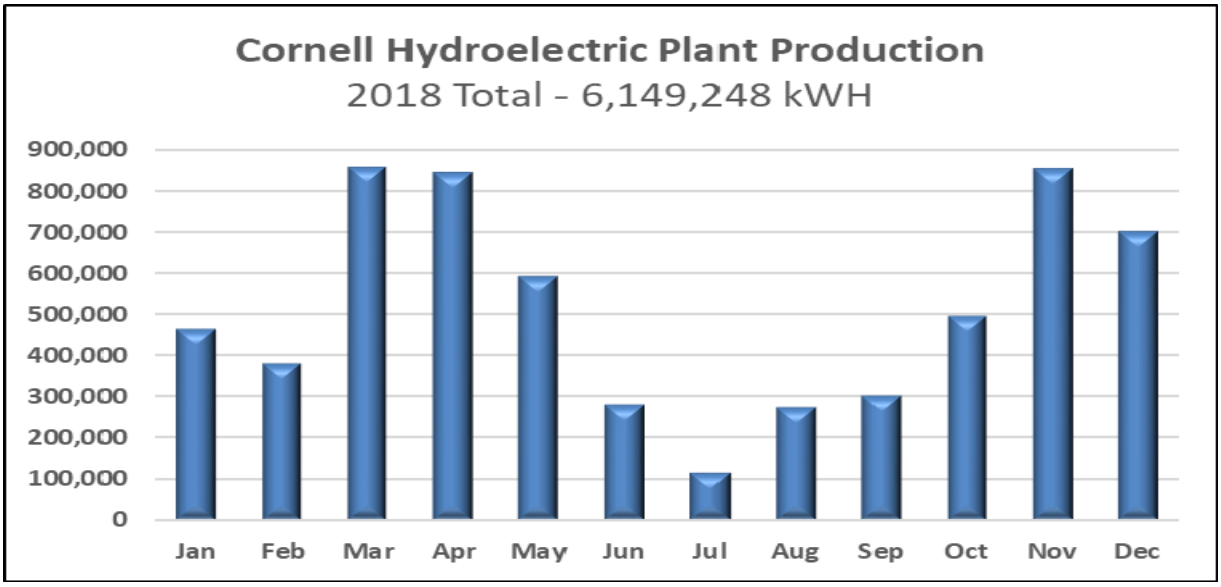
# Cornell University Fall Creek Hydroelectric Plant

The first electrical generation facility in Fall Creek gorge was built in the early 1880's. That plant was powered by water from a dam just above the present dam, with a water wheel just above the present plant with a cable to a generator located near the Foundry. In 1904, the present plant was brought on line. Construction was preceded by replacing Triphammer Dam slightly west of its original location in 1896. Water is supplied to the plant from Beebe Lake by a five-foot diameter underground penstock, 1700 feet long. The existing intake dates to 1953 and was upgraded in 1981.

The original plant capacity was 300 kW with 2 Pelton Wheel turbines and two 30kW DC exciters. This was increased in 1913 by adding a 360 kW Francis turbine. The facility was overhauled in 1935 after being completely flooded. In 1957, No. 2 generator was replaced with a 175 kW unit. The plant capacity then stood at 850 kW @ 2,400 volts. In this configuration, the plant last operated in 1970. It was vandalized in 1972.

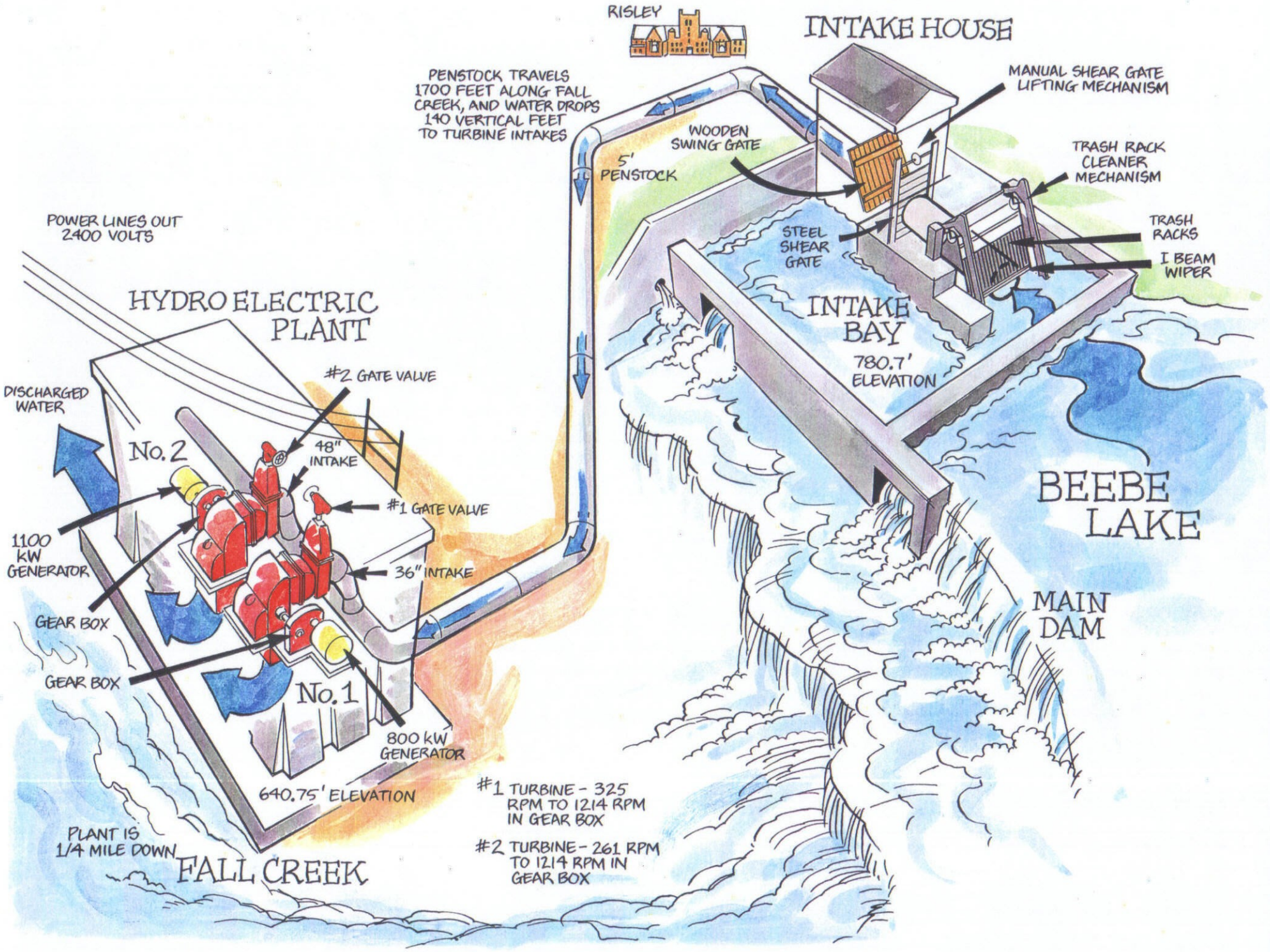
In 1981, the plant was completely renovated and all the original machinery removed. Two Ossberger crossflow turbines were installed with a total rated capacity of 1,840 kW. The plant, however, is limited to about 1,400 kW output because of the size of the penstock.

This hydroelectric plant is "run of river", which means that no water is stored. At all times, 10 cfs must continue to pass over the dam. The average production for this plant is 5.0kWh to 6.2kWh.

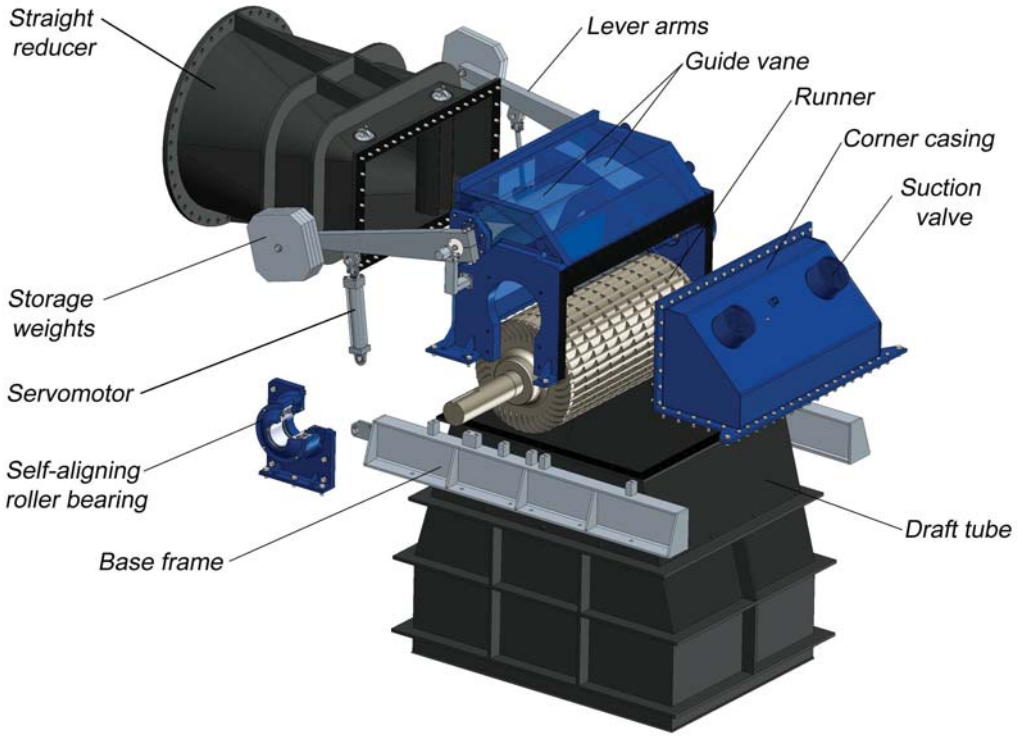


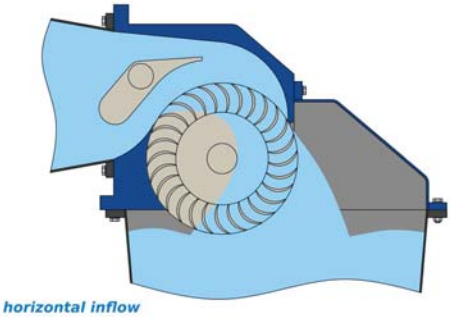

| | Unit #1 | Unit #2 |
|---|---|---|
| **Turbine:** | | |
| Manufacturer | Ossberger | Ossberger |
| Type, Model | Crossflow G8069/17g (2 cell) | Crossflow G1078/20g (2 cell) |
| Rated Capacity | 712 kW (conservative rating) | 997 kW (conservative rating) |
| Net Head | 115 feet | 115 feet |
| Discharge | 88.3 cfs | 123.5 cfs |
| **Speed Increaser:** | | |
| Manufacturer | Flender | Flender |
| Model | Sen 360 | Sen 450 |
| **Generator:** | | |
| Manufacturer | Reliance | Reliance |
| Type | Induction motor | Induction motor |
| Rated Capacity | 800 kW | 1,072 kW |
| Voltage | 2,400 V | 2,400 V |

rev. F.Perry 01/30/19

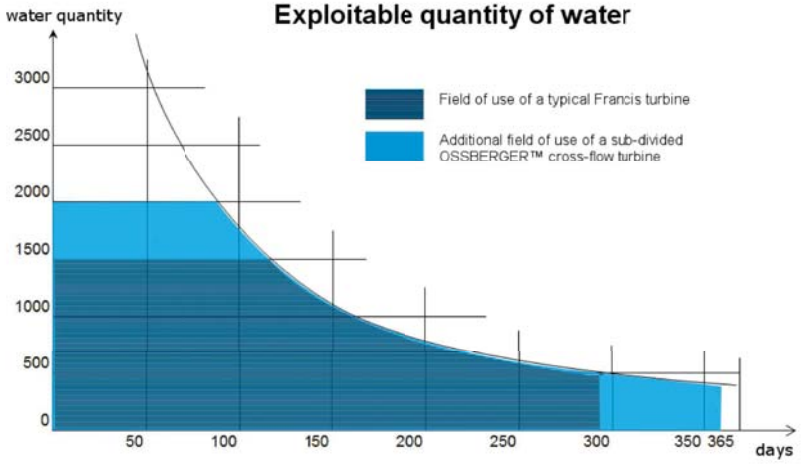

RISLEY
INTAKE HOUSE
PENSTOCK TRAVELS 1700 FEET ALONG FALL CREEK, AND WATER DROPS 140 VERTICAL FEET TO TURBINE INTAKES
MANUAL SHEAR GATE LIFTING MECHANISM
WOODEN SWING GATE
5' PENSTOCK
TRASH RACK CLEANER MECHANISM
POWER LINES OUT 2400 VOLTS
STEEL SHEAR GATE
TRASH RACKS
I BEAM WIPER
HYDRO ELECTRIC PLANT
INTAKE BAY
780.7' ELEVATION
#2 GATE VALVE
DISCHARGED WATER
No. 2
48" INTAKE
#1 GATE VALVE
1100 kW GENERATOR
36" INTAKE
BEEBE LAKE
GEAR BOX
MAIN DAM
GEAR BOX
No. 1
800 kW GENERATOR
640.75' ELEVATION
#1 TURBINE - 325 RPM TO 1214 RPM IN GEAR BOX
#2 TURBINE - 261 RPM TO 1214 RPM IN GEAR BOX
PLANT IS 1/4 MILE DOWN
FALL CREEK

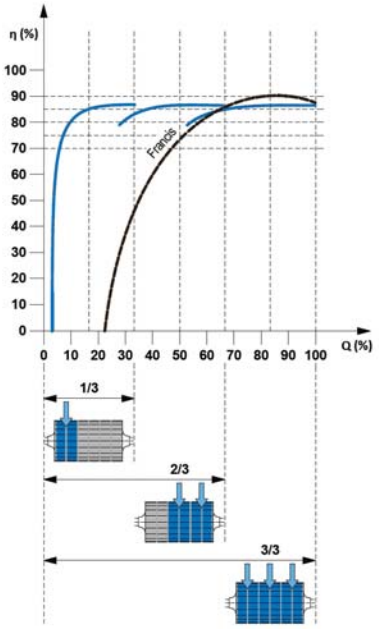
# The original OSSBERGER™ cross-flow turbine



horizontal inflow




for further information, please visit www.ossberger.de


Guide Vanes

Turbine Runner