

Fast returns on your machinery investment when you use the NEW Orbital Frame Saw System

Keeping your production costs low while maintaining a high quality product is not a simple undertaking. Ever since Neva built their first frame saw, we have invested a significant amount of time in the research and development of frame saw technology. Through our efforts, Neva has developed and refined the orbital movement of the frame as it cycles up and down. With the orbital movement, both production and saw blade life is increased. To read more on how the orbital movement works click the following link [orbit motion](#).

Since the late 1990s, the companies NEVA and OGDEN (USA) have worked cooperatively, sharing their knowledge and resources in the field of thin-cutting technology. Through the strength of our ongoing relationship, our two companies have successfully taken this technology to the next level with our thin-cutting frame saw, Orbit.

Rather than throwing out numbers and percentages that can be misleading, we have put together actual production numbers from a customer who has both the conventional frame saw and the Neva Orbital frame saw. The customer processes dry oak lumber with a moisture content of approximately 8 – 10% and requires lamellas that are produced to have a surface tolerance of +/- 0.1 mm. Please note that his high tolerance requirements do affect the feed speed of the wood being cut.

Theoretical calculations are rarely true when compared to the actual production results, and when comparing the theoretical data against the actual production capacity on a data sheet, the difference for both machines will be approximately 23%. The main reason for this is because wood parts are not fed through the machine butt to butt (there are gaps that occur between the end of one board and the start of the next). Secondly, the feed system on all of the frame saws work on a start – stop principle. The feed on the machine technically must stop during the up stroke of the blade to eliminate friction which would occur on the back of the blade. Neva has developed and patented a mechanical start-stop feed system which is found on all of their machines, and this has significantly improved the saw blade life for our customers.

Conventional Up/Down frame saw (dry oak lamellas in tolerance $\pm 0,1$ mm)					
Height of wood (mm)	Channels	Lamellas	Feed speed (m/min.)	Minutes 400	Production capacity 100%
93,5	5	25	0,32	299 m ²	230 m²
128	5	25	0,28	358 m ²	276 m²
156	5	25	0,24	374 m ²	288 m²
191	3	15	0,20	229 m ²	176 m²
203	3	15	0,18	219 m ²	169 m²

Frame saw ORBIT (dry oak lamellas in tolerance $\pm 0,1$ mm)					
Height of wood (mm)	Channels	Lamellas	Feed speed (m/min.)	Minutes 400	Production capacity 100%
93,5	5	25	0,45	421 m ²	324 m²
128	5	25	0,40	512 m ²	394 m²
156	5	25	0,35	546 m ²	420 m²
191	5	25	0,28	535 m ²	411 m²
203	5	25	0,25	508 m ²	390 m²

In comparing the data on the above 2 charts, we see the following production results:

- Cutting wood @ 93.5 mm height, the Orbit frame saw capacity is 40% higher
- Cutting wood @ 128 mm height, the Orbit frame saw capacity is 42% higher
- Cutting wood @ 156 mm height, the Orbit frame saw capacity is 45% higher

It is important to note that the Economic frame saw with the conventional up/down movement is equipped with an aluminum saw frame carriage and an 11kW main motor. These limitations do affect the production capacity particularly when feeding 5 pieces of wood through a channel or with material that is high or wide. We were not able to compare the two machines with the last two (2) wood heights because the customer could only run three (3) channels on the Economic Saw with these heights.

The Orbit Plus frame saw, though, is equipped with a cast iron carriage frame and a 15 kW main motor. As you can see, the increased horsepower and the sturdier carriage in the Orbit saw make a significant difference in the production capacity of the two machines. This is most noticeable with the higher wood heights (see the production capacity in the last two rows of each chart). The energy that is conserved by the heavy-duty carriage is very important for the processing of large volumes of wood simultaneously.

The orbital cutting system increased production even with the lowest wood heights and increased the production capacity by over 45% with the wood height of 156 mm.

Let's use some Math to look closer at the feed speeds of the two machines.

Feed speed is determined with the following equation:

$$U = u_z * H * n / t$$

Both machines technically have the same parameters, ie. the same stroke $H = 210$ mm, $n = 450$ rpm; and the same type of saw blade is used with each machine (pitch $t = 13$ mm). The remaining parameter that can influence feed speed is the chip removal u_z . Some may dispute that the rpm could be increased, but with an increase in rpm there is a faster dulling of the blades due to the friction.

The result: The Orbital movement on the Orbit Frame saw allows a higher tooth value take of u_z which maintains a high surface quality. **The Orbit machine achieves, at minimum, 40% higher production capacity than the conventional up/down frame saw.**

The second parameter that affects the machinery is the saw blades. Properly prepared saw blades are very important for the successful running of a machine. There is really no limit as to how thin a blade that can be used on either frame saw. Below is a calculation of Saw Blade costs based on cutting dry oak. The average blade life without sharpening is approximately 16 hours, ie. 2 – 8 hour shifts. The following calculation is based on one month or 22 working days (1 shift/day); re-sharpening the blades approximately 10 times over this period. To produce 25 lamellas, the customer required 4 saw blades and 2 hogging blades per channel, for a total of 20 saw blades and 10 hogging blades, these figures may change depending on saw blade vendor and price of sharpening.

1 Set of saw blades: € 720.00
 10 x Sharpening: 10 x 30 Blades x € 2.00 = € 600.00

Total: € 1,320.00

1 Year @ 1 Shift/Day € 1,320.00 x 12 = € 15,840.00 Total Blade Cost

Minimum Savings by using the Orbit System (40%) = € 6,336.00

In conclusion, it is evident that the customers using the conventional up/down frame saw will experience consistently higher saw blade costs and longer production times to achieve the same production capacity as the frame saw with the orbital movement. It is obvious that the Orbit Frame saw is the much better investment and customers using this saw will experience a much quicker financial return on their initial investment than those using the conventional frame saw.

