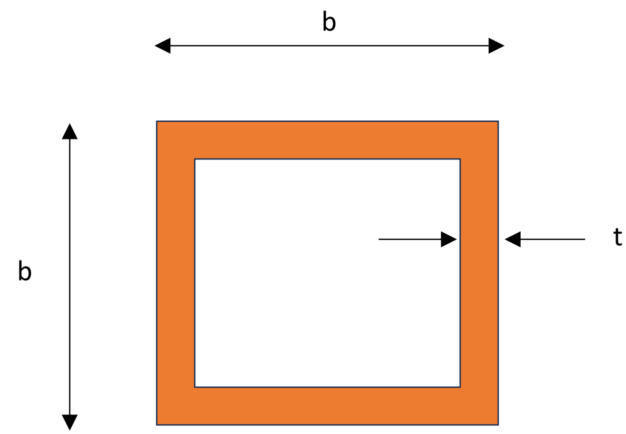
Comparaison de l'influence de l'élancement des parois sur le comportement en compression de tubes carré en aluminium

Sans soudures

6061-T6

E =	70000	MPa
Fu =	260	MPa
Fy =	240	MPa
Fwu =	165	MPa
Fwy =	105	MPa
ϕu =	0,75	
ϕy =	0,9	



100x100x6

b = 100 mm

t = 6 mm

$A = 4(bt - t^2) =$ 2256 mm²

$I = \frac{1}{12}(b^4 - (b-2t)^4) =$ 3335872 mm^4

$r = \sqrt{\frac{I}{A}} =$ 38,5 mm

$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$ 15,667

150x150x3,86

b = 150 mm

t = 3,86 mm

$A = 4(bt - t^2) =$ 2256 mm²

$I = \frac{1}{12}(b^4 - (b-2t)^4) =$ 8037227 mm^4

$r = \sqrt{\frac{I}{A}} =$ 59,7 mm

$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$ 37,860

Ratio A : 1,000

Ratio I : 2,409

Vérification du voilement locale

	$m = 1{,}25 + \dfrac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65		$m = 1{,}25 + \dfrac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65	
Élancement paroi :	$\lambda = \dfrac{m\,b}{t} =$	25,85		$\lambda = \dfrac{m\,b}{t} =$	62,47	
Contrainte limite :	$F_0 = F_y =$	240 MPa		$F_0 = F_y =$	240 MPa	
Élancement norm. :	$\bar{\lambda} = \left(\dfrac{\lambda}{\pi}\right)\sqrt{\dfrac{F_0}{E}} =$	0,482 <	$\bar{\lambda}_0$	$\bar{\lambda} = \left(\dfrac{\lambda}{\pi}\right)\sqrt{\dfrac{F_0}{E}} =$	1,164 >	$\bar{\lambda}_0$
Alliage non soudé (α=0,2)	α =	0,2		α =	0,2	
	$\bar{\lambda}_0 =$	0,5		$\bar{\lambda}_0 =$	0,5	
	$\beta = \dfrac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	2,646		$\beta = \dfrac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	0,918	
	$\bar{F} = \beta - \sqrt{\beta^2 - \dfrac{1}{\bar{\lambda}^2}} \leq 1 =$	1,000		$\bar{F} = \beta - \sqrt{\beta^2 - \dfrac{1}{\bar{\lambda}^2}} \leq 1 =$	0,594	
Contrainte de voilement locale	$F_c = \bar{F}\,F_0 =$	240 MPa		$F_c = \bar{F}\,F_0 =$	142,6 MPa	

Vérification du flambement global

Pour L = 500 mm

100x100x6

Élancement poteau : $\lambda = \frac{K\,L}{r} =$ 13,00

Contrainte limite : $F_0 = \sqrt{\bar{F}}\,F_y =$ 240 MPa

Élancement norm. : $\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 0,242 < $\bar{\lambda}_0$

Alliage non soudé (α=0,2) α = 0,2

$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 8,915

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 1,000

Contrainte de flambement global $F_c = \bar{F}\,F_0 =$ 240,0 MPa

résistance du poteau $C_r = \phi_y\,A_g\,F_c =$ 487,3 kN

150x150x3,86

$\lambda = \frac{K\,L}{r} =$ 8,38

$F_0 = \sqrt{\bar{F}}\,F_y =$ 185,0 MPa

$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 0,137 < $\bar{\lambda}_0$

α = 0,2

$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 26,237

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 1,000

$F_c = \bar{F}\,F_0 =$ 185,0 MPa

$C_r = \phi_y\,A_g\,F_c =$ 375,6 kN

Vérification du flambement global

Pour L = 3000 mm

100x100x6

Élancement poteau : $\lambda = \frac{K\,L}{r} =$ 78,02

Contrainte limite : $F_0 = \sqrt{\bar{F}}\,F_y =$ 240 MPa

Élancement norm. : $\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 1,454 > $\bar{\lambda}_0$

Alliage non soudé (α=0,2) α = 0,2

$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 0,791

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 0,400

Contrainte de flambement global $F_c = \bar{F}\,F_0 =$ 96,0 MPa

résistance du poteau $C_r = \phi_y\,A_g\,F_c =$ 195,0 kN

150x150x3,86

$\lambda = \frac{K\,L}{r} =$ 50,27

$F_0 = \sqrt{\bar{F}}\,F_y =$ 185,0 MPa

$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 0,823 > $\bar{\lambda}_0$

α = 0,2

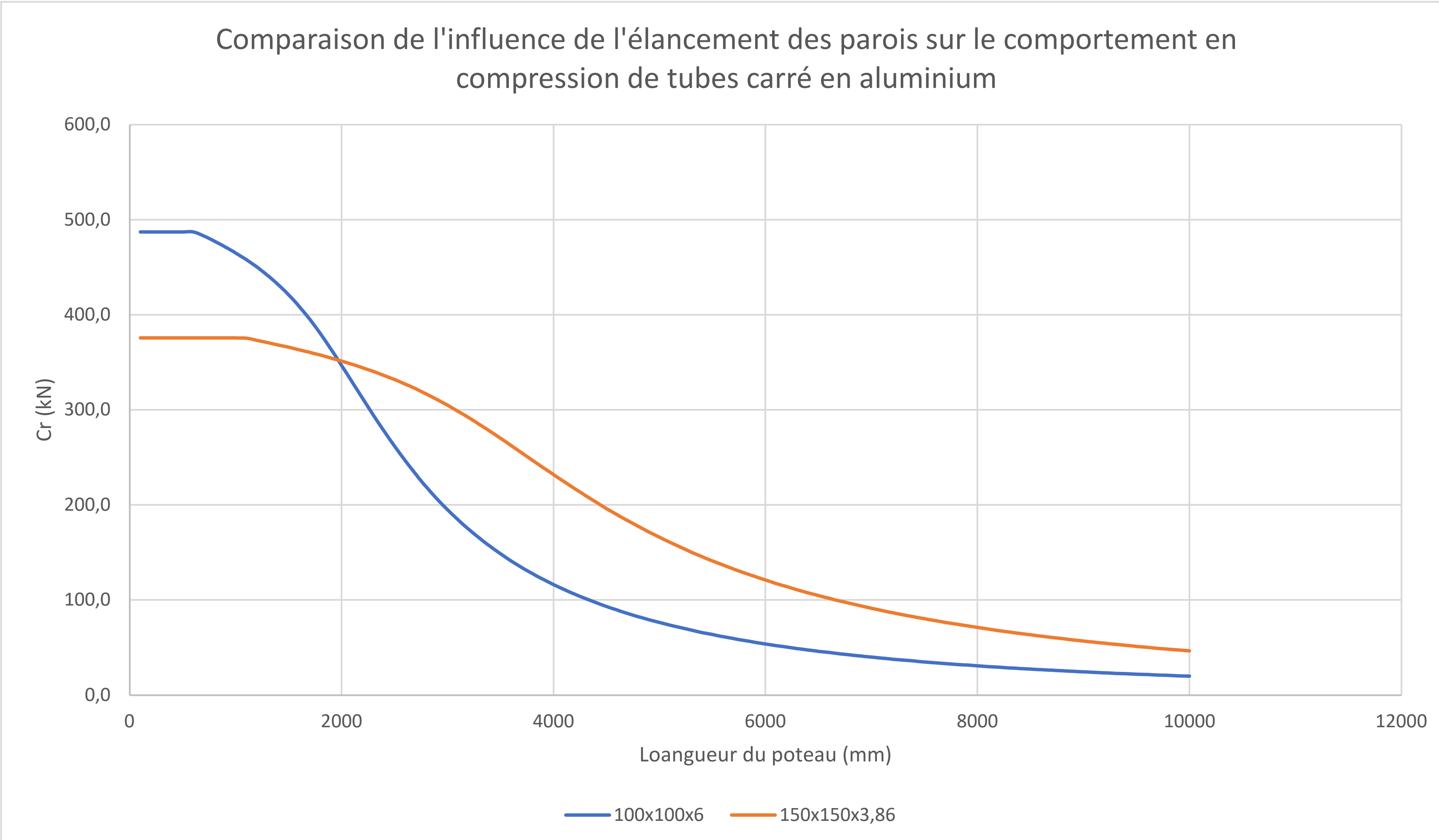
$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 1,316

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 0,812

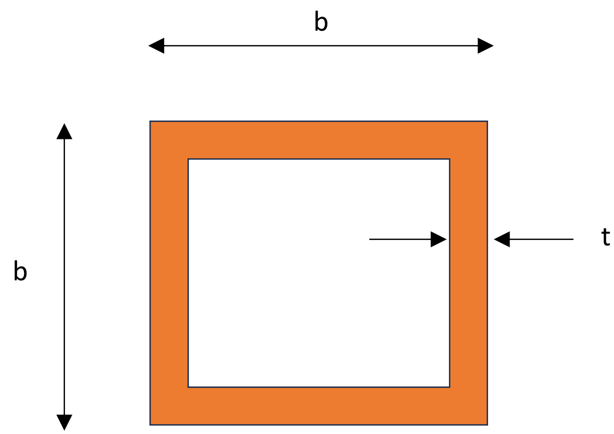
$F_c = \bar{F}\,F_0 =$ 150,2 MPa

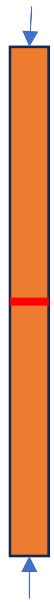
$C_r = \phi_y\,A_g\,F_c =$ 304,9 kN


Comparaison de l'influence de l'élancement des parois sur le comportement en compression de tubes carré en aluminium
600,0
500,0
400,0
300,0
200,0
100,0
0,0
Cr (kN)
0
2000
4000
6000
8000
10000
12000
Loangueur du poteau (mm)
100x100x6
150x150x3,86

Comparaison de l'influence de l'élancement des parois et des soudures sur le comportement en compression de tubes carré en aluminium

Avec soudure transversale au centre du poteau





6061-T6

E =	70000	MPa
Fu =	260	MPa
Fy =	240	MPa
Fwu =	165	MPa
Fwy =	105	MPa
ϕu =	0,75	
ϕy =	0,9	

100x100x6 (soud. Trans)

b =	100	mm
t =	6	mm
$A = 4(bt - t^2) =$	2256	mm²
$I = \frac{1}{12}(b^4 - (b-2t)^4) =$	3335872	mm^4
$r = \sqrt{\frac{I}{A}} =$	38,5	mm
$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$	15,667	

150x150x3,86 (soud. Trans)

b =	150	mm
t =	3,86	mm
$A = 4(bt - t^2) =$	2256	mm²
$I = \frac{1}{12}(b^4 - (b-2t)^4) =$	8037227	mm^4
$r = \sqrt{\frac{I}{A}} =$	59,7	mm
$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$	37,860	

Ratio A : 1,000

Ratio I : 2,409

<u>Vérification du voilement locale</u>

	100x100x6 (soud. Trans)		150x150x3,86 (soud. Trans)	
	$m = 1{,}25 + \frac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65	$m = 1{,}25 + \frac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65
Élancement paroi :	$\lambda = \frac{m\,b}{t} =$	25,85	$\lambda = \frac{m\,b}{t} =$	62,47
Contrainte limite :	$F_0 = F_y =$	240 MPa	$F_0 = F_y =$	240 MPa
Élancement norm. :	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,482 < $\bar{\lambda}_0$	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	1,164 > $\bar{\lambda}_0$
Alliage non soudé (α=0,2)	α =	0,2	α =	0,2
	$\bar{\lambda}_0 =$	0,5	$\bar{\lambda}_0 =$	0,5
	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	2,646	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	0,918
	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	1,000	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,594
Contrainte de voilement locale	$F_c = \bar{F}\,F_0 =$	240 MPa	$F_c = \bar{F}\,F_0 =$	142,6 MPa

Vérification du flambement global

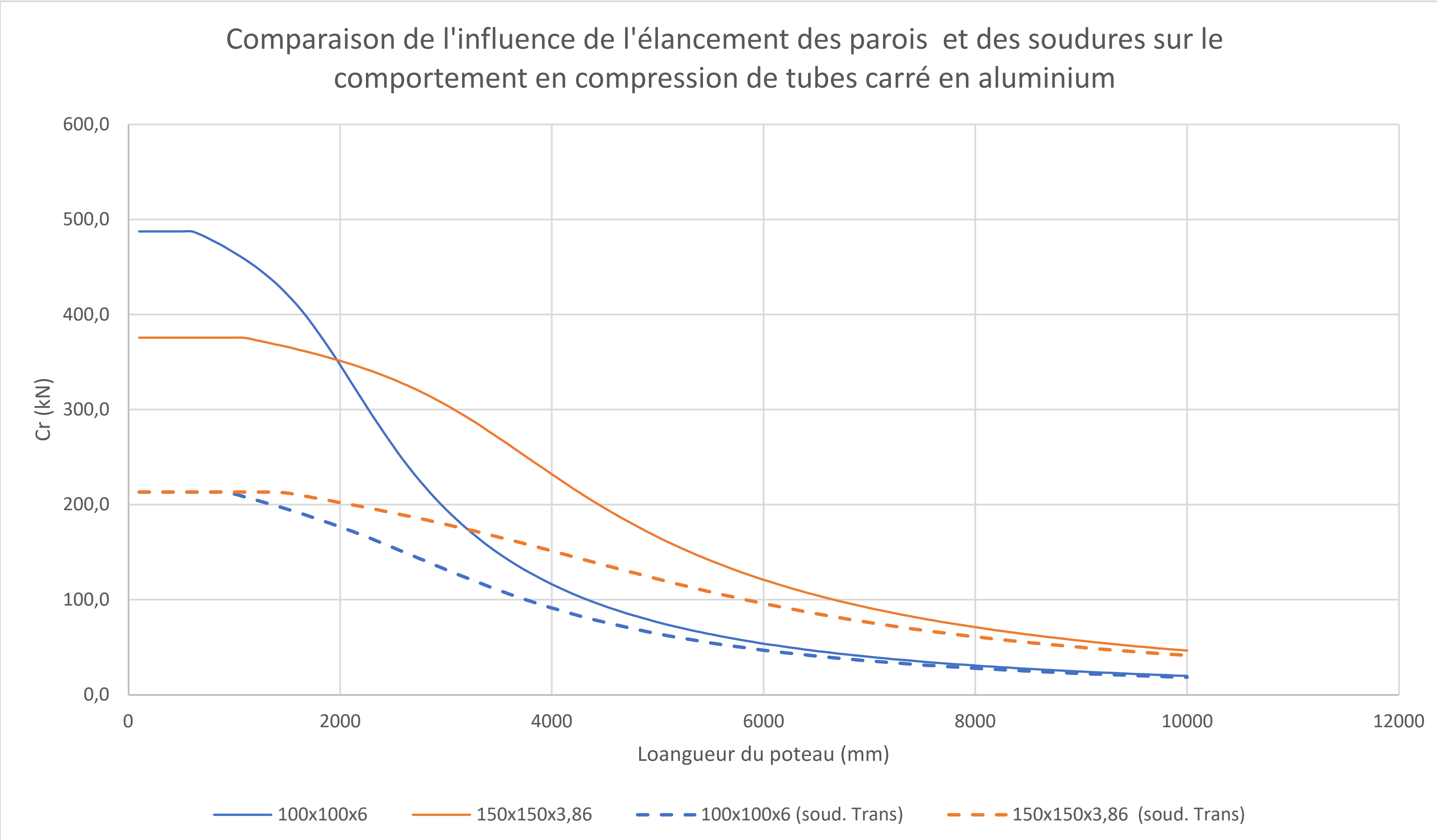
Pour L = 500 mm

100x100x6 (soud. Trans)			**150x150x3,86 (soud. Trans)**	
Élancement poteau :	$\lambda = \frac{K\,L}{r} =$	13,00	$\lambda = \frac{K\,L}{r} =$	8,38
cont. post-voilement	$F_m = \sqrt{\bar{F}}\,F_y =$	240,0 MPa	$F_m = \sqrt{\bar{F}}\,F_y =$	185,0 MPa
Limite élastique soudé	$F_{wy} =$	105,0 MPa	$F_{wy} =$	105,0 MPa
	$F_0 = \min(F_m;\ F_{wy}) =$	105,0 MPa	$F_0 = \min(F_m;\ F_{wy}) =$	105,0 MPa
Élancement norm. :	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,160 < $\bar{\lambda}_0$	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,103 < $\bar{\lambda}_0$
Alliage soudé (α=0,4)	α =	0,4	α =	0,4
	$\bar{\lambda}_0 =$	0,3	$\bar{\lambda}_0 =$	0,3
	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	18,871	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	43,685
	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	1,000	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	1,000
Contrainte de flambement global	$F_c = \bar{F}\,F_0 =$	105,0 MPa	$F_c = \bar{F}\,F_0 =$	105,0 MPa
résistance du poteau	$C_r = \phi_y\,A_g\,F_c =$	213,2 kN	$C_r = \phi_y\,A_g\,F_c =$	213,2 kN

Vérification du flambement global

Pour L = 3000 mm

	100x100x6 (soud. Trans)		150x150x3,86 (soud. Trans)	
Élancement poteau :	$\lambda = \frac{K\,L}{r} =$	78,02	$\lambda = \frac{K\,L}{r} =$	50,27
cont. post-voilement	$F_m = \sqrt{\bar{F}}\,F_y =$	240,0 MPa	$F_m = \sqrt{\bar{F}}\,F_y =$	185,0 MPa
Limite élastique soudé	$F_{wy} =$	105,0 MPa	$F_{wy} =$	105,0 MPa
	$F_0 = \min(F_m;\ F_{wy}) =$	105,0 MPa	$F_0 = \min(F_m;\ F_{wy}) =$	105,0 MPa
Élancement norm. :	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,962 > $\bar{\lambda}_0$	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,620 > $\bar{\lambda}_0$
Alliage soudé (α=0,4)	α =	0,4	α =	0,4
	$\bar{\lambda}_0 =$	0,3	$\bar{\lambda}_0 =$	0,3
	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	1,184	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	1,969
	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,618	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,841
Contrainte de flambement global	$F_c = \bar{F}\,F_0 =$	64,9 MPa	$F_c = \bar{F}\,F_0 =$	88,3 MPa
résistance du poteau	$C_r = \phi_y\,A_g\,F_c =$	131,8 kN	$C_r = \phi_y\,A_g\,F_c =$	179,3 kN

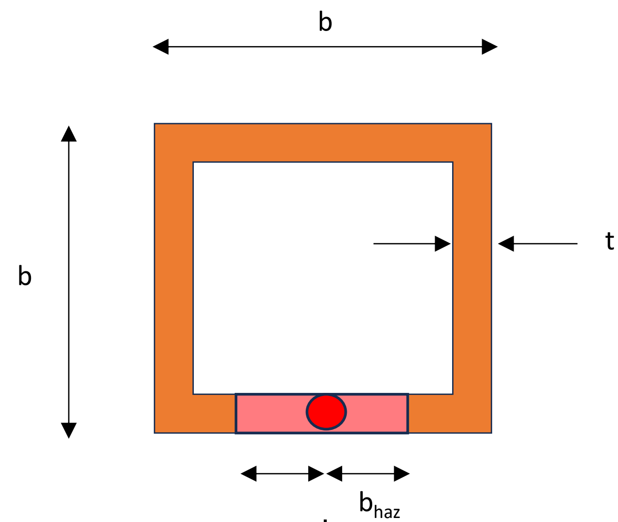

Comparaison de l'influence de l'élancement des parois et des soudures sur le comportement en compression de tubes carré en aluminium
600,0
500,0
400,0
300,0
200,0
100,0
0,0
Cr (kN)
0
2000
4000
6000
8000
10000
12000
Loangueur du poteau (mm)
100x100x6
150x150x3,86
100x100x6 (soud. Trans)
150x150x3,86 (soud. Trans)

Comparaison de l'influence de l'élancement des parois et des soudures sur le comportement en compression de tubes carré en aluminium

Avec soudure longitudinale le long poteau

6061-T6

E =	70000	MPa
Fu =	260	MPa
Fy =	240	MPa
Fwu =	165	MPa
Fwy =	105	MPa
ϕu =	0,75	
ϕy =	0,9	



pour t<6 mm

b_{haz} = 20 mm

100x100x6 (soud. long)

b = 100 mm

t = 6 mm

$A = 4(bt - t^2) =$ 2256 mm²

$I = \frac{1}{12}(b^4 - (b-2t)^4) =$ 3335872 mm^4

$r = \sqrt{\frac{I}{A}} =$ 38,5 mm

$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$ 15,667

150x150x3,86 (soud. long)

b = 150 mm

t = 3,86 mm

$A = 4(bt - t^2) =$ 2256 mm²

$I = \frac{1}{12}(b^4 - (b-2t)^4) =$ 8037227 mm^4

$r = \sqrt{\frac{I}{A}} =$ 59,7 mm

$\frac{b}{t} = \frac{a}{w} = \frac{b-t}{t} =$ 37,860

Ratio A : 1,000

Ratio I : 2,409

Vérification du voilement locale

100x100x6 (soud. long)

	$m = 1{,}25 + \frac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65	
Élancement paroi :	$\lambda = \frac{m\,b}{t} =$	25,85	
Contrainte limite :	$F_0 = F_y =$	240	MPa
Élancement norm. :	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,482	< $\bar{\lambda}_0$
Alliage non soudé (α=0,2)	$\alpha =$	0,2	
	$\bar{\lambda}_0 =$	0,5	
	$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	2,646	
	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	1,000	
Contrainte de voilement locale	$F_c = \bar{F}\,F_0 =$	240	MPa

150x150x3,86 (soud. long)

$m = 1{,}25 + \frac{0{,}4\,(a/w)}{(b/t)} \leq 1{,}65 =$	1,65	
$\lambda = \frac{m\,b}{t} =$	62,47	
$F_0 = F_y =$	240	MPa
$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	1,164	> $\bar{\lambda}_0$
$\alpha =$	0,2	
$\bar{\lambda}_0 =$	0,5	
$\beta = \frac{\left[1 + \alpha\left(\bar{\lambda} - \bar{\lambda}_0\right) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$	0,918	
$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,594	
$F_c = \bar{F}\,F_0 =$	142,6	MPa

Vérification du flambement global

Pour L = 500 mm

100x100x6 (soud. long)

Élancement poteau : $\lambda = \frac{K\,L}{r} =$ 13,00

cont. post-voilement $F_{m(v)} = \sqrt{\bar{F}}\,F_y =$ 240,0 MPa

Aire ZAT : $A_w = 2\,b_{haz}t =$ 240,0 mm²

cont. eff. soudure

$F_{m(s)} = F_y - (F_y - F_{wy})\left(\frac{A_w}{A_g}\right) =$ 225,6 MPa

$F_0 = \min(F_{m(v)};\, F_{m(s)}) =$ 225,6 MPa

Élancement norm. : $\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 0,235 < $\bar{\lambda}_0$

Alliage soudé (α=0,4) : α = 0,4

$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 9,319

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 1,000

Influence soudure $k = 0{,}9 + 0{,}1\left|1 - \bar{\lambda}\right| =$ 0,977 si $F_{m(v)}<F_{m(s)}$; k=1

Contrainte de flambement global $F_c = k\,\bar{F}\,F_0 =$ 220,3 MPa

$C_r = \phi_y\,A_g\,F_c =$ 447,4 kN

150x150x3,86 (soud. long)

$\lambda = \frac{K\,L}{r} =$ 8,38

$F_{m(v)} = \sqrt{\bar{F}}\,F_y =$ 185,0 MPa

$A_w = 2\,b_{haz}t =$ 154,4 mm²

$F_{m(v)} = F_y - (F_y - F_{wy})\left(\frac{A_w}{A_g}\right) =$ 230,8 MPa

$F_0 = \min(F_{m(v)};\, F_{m(s)}) =$ 185,0 MPa

$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$ 0,137 < $\bar{\lambda}_0$

α = 0,4

$\bar{\lambda}_0 =$ 0,3

$\beta = \frac{\left[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2\right]}{2\,\bar{\lambda}^2} =$ 25,371

$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$ 1,000

$k = 0{,}9 + 0{,}1\left|1 - \bar{\lambda}\right| =$ 1,000

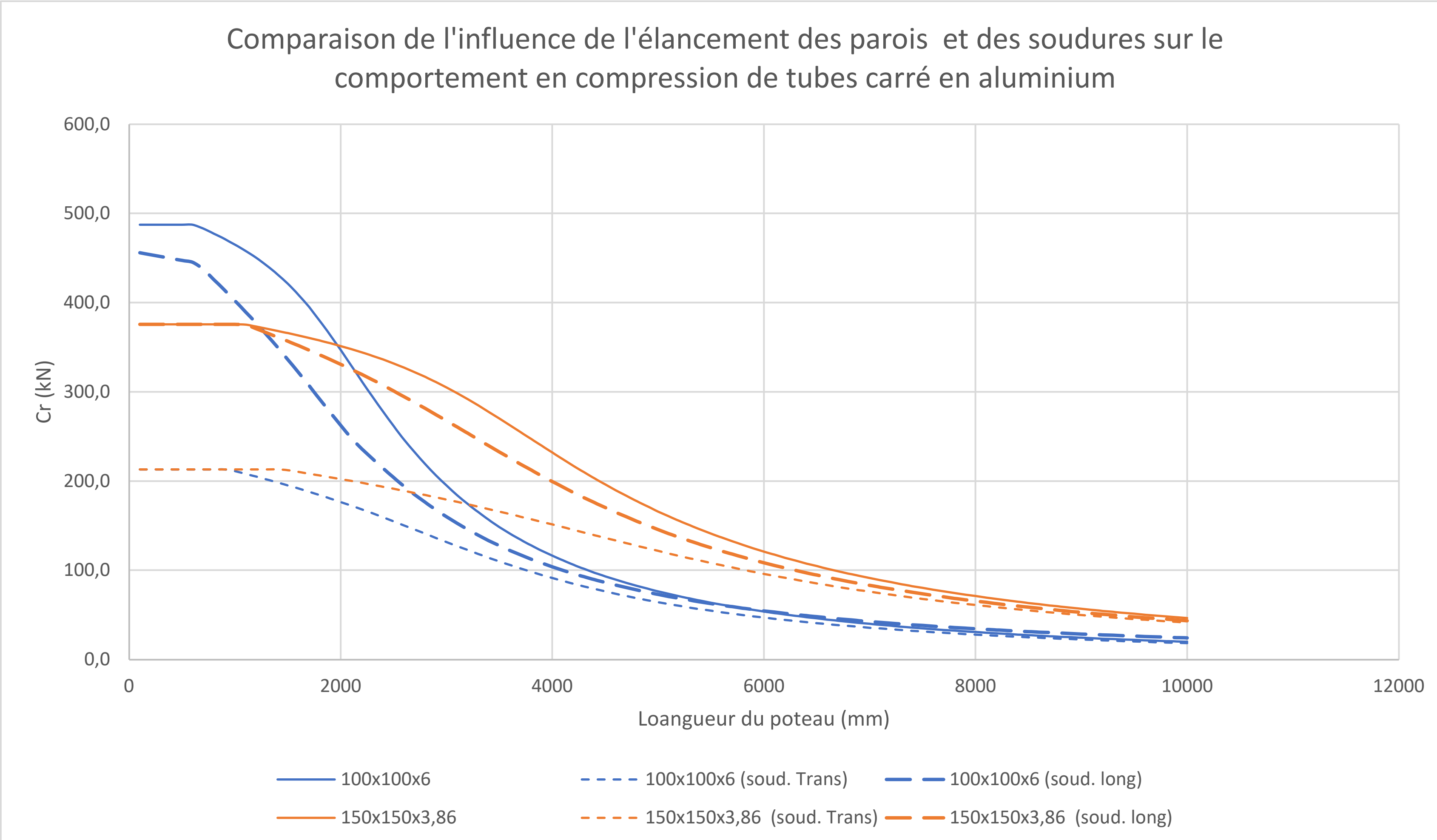
$F_c = k\,\bar{F}\,F_0 =$ 185,0 MPa

$C_r = \phi_y\,A_g\,F_c =$ 375,6 kN

Vérification du flambement global

Pour L = 3000 mm

	100x100x6 (soud. long)		150x150x3,86 (soud. long)	
Élancement poteau :	$\lambda = \frac{K\,L}{r} =$	78,02	$\lambda = \frac{K\,L}{r} =$	50,27
cont. post-voilement	$F_{m(v)} = \sqrt{\bar{F}}\,F_y =$	240,0 MPa	$F_{m(v)} = \sqrt{\bar{F}}\,F_y =$	185,0 MPa
Aire ZAT :	$A_w = 2\,b_{haz}t =$	240,0 mm²	$A_w = 2\,b_{haz}t =$	154,4 mm²
cont. eff. soudure	$F_{m(s)} = F_y - (F_y - F_{wy})\left(\frac{A_w}{A_g}\right) =$	225,6 MPa	$F_{m(v)} = F_y - (F_y - F_{wy})\left(\frac{A_w}{A_g}\right) =$	230,8 MPa
	$F_0 = \min(F_{m(v)};\,F_{m(s)}) =$	225,6 MPa	$F_0 = \min(F_{m(v)};\,F_{m(s)}) =$	185,0 MPa
Élancement norm. :	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	1,410 > $\bar{\lambda}_0$	$\bar{\lambda} = \left(\frac{\lambda}{\pi}\right)\sqrt{\frac{F_0}{E}} =$	0,823 > $\bar{\lambda}_0$
Alliage soudé (α=0,4) :	α =	0,4	α =	0,4
	$\bar{\lambda}_0 =$	0,3	$\bar{\lambda}_0 =$	0,3
	$\beta = \frac{[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2]}{2\,\bar{\lambda}^2} =$	0,863	$\beta = \frac{[1 + \alpha\,(\bar{\lambda} - \bar{\lambda}_0) + \bar{\lambda}^2]}{2\,\bar{\lambda}^2} =$	1,393
	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,371	$\bar{F} = \beta - \sqrt{\beta^2 - \frac{1}{\bar{\lambda}^2}} \leq 1 =$	0,712
Influence soudure	$k = 0{,}9 + 0{,}1\left\lvert 1 - \bar{\lambda}\right\rvert =$	0,941	si $F_{m(v)} < F_{m(s)}$; k=1 — $k = 0{,}9 + 0{,}1\left\lvert 1 - \bar{\lambda}\right\rvert =$	1,000
Contrainte de flambement global	$F_c = k\,\bar{F}\,F_0 =$	78,8 MPa	$F_c = k\,\bar{F}\,F_0 =$	131,8 MPa
	$C_r = \phi_y\,A_g\,F_c =$	160,0 kN	$C_r = \phi_y\,A_g\,F_c =$	267,6 kN



Comparaison de l'influence de l'élancement des parois et des soudures sur le comportement en compression de tubes carré en aluminium
600,0
500,0
400,0
300,0
200,0
100,0
0,0
Cr (kN)
0
2000
4000
6000
8000
10000
12000
Loangueur du poteau (mm)
100x100x6
100x100x6 (soud. Trans)
100x100x6 (soud. long)
150x150x3,86
150x150x3,86 (soud. Trans)
150x150x3,86 (soud. long)