

	A	B	C	D	E	F	G	H	I
1	Calculation of forces on a PELTON wheel 5 jets - Vertical axis								
2	Data Input					Opening (%)			
3	n	5	Number of jets	Needle 1	Needle 2	Needle 3	Needle 4	Needle 5	
4	Hn	1034	Nominal head (m)	60	0	60	0	60	
5	Qn	21	Nominal flow rate (m ³ /s)	o_1	o_2	o_3	o_4	o_5	o_6
6	Vn	428.6	Nominal speed (tr/mn)						
7	D	3.1	Wheel diameter (m)	Resultant force ==> 226.964 kN					
8	g	9.81	Acceleration of gravity (m/s ²)						
9	ro	1000	Density of water (m ³ /s)						
10									
11			Calculated constant	K=	612059.667				
12									
13				q_1	q_2	q_3	q_4	q_5	q_6
14			Flow rate per needle (m ³ /s)	2.520	0.000	2.520	0.000	2.520	
15			Total flow rate (m ³ /s)		qt	7.560			
16									
17				f_1	f_2	f_3	f_4	f_5	f_6
18			Force Fi exerted on the buckets (kN)	367.236	0.000	367.236	0.000	367.236	
19			Fix: Projection Fi in X (kN)	367.236	0.000	-297.100	0.000	113.482	
20			Fiy: Projection Fi in Y (kN)	0.000	0.000	215.856	0.000	-349.262	
21									
22			Fx: Module of X (kN)	183.618	Fx				
23			Fy: Module of Y (kN)	-133.406	Fy				