



# A project to go the distance

Most Guzzi projects become café racers. This one's going to be a road-legal endurance racer

WORDS: PETE NORMAN. PHOTOGRAPHY: PETE NORMAN, MOTO REVUE AND MOTO JOURNAL

hat is it about the French and self-flagellation on wheels? The original petrolhead pioneers, they led the early development of wheeled, winged and pedal sport. They were the first to document an endurance race – between Paris and Dieppe in 1897 – and more than a century later, passion pour l'endurance remains. Le Mans and the Bol d'Or are both big crowd-pullers – 90,000 fans enjoying 24 hours of punishment as competitors suffer blisters, effect bodges and pray for luck. And in the 1970s the technical innovation was dizzying: funny front ends, V6s, autos...

"Grand Prix bikes get the attention of the press while endurance bikes do much of the real testing for the machines sold to the public," writer Mick Walker once mused. "They are the unsung heroes of motorcycling sport."

Walker was right, and it got me thinking. With a spare 1976 Moto Guzzi Le Mans frame languishing in the garage, I, like plenty of others, have drifted towards the idea of a 21st-century café racer project. Guzzi's twin works beautifully with that all-ally stripped down look. But the café scene is no longer skint boys bashing bikes together in their garages. Now it's CNC-milled this, billet that. The look is tempting but it's so damn expensive. In August a Le Mans café racer sold in Australia for £17,500. Europe's best workshops now want £20,000 to perform their magic on your donor bike. There is, I've decided, no better time to lunge into a self-built budget endurance racer.

Less logical is the idea of making a replica of the two-speed automatic racer of veteran French privateer Charles Krajka. Branded the GuzziMatic, Krajka's hybrid mated a 947cc Le Mans engine to a Sachs transmission from a Guzzi Convert. Although no threat to the Japanese machines racing for the win in the 1976 Bol d'Or, Krajka's contraption trounced the other Europeans: a brace of Laverdas, half a dozen BMWs and all the Ducatis. It was no

wonder Bologna's bevels were soon ditched and replaced with cambelts. After all, they had been humiliated by Krajka's concept. Especially so once they realised that the crude auto needed to go through corners dragging the brakes, as the rider worked to keep the revs above 3000rpm to avoid hydraulic lag on acceleration.

Now 78 years old, Charles Krajka first raced a single cylinder Moto Guzzi Airone in 1955. Two years later he was French 250cc champion. Krajka built a successful solo and sidecar career and became a Guzzi dealer, in Vincennes, to the east of the Paris Périphérique. The business funded his racing and brought him publicity. Dapper and fond of elaborate facial hair, Krajka had top connections with the Lake Como factory and other Italian manufacturers. Famed throughout France, he did deals with parts

suppliers and sold his own camshafts, fairings and outfits in the 1970s. Today, he is vice president of the technical college of the French Federation of Motorcycling. His blood, he says, is Guzzi red.

"When I suggested racing le Bol with this type of bike, they thought I was crazy," he recalls. "But I've always been a betting man, and it has always been a habit of mine to do impossible things. The firm and especially Mr Guzzi – chief engineer Lino Tonti – accompanied me in this madness."

Engineering supremo Tonti prepped a Sachs convertor for the GuzziMatic that would handle 20bhp above stock. There were two factory spannermen to monitor events from the trackside and Krajka's sons Eric and Fred looked after refuelling.

"We planned to use riders Daniel Rouge and Daniel Levieux but before the race

another rider, a friend of Rouge's, was killed. Then we had a convertor oil leak in testing. Daniel decided to pull out of the race," Charles recalls. "I contacted an old race colleague from the 1970 Bol, Raimondo Riva, and he stepped in."

The GuzziMatic was never going to win. It was ten seconds a lap slower than veteran Guzzi factory test pilot Luciano Gazzola's Le

"Building 21st century café racers is so damn expensive. So instead I decide to lunge into a self-built automatic endurance racer..."





Charles Krajka and his creation in the September 1976 issue of Moto Revue. The bike now resides in the Guzzi museum in Mandello

Mans racer, which finished 15th. But Krajka's averaged just 1km/h slower over the 24 hours and came in 16th. The auto completed 646 laps to Gazzola's 652.

The Bol cost Krajka about 40,000 francs, and the prize pool for Honda winners Jean-Claude Chemarin and Scot Alex George, who completed 762 laps, was 50,000 francs – around £6000. At the time, a new Le Mans cost £2000.

Krajka claimed 91hp at 8000rpm for the bike, delivered through a 4.00/5.60 18 rear Michelin with standard aluminium FPS 12-spoke cast wheels, a stock auto 9x34 ratio bevel and shaft final drive. Top speed in first was 190km/h (118mph), and another 40km/h (25mph), theoretically at least, in top gear. Only two points on the circuit needed top.

The frame and forks were stock but the rear shocks were gas Konis. The Sachs transmission used Motul Dextron ATF, the fluid camshaft-driven through a timing cover pump, cooler and nearside reservoir. The 40mm carbs fed high-compression Le Mans heads with stronger springs on standard 37mm and 44mm valves, drawing fuel from a home-built tank with offside flip filler. The Krajka special cam was without a bevel end (used to

drive the tacho on production bikes). Instead, an electronic ignition coil triggered a West German-made Kröber tacho. Rubber bushes on an alloy top yoke plate cut vibration. The 40mm exhausts ran without mufflers and sound peaked at 117db.

Krajka became obsessive about the bike's weight. He part-drilled 96 screws and bolts, whittling a few grams off each. The cylinder studs were 50-gram titanium items instead of the stock 115-

gram steel studs. A total of 155 grams were shaved off the six brake pads and even the 24-litre alloy tank was left unprimed. It all meant Krajka got the bike's dry weight down to 160kg.

The electrical system comprised twin 55W Marchal spotlights, a tail light, ignition, lightweight state-of-the-art Ni-Cad batteries and the standard 280W Bosch alternator. Six holes were drilled in the alternator cover for cooling during what turned out to be a rain-free race. The bulky Bosch starter had to remain because the automatic couldn't be bump-started. The rear master cylinder reservoir was moved inboard of the nearside clip-on, to avoid damage to the Brembo system if the bike took a slide.

All six Ducatis in the race suffered piston or con-rod failure. But the GuzziMatic survived on standard, polished 234-gram con-rods and stock 88mm high-comp pistons giving a 12:1 ratio. The forged crankshaft was standard but balanced. The engine burned 1.75 litres of oil over the race distance, and averaged 28mpg. The transmission remained oil-tight throughout.

The potential for further racing was there. But Charles believes that the lack of a podium finish (or the drama of a major disaster) made it easy for the media to ignore the auto's long-distance

potential. "The race went without problems, and we only used fuel, oil and tyres," he says. "Back in Mandello there was joy from Tonti but not from the factory. So what? What is important is that I succeeded in having an automatic complete the race."

It's inspirational stuff, and now my dream is a road-registered endurance race replica. I want it dirty and bug-encrusted, with that just-wheeled-off-the-track feel. I want iconic 1970s twin white Marchal spots to melt the tarmac at 50 paces. Objectionable induction

"Krajka became obsessive about the bike's weight. He part-drilled 96 screws and bolts, whittling a few grams off each" roar and nasty exhausts. Something that yearns for its neck to be wrung en route to the Bol d'Or Classic. Taking its name from the April megarace, the Classic has become classic endurance racing's season finale, and it's a natural deadline for my build. What a trip that would be...

The mechanicals and electrics will need to be right but the bodywork and paint will work best with some period authenticity. Magazines, costing pennies, are invaluable for their detail. I prowl the Guzzi club magazine, Gambalunga, the ads in Classic Bike and eBay for a donor Convert. Nothing comes up. Eventually, I place a wanted advert and receive a call from engineer Brian Liversidge, a Convert owner for 30 years who has overhauled more than three dozen of the Sachs units. Marrying a Mk1 engine to an automatic is no easy feat, he warns. Apparently

the transmission oil pump, reservoir, cooler and torque converter will all need modification, and I'll need to use a different drive shaft and different final drive ratio 'boxes. "And after all that they need to be shimmed properly," Brian tells me. "The factory gives allowable runout of 17 thou, but it can be improved to half a thou with care. Then there's the problem of wear on the transfer shaft into the torque converter, as its bearing runs on the shaft. If it's set up right, 100,000 miles is easily possible – but once it is worn, or if it's not fitted right, it will brindle the shaft something terrible and ruin both. They are matched pairs and the static shaft is unobtainable."

Blimey. Wary of becoming embroiled in a never-ending project I decide to ditch the Convert aspect of my Krajka concept and aim instead for the more traditional five speeds in the GuzziMatic drivetrain. Easier and cheaper, it still leaves the option of marrying the two later. For now, the decision seems the lesser of two evils.

Soon a tempting Mk2 Le Mans project appears on eBay. An old French Battle of the Twins (BOTT) racer, it had been wedged in a Leicester shed for years and never road-registered.

The current owner, Rob Coley, a veteran grasstrack and speedway frame builder, and pal of the grasstrack champion and engineer Don Godden, bought it as a café project. But he lost enthusiasm for it years ago. Now, around £2500 sounds good to him. I fret about being gazumped and offer a deposit. "No need. Classic bikers can be trusted," Rob tells me. "See you Friday.'

True to his word, the bike is still there and Rob explains the bike's hazy race history during the '81 BOTT campaign. "It came from the estate of a French racer and collector, and I got it off the

guy who brought it into England," he says.

My gut feeling is good on this black beast of a V-twin. It has been partially prepped for the road, with basic wiring, a Cibie headlight, generic indicators and a nicely resprayed black fuel tank to match the plastic side-covers. And Mk2s are great donors for rebuilding Mk1s. Beyond tank and fairing they are virtually identical. But this is a league above, with the carrot of a possible

race pedigree and classy non-standard parts.

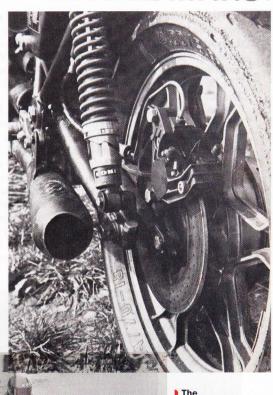
Sporting spoked Akronts, a 2.50in front and broad 3.50in rear, its notched shaft-drive swingarm allows an extra wide tyre. The fat Akronts are Spanish-made, using the original Italian Borrani tooling. Marzocchi 38mm forks have been fitted, uprating the flimsy thin-walled 35mm stock ones. A proportional CP3125-2 AP Racing front master cylinder pumps the twin T3 cast iron discs, along with a Grimeca master - as used on US drag bikes feeding the de-linked tail end. It has wired plugs on the sump, 'box and bevel drive. Production racer 40mm (internal diameter) exhaust headers, Lafranconi race pipes and a period Lucas Rita (Racing Ignition Transistor Amplifier) digital ignition are fitted. The carbs, always a delight on Guzzis, are gems: factory racing kit, 4mm bigger than standard, Dell'Orto PHM40s with blanked and rivet-sealed chokes and accelerator pump diaphragms, along with enlarged manifolds with vacuum balance pipe between inlets.

It's a bitterly cold day, and despite a meaty spark the bike refuses to fire. Not the moment for chokeless carbs. But Rob reckons it's another racing modification that's to blame. "The actuating point of ticklers on racers is often filed down to stop them drilling a hole



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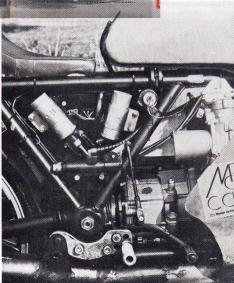
**Twin** adjustable Konis had the job of controlling the movement of the rear wheel and swingarm/ shaft final drive



GuzziMatic in

action in the '76 Bol d'Or

The guts of the Guzzi's electrics. Exposed ignition coils fed a Kröber tacho: Ni-Cad batteries were state of the art





in a float through vibration," he explains. Petrol should be oozing out of the tickled carb mouths, but the inlets stay dry. I quickly unscrew the dented alloy velocity stacks and splash a capful of juice into each inlet tract. I glance at Rob, pause for effect (and to mutter a prayer) then hit the starter button. The hibernating beast roars into life. The shed shakes, we shake hands and I write a cheque. Sold.

I had forgotten that serendipity is hard work. But finally, I've got myself a donor to rebuild in my Mk1 frame and a model-specific race crankcase. I'm already picturing the result. With frame and engine block together, and an updated V5C, I'll have a true phoenix. I'm chuffed. Not only will I resuscitate a neglected Moto Guzzi Le Mans, but I'll be paying due homage to the golden age of endurance racing. This rescuing of near-extinct metal and the memories that go with it is what classic motorcycling is all about.

I can feel the beginning of an obsession. All I need now is to get the engine internals of Rob's donor inside my period crankcase, rebuild it, rewire, swap cycle parts and find race bodywork, decals and sundries for the endurance racer – and hope there are no major stumbling blocks. I've got it all to do...



The ex-racer Pete found. Vast Dell'Orto carburettors are a nice bonus



A bemused Rob Coley, seller of Pete's feisty donor bike

#### A FRAME WITH A STORY

Pete's replica will be built around a Series 1 Le Mans frame with a chequered past...

In April 2009, I spotted a Moto Guzzi Tonti frame on eBay with old-style logbook. Questioning the vendor led me to believe the frame was a rare round-tail Series 1 Le Mans 850. The bike had long been broken and only the frame remained. But without the crucial model name in auction headline or text, I ended up as the sole bidder at £30. The courier from Durham cost £33. It arrived with the original leather key fob from John Blanchard Motorcycles in the steering lock.

It had been bought new by Bernard Pontet in March 1977, then stolen from outside Tottenham Hotspur's ground three months later. Tony Pontet, now chief mechanic at the South East's leading classic Italian dealer Motori Di Marino, explains, "A clever copper later saw a bike with mixed numbers and pulled the guy over. He said he had bought it in a pub. My brother had already got the insurance payout but he bought the bike back from the company and I bought it from him." In 1987 Tony sold it to the Durham vendor, who I bought it from.

For Tonti-era Guzzi aficionadi alphabetic prefixes are all important. Although the frame and engine blocks are shared between models, the stamped two-letter code signifies the source model. A phoenix like this needs a correctly prefixed engine block to maintain its thoroughbred bloodline. Then shared components from a cheaper Mk2 donor bike can be used in the rebuild. In 2009, Texas Guzzi breaker Larry Chabira offered a "short block"

Mk1 engine on eBay and I made sure I won. The block, crank and lightened flywheel – weighing 78lbs – arrive safely via British Airways cargo at Heathrow. Drillings for wired sump and plugs hint at race heritage.

Fast forward to 2012. I email Larry to ask about the crankcase's provenance. His reply, "Here goes: James Haecker, was at the time (1976) working at the local Guzzi/BMW dealer, Hofflers, owned by Udo Hoffler. When the first blue Le Mans came in, James had it. He campaigned it in '76, '77 and '78 but his sponsorship went up in smoke when the authorities found 100lbs of high-grade Mexican weed in the sponsor's house. Forced to do nine years at government expense, James maintains he never knew where the money was coming from. He just loved to race. He went on to start his own shop, Austin Sports Cycles.

"I got an email one afternoon from a guy in San Antonio, Texas who saw some parts I was selling on eBay. He mentioned in passing that he had an old Le Mans if I was interested. Well, ves. I was interested. Me and a friend drove down to the south side of San Antonio, a notoriously unfriendly part of town. After we rolled an old Chevy van out of the way and the owner tied up his pitbull, we pulled two and half Le Mans race bikes out of some backyard chicken coops. I paid the asking price, we loaded everything as fast as we could and got out of there - I was worried I might be shot or stabbed if the guy changed his mind. We showed the treasure to James a few weeks later and he confirmed that it was his old race bike. And if that ain't the truth let lightning strike me."



# Into Le Man cave

Plan? Check. Parts? Check. Pete Norman takes up tools on his Guzzi endurance racer replica

WORDS: PETE NORMAN. PHOTOGRAPHY: PETE NORMAN, MOTO REVUE AND MOTO JOURNAL

'm proud of my man cave but not the workbench in it. The knackered student's desk from a Nordic concern is no engineer's delight. It wobbles when you look at it, and such frailty bodes badly given some of the jobs on my project list. Like an engine rebuild. And in this chaotic, unheated and electricity-devoid den, I know expensive bits are just waiting to be misplaced.

Last month I took the plunge and bought a Moto Guzzi Le Mans MkII to act as donor for my project bike, a replica of the automatic Guzzi Le Mans that privateer Charles Krajka entered in the 1976 Bol d'Or (see 'What's the plan?' below). I already had a MkI frame and crankcase, so now it's a simple matter of popping in the hot internals from my donor bike

and bolting all the bits together.

It's an easy decision to call in the pros for engine help. Guzzi guru Nigel Billingsley at NBS agrees to do the engine swap/rebuild while I tackle the remainder of the bike. Although the engine rebuild will cost shekels, the release of responsibility is joyful. Morphine, I guess, gives a similar warm glow.

With the engine removed, dismantling the donor carcass is easy. Prioritising means the trivial comes first – the steering lock, which powder-coating has seized. Drilled out on the sweet spot, the mechanism pops out before a quick ream and lube eases in a new Neimann barrel.

The key, on the original John Blanchard leather fob, swings happily from the lock. Time to focus. Tonti frames are renowned for their stability and employ taper bearings for steering head and swingarm. I replace both sets. Meanwhile, the driveshaft bearings and universal joints in the swingarm feel sound but battery acid has minced the paint so I wire-brush and prime. Stone-chip aerosol topcoat leaves a durable matt finish.

Nigel calls to say the engine is ready. I dart to Staffordshire to retrieve the heart of the beast. Few engines cross over to brutalism quite like a Guzzi twin; exposed crankcase ribs, jutting bores, monster fins. Even stationary you can sense the barely-contained torque. "It's a cracker of an engine with some interesting mods. It has been bored out to 1000cc, ported and polished," explains Nigel, a two-decade Guzzi engineer. "It also has Cosworth high compression pistons. A lot of engines were fitted with standard pots but you've got the real deal." The words linger reassuringly.

It turns out the cam is not stock either, devoid of the tacho worm drive. That's fine. I hope to fit my race replica with a period West German-made Kröber electronic tacho just like Krajka's bike. He

also sold B10 race cams from his dealership. I wonder if I'm so lucky.

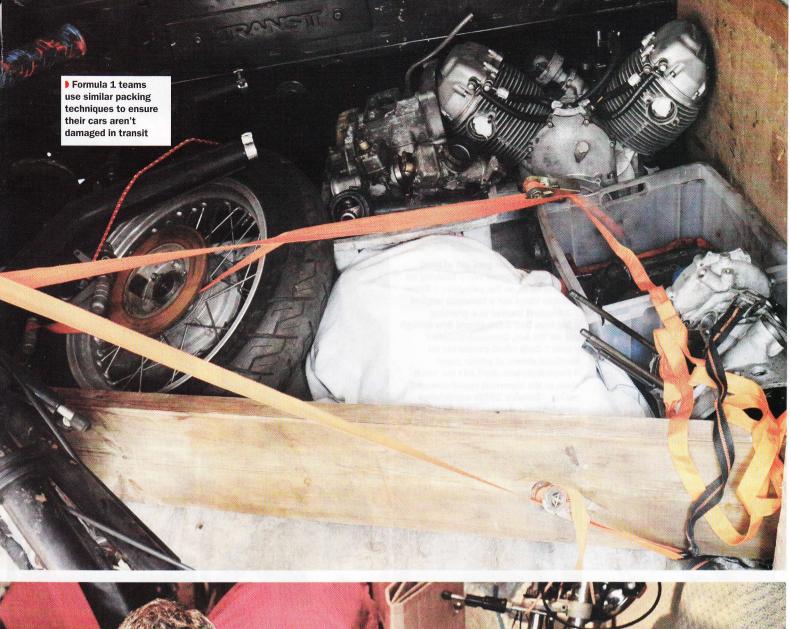
Nigel has replaced the clutch plates too – dormancy had seized one to a pressure plate. He renewed seals and gaskets and spotted a flywheel mod. "The standard Le Mans flywheel doesn't make it faster at the top end, only quicker getting there compared to the bulkier standard lump," he says. "This has had its flywheel lightened – it's smaller in diameter and thinner too." With extra grunt and theoretically quicker acceleration, I can't wait to twist the throttle and feel the lunge.

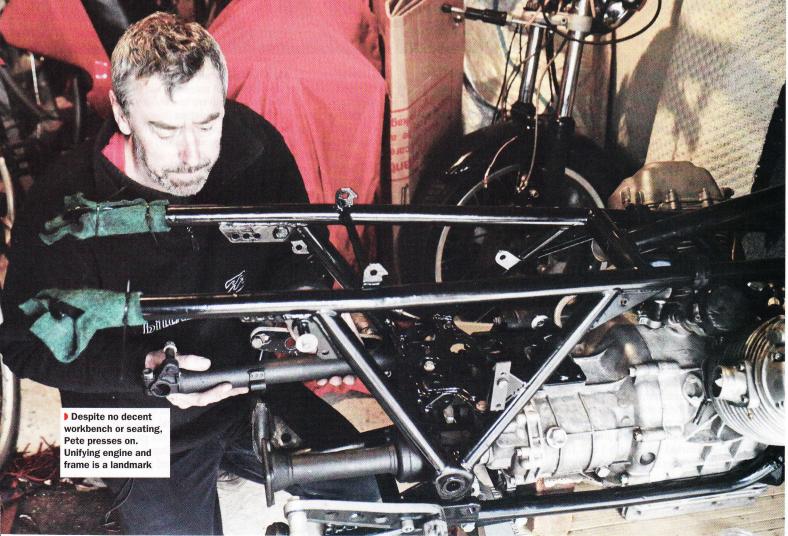
Back home, I memorise a new mantra. No prettiness and no polishing. If I want the feel of a fresh-off-the-track racer, I need to

keep the patina and dirt. Meanwhile, as the eagerness accelerates all thoughts of making my garage into a practical workshop disappear. But I do need a plinth in the garage for my phoenix to perch on. Tonti frames cleverly unbolt the lower rails, so the flat sump becomes a foundation stone. Dreams of a posh hydraulic bike-lift descend to plastic coolbox and a kitchen worktop offcut. Weighted with bricks, it offers suspect stability so I sling some rope

#### WHAT'S THE PLAN?

Classic Bike contributor and Guzzi enthusiast Pete Norman had a Le Mans frame kicking around. He was planning to build it into a café racer, then he read about French endurance privateer Charles Krajka and his automatic Moto Guzzi racer. Now Pete's plan is to build a road-ready replica of the bike, and ride it to the Bol d'Or Classic in France. Formidable!







GUZZI ENDURANCE RACER PROJECT PART 2







1 Weight reduction gets out of hand
2 Rear-engined panel van 3 Clearing up
the acid mess on the swingarm 4 Ropeassisted stand not a Mandello original
5 Driveshaft treated to a greasing
6 Big-bore Dell'Ortos should flow enough
gas for the hot, Cosworth-pistoned
V-twin 7 Carb refurb conducted on
sterilised sheets of printer paper
8 Fresh fasteners don't add too much
shine to the important speed-smeared
patina 9 Genuine 1970s sandwiches
were beyond salvation 10 Calipers get a
full strip and clean – they'll work hard
when it's finished 11 Fingers crossed...













over the rafters ready for additional support. Local Guzzisti soon salivate, hover and help. Justin Popham, who dismantled and reconnected his Lemon's flywheel en route to Le Mans in the twilight days of Thatcher's rule, helps haul the engine safely onto my plastic plinth. He's suitably piqued. His ongoing yearn for a café project prompted me to get started on this in the first place.

Suddenly I realise the enormity of responsibility. A sense of urgency descends. I want to make it to the Bol d'Or Classic, and it dawns on me that some lead-time planning is essential. While current tasks are mechanical and electrical, bodywork preparations need planning.

Generic switchgear, rudimentary wiring and aftermarket indicators are amputated from the donor. Useable parts are sold to pals or on eBay. The seat, actually from a rare V7 Sport, sells for £285 to a Parisian. The redundant MkII frame and block make £400, the Lucas alternator another £50. I take the opportunity to sell a prized but rarely used Quad CD player, realising another £220. Meanwhile I start buying. Regular trawls

of eBay sites get me an ex-Triton Kröber LZ13 tacho for £80, an original Valpolini tail unit for £30 from Germany, a boxed pair of NOS 55W Marchal spotlights with covers from Italy for £90 and a period fuel filler neck for £10 – the same item in the UK is £59. Period Michelin stickers are £3 in France.

Curiously, period fairings seem to have vanished from eBay view since my project started. Eventually I call Trev Smith from Sprint Manufacturing, who still uses original Le Mans moulds from when he started in 1978. He agrees to keep my dual headlight recesses solid for protruding spotlights. White gel coat finish, delivery in a month. The MkII tank goes to vintage car fuel tank specialists Aaron Radiators. Boss Gerald Stringer is looking to expand the firm's skills to classic bikes. He will flush-fill the recessed tank, offset the Monza fuel cap and fit a copper breather.

The drivetrain to Guzzi's iconic twin is more car than bike. With a meaty longitudinal forged crankshaft, the twin-plate clutch and transmission mate easily. Rummaging in my plastic dismantled donor parts boxes, I retrieve the centrestand, the bulky Bosch starter and the lower frame rails. Bringing the engine and frame together isn't difficult but you need four cautious hands to jiggle the frame on. Guzziste Neil Waugh lowers it on as I push the mounting bolts home. With my tank absent he lends me a squat black one from a G5. It's ugly as sin.

With the frame, engine and gearbox reunited, the swingarm, driveshaft and bevel are next. Fortunately, many Guzzi items are

still available. The bevel pinion crown paper gasket looks frail and the finely threaded swingarm pins need upgrading.

MotoMecca's Alan Baldwin has the taper pins but baulks over the gasket. "They use O-rings on the flange. They haven't used gaskets since the V7," he says. Restorations, I learn, are as much about observing forensics as about renewal. I look at the exploded view and lever the gasket. Beneath lies a flattened O-ring. Guzzis have three plugs on the rear drive and gearbox: drain,

"Although the bike now stands on its own two wheels, there is a problem. The steering lock key has snapped off in the barrel" filler, and a midway overflow marker. Mine are drilled for wires but the overflows, with just several alloy threads for purchase, hold tenuously. I reach for the Loctite activator 7471, thread sealer 542 and copper washers. Long may they hold. The tail end takes shape and a brainwave has me calling Graphite Trading Company. A superb dry lubricant, graphite readily makes a paste with sump oil. I paint driveshaft splines and anything else worthy of covering. My rusty 40mm headers take quickly to the silver slop. Graphite is the magic mineral in grate black, and the oil simply burns off.

I spend hours online trying to ascertain tyre profile limits, widths and height, a necessary feat thanks to my fat Akronts. It's remarkable the variation in detail given by different manufacturers. Eventually I pick Metzeler

Lasertecs – 110/80 and 120/80. The front is a near-period crossribbed front. They are proven Guzzi rubber. FWR (020 7820 7818) fit the tubes and tyres while I wait. "Lasertecs have been around for a long time and Metzeler has updated the rubber compound for better durability and grip," says FWR's Bob Collins, whose alter ego is Viagra Bob, the race-winning pilot for Team Glam. "The front ribbing also helps look the part on older bikes."

Rear wheel on, it's time for the forks, allowing me to ditch the coolbox plinth. Although only a rolling carcass, getting the bike to this state gives me a boost to get through what at times feels like hitting the marathon runner's wall. This is the dreadful project stall I've read about. Forward motion requires huge amounts of energy and effort. I can empathise with those who lose the will.

I give the top yoke the stonechip paint treatment before slipping the stem up to rest on the new taper bearings. Top nut tightened, all is well. "I don't think the 38mm Marzocchis were OEM on any Guzzis, but designed specifically for the aftermarket. They were obviously a major improvement on the stock 35mm units," says Nigel, over the phone. "At the time you bought yokes, fork tubes and sliders as a complete unit. They were bloody expensive." An old pair of chromed clip-ons fit perfectly, replacing the gold anodised donor clip-ons and garish grips. Wire-brushing strips the bar-ends of their anodising, saving another few quid.

Although the bike now stands on its own two wheels, there is a problem. The steering lock key has snapped off in the barrel. I find the broken stem on the garage floor. Fitting the forks must have sheered it in situ. Not even a dentist could extricate this mutha. With just 2mm exposed, I decide to drill a purchase point for a spike to lever. I fit a 1mm drill bit and, at a low-speed setting, put drill to broken shaft. But instead of drilling, to my amazement it works like a rack and pinion and the key slides effortlessly out.

Donald Rumsfeld spoke famously of "unknown unknowns" in international relations. With so many components, carbs are also impending disasters. To make knowns of unknowns, Dell'Orto importer Matt Cooper from Eurocarb sends jets, O-rings, gaskets and viton float needle valves for my PHM40s. "These carbs were specifically modified to suit the Guzzi racer with ticklers, to save weight and avoid using the accelerator pumps - which are not normally fitted on racing bikes," says Matt. "They are basically the same as the standard Le Mans PHF carbs but they come in 38, 40 and 41mm, whereas the largest PHF is 36mm." Chokeless and with some 20% greater inlet area than stockers, the ticklers are crucial. A Friday night in front of the telly, wine in one hand, carb in the other, and each is overhauled inside half an hour. Blowing air down a fuel hose lets me set the float height perfectly. I ask Matt if there is a certain count of seconds to prime fitted carbs - I hear 900SS Ducatis like six seconds apiece. "It's trial and error really with ticklers, whereas with pumper carbs it's a few twists of the throttle to squirt fuel straight into the engine." I also learn the trick to get the floppy throttle cable through the spring - holding the slide upside-down does the trick.

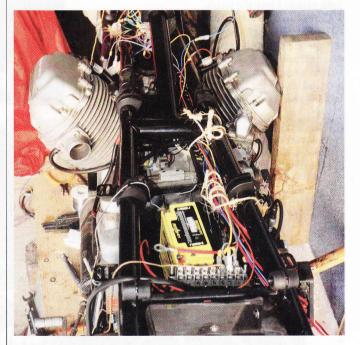
My Rumsfeldian theory shifts to the dodgy wiring harness. With usual alacrity, Vehicle Wiring Products (VWP) send thinwall cable, insulators, crimps, wrap and terminal blocks. First off, I check the

## AUTO RACCORD BERSOL



- Tweezer-assisted keyhole surgery
- The Guzzi proudly shows off the hundreds of hours' work that have already been poured into it. Look at those lovely clean wires





old oil pressure switch, expecting continuity. Nigel didn't need to touch it during the rebuild. It's duff. Unscrewing the switch, I see thin wire amongst its threads. It looks like a pre-Helicoil attempt at thread rebuilding in the alloy block. I consider just a gentle torque setting with the new switch. "Do that and 20 miles into your first shakedown, revs near redline, all you will think about is if the thread is holding or if it's a geyser," says Mike Leitch, who owns more Guzzis than fingers. Wise words. I carefully block the vertical oil passage with a grease-covered steel countersunk screw. Drill, tap and a pen magnet pulls out the blocking screw, grease and swarf. I'm confident no metal has descended the oil passage. Helicoil inserted, switch tightened, I'm chuffed as the bike passes a magical mechanical milestone. I stand back and take a moment.

Krajka's racer used cable wrap, even for the brake and the hose to the yoke-mounted rear reservoir. It makes sense for my rewire too. Cable markers make identifying easy, and the wrap allows easy alterations without the need to feed more wires through tight



sleeving. I trace off the stock diagram, skipping superfluous circuits like indicators. I run all cables from fore and aft terminal blocks. I detest connector crimping, preferring to solder for security. Where possible I loop wires to relieve strain, a trick both functional and aesthetically pleasing. The original Lucas Rita reconnects, with a single-pulse wire tapped from series-connected 6-volt coils to the

tacho. I use a bit of sleeving where wires need greater protection, such as through the steering head.

Germany's Volker Sachse does nifty classic kit. His combined regulator/rectifier replaces the stock units and I mount the keyswitch adjacent to it on the offside. Krajka did the same, wiring the key to the frame. Likewise, I replicate the alloy plate he used to mount the tacho, and fit retro idiot lights. A pair of VWP's micro-relays stash under the headstock to take the 110W of Marchal power, and I use their retro horn/headlight switch and a starter button for simplicity. I temporarily rig the headlight wiring to the donor's Cibie and buy brake light pressure switches off eBay. Krajka used distinctive yellow and black bumblebee racing HT leads. The Green Spark Plug Co still sells the 7mm cable, and I sling-mount the wires like on the original. I remount both coils on the nearside, with a felt tip 'D' inked on the right bracket - signifying droite, French for right - like Krajka also did. But I take it further and use an old Dymo machine to add more Gallic flavour to coil and idiot light panels. I love the result.

Carbs on, new Venhill cables in, and balancing is by sight. Epiphany as I screw on the dented Malossi alloy trumpets. Almost there, with just the brakes to overhaul and I'm ready for start-up and MoT. The Grimeca rear master is awkwardly placed. The piston is seized, as are the fluid cover screws. Days of PlusGas fail. But then two impact driver strikes - tightening

not loosening - are enough. They then unscrew easily. With patient juggling, the piston frees. I'm grateful, as vintage Grimeca overhaul kits seem unobtainable. Conversely, Brembo P08 calipers are plentiful. The three OEM kits from Gutsibits come with two replacement high tensile steel assembly bolts. Another pair mount calipers to forks. During the build I've become an occasional visitor

to London Stainless Fasteners for minor orders. MD Tony Gray warns me off stainless for critical applications. "We sell a lot of stainless in bulk to people who do autojumbles and online sales," he says. "But I never recommend using stainless in crucial areas like brake calipers and discs. Always use high tensile." He is someone who puts safety before sales.

Meanwhile, my front master cylinder comes back from overhaul. Turns out it was a 1984 prototype and an original adjustable ratio master cylinder design used by GP and superbike teams in the era. "All the early AP Racing and Lockheed master cylinders were manufactured in two bore sizes. To help identify them the 0.625in bore had a single groove cut on the outlet while the 0.70in had two grooves," explains AP race engineer Peter Harris. "When the bore went up to 0.75in a third groove was cut. That's what yours is. Shortly afterwards handheld etchers became available so there was no more need to apply the grooves. It's vintage. Still manufactured today, they are a big seller." With all three calipers back on, the brakes bleed easily enough.

The ever-so-ugly borrowed black tank goes on, fuel hoses with inline filters are connected and a jerry can half-fills the beast. I turn on both taps. The trickling sound of petrol subsides as the bowls fill. Tickle carbs, turn key, check neutral and it's time for a deep breath. I feel like a parent whose child is about to fledge.

Tune in next month for the moment of truth.









USEFUL CONTACTS: Aaron Radiators: 0845 652 8852, Motomecca: 01202 823453, www.motomeccaspares.com www.aaronradiator.co.uk FWR: 020 7820 7818, www.fwr.co.uk Graphite Trading: 07831 109201, www.graphitetrading.co.uk Green Spark Plugs: 01477 532317, www.gsparkplug.com Gutsibits: 01484 841395, www.gutsibits.co.uk London Stainless: 020 8545 0555, www.londonstainless.com

NBS: 01889 271818, www.motorcycleservicing.co.uk Sachse: www.elektronik-sachse.de Sprint Manufacturing: 01985 850821, www.triumphparts.gbr.cc Vehicle Wiring Products: 0115 930 5454, www.vehicle-wiring-products.eu AP Racing: 024 7663 9595, www.apracing.com

Firing up for the first time; distressing – making new paint look like old – getting a new supporter, and time running out as the Bol d'Or

**Classic looms** 





## Guzzi de retour au Bol

Tickets, passport, Guzzi race replica? Check. Now, to the Bol d'Or Classic



neighbours are woken by 1000cc of baritone. Forget last night at the Proms; first fire of the rebuild is true classical music. Off the throttle and a respectable idle continues, the period Kröber tacho showing 900rpm. The oil light stays off and lubrication pipe unions remain tight. Well chuffed. It reinforces my decision to get Nigel Billingsley to rebuild the engine ahead of

nearside pot warms more quickly. Guzzi Dell'Ortos are benchmark-tuned with the fuel mixture screws 1.5 turns out, but that really is only a starting point. Nigel advises me to continue the tweaking process until the temperature differential disappears. I decide to blow the dust off my Morgan Colourtune. It speeds up the process vastly. So we have a runner - now for the myriad finishing touches.

an off-white rear end with red central band. Choosing colours purely by sight at Halfords gets me Lada cream and, rather more encouragingly, Venetian red. I set about giving the new paint an old-looking finish before renewing the pensionable seat- padding with bedroll foam. I've been hoarding the stickers I'll need for months. I've told myself they'll be the final flourish, but I allow myself one exception and, after distressing the tail unit, a Marchal sticker goes on each side.

without calamity. Only the foolhardy would push too hard

before man and machine have had a chance to get to know each other. At this stage the bike is still an ugly duckling, wearing the squat G5 tank, no bodywork and just a tacho. It gets some weird looks en route.

With tax and a ticket sorted, my confidence builds and with it our

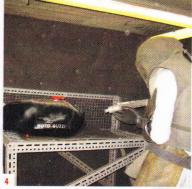
Classic Bike contributor and Guzzi enthusiast Pete Norman had a Le Mans frame kicking around. He was planning to build it into a café racer, then he read about French endurance privateer Charles Krajka and his automatic Moto Guzzi racer. So a plan formed to build a road-ready replica of the bike and ride it to the Bol d'Or Classic in France. Formidable!



GUZZI ENDURANCE RACER PROJECT PART 3



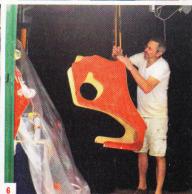






1 Sprint lay up Pete's new fairing using some classic moulds 2 Don't try this at home unless you love great big explosions 3 Notes to self: re-engineer fuel tank 4 Into the booth and on a journey from black to spanking new red 5 Cheer up – she's come up a treat 6 Hanging the fairing really boosts its depth of flavour 7 1970s French painting techniques are key to achieving the right finish on a 1970s French endurance racer 8 A bit of post-paint cleaning up 9 Pete's spray booth, 'summer', is only available for use a few days a year... 10 New foam please













speed. I'm listening, feeling and smelling for abnormalities, but I want to know what she'll do too. Without a speedo it's all guesswork, but 50mph at 5000rpm seems to come up quicker than it does on a standard Le Mans, with an exhaust note that's at least an octave lower. I stop several times to check for leaks, and balance the carbs again in a Surrey lay-by. Later, an M25 downpour leaves the orbital drenched and by the time I'm home the Lafranconis, Akronts and Valpolini are smeared with dirt. Mixed with the greasy grime I purposely avoided cleaning off during the build, the instant patina is pretty convincing.

So we're on the road, but there's plenty still to do. I discover the speedo take-off on the gearbox isn't fitted, so plump for a discreet Acewell from Furore Products, triggered by a magnet on a front disc carrier bolt. Remarkably, the fork-mounted sensor aligns perfectly. I glue the magnet in position and secure it inside heatshrink. Set up with a separate power supply for the clock, I measure the front wheel's diameter and programme it in. The tacho pulse comes from a wire wrapped around the offside HT

lead. A test run past two 50mph speed cameras has me matching the cars' speed. I'm surprised how easily it all goes on, and it informs me the Kröber is reading high by 1000rpm at 5000rpm.

Sprint Manufacturing call to say my fairing is ready. "All the fixings you'll need are included but the more support you can give the body from the frame the better," says Sprint's Trev Smith. "Triangulation off the steering head is the ideal solution."

The courier arrives and I unpack the gel-coat bodywork with glee, stashing the perfectly packed Perspex screen for fitting later. At Halfords I'm loading up with primer and colour when I make an impulse buy, a nifty £4.99 trigger that turns rattle-cans into a quasi-spray guns. Once home I hang the fairing from the clothesline, wipe it with thinners and start building up with primer. Once it's rubbed down I revert to the garage to avoid bugs, using curtains and B&Q plastic sheets to shield my life's possessions from overspray. The fairing is big and hangs from the rafters like a prized, blooded carcass.

Steve Long is an old-school mechanic: dirty hands, Embassy fags and a certain way with words. I deliver the bodywork in the car. "How come you're driving a girl's car?" he quips. One of Steve's hobbies is out-running young Porsche drivers in his old Mazda rotary. Trading as Sparrowhawk Motors from an arch in Parson's Green, he handles a variety of classic vehicles from the streets and garages in neighbouring Chelsea. It's Alvis to VW in a day. Sprint's fitting instructions, photocopied from typewriter

days, are detailed and straightforward. Fittings are provided to support the cockpit from the steering head, while nearside bracing is off the starter mount and offside from the bellhousing.

Steve pores over my reference material – a pile of old race magazines. The bikes were prepared in the Gallic equivalent of this workshop. He says little but sets to work on a bracket for my 55W Marchals using angle iron that's cut, curved and re-welded. "Do you want them wire-brushed and painted or

"50mph at 5000rpm comes up quicker than it does on a standard Le Mans, with an exhaust note an octave lower"

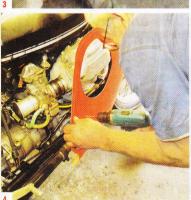








1 Now to make it look faster, French and nearly 40 years old... 2 Pete's £4.99 trigger widget makes light work of turning great swathes of London red 3 The hardworking hands of ace fairing fitter Steve Long 4 Rest assured the heads will melt their own way through if any fibreglass gets too close 5 Luxurious new cockpit. complete with offset fuel filler



simply rusting?" asks Steve. Rusty is just fine for me. Mastic gasket and backing plates are added to prevent the fibreglass fracturing. With the steering head mounting in position, the fairing goes on easily enough, mounting cleverly with compressible rubber bushes and brass sleeves. Over a lunch of steak bakes, Steve reveals a past in naval dockyards and explains the ethos of Sparrowhawk: "I get in early, avoiding the traffic, do my days, look after the dogs and make sure I have weekends," he says. "I'll work on anything that comes along. For me part of the enjoyment comes from the challenge of what sometimes look like impossible jobs."

With the fairing on, it's time for a bit of air-powered hacksaw trimming. Replicating Krajka's bike means slicing off the fibreglass surround above the rocker covers. With a steady hand and slow movement, my cutting technique turns out to be more than adequate. I give Steve the honour of trimming the lower spoiler brace near the header crossover. Job done. With the Marchals bolted on, I can't help but smile – she's looking good. I'm concerned about the heat the headers are sure to pour out so decide to give the fibreglass a fighting chance by wrapping the exhaust and putting reflective film inside the fairing. Screen fitted, I stand back and admire. I'm happy but my temporary black tank really is butt-ugly. It shows how crucial tank design and colour are to the unity and integrity of a motorcycle's aesthetics.

Gerald at Aaron Radiator says the tank will be done in a week. True to his word, the call comes bang on time. His sheet metal guy has done a good job replacing the recessed centre with my offset fuel neck and inserting a copper breather. He warns that DIY tank modifications are only for the brave or foolhardy. "I can't stress enough the safety aspect of working with tanks," says Gerald. "They need to be de-fumed correctly otherwise you risk an



## EBAY: HOW TO FIND THE GOOD STUFF

**Techniques for getting the most for the least** 

From humble beginnings in 1995, eBay has morphed into a vast global professional sellers' emporium. Searching for a part was once a doddle but now a crude search term like 'Guzzi' typically returns more than 32.000 results that's a lot of trawling. To cut that down try ticking the Auction Only box - a lot of the tat in your search result will be listed as Buy It Now. Similarly, a UK Only search is a good filter, as is selecting Used, which often clears out a good chunk of superfluous prosellers. But the real trick is thinking laterally - not everyone thinks alike, so they don't list alike. The frame I bought was listed pretty vaguely as a 'Guzzi Tonti frame', but turned out to be a rare 850 Le Mans item. £30 and it was mine, including logbook. Try a range of search words and take a look most days if you can that way you'll spot the new postings. eBay masters used

to employ asterisks to make very specific searches but that little-known trick has been replaced with bracket searches. Searching Guzzi (Le Mans, LM1, LM2) will

now return searches with Guzzi and any of the bracketed words. Putting a hyphen in front of the bracket excludes those words. Bracket searches are handy for OEM part numbers or spelling variations. Doublequote-mark searches are used for a specific phrase search of more than one word, and this handy trick also works well with Google. Google's Translate page (found under the 'More' tag at the top) lets you translate your search words and check the European domestic eBay sites. For easy access to foreign eBay versions simply replace the .co.uk suffix with the desired country's equivalent, such as .fr for France, .de for Germany, .be for Belgium and so on. If buying beyond the EU you risk import VAT for items above £15 and import duty above £40. Duty below £9 is normally waived by the taxman. Decipher the Border Agency charges at www.hmrc. gov.uk/customs/post. Royal Mail also charges admin fees for levied recipients.

The final trick is sniping (last-second bidding), using software like www.eSnipe.com. Handy if you *really* want something.



explosion as soon as heat or a spark from cutting or sealing hits it." The nice black tank is now partially bare, exposing plenty of filler underneath, masking some small dints. For this bike, dints are good. South London's finest blasters, I Cleenz Macheenz, are only two miles away so I decide to blast the full tank ahead of spraying it. Young George Smith does a pristine job and I spray it with primer as soon as I'm home to thwart corrosion.

After a few layers of top coat, I swill some petrol to remove the remaining debris. Only then do I notice a weep near an inner seam. Damn. Blasting has exposed a pinhole leak, a common problem with old steel. And cyberspace abounds with tank sealing horror stories. "Get POR15 and nothing else. It's paint, not resin, advises fellow Guzziste Justin Popham. "Mine leaked after blasting too. Follow the instructions but watch out - if it drips on your

paintwork you'll never get it off."

Degreasing, etching and drying come before the silver-coloured air-cured paint is gently rolled around the tank. Unlike solvents, Frost's POR15 lacks microscopic pores, making an impermeable barrier, but curing takes four days. To avoid spills on paintwork I spray the tank with WD40. Some spilled sealant near the fuel neck is inevitable but the sprayed-on oily surface works wonders. After degreasing, more top paint and some gentle distressing, I fix the 1976 Bol tank sticker. With a final coat of fuel-resistant lacquer, a PVC breather and the Monza cap, we're done.

I've toyed with various ways of reproducing Krajka's signage and stripes. Sue Collins at I Say Ding Dong Ltd has become a saviour, creating repro stickers to complement my originals. She also replicates the GuzziMatic names for the fairing lowers. Tempted to try pinstriping and lettering myself, eventually I turn to a local family firm for help. Lee at Bryan Mills & Son works with vinyl and computers but trained the old way. Once again the period magazines are referenced. Vinyl-cut race numbers are positioned with chinagraph; ditto the swoops and words.

Krajka's autograph became his trademark for his business selling fairings and outfits. "The C for Charles is sized differently. It's a lot smaller on the offside because the race number background is in the way," says Lee. "That shows the signwriting was done after the

numbers were on. I always give it a good rub with Ajax to key the surface and it's best if we leave it a couple of days to harden," he continues. With his fantastic work in place, the final touch are the oval Michelin stickers. Necks crane on the A3 as I ride home on my completed race replica. I'm smiling inside my

helmet - the Bol beckons.

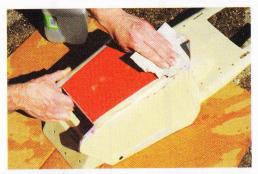
Lee of Bryan

Mills & Son gets

busy with some

proper pinstriping





### **DISTRESSING PAINTWORK**

The gentle art of making the new look old

Distressing is the art of making new look old, and at its core it's the controlled destruction of a top layer to imitate a weathered, worn or fatigued finish. I needed to distress tail unit, tank and fairing on the GuzziMatic project. The fairing yearned for scuffs and scratches the sort of thing that would happen to it in the pits as bodywork was hurriedly removed. Meanwhile the tail and tank needed the look of weathered paint and rubbed surfaces. particularly where the seat meets fibreglass and knees and chest rest against tank.

Visualise the areas that would be worn or scuffed. Work in stages to avoid going too far. As you progress it becomes increasingly addictive. Like salting soup, alter with care. Memorise your spots, then prime and undercoat as normal. You can plan to rub back to undercoat or add another layer mock undercoat - of contrasting colour to offset the topcoat. My tail unit was finished in a cream colour before a red stripe was added. Once dry, I used worn wet-and-dry to weather the paint edge and rub through to expose the cream. The unit was then rubbed with the non-abrasive side of wet-and-dry to dull the shine of new paint. The

tank was also sprayed with cream and black, before top coating. With copious quantities of soapy water, corners and knee spots were rubbed through. Gradually the darker under-colour appeared. Working with paint that is now down to microns means going too far is a real risk. The tank was then sprayed with fuel-proof lacquer and burnished.

Distressing frees you from the burden of handling everything with kid gloves. I found it most liberating with the fairing. After each spray coat or rubbing phase, it would end up on the concrete outside. It was gleeful seeing the red paint chip from the sides.

Pinstriping and sharp-edge lettering brushes are readily available online for those willing to try the finer finishing arts. Make yourself a maulstick to steady your hand and you may unleash hidden talents. Specialist paints are available and there are various dulling-down tricks, like adding baby powder or gloss flattener. Others turn to dirt. I wiped my greasy hands on the tail and fairing for effect. Some use this trick on touchdry pinstriping and lettering, but the same process works on general paint areas, all creating that used look.





### Coming home... Magny-Cours or bust

With fingers crossed, Pete and the Guzzi make for the Circuit de Nevers

Where the original Bol d'Or was based at legendary Le Mans, the Classic is held at modern Magny-Cours. But while it's no Paul Ricard, when the Guzzi and I roll in to the Nevers circuit, that matters not one bit. The weather is almost T-shirt-warm and dry. The sound of 1980s Japanese inline-four racers and Italian twins mixes with the crackle of IHRO singles and strokers learning the 2.74-mile circuit. My old French racer is back on home soil.

As you'll have read, the project was conceived as a homage to Krajka's pioneering auto racer, while the donor bike was a Le Mans MkII with its own race history. And now there's an opportunity to take it on track in one of the public sessions. But only if our bikes (Justin Popham is also along on his Le Mans) pass scrutineering. And then there's the £150 fee.

Instead, we decide to wring our bikes' necks on the superb regional roads. We also hope to find an agreeable vineyard. Then a puff of smoke comes from the starter button as I press it. I swear. Then I swear again. "Let's just get the tank off and check it out," says Justin. "I've always been able to get my Guzzi going on the roadside and we're not going to be stuck now."

It had occurred to me during wiring that the steering head terminal strip seemed too far out from the frame's spine. Now, with 400 miles under its belt, the tank has rubbed and exposed a

Classic race bikes bring even soulless Magny-Cours to life



terminal, giving a straight earth on the starter circuit. I wrap the terminals with insulation tape, disconnect the melted starter button and wedge the solitary wire between the master cylinder cap and the tricolore sweatband surrounding the reservoir. Tank refitted, I turn the ignition and short the wire to the handlebar. Bingo.

Some 120 miles in, we're thrashing across open plains, roaring through towns and generally feeling the part as our 1976 bikes streak across the D978A from Decize. A brace of Guzzis soaring down the N7. I'm tucked in tight beneath the screen, laughing as I go. I'm shielded from the windblast while the two Marchals bounce in unison. Justin's bike is bored to 1000cc too, and he eggs me on for a wide-open acceleration test. I see him twist his wrist and I do likewise. My lightened flywheel, race Dell'Ortos and Cosworth pistons do their job, helping me gallop quickly past his milder kit. Well, he asked for it. This is pure bliss.

An old man on his doorstep gives me the thumbs-up as we thunder into the village of Saint-Pierre-le-Moûtier. Locals point us in the direction of its nearby vineyard, Domaine Des Hespérides. The door is locked but the French couple appear and agree to open for us. Their son, we learn, works in aerospace in Bristol. We taste and order. Incredibly, we are invited out back to cork and label our own bottles. So unexpected and yet utterly memorable. And that sums up this whole restoration. In less than a year I've gone from a bare frame with unknown provenance to rebuilding a bike that has race history on two continents, all the while basing it on an innovative racer's bike few have heard about. I now realise classic restoration is about far more than just the bike. It's also about the surprise and delight of the unexpected C between the A and B.

Simon Fenning, formerly of Moto Vecchia, made contact after the project started in December's issue of *CB*. He thinks my donor bike had once been in his shop, on sale or return, before the guy I purchased it from acquired ownership. "It allegedly competed at Le Mans. It had all the good bits and went very well – it obviously had a lightened flywheel and so on," says Simon. "It was a bit scruffy and I think we were a bit suspicious about how the seller came by



it, but as I recall he took it back before we made our minds up. The irony is that had it been a totally standard MkI Le Mans we would have had no problem selling it, but there was little interest in retired racers at that time, except for 1950s and 1960s ex-works bikes."

Writing now, in mid-winter and months after the joy of the Classic Bol, the unheated Le Man cave feels neglected. But when spring returns the fettling will start in earnest. The starter wiring will get sorted, along with support braces for the Marchals and perhaps a replacement rear master cylinder. Hagon will alter the dish offset slightly for the rear wheel, and the Kröber may even get recalibrated in Germany.

I wanted a café racer - once. But I'm chuffed with the alternative route I've taken. And it comes at a time when classic endurance is really taking off. Mooting the idea of campaigning my GuzziMatic brought a salvo of unsolicited offers from pals in Britain and abroad to help with pits and piloting. Bikers' Classics at Spa is set to get bigger still in 2013 and the Bol Classic continues to grow. We're already pencilling weekends into the diary. And so it begins.



Wish you were here? The sun on your back (and your cheese), bit of sausage, nothing to do but soak up the atmosphere and the warm wine...

#### **USEFUL CONTACTS**

Many thanks to LD Lines for the ferry crossings: 0800 917 1201, www.ldlines.co.uk Aaron Radiator: 0845 652 8852, www.aaronradiator.co. uk Bol d'Or Classic: www.boldorclassic.com Bryan Mills and Son sign-artists: 020 8397 4973, www.signartists.co.uk Frost Products: 01706 Manufacturing: 01985 850821, www.triumphparts.gbr.cc/

658619, www.frost.co.uk Furore Products: www.furoreproducts.co.uk I Cleenz Macheenz: 020 8766 7164, www.icmhome.org.uk I Say Ding Dong Ltd: www.isaydingdong.co.uk Sparrowhawk Motors: 020 7610 9848 Sprint