

SWIDERSKI ENGINEERING INC.										
CFD-based designs - projects commissioned (2000 - 2021)										
No. Projects	No. Reviews Sub-100	Site name	Site Owner	Turbine Manufacturer	Turbine Type	Scope	Totals MW	Presented MW	PowerMax MW	Notes
1	1	Lingsheng	Provincial Water Authority (China)	GETAI Shenyang Hydropower Co (China)	Francis	New turbine design	2.22	57600	58800	Revised design of runner incorporating the new Francis runner design (2000-2001)
2	1	Lingsheng	Provincial Water Authority (China)	GETAI Shenyang Hydropower Co (China)	Francis	New turbine design	3.15	56000	56000	Final design of runner incorporating the new Francis runner design (2000-2001)
3	1	OK Tui	OK Merau Papua New Guinea	Kiwa Hydro LLC (USA)	Francis	New turbine design	1.30	27500	28500	Power turbine, detailed runner design for contract
4	1	Wuyangang	Provincial Water Authority (China)	GETAI Shenyang Hydropower Co (China)	Francis	New turbine design	9.30	24000	24000	Runner design including the design modification of the turbine runner design
5	1	Coyaci	Pacific Hydro (China)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	1.13	10800	12600	Runner design including the design modification of the turbine runner design (2000-2001)
6	1	Combas	Equator National Grid (Guatemala)	GETAI Shenyang Hydropower Co (China)	Francis	New turbine design	1.15	19500	11600	Power turbine, detailed runner design for contract
7	1	SKA, G150	AL (USA)	GGG	Francis	New turbine design	1.05	7000	7350	Revised design
8	1	Waterbury	Green Mountain Power Ltd. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	1.40	5200	5800	Runner design including the design modification of the turbine runner design (2000-2001)
9	1	Waterford # 5	Green Mountain Power Ltd. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	1.40	4500	5200	Runner design including the design modification of the turbine runner design (2000-2001)
10	1	Smooth Rock Falls	Ontario Power Generation (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	2.60	5000	5200	Runner design including the design modification of the turbine runner design (2000-2001)
11	12	Chulakerna North Hydro	Energy One (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	Complete new runner design with 10% efficiency gain	1.80	3000	4800	Final design including the design modification of the turbine runner design (2000-2001)
12	1	Lower Leitchville	ENEI North America Inc. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	1.65	3900	4500	Runner design including the design modification of the turbine runner design (2000-2001)
13	1	Pikowice No. 5	Tarom Energetyka Sp. z o.o. (Poland)	ZRE Gdansk SA (Poland)	Francis	Runner replacement - detailed runner design	1.00	2950	3400	Runner design including the design modification of the turbine runner design (2000-2001)
14	8	St. Anthony Falls	Voel Energy (USA)	Kiwa Hydro LLC (USA)	Double Horizontal Francis	Replacement of runner, detailed runner design	1.42	2600	3200	Runner design including the design modification of the turbine runner design (2000-2001)
15	3	St Croix	Voel Energy (USA)	Kiwa Hydro LLC (USA)	Triple Francis	Replacement of runner	1.23	2780	3200	Runner design including the design modification of the turbine runner design (2000-2001)
16	1	Munkedal	Arctic Power SA (Sweden)	ZRE Gdansk SA (Poland)	Francis	Complete new Francis turbine	1.00	3140	3140	New turbine design
17	4	Abensberg	Abensberg Pulp and Paper (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	Upgrade of complete-turbine unit	1.52	2200	2500	Runner design including the design modification of the turbine runner design (2000-2001)
18	1	Sempok Viva	ESI (Nepal)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	Runner replacement	0.72	1500	2500	Runner design including the design modification of the turbine runner design (2000-2001)
19	4	Pikowice No. 1, 2, 3, 4	Tarom Energetyka Sp. z o.o. (Poland)	ZRE Gdansk SA (Poland)	Francis	New unit including runner design	1.00	2300	2450	Runner design including the design modification of the turbine runner design (2000-2001)
20	1	Santa Maria	INDE (Guatemala)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	Runner replacement	6.68	2100	2250	Runner design including the design modification of the turbine runner design (2000-2001)
21	2	Minden	Ontario Water Light and Power Commission (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New runner and distributor	1.37	1940	2200	Runner design including the design modification of the turbine runner design (2000-2001)
22	1	Brule	WE Energies (USA)	Kiwa Hydro LLC (USA)	Francis	New turbine design	1.44	2100	2200	Runner design including the design modification of the turbine runner design (2000-2001)
23	2	Kruger	Kruger (USA)	Kiwa Hydro LLC (USA)	Double Horizontal Francis	New turbine design	1.44	2000	2200	Runner design including the design modification of the turbine runner design (2000-2001)
24	4	Shagapon Falls	City of Shagapon Falls (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New complete turbine runner design	1.22	1600	2000	Runner design including the design modification of the turbine runner design (2000-2001)
27	2	Gen Fems #7 - #8	Brookfield Power Corporation (USA)	Kiwa Hydro LLC (USA)	Francis	New turbine design	2.64	1800	1937	Runner design
28	6	Gen Fems #1 - #6	Brookfield Power Corporation (USA)	Kiwa Hydro LLC (USA)	Francis	New turbine design	1.65	1800	1937	Runner design
29	1	Copenhagen	ENEI North America Inc. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	1.28	1500	1700	Runner design including the design modification of the turbine runner design (2000-2001)
30	4	Wendon	City of Sherbrooke (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New runner and distributor	1.44	1300	1600	Runner design including the design modification of the turbine runner design (2000-2001)
31	4	MVista	Ontario Power Generation (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	Upgrade of complete-turbine unit	1.27	1100	1500	Runner design including the design modification of the turbine runner design (2000-2001)
33	4	Grodek 1&2	Elektrownia Wroclaw Sp. z o.o. (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Double Horizontal Francis	Runner replacement	0.97	1200	1400	Runner design including the design modification of the turbine runner design (2000-2001)
33	1	Grodek 3	Elektrownia Wroclaw Sp. z o.o. (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Francis	Replacement of double horizontal and with-ridge	1.20	1150	1350	Runner design including the design modification of the turbine runner design (2000-2001)
34	4	Huntington	Central Vermont Public Service Corporation (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New turbine design	1.04	1280	1350	Runner design including the design modification of the turbine runner design (2000-2001)
35	1	St. Raphael	Algonquin Power Ltd. (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine	1.65	1050	1280	Runner design including the design modification of the turbine runner design (2000-2001)
36	2	Pikowice No. 6	Tarom Energetyka Sp. z o.o. (Poland)	ZRE Gdansk SA (Poland)	Francis	Runner replacement	0.75	1200	1250	Runner design including the design modification of the turbine runner design (2000-2001)
37	2	Moncton	City of Sherbrooke (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	Upgrade of complete-turbine unit	0.91	900	1200	Runner design including the design modification of the turbine runner design (2000-2001)
38	1	Theresa	ENEI North America Inc. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	Runner replacement	0.70	875	1000	Runner design including the design modification of the turbine runner design (2000-2001)
39	1	Sabo Grande	ESI (Nepal)	Norcon Hydraulic Turbine Inc. (Canada)	Francis	New turbine design	0.61	900	1000	Runner design including the design modification of the turbine runner design (2000-2001)
40	4	Baldes	Orysa (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New runner and distributor	1.00	750	950	Runner design including the design modification of the turbine runner design (2000-2001)
41	2	Vergennes	Green Mountain Power Ltd. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New turbine including distributor	1.05	700	835	Runner design including the design modification of the turbine runner design (2000-2001)
42	2	South River	South River Village (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Double Horizontal Francis	New double-ridge turbine	0.64	800	800	Runner design including the design modification of the turbine runner design (2000-2001)
43	1	Wassau	United River (USA)	Kiwa Hydro LLC (USA)	Francis	New turbine design	1.73	625	735	Runner design including the design modification of the turbine runner design (2000-2001)
44	2	Flambeau Valley	Hecla Energy Group (USA)	Kiwa Hydro LLC (USA)	Double Horizontal Francis	New turbine design	1.32	620	670	Runner design including the design modification of the turbine runner design (2000-2001)
45	1	Kamarna	ENEI SA (Poland)	ZRE Gdansk SA (Poland)	Double Horizontal Francis	New turbine including distributor	1.30	475	561	Runner design including the design modification of the turbine runner design (2000-2001)
46	1	Porokaj	ESP SA (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Francis	New turbine design	0.65	360	450	Runner design including the design modification of the turbine runner design (2000-2001)
47	1	Hilabo	Hilabo Kraftek (Sweden)	ZRE Gdansk SA (Poland)	Francis	New unit including distributor	0.37	265	300	Runner design including the design modification of the turbine runner design (2000-2001)
48	2	Olca	ZEW Rumoren Sp. z o.o. (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Francis	New unit including distributor	0.33	200	200	Runner design including the design modification of the turbine runner design (2000-2001)
49	1	Kozlice	ZEW Rumoren Sp. z o.o. (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Francis	New unit including distributor	0.33	175	175	Runner design including the design modification of the turbine runner design (2000-2001)
No. Projects	No. Reviews Sub-100	Site name	Site Owner	Turbine Manufacturer	Turbine Type	Scope	Totals MW	Presented MW	PowerMax MW	Notes
1	2	Rapport Rapids	Ontario Power Generation (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine design	2.58	4600	5000	Replacement of runner blades in existing Kaplan turbine to improve power and torque characteristics
2	2	Medawaka	City of Edmundston (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New unit	3.25	4900	4900	New design of complete turbine, new penstock
3	1	Gorge #18	Central Vermont Public Service Corporation (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine	2.92	3500	4000	Design of the Kaplan to Kaplan conversion for the Gorge #18
4	2	Chesholm	Provincial Water Authority (China)	GETAI Shenyang Hydropower Co (China)	Conventional Kaplan	New turbine design	3.30	3050	3300	Power turbine design including the design modification of the turbine runner design (2000-2001)
5	1	Clark Falls	Central Vermont Public Service Corporation (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine design	2.16	3000	3300	Runner design including the design modification of the turbine runner design (2000-2001)
6	1	Micromere	Voel Energy (USA)	Kiwa Hydro LLC (USA)	Kaplan	New turbine design	2.47	2750	3000	Replacement of runner blades in existing Kaplan turbine to improve power and torque characteristics
7	1	Wilson's Falls	Brookfield Generation Ltd. (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Safran	New turbine design	2.10	3000	3000	Complete new turbine, triple runner
8	1	Kaduna	Kaduna Utilities (USA)	Kiwa Hydro LLC (USA)	Kaplan	New turbine design	2.80	2200	2600	Replacement of runner blades in existing Kaplan turbine to improve power and torque characteristics
9	2	Lowell Thomas	City of Regina (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Axial Flow (SAVO)	New turbine unit	1.40	2100	2100	Runner design including the design modification of the turbine runner design (2000-2001)
10	2	Dobele	TARON Energetyka Sp. z o.o. (Poland)	ZRE Gdansk SA (Poland)	Kaplan	New turbine design	3.70	1650	1800	Runner and distributor design
11	1	Brookridge	Brookridge Generation Ltd. (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Safran	New turbine design	1.78	1800	1800	Complete new turbine, triple runner
12	1	Trayozyn	ENEI Wytwornia SA (Poland)	ZRE Gdansk SA (Poland)	Kaplan	New turbine and distributor	3.85	1700	1550	The year of the turbine commissioning was affected by the COVID-19 pandemic, causing an RFP award delay
13	1	Hartwick	City of Hartwick (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine design	1.02	900	950	Final design including the design modification of the turbine runner design (2000-2001)
14	1	Jamieson	Elektrownia Wroclaw Sp. z o.o. (Poland)	ZRE Gdansk Sp. z o.o. (Poland)	Kaplan	New turbine design	1.88	720	900	New turbine design including the design modification of the turbine runner design (2000-2001)
15	1	Chulakerna Falls - Grids/Room	Energy One (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Axial Flow	Turbine upgrade	1.20	750	750	Upgrade of existing Kaplan turbine by installing new runner blades
16	1	Conestoga	Grand River Conservation Authority (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	Axial Flow	New runner distributor assembly	0.95	500	750	Runner design including the design modification of the turbine runner design (2000-2001)
17	6	Kerona GS	RCD	Norcon Hydraulic Turbine Inc. (Canada)	Axial Flow	New turbine design	2.00	500	500	Complete new turbine, triple runner
18	1	Elton Falls	Elton Falls Power Corp (Canada)	Norcon Hydraulic Turbine Inc. (Canada)	semi-Kaplan	New turbine and casing	1.55	325	400	Runner design including the design modification of the turbine runner design (2000-2001)
19	2	Beaverly	ENEI North America Inc. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine distributor assembly	1.50	180	385	Final design including the design modification of the turbine runner design (2000-2001)
20	1	Pelaton	Green Mountain Power (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Kaplan	New turbine design	2.84	600	6270	New turbine design including the design modification of the turbine runner design (2000-2001)
21	1	Nesbury	ENEI North America Inc. (USA)	Norcon Hydraulic Turbine Inc. (Canada)	Propeller	New runner distributor assembly	0.40	35	65	Runner design including the design modification of the turbine runner design (2000-2001)