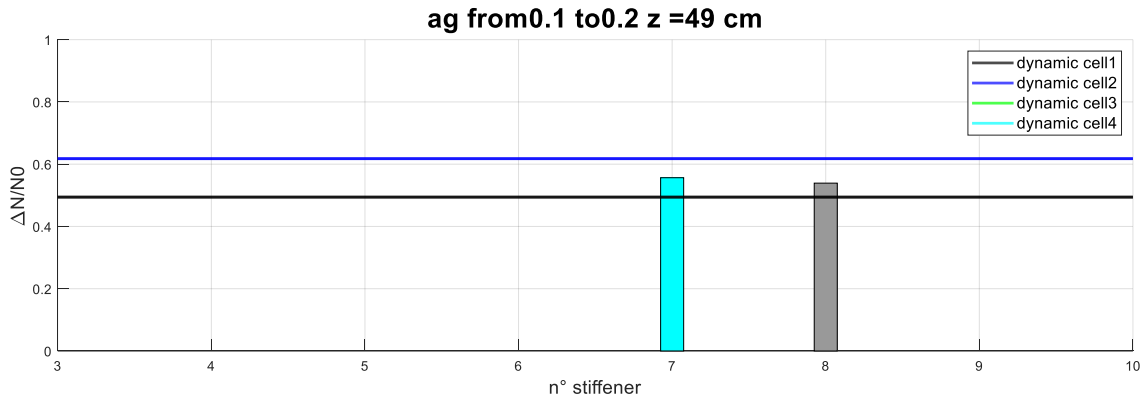
Earthquake input RS3

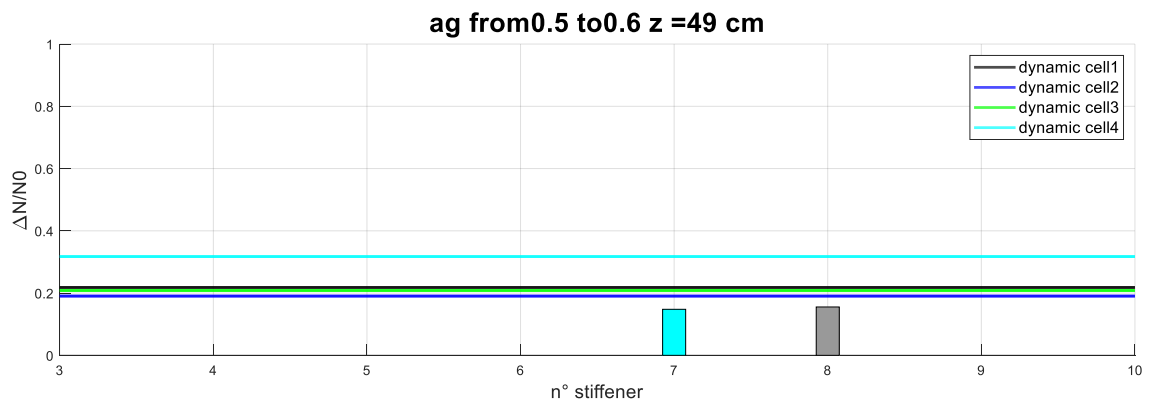
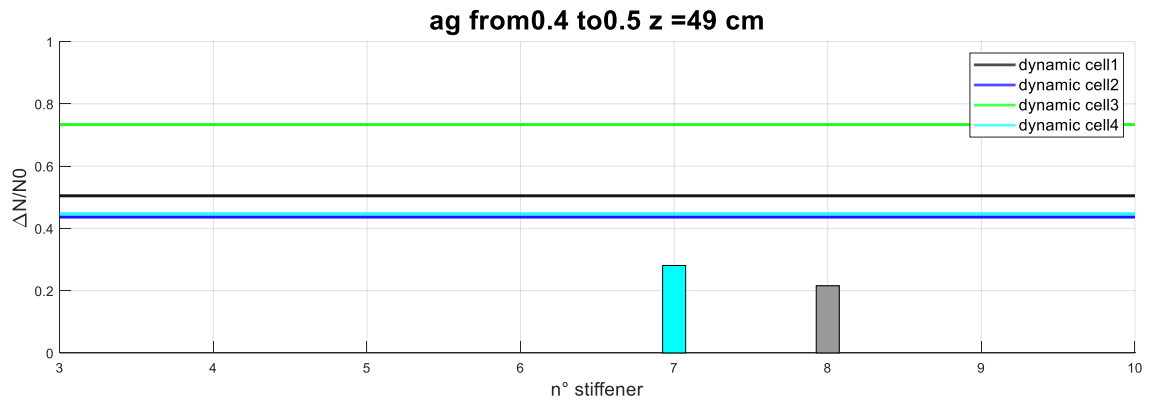
Quota Z = 42 cm



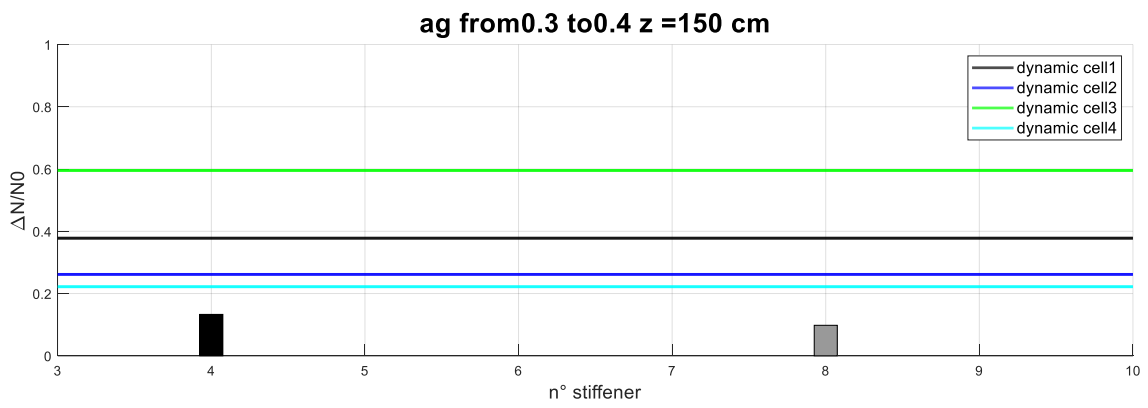
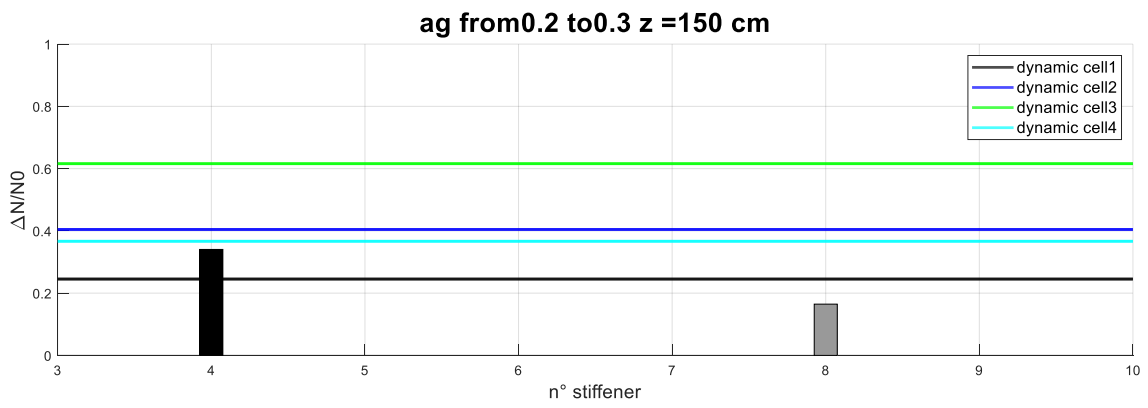
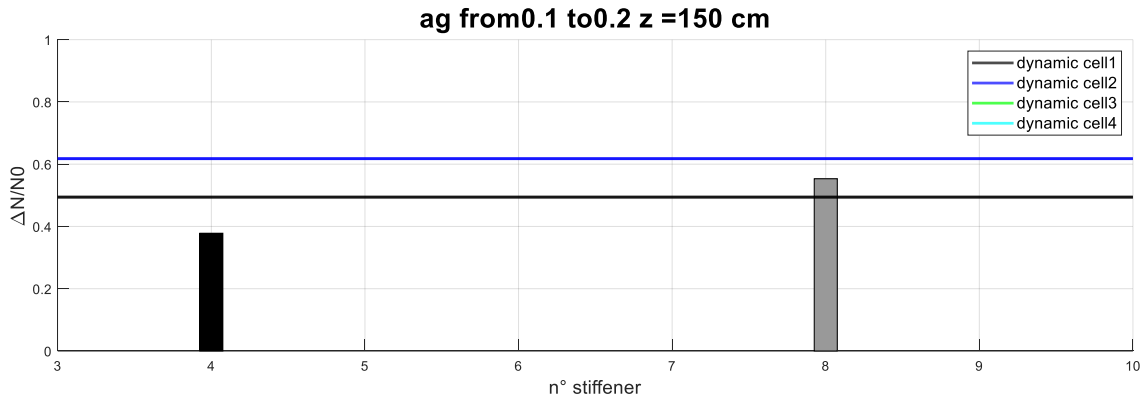


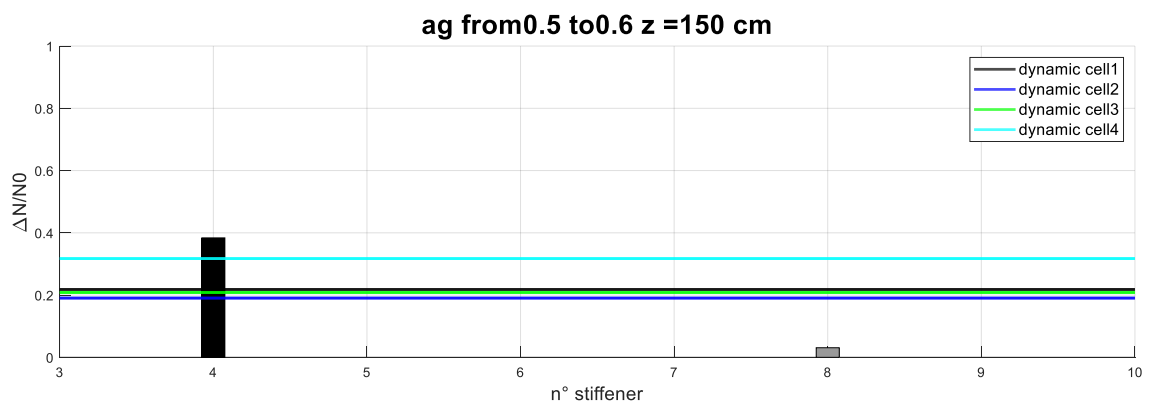
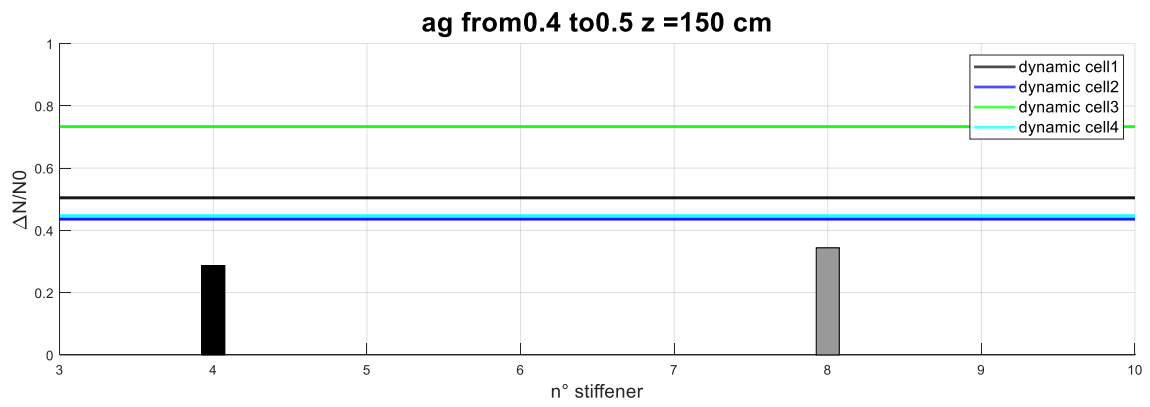
Quota Z = 49 cm





Quota Z = 150 cm





Quota Z = 250 cm

