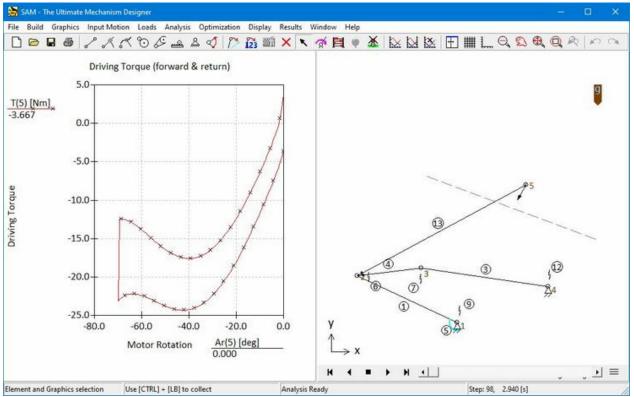


## What is new in SAM 8.4

## Load dependent friction

- A load dependent friction torque has been added to the already existing constant no-load friction torque of the rotation friction element. The total friction is now defined by a no-load friction torque, a friction coefficient and a friction radius.
- Friction has also been added to the <u>(curved) slider</u> element via two additional parameters, being the constant no-load friction force and the friction coefficient. The total friction force equals: no-load friction + contact force \* friction coefficient.

Example of an motorized automotive engine hood incl. rotation friction elements in all joints

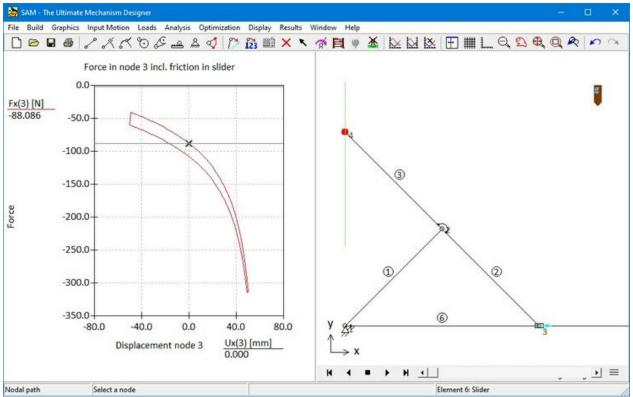


Required driving torque (back & forth motion) as function of the motor rotation.

lement Nr 00e I lement 1 lement 2	6 2 1 4
io-load friction Inction coefficient ladius	0.300 (Hen) 0.200 [4] 0.005 [e]
n fixation 7 At element 1	
At element 4	
" At dement 4	

## **Rotation Friction**





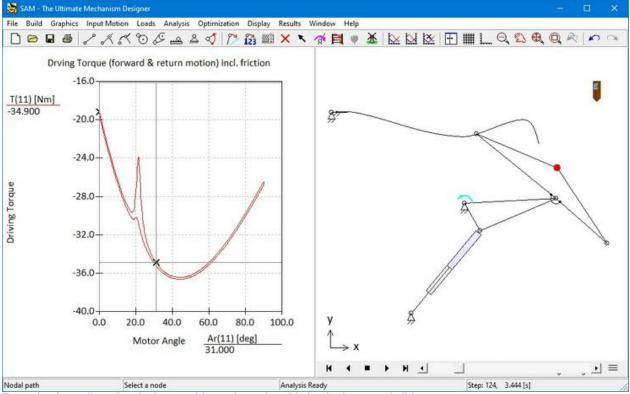
Example of a slider element used in a Hoecken mechanism to generate an exact linear motion

Exact linear guiding according to Hoecken incl. friction in slider element 6

Length 141.421 [mm]   Nrigle 0.000 [deg]   Stider length 276.619 [mm]   Mass 0.000 [deg]   Janetia at COG 0.000 [degmn2]   Red.Statuce to rod-end 0.000 [4]   No.0ad fiction 10.000 [4]	Length 541.421 [sm]   Stder length 276.619 [sm]   Read 0.000 [feg]   Stder length 0.000 [feg]   Inertia at COG 0.000 [feg]   Reidistance to rod-end 0.000 [feg]   Ne-load friction 10.000 [fe]   Friction coefficient 0.200 [f]	Length 541.421 [wm]   Stder length 276.619 [mm]   Read 0.000 [ftg]   Timeta et COG 0.000 [ftg]   Reidistance to rod-end 0.000 [ftg]   Ne-load friction 10.000 [ft]   Pinction coefficient 0.200 [ft]	Dement Nr Vode 1 Vode 2	6 1 3	
Skder length [276.619 [nm]   Meas 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Reflattance bir of end 0.000 [ligit]   Ne-load fiction 10.000 [ligit]   Friction coefficient 0.200 [ligit]	Skder length [726.619 [mm]   Meas 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Reliditation to independent 0.000 [ligit]   No-load fliction 10.000 [ligit]   Priction coefficient 0.200 [ligit]	Skder length [276.619 [nm]   Meas 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Inertia at COG 0.000 [ligit]   Reflattance bir of end 0.000 [ligit]   Ne-load fiction 10.000 [ligit]   Friction coefficient 0.200 [ligit]	ingth	141.421	[mm]
Nees D.000 [kg]   Inertia at COG 0.000 [kgmm2]   Re-food 0.000 [4]   No-food 0.000 [4]   No-food 0.000 [4]   Increase 0.000 [4]	Nees D.000 [kg]   Inertia at COG 0.000 [kgmm2]   Re-food 0.000 [4]   No-food 0.000 [4]   No-food 0.000 [4]   Increase 0.000 [4]	Nees D.000 [kg]   Inertia at COG 0.000 [kgmm2]   Re-food 0.000 [4]   No-food 0.000 [4]   No-food 0.000 [4]   Increase 0.000 [4]	-ge	0.000	for the
Inertia el COG 0.000 [legmo1] Re-Kead Fiction 0.000 [l] No-Kead Fiction 20.000 [l] finction coefficient 0.200 [l]	Inertia el COG 0.000 [legmo1] Re-Kead Fiction 0.000 [l] No-Kead Fiction 20.000 [l] finction coefficient 0.200 [l]	Inertia el COG 0.000 [legmo1] Re-Kead Fiction 0.000 [l] No-Kead Fiction 20.000 [l] finction coefficient 0.200 [l]			
Relidence to red end 0,000 [4] Ne-load friction 20,000 [9] Friction coefficient 0,200 [4]	Relidence to red end 0,000 [4] Ne-load friction 20,000 [9] Friction coefficient 0,200 [4]	Relidence to red end 0,000 [4] Ne-load friction 20,000 [9] Friction coefficient 0,200 [4]			[4]
Ne-load fiction 00.000 (k) Priction coefficient 0.200 (c)	Ne-load fiction 00.000 (k) Priction coefficient 0.200 (c)	Ne-load fiction 00.000 (k) Priction coefficient 0.200 (c)			
Priction coefficient	Prection coefficient	Prection coefficient			

Properties of the slider element





## Example of a toolbox riser incl. normal force dependent friction in the curved slider

Example of a toolbox riser incl. normal force dependent friction in the curved slider

Sement Nr Hode 1 Trajectory distance to Node 2 Curve type			8 7 3 0.572 Beper	[m]
-load friction			p. 500	01
riction coefficient		0.200	(4)	
	X [n]	Y [6]		
(point)	7.801	1.503		
(centrel point)	7.823	1.504		
(control point)	7.845	1.506		
(point)	7.867	1.501		
(cantrol point)	7.969	1.479		
(control point)	8.023	1.447		
(point)	0.128	1.442		
(control point)	8.559	1.441		
(control point)	8.238	1.485		
(point)	8.279	1.485		
(control point)	8.304	1.485		
(control point)	8.312	1.454		
l (paint)	8.319	1.423		
(point) Add	_ <b>b</b> .339	L-423	E	Delete
Import conts				
			-	Delete al
Import points and control points				
When moving node	2: also transl	ale the curve.		

Properties of the curved slider element