

NICHE ZERO

A COFFEE GRINDER LIKE NO OTHER

INDEPENDENT REVIEW BY DAVEC



INTRODUCTION

A REVOLUTION IN HOME GRINDING?

I had not heard about this grinder before, a friend mentioned he had spoken to Martin the CEO of the company, had told him about me and suggested this was a grinder I should review.

These days, I am not usually interested unless it is unusual in some way, either very expensive, very good, or something I helped design. **This was small, domestic and relatively inexpensive, not usually of interest to me.**

I read all the sales and marketing stuff on the website, all very glossy and professional, my first thought was "too good to be true". I scheduled a telephone call with Martin, I was prepared to listen and then politely explain that this domestic, non-professional grinder was not the sort of thing I reviewed.

During our phone call Martin came across as a "passionate", knowledgeable engineer and designer, he also seemed to have done his homework on grinders. Clearly, he had put considerable effort into

the Niche Zero over the last few years. I discussed some of the issues around grinding and grinders, he had answers and knew many of the issues!

We arranged to meet in a few days and unfortunately, Martin said he could not leave one with me for a 2-week review until production was almost underway. The production prototypes were ultra valuable and some things secret (patent stuff etc.).

I saw the grinder for the first time and my immediate thought was "it didn't seem very big or heavy". My own personal coffee grinder was £2,000 of commercial monster sitting in the corner, which gives you a hernia to lift. I paid that sort of money so I could get the best compromise on size vs. performance. First thing I asked was to see the burrs. Off came the top and out came the burrs. It was at this point that I knew Martin (and the Niche Zero) was serious about grind quality. **I held the burrs in my hand and looked hard at 63mm conical burrs I would normally find in a £1200 grinder, he had my interest!**

We spent the rest of the afternoon grinding coffee, drinking coffee and talking grinders. He dismantled a second production prototype to component level so I could examine everything. **Then Martin made the decision to leave the other production prototype with me for 2 weeks to give an independent review and advice.** I was pleased, because it's a chance for you to see how it works away from Niche HQ and in the hands of a very experienced user!

REVIEW AREAS

The impatient may want to skip to the grind quality bit, but I hope you take the time to read them in order. It all makes much more sense when you appreciate some of the engineering that has gone into the Niche Zero.

- Construction
- Key features
- Retention
- Performance
- Punishment test
- Conclusions

CONSTRUCTION

An aluminium body with wood accents gives a nice blend of organic and modern. **Launching in white**, plans include other colours and a polished finish later. This will include extending the range and colour of wood accents (retrofitting will be possible).

I like the keep things simple approach and minimalist design that still functions and performs well. It's art, one the British excel at and good engineering to avoid unnecessary complications. This simplicity is apparent when stripping the grinder to component level. No fancy displays, timers, lit buttons and minimalist electronics. It enhances reliability and promotes easy repair. Some of the things I really liked were:

DC MOTOR

It's a motor, who cares as long as the burrs spin? However, there are advantages to using DC motors in certain applications.

- No high surge currents or start run capacitors to go wrong
- Small size, but powerful
- Flat torque over a wide speed range

A DC motor is smaller and more efficient than an A/C motor would be allowing the grinder to remain compact. A simple bridge rectification circuit changes our 240V A/C to **240V DC to run the motor** (don't worry it's not a small 12V cordless drill motor).

IN LINE PLANETARY GEARBOX

Most prosumer and commercial grinders spin at around 1450 rpm (50Hz), this is simply a function of standard A/C mains induction motors, **not because that's a great speed to spin burrs at!** High grinding speeds encourages static and pulverisation in the bean breaker zone, increasing fines and reducing grind quality. **Very slow burr speed is why I bought a Ceado E92 costing well over £2,000.**

Slow speed is better for a single dosing, because there is no full hopper of beans pressing down to reduce popcorning in the bean breaker zone. This popcorning occurs more with high speeds.

The Niche Zero 240V DC motor spins rapidly, but a 2-stage inline planetary gearbox reduces this speed and **acts as a torque multiplier. This means, low torque requirements at the motor end, masses of torque developed at the burrs and a stable grind speed.** The Niche Zero will be resistant to stalling on start-up or at any other time. If a foreign object jams the burrs, the motor will stop, a rise in current will be detected and a **self-resetting thermal cut-out** prevents motor damage. Damage to the drive system or stripped gears and cogs did not happen during testing on a completely stalled grinder. Of course, if that object is a bit of metal or a stone, it could damage the burrs, but the design should reduce any chance of shaft misalignment.

The result...an approx 330 RPM (depending on mains voltage) stable grinding speed with loads of torque, just what we need, because different beans and roast levels vary in how easy they are to grind.

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BURRS

Niche asked me to test 2 sets of burrs, A and B.

Both sets were excellent with no difference in grind quality. However, set B failed punishment testing (see later). **As a result, everything you read in this review is for burr-set A (apart from punishment testing.)**

The one difference I did notice was that burr set A seemed to consume less power when grinding than burr set B. I put that down to a less aggressive breaker zone (clearly visible). Grind throughput was unchanged, because, the lighter loading allowed a higher rotational speed under load.

The Niche Zero has the same quality burrs you will find in famous name commercial grinders costing £1,200. They are food grade 63mm conical burrs from a leading Italian burr manufacturer. A Mazzer



Kony has the same size burrs, in fact Kony burrs from Mazzer would just pop right in. **The specially hardened food grade burrs, last 70% longer than standard hardened steel burrs.** This gives less contamination as there is less wear and hence the term food grade. Burr life is in the region of 750Kg of ground coffee (*source: burr manufacturer*), or around **20 years home use!**

LOADING AND STRESSES

The top bearing is located very close to the base of the lower burrs, because this is where lateral loads are highest and burrs need stabilising to prevent eccentric running. Nothing lasts forever and after many years, this bearing may require replacement.

It's user replaceable, no special tools, or heating required (unlike other commercial grinders) and would take around 15 minutes. I pressed Martin on the cost of this and his reply was less than £20 and you would actually get a complete grind chamber floor with bearing pre-fitted.

I asked about the inline planetary gearbox, perhaps that might one day wear out...how much would that be? Again the reply came back, less than £50 and about 30 minutes to fit for the home user, no specialist tools required.

If I wanted a new set of highly polished sweep arms after 3 or 4 years ..."about £5" came the reply.

I asked Martin, why so reasonable on key parts prices and he said. **"I don't want this grinder to end up in landfill because it's too difficult, expensive, or complicated to repair, that's poor design. I made a conscious decision to try and price any maintenance parts as economically as I can."** This sounds good to me, because I hate products that have to go back to the manufacturer and are so expensive to repair, you might as well buy a new one! Martin completely disassembled a Niche Zero in 5 minutes while I watched, with just the few simple tools you see in the photo.



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KEY FEATURES

KITCHEN FRIENDLY AND QUIET



This is the Niche Zero next to my E92, one of the smallest commercial conicals (with large burrs) you can buy. The Niche Zero is just a little baby in comparison!

It's just right, heavy enough so it does not feel like it's in danger of falling over and light enough that you would be happy to transport it. This is great because

- If you're a Barista trainer, you can carry this round with you easily
- If you go on a UK holiday you can bring this with you and use your favourite brew method
- It is super kitchen friendly and just fades into the background
- It won't wake anyone in the morning it's so quiet. At 330 rpm the sound it makes is much less annoying than 1500rpm grinders
- You will happily move it to clean the counter underneath
- Small footprint and fits under all cupboards
- Integrated cord storage, no messy cord lying about, pull out what you need, the rest stores in the base

UNCOMPLICATED

- You really don't need to read the manual
- 1 switch no fancy displays or settings
- Place beans in grinder, shut lid, flip switch

EASY TO MAINTAIN AND ADJUST

- Twist top ring if required to make grind finer or coarser, **arthritis...no problem, it's easy to adjust.**
- Very small adjustments are easy to make and it is stepless (no preset click points).
- Can open grinder and remove top burr for quick cleaning in about 15 seconds (no tools required). Both burrs and sweep arm can be removed for deep cleaning in less than 60 seconds, only a single 10 mm socket is required
- Easy to return to previous grind settings after cleaning, even after removing both burrs and the sweep arms for deep cleaning
- Future maintenance quick and easy to do, no special tools required.
- Economical maintenance spares pricing

SUPERB GRIND QUALITY FOR ALL PREP METHODS

- Adjust from Espresso to Kalita Wave in 1 quick rotation. Going back is just as fast and easy.
- Static is reduced, controlled and contained
- Slow grind speed makes single dosing practical and improves grind quality.

On my big Ceado E92 grinder, moving from Espresso to Press-pot and back again is a major hassle and takes so long I won't do it!

RETENTION (COFFEEPHILE WARNING)

Often defined and used incorrectly it means different things to different people. I will often read, *I put 20g in and get 19g out, so my retention is only 1g...*this is nonsense. Occasionally manufacturers use this in advertising and it can be misleading. **It's best I define things very clearly and this applies to all grinders.**

There are 3 key areas that we should care about in a grinder, in addition to grind quality.

- Total Retention
- Dose Consistency
- Exchange

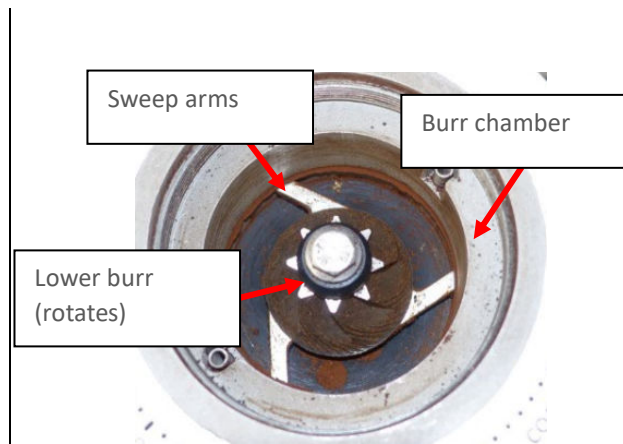
Total Retention: All grinds are removed, weighed and come from entire "grind path" of a grinder after it has ground at least 2 or 3 double shots of coffee and dose consistency normalises.

*To do this accurately, you must completely remove the burrs, carriers and sweep arms. The upper & lower burrs, sweep arms, burr chamber, screw heads, nooks & crannies and outlet pipes. All need to be swept clean and the grinds collected and weighed, **if this is not done, you won't get all the coffee out and your retention figure will be wrong.***



I have made a little video about retention at this link:
<https://youtu.be/4OSI5iy0kRg>

Usually people start with a completely clean grinder, the first time(s) you grind coffee some will remain in the grinder. As you continue to use the grinder, this coffee will settle in areas and compact in others (screw heads, sweeper arms, edge of burr chamber, burrs etc.).



*For at least 2 grind sessions, the grinder will be filling little voids and compressing the coffee into some of them as it settles down. It might seem strange, but it is a slightly variable figure, because it depends on the beans, their roast level **and other factors (such as exchange)** this will become clear as we define the other 2 areas.*

Dose Consistency: Is the weight of coffee in vs. the weight of coffee out. Ideally, you want this to be as close to identical as possible e.g 20g beans in = 20g ground coffee out, every time you grind. In practice, this is impossible, because of measurement error, static and **exchange variance**. **+ or - 0.3g variance between what you put in and what you get out is considered excellent for any grinder. However, this isn't the whole story!**



I have made a little video about dose consistency at this link:
<https://youtu.be/lupMWRiMDmI>

Exchange: You might put 20g into a grinder and get 20g out....**but what weight of that output is stale coffee from the previous grind?** This number is also variable as oily coffee is stickier and may show more exchange than non-oily coffee.

When *single dosing a grinder. **The exchange figure cannot be higher than the total retention, or less than the dose consistency variation.**

**Single Dosing: Where you don't use a hopper and only add the weight of beans you want to grind. Then grind as much out as you can, until no more comes out.*

RETENTION (CONT)

To put things in proper perspective, **large conical grinders (similar burr size) and NOT single dosed will typically have**

- Total Retention = about 20-30g
- Dose Consistency = up to + or - 1g
- Exchange = about 15-20g

Any large single dosed 75+ mm commercial flat or large conical burr grinder 63mm+ (that can be single dosed), would be considered exceptional if it had:

- Total Retention = about 6 or 7g
- Dose Consistency = up to + or - 0.5g
- Exchange = about + or - 3g

Note: Most grinders would require some modification to facilitate single dosing and achieve these figures

There is a commercial single dosing speciality flat burr grinder costing £3500 or more to buy and ship to the UK, **they talk about retention, but what they really are talking about is dose consistency**, the following is an extract from their web site.

"a single dosing grinder with very low grind retention. If you put 20g of coffee beans into the machine, you will get almost 20g of grinds out."*

**our data has shown this figure to be accurate to within +/- 0.3g which on average works out to 3 coffee beans.*

I am sure that particular flat burr grinder is the peak of technology but even they have to be realistic with dose consistency. I am sure they have been quite conservative and the grinder probably

performs better than that. **They don't state an exchange figure, but I imagine its design makes that hard to measure.**

THE RESULTS FOR THE NICHE ZERO?

The results were hugely impressive, so much so I was seeing it and still not believing it!

These numbers are orders of magnitude less than most grinders and calculated over many days of grinding and measurement.

- **Total Retention = 0.4g - 0.7g**
- **Dose Consistency = + or - 0.2g (usually much less)**
- ***Exchange estimate = 0.3g max**

** Based on measurement; please see methodology for exchange in appendix 1.*

Note: To measure retention, the grinder would be used for a significant amount of grinding, a day a few hours etc.. Before each test, I completely removed both burrs and sweep arms for full access to the grind chamber. Then weighed all the coffee I could completely clean out from burrs sweep arms and grind chamber.

Note: Multiple tests conducted over different days with different coffees.

When Martin saw these figures he was disappointed, because they are not as good as he thought. I did explain that my testing regime was very thorough, used a wide variety of very fresh coffee and was in a typical busy (sometimes humid) kitchen environment. I think his view of what retention means is probably different to mine.

He was concerned that perhaps people would think the website and his statements, purposely misleading. I reassured him that asking for an expert independent report, shows no intention to mislead anyone.

Martin asked what he could do to improve these numbers. **I was surprised and explained, these numbers don't need to be improved and they are already low enough to be insignificant!**

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RETENTION (CONT)

These are tiny, tiny amounts with the scales working at their limits of accuracy. **To put these numbers in perspective a single coffee bean = 0.15g (approx).**



Martin could waste money and increase the cost of the Niche grinder, striving to reduce the figures I found.

It's important to make this point, below a certain level, retention, exchange and consistency of dosing is irrelevant. The Niche grinder is well past this point. Smaller and smaller numbers would make no difference, or deliver any detectable benefits to grind quality or taste.

The Niche Zero is super consistent, exchanged grinds is a fraction of other grinders, no human could taste the minute amount of stale exchanged coffee in a Niche Zero!

HOW DOES IT ACHIEVE SUCH GOOD FIGURES FOR RETENTION, DOSE CONSISTENCY AND EXCHANGE?

A fair question, as most grinders don't, even when single dosed.

- Advanced materials
- Burr speed
- Sweep arm and chamber design

The grinder uses an advanced man made material added to the normal metal grind chamber floor, I insisted on knowing what it is to assess its suitability, but I can't disclose what it is. It combines slipperiness with wear resistance and is suitable for replacing metal components. Importantly, it is dimensionally very stable and

unaffected by the thermal changes you might see in a grinder.

The grinds output tube is another variant of this advanced material. It also doesn't seem to let static cause grinds to cling.

Slow burr speed limits static and compaction Martin likened it to "bug splat" on cars, which I liked. At high speeds, things tend to stick a bit more than at low speeds. A combination of extra static and, "bug splat".

Any static is only temporary and limited. Some of it is hidden as it grinds into the metal cup, where the static dissipates rapidly. No spraying of beans with water needed.

There is no portafilter holder, because there isn't really room under the exit chute. It would also defeat part of the anti static system. I would not recommend trying to grind into the portafilter, the short-lived static makes things messy as does the nice big fluffy mound of ground coffee!

Someone said "but if I wanted to make 3 doubles for guests it's handy to have a portafilter holder, it's faster and easier than grinding into that cup". I said you are forgetting something, while you are pulling the shot, the Niche Zero is already grinding the next double shot into the cup and is ready before your portafilter is". **It's no slower in the domestic environment.**

Highly polished and well designed sweep arms discourage coffee sticking and allow for a nice "fling" of the coffee towards the exit point of the chamber. **The tilted chamber** is something I never seen on a large conical burr grinder. This tilt is just enough to give an almost complete grind chamber clearance by the sweeper arms. A lesser degree of tilt presumably ensures that at the very low grind speeds loading of the conical burrs remains consistent around the periphery. **(COFFEEPHILE WARNING OVER)**

PERFORMANCE

I think people sometimes, focus too much on retention. It's very important, but we must not lose sight of other things that we really want, **great grind quality, delivering great taste in the cup.**

I have covered ease of use and simplicity and the very quiet running. **As far as retention, dose consistency and exchange, we know we're good there,** now it's down to taste "what's it's like in the cup" and grind quality.

BIG CONICAL BURRS

I covered the quality of the burrs earlier and in my mind, their quality is not in question. I like big conical burrs and it is important to understand a bit about burr types. You get flat burrs spun at high speeds and conicals usually run at lower speeds.

You cannot directly compare conical and flat burr sizes. An 83+mm flat burr is quite big and sounds bigger than a 63mm conical, **but the 63mm high quality conical burrs will cost twice as much and have a similar or better throughput, even though they turn at lower rpm.** This is because the milling area is large in relation to the diameter.

Conical burrs respond very well to being run slowly and the shape and size of the bean breaker zone reduces popcorning (beans jumping out). I personally think they also work far better than flat burrs at very low rotational speeds. **Certain** forces on the shaft are greatly reduced compared to flat burr grinders and when you tilt a flat burr as in certain grinders, they have to be a lot stronger to cope with potential uneven stresses.

The internet has debates about flat vs conical burrs and much misinformation about grinders. **I prefer a QUALITY large, slow moving conical burr-set. Experience has taught me that they adjust well through a range of grind sizes. I think they are more forgiving and I prefer the taste.**

I believe slow moving burrs are essential to maintain grind quality when single dosing. This is because you have no weight of beans in a hopper above to keep beans pressed into the burrs of fast spinning grinders. I have read about some people running big (faster spinning) commercial conicals with a low level of beans in the hopper and a weight, the big problem there is the massive retention when run this way and the considerable purging to be free of old grinds. Using a partially full hopper with weight in is impractical for home use.

I dislike high speeds in coffee grinding, throughput matters in the commercial world, but at home, "time isn't money". Domestic owners will happily trade speed to get the best grind quality possible.

They say high speeds can heat or burn the coffee, I don't think it's a big issue in domestic use. **The importance of speed is pulverisation vs. grinding.** The first I dislike intensely, the second I prefer. High speeds pulverise in the 1st stage (bean breaker zone) of the burrs, slow speeds do not. This pulverisation always seems to result in fines and poorer grind quality. In the photo below is an Americano espresso (pulled straight into the mug) topped up with hot water. What's notable is the lack of fines in the cup...a good sign (there's the odd dot, but hard to see).



PERFORMANCE (CONT)

(When grinding for quality speed is not your friend, however, torque is. The more torque (turning force) you can generate, the more stable the speed. The **Niche no load speed is approx 330 rpm, which is nice and slow and it has masses of torque, this keeps the grinding speed constant...a good thing.** It easily handled a variety of coffees and roast levels from espresso to very coarse Kalita Wave style grind.

The high torque coupled with high quality slow rotating burrs **moves the Niche Zero from being a great grinder to being an astonishing grinder.** Not just because it's good for its size, but also because you could put it up against a £1200 63 mm conical burr grinder and outperform it in all the key areas that matter when using them in a domestic setting. With a grind quality that is as good or better.

The design and choice of materials makes expansion and contraction with temperature a non-issue. It works well in steamy kitchen environments as well as dry ones. This means you only need to adjust your grind as your coffee ages. Adjustment is simple, stepless and easy.

Certain situations really stretch the abilities of any grinder. **The bottomless (or naked) portafilter is a device where bad shots, poor prep and inadequate grinders have no place to hide.** The most challenging of these is the single portafilter where the amount of ground coffee is much smaller. Most people don't use them, because of the mess when the shot goes wrong, as it often does.



<https://youtu.be/De0-Mig2a90> is a little bit of youtube video showing the Niche Zero in action with the naked single portafilter.

I was able repeat this performance shot after shot after shot once the grinder is dialled in. It made the naked portafilter fun again.

BREWED COFFEE

Now I have concentrated on espresso performance up to now, but I needed an expert in the brew coffee field. I contacted Mark from the forum and invited him to test this aspect of the grinder. Mark had all the kit I didn't have including VST refractometer, V60s, Bodum insulated carafes with silicone plunger seals, Krueve Sieves and more importantly a wealth of brew coffee experience.

I was going to try to give my take on it, but I thought it easier just to use Marks own words.

I have just spent a very enjoyable and fascinating morning with @DavecUK using the Niche grinder for a few brews and enjoying Dave's espresso, ground on the same.

Dave only has the machine until Friday & as I had a day off today, I took the opportunity to accept Dave's kind offer to have a quick play with it. This is really just a snapshot of its brewed capability, but from what I have seen so far, it is impressive in terms of dose consistency. Dave has tested various aspects of retention-based issues, so his report on the matter will cover this in more depth. However, today I saw seven doses ground...

Espresso: 11.02g into the grinder, 10.95g out and 11.38g in, 11.35g out. No sweeping of the burrs, or chute, no bumping of the grinder, no RDT.

Pourover: Straight from the espresso setting, no purging 13.70g in, 13.72g out. 13.64g in, 13.61g out. 13.57g in, 13.54g out. 13.63g in, 13.60g out.

Test grind: From pourover setting to centre/ 6 o'clock setting, no purging 13.06 in, 13.16 out.

To kick off the brewed coffee, we dialled in a V60 to my usual recipe of 13.5g coffee to 225g water, bloom 30s then 6 pours of 35g every 20second thereafter. Target total brew time 3:10 +/- 15seconds. This is the method I have been using with my Feldgrind set to 2+6, giving average extractions around 20.5%EY with that grinder.

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The first brew we attempted with the Niche (after a test grind) came out at 21% extraction at 1.45%TDS – juicy acidity, sweetness and a representative brew. We then set the grinder 10 marks coarser and the resulting brew came in at 19% extraction and 1.33%TDS. Still juicy, sweet citrus, maybe a little more balance & clarity to this cup.

We then set the grind halfway between the previous two settings & started a French press brewing in a double-walled, steel Bodum (same brew weights) whilst we sifted a test grind with my Kruve, fitted with 400 & 1200 sieves. At this setting for the V60 we landed 78% between the sieves, 15% below 400, 7% above 1200.

There are graphs and data at this link:

<https://docs.google.com/spreadsheets/d/1Db7IqVAhkm0E7GYGkdMRYKhkz3pcXKYM2jR989rNeG8/edit#qid=654206614>

This is a little tighter, in terms of distribution, than I see with my hand grinders (Lido1, LidoE, Feldgrind), which usually land ~70% between these sieves, for this recipe. Note that I am saying that the distribution for the Niche is measurably a little tighter, not that the distribution is in a different ball-park.

We then went back to the French press which had been steeping for the previous 40 minutes (within the bounds of my typical steep times), still too hot for me at this point, but as it cooled it was comparable to the earlier V60s, just a little hazier.

I wanted to see how coarse the grinder would practically go, so Dave then wound it a full 360 degrees past the espresso setting he had been using. This yielded 64% over 1200, 31% between the sieves, 5% below 400. This is about as coarse as I would ever go, to get this ratio on the Feldgrind I would be at around 3+6.

The prototype we used doesn't have the final design as far as setting markings, so this was the only cause of my concerns – the fact that available range of adjustment appeared to be about 270 degrees of adjustment turn, but in reality this is not the case. Perhaps setting numbers around the entire circumference of the grinder would be a better solution, allowing the user to adjust across that 360 degree range & then plus a full turn, if required.

I'm not really in the market for an electric grinder, however, the dosing with the Niche was impressive. Add your exact dose, plus one bean, and you get at least your dose out (at constant grinder settings). No purging, nor sweeping out of chutes. I tend to weigh beans into my hand grinders, add two beans, grind & weigh the dose out again into the brewer, but I'd be confident that I could just weigh out beans the once with this grinder, without significant loss, then brew.

Dave removed the burrs to show me how much was retained in the burr chamber, it was almost nothing.

Thank to Mark for his time and an enjoyable day, I think as far as brewed coffee goes it is going to deliver very well for fans of that process.

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Grinder companies all work hard looking for the next marketing angle. Often large grinder companies sponsor industry events such as the world Barista championship.

The important thing to remember is these are **commercial** events and the grinders aimed at **commercial** business. The technology that filters down into domestic grinders is often a smaller cheaper version of their **commercial** brothers.

Home users simply want the same grind quality or better than expensive commercial grinder, without having a grinder the size and weight of a small child on the kitchen counter.

They also want simplicity, ease of use, easy cleaning, cheap maintenance and reliability.

This is where the Niche Zero delivers, producing a commercial quality grind in a domestic design.

NEXT STEPS

The idea of placing a portafilter on the metal grind cup and inverting it to load the portafilter with coffee, didn't work in practice for me (especially with the double portafilter). I found I got a big fluffy mound to one side and things got a bit messy. I found it easier tipping from the metal cup it into one of my homemade portafilter rings.



See Video:

<https://youtu.be/zfjdg51nOIE>

Niche are going to look at a portafilter catcher rings for people who find it easier to tip the coffee into the portafilter. Obviously the cup method isn't a 1 size fits all at 58mm and it won't fit portafilters on some machines.

It's a production prototype, so there are a few improvements to fits and tolerances prior to production. Destruction testing also has to be completed. I've given design/engineering feedback

to Niche although most areas they already had plans for in the final production grinder.

DESTRUCTION & PUNISHMENT TESTING

This was an important area and we discussed it specifically. **The reason is that I have seen too many grinders with problems over the years, some of them very expensive grinders:**

- Insufficient power, causing stalling when grinding certain beans
- Stripping of motor gears, toothed belts etc.. when objects jam the burrs
- Slipping belt drives on shafts
- Failed electronics

Luckily, the Niche Zero has no belts, off centre drives or complicated electronics. However, it does need good destruction testing. This includes torquing up shafts until it destroys gearboxes or motor drives and maximum burr breakaway torque testing. Niche have already built a variable load and shock load rig, part of which is in the photo below.

This can test the motors and gearboxes with sudden shock loads such as something jamming



the burrs at speed, but also heavy high current draw loads for long periods. Again, they will test to destruction. One of their last (and very important) jobs before production starts is, ensuring it has the durability we would all expect from a grinder like this.

PUNISHMENT TESTING

There are only a few valuable production prototypes and I needed permission to perform these tests. We have all heard of grinders (some very expensive) that cannot grind very light roasts, or ones that stall sometimes, others that strip belts or burn out motors. Etc. Amazingly, these grinders are still being sold!

I initially had two burr sets to test, burr set A and burr set B. They performed equally well except one set required less power to turn than the other did. Niche can test certain things on their rig such as 100 simulated instant burr jams, or 100's of 30-second maximum torque loads with (way out of user grind range). **My tests are something real world, something we could experience and something inexperienced users might do....and it's tough!**

It's also important to point out some issues when spinning a conical burr set very slowly. These don't make good sales and marketing, so you may have never heard of them. Unlike a flat burr, in a conical burr set, there is a large and funnel shaped bean breaker zone. It points downward and is gravity assisted. At very low speeds, the tendency for beans to jump out is reduced. **As you grind finer and finer, the force required to turn the burrs can increase geometrically.** This is because unlike a flat burr, where less and less gets through, the conical continually rams coffee down into the burrs, to the point where a large force is required to turn them. **Burr design can mitigate this (the way the breaker zone works), usually by throttling grind throughput to a limit.** This I believe was the main difference between Burr A and B. funnily enough throughput is almost identical, because the load speed of burr A is higher than burr B.

The Niche is a domestic grinder that really has to perform like a pro, this gives a unique set of engineering and design challenges:

- Affordable price
- Small size
- Grind quality of a £1200 grinder
- Quiet
- Robust and long lasting in the domestic environment

Overcoming these challenges requires care in design. Non-engineers might call them compromises:

- 1. No Turkish grinding, they are not Turkish burrs, the larger than designed loads and the burrs, by design, will not allow correct throughput or operation.**
- 2. The motor must be powerful enough for all grind types down to the finest espresso and a reasonable point, way beyond where it chokes any espresso machine.**
- 3. The motor must not be so powerful that it tears the rest of the grind system apart, due to massive torque loadings from a sudden jam of the burrs (e.g. hard object)**
- 4. It's not designed for commercial use apart from travelling barista training and Roastery Cupping.**
- 5. If a user accidentally moves a long way beyond the espresso point, the grinder should fail to grind without internal destruction.**

Points 2, 3 and 5, I have personally tested.

Trying to break it seems a strange thing to do to a very expensive prototype but best done now than later! We have all seen enough grinders from some other companies, that fail so often and the owners sent parts to repair them, often multiple times.

NICHE ZERO

INDEPENDENT REVIEW BY DAVEC

PUNISHMENT TESTING (CONT)

All tests conducted on a long 12 second 2 bar infusion profile on a pressure-profiling espresso machine. This profile typically requires a **much finer grind** than a normal 9 bar non pressure profiling machines. **The tests are a FAIL if grinder stalled or grinds abnormally (struggled).**

Tests for burr-sets A & B

Test 1 medium roasted beans, SHG (fairly dense) Nicaraguan el Buey and Brazilian Santa Lucia.

Grind Fineness	BURR A	BURR B
Espresso	PASS	PASS
2 marks finer (reduced volume)	PASS	PASS
4 marks finer (choking)	PASS	PASS
8 marks finer (choked)	PASS	PASS
10 marks finer (choked)	PASS	PASS

No stopping or stalling of motor, grinds all good, quality good. Went way past the choke point for these dense beans....no problem with grinding

Test 2 medium roasted beans, both SHG Nicaraguan el Buey and Brazilian Santa Lucia.

Grind Fineness	BURR A	BURR B
Espresso	PASS	PASS
2 marks finer than full choke point, stop start halfway through grind	PASS	PASS
6 marks finer than full choke point, stop start halfway through grind	PASS	PASS

Test repeated 6 times in succession all OK.

Test 3 A Scandinavian style roast. Brazilian Santa Lucia, very light roasted beans, just before the end of 1st crack (1m 30s into 1st). This is about as hard as any beans you will get. **Burr B would simply stop turning within a second or two. Burr A acted as if it was a normal bean.**

Grind Fineness	BURR A	BURR B
2 marks coarser pressure-profiling Espresso grind	PASS	FAIL
pressure-profiling Espresso grind	PASS	FAIL
2 marks finer	PASS	FAIL
4 marks finer	PASS	FAIL
8 marks finer	PASS	FAIL
10 marks finer	PASS	FAIL
15 marks finer	PASS (Turkish grind)	
20 marks finer	PASS (Turkish ++)	

The last two runs at 15 and 20 marks finer were to be as tough as possible with a Scandinavian roast (that is **NEVER** ground that fine). We are way past the zone of normal operation or grinding here. The notes about grind fineness are so you get some idea of how fine it was... **remember, this grinder is NOT suitable and will not work as designed for Turkish grind, this was abuse testing!**

It might seem an unfair test for a domestic grinder, but some people like a Scandinavian roastor just beyond. **This roast type is usually brewed coffee not espresso (perhaps even more unfair).** The difference as stated earlier must be down to the 1st stage breaker design. **No damage to the grinder or gearbox was evident for test with either burr.**

I don't want to see more grinders that can't grind a light roast and many that won't grind a Scandinavian style roast (one of those grinders costs well over £1000).

NICHE ZERO

INDEPENDENT REVIEW BY DAVEC

PUNISHMENT TESTING (CONT)

To summarise a flawless performance with burrs A and B for every test, except Scandinavian Roast, only burr-set A ground that tough bean.

The Scandinavian roast profile used below, is very representative of this roast style. I would always want the roast to go on longer to ensure it minimises Aflatoxin and Ochratoxin A products and has proper development, I personally would not drink, or enjoy this roast style!

Total roast time	12m 30s
1st crack start	11m
Roast end	12m 30s 1st had not ended
1st crack temp	193
End roast temp	198 (controlled)
development	Toad not frog



Scandinavian roast. Note the bean lightness and appearance, it has a slight wrinkled appearance, we call toads. This shows incomplete expansion because they didn't finish 1st crack. Beans like this are **very tough to grind**. Many cheaper grinders and some very expensive ones may struggle with these.

I'm not a fan of this style, but some people roast even lighter and I think risk undesirable chemical products being present.



Normal medium roast, note the plump appearance of the bean surface, **beans have always completed 1st crack**. These are high grown arabica, so they will be dense, but all grinders should be able to cope with these.

UK MAINS VOLTAGE

This is a DC motor, which reacts well to changes in voltage, but the speed varies. Because of mains voltage harmonisation within the EU, electricity supplies are now nominally 230V

- Within the EU 230 V $\pm 10\%$ at 50 Hz
- Within the UK 230 V $+10\%/-6\%$

In reality nothing changed, this was politicians cleverly setting the limits so no country had to change anything about their electricity networks. **An item sold in the UK and EU may have to cope with a legal allowable voltage range or 207V - 253V @ 50Hz.**

In reality our normal voltage is close to 240V and Europe is fairly close to 220V most of the time. For a complete test though, I thought I'd better see how the grinder performed at a Variac controlled voltage. I did grind tests at just beyond the finest espresso my pressure profiling machine could use (punishment testing was not relevant or necessary here).



A short video showing part of the voltage testing

<https://youtu.be/q8Mw20QRgbA>

NICHE ZERO

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UK MAINS VOLTAGE (CONT)

There were absolutely no problems well below the allowed minimum EU voltage. I tried a few different bean types including the hard Scandinavian roast beans.

204V (below minimum EU allowed)	238V (normal voltage seen in the UK)
Ground correctly no problems	Ground correctly no problems
Chamber cleared correctly, no problems	Chamber cleared correctly, no problems

Dose consistency, retention and exchange are all unaffected.

I know it's intended as a worldwide product. If you are on holiday in Europe camping in your Yurt and the lights grow dim, perhaps the espresso machine works funny and it's hard to see. At least your Niche Zero will still be pumping out excellently ground coffee, dosing consistently, exchanging hardly anything and retaining what it always did!

I also decided to over-volt the grinder while I was about it. I shoved 268V through it (sorry Martin) and it worked fine, just span a bit faster.

Now I need to make a little point here...This prototype has been used for well over a year by Niche, taken apart and put together many times before I got it. I had to complete all the basic tests first, because I didn't want to break a prototype. Then I got permission to have some fun with it, which means abusing the hell out of it. The Niche Grinder has been, stalled, overloaded, shock stopped, over-volted and under-volted. I also abused it with a Scandinavian (not even finished 1st crack) roast. I even held it stalled for 5 seconds many times (felt like ages), but no blue smoke

After all this, what's it like now? My answer, "still seems to work well"!

CONCLUSION

I asked Niche many questions attempting to cover everything you would want to know and to satisfy myself that all the right things were all happening. **It's not a sales review. It was always going to be a good hard look at Niche and their grinder in as close to production form as possible.** In fairness, I don't know of any grinder that has gone through this sort of scrutiny and had it made public before it's even built.

THE GREAT THINGS ABOUT THE NICHE ZERO

I was surprised at how close to final production this prototype was. I used the term production prototype because apart from a few things (and any issues in destruction testing), this is pretty much the finished product and they are close to specifying final production tooling. **This review should be the minimum level of performance to expect.**

My time with the Niche Zero is ending. After more than 2 weeks use I can truthfully say it has become invisible to me...this is a good thing. I don't need to worry about it or think about it, it simply works and works fantastically well. I really tried to find any negatives because the review seems unbelievable, even to me. I still look at this little grinder and think "how, just how can it be so good, I must be missing something". The grind quality is so good and the dosing so accurate, with miniscule levels of exchange that **I have gone back to my single naked portafilter. These require the finest grind quality and great dose consistency or things get messy.** I had put it away some years ago and lazily used spouted portafilters since.

I see the consistency of the dose and I still can't quite believe it's such a small variance, put 20g in get 19.90 out or put 11.11g in and get 10.99 out. I keep expecting to see a massive compacted lump drop out and a 1g variance, but no, it doesn't happen.

NICHE ZERO

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I know some people will say, "What about a portafilter holder"....I tried and I say, no, you don't want a portafilter holder, the metal cup helps eliminate static. You can also leave your portafilter nice and hot in the machine (not cooling down under the grinder) until the last second before you fill it.

WORKFLOW

To check what happens with some top end single dosing grinders, I searched YouTube to watch videos of those hugely expensive specialist single dosing grinders. I'm not going to name names, but we're talking about stuff in the £2000-5000 range, the esoterica. **I was particularly interested in workflow.** I urge you to watch a few of those videos. You will see all sorts of techniques, usually always spraying the beans with water for static reduction. I personally would lose the will to live if I had to follow some complicated and almost ritualistic set of procedures.



This is the Niche Zero workflow.

<https://youtu.be/CTmUw5IFAyU>

You have to change the way you think about a big conical burr grinders and super expensive single dosing grinders. **The Niche Zero is specifically designed to work well in domestic use,** not a specialist or shrunk down commercial product and yes it will turn those big burrs....no problem.

I really love this little grinder; it performs as well as my big commercial conical, but is a lot more convenient. I will miss it when it goes back, I'll miss it a lot...It just made everything so easy. It works really well and is one the best grinders for domestic use I have seen at any price!

The Niche Zero is what we might describe in car terms as a "sleeper". **This is a car with very high performance and an unassuming exterior.** In terms of grind quality, I personally believe that the Niche will absolutely blow away any grinder up to £800 and totally match any grinder of £1200 and possibly beyond!

I read on my local forum that someone is considering buying the Niche and using it as their decaff grinder keeping their Rocket Fausto grinder for best. **I chuckled a little when I saw that because if they get a Niche, I'm sure it would become their primary grinder, as it will mine, when I buy one.**

Martin has put a huge amount of time, effort and investment into developing the Niche Zero, it's taken a lot of dead ends to finally get it right. He is serious about doing this. **If you buy a Niche Zero you will find the grinder speaks for itself and has to apologise for nothing. Until then, this review is the only voice this little giant killer has.**

The Niche Zero is "~~almost~~ perfect" and that's high praise for a new grinder. I'm not an easy reviewer but I would be doing Niche and it's customers a disservice if I didn't give it the toughest and most realistic test I know how.

Now I know I'm going to hate myself later for saying this tired old clichéd phrase" The Niche Zero is going to be a game changer".

Disclosure: I always make a nominal charge for my work when I review and I am very selective about what I review. This charge is payable whether the review is favourable or unfavourable. The reviews are locked and Niche only has the choice to publish or not publish, they cannot amend anything. The review is completely independent and I have no commercial links with the company.

The entire payment for this review is being donated to a registered UK charity of my wife's choosing, including the costs of the coffee I roasted to do the review. I have asked for Niche to publish details of the charity and evidence of the donation in due course.

My great thanks to Mark Burness for his essential and expert help in the brewed Coffee section.

NICHE ZERO

APPENDIX 1 - ESTIMATING EXCHANGE

METHODOLOGY FOR ESTIMATING EXCHANGE

Earlier there is an estimate of the level of exchange, old coffee from the previous grind coming out in the current grind session. Just because it's an estimate, does not mean it's a figure pulled out of thin air or a pure guess!

During testing, I noticed a lot of trapped coffee, under the sweep arms and this looked quite compressed to me.



These images show the floor of the chamber looking quite clean, most people would sweep all they can see away and that's what they might think is retention. However, once we remove the burrs and sweep arms, look what is under them!

Now I did disturb some of the coffee packed beneath the lower burr and sweep arms in this particular image but **only a small amount of coffee is retained in the grinder, it is clear that a very little of this would come out with the next grind..**

My retention figure for the grinder was for the TOTAL weight of coffee I could remove after removing burrs and sweep arms. In other words...everything!

I could have scraped off this compacted ring of coffee and measured it, but **I needed to be sure it stayed put and wasn't being exchanged**. I decided on use of a food safe marker. That would not change anything dramatically.

I ground a number of shots through the grinder to ensure the grinder had retained as much coffee as it was going to and super carefully removed the lower burrs and sweep arm, trying not to disturb the ring of coffee. It's very difficult because the arms are so slippery and hard to remove without disturbing anything.

I dusted the ring of coffee on the floor of the grinding chamber (under the sweep arms) with 0.05g of white flour, reassembled the grinder and ground a double

shot. I carefully removed all the burrs and sweep arms. **This photo shows what I found.**

The coffee on the floor of the chamber is from burrs and



sweep arms as I removed them **you can clearly see the white ring where flour remains undisturbed.**

It was a fraction wider in areas but there was some unavoidable movement of coffee as I removed those very slippery sweep arms. I cleaned away all coffee around this area with my small brush set and ensured all parts of the grinder was clean except for this area. Lastly, I brushed out this flour-stained coffee and weighed it.

The photos below show what came directly from the **flour stained ring and then the additional weight from the allen head bolt holes on the conical burr**, another area where coffee is retained but does not exchange.



MAN MATHS WARNING!

$0.37g + 0.08g - 0.05g$ (flour weight) = **0.4g does not exchange**

Total retention of grinder = **0.4 - 0.7g max**

Exchange = Total retention (max) **0.7 - 0.4g = 0.3g**

0.0 - 0.3g is the potential for exchange within the grinder. In reality it will never be zero, but will often be less than 0.3, because retention is in the range 0.4 - 0.7 and I took the higher retention value as a worst-case scenario. Moreover, I used the total flour weight not just the weight in the ring etc.