Analyzing the Effectiveness of Applying the Mathematical Fibonacci to Modern Solar Sequence Panel Design

Kendall, Spencer

Trees have evolved for millions of years in their light gathering capability. This can be quantified utilizing the Fibonacci sequence, a mathematical description of the sequencing of the limbs and leaves. Comparison against a commonly used layout of solar panels will show how to increase efficiency. Cost is the barrier to the widespread use of Solar cells, so this knowledge impacts by lower cost per watt. Patterns in nature follow the sequence, how branches are arrayed about of a tree. The F formula is Fn = F n-1 + F n-2 where the first two numbers of the sequence are 0, 1 with the next value being the sum of the previous two values. The sequence starts 0, 1, 1, 2 3, 5, 8, 13…….. Taking two successive F Numbers, their ratio is the Golden Ratio, an Irrational Number which determines the angle, or the turn, between limbs enabling the maximum use of the limbs to capture sunlight. PVC pipes used for the two solar panel arrays, first with the F sequence applied and the second not - the common solar panel array. The solar panel with the F sequence had the angles carefully measured using the Golden Ratio. This Ratio represents, a pattern with no gaps from beginning to end, high efficiency of space about the central cylinder, and a numerical value slipping in between simple fractions. Thus the Ratio defines where the branches are at each level, and will fall around the trunk's circumference. Two meters, one measuring volts and the other amps, record 30 days thrice daily. Watt The amount of actual flowing electrical energy. Amp Electrical current, the electrons, as it flows past a specified point. Volt Difference of electric potential, between two points on a wire. P(Watts) = V(Volts) × I(Amperes) Statistical analysis will summarize and illuminate the data.