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ICONOGRAPHY

Say Happy Birthday to the 917! We celebrate its half-century with a track test of a workshop masterpiece built by Icon Engineering

Le Mans! For a few dramatic moments I'm Michael Delaney, flat-out at 190mph on Les Hunaudières in a JW-Automotive 917, *en route* to a dramatic 1-2 finish in the epic 1970 24-Heures movie. Well, maybe not, but we can all dream. And it is a Gulf 917 replica, created by Icon Engineering, and I am helming it on the broad, unfettered swathes of a disused East Anglian aerodrome.

Icon is apt. No other racing car justifies that clichéd epithet more than the Porsche 917. In play for just three seasons – from '69 to '71 – in coupé format and a further two as a Can-Am/Interserie Spyder, its top-line career was brief. Yet the impact it made, in strikingly visual and contemporary performance terms, has never been bettered. Not even by the far longer-lasting and more successful 956 and 962. That's because the 917 broke new ground, taking Porsche into uncharted territory, if not in race car construction but certainly power and aerodynamics. And, significantly, it dominated the '70 and '71 World Sportscar Championship, exemplified by winning for Porsche – finally – the Le Mans 24-Hours.

Launched 50 years ago – as good a reason as any to run this feature – the 5.0-litre flat-12 powered 917 was the culmination of Porsche's concerted movement during the '60s to create the ultimate world-beating sports-racing prototype. Beginning in 1960

with the RS60/61 718 RSK, via 904 and 906, the marque's challengers for outright victory in WSC endurance events in '68 brought forth the flat-eight powered 3.0-litre 907 and 908, with the 2.0-litre 910 the reliable class winner. Hans Mezger designed the 917 in 1968 at the behest of Ferdinand Piech, and Porsche engineers hand-crafted it in the space of nine months. It debuted at the Le Mans Test Week in March 1969 in the hands of Rolf Stommelen, non-finishing at Spa, but placing 8th in the '69 Nürburgring 1000Kms.

A racing car that's as, shall we say, iconic, as the 917 would surely justify a host of self-builders to create copies, even prompt a factory replica you might think: after all, the Masters Historic series encourages factory-built 'continuation' Chevron B8s, Lola T70s and GT40s, so why not the legendary Porsche prototypes?

My interest was piqued at the 2017 Historic Motorsport show at Excel where I went to interview Jacky Ickx, when I noticed the Icon Engineering stand and its 917. One of the proprietors, Dave Eaton, invited me down to his Rayleigh workshop to take a closer look. Both Dave and his confederate John Hartland were on hand to describe how the project evolved. Both men are highly experienced, hands-on development engineers with careers in the international automotive and motor sport industry.

Their fascination with 917s was born at

the BOAC 1000kms at Brands Hatch in 1970 – like it was for so many people – as Dave recalls: 'We were at Druids hairpin when the field came round on lap 2, but there was no Pedro...' (Rodríguez, having had a pit lane drive-through, due to being black-flagged for overtaking under yellows). 'And then he came round by himself, and then he drove 5½ of the 6½ hours single-handed to win (co-driver Leo Kinnunen actually drove 100 laps of the 235-lap race but was somewhat slower). That's why I blame Pedro! Because I remember thinking, "I want one of those 917s." And, as we know, the only way to have one now is to make it yourself.' Wind the clock forward four decades, and Dave acquired a spare shell from Graham Turner who also owned an LMK 917 replica. This shell came from moulds taken from David Piper's original 917, which he bought in 1969 – so, three years before making Steve McQueen's Le Mans epic – and has served as the body for the present Icon prototype and moulds. The tubular spaceframe chassis is a work of art, and the engine is a 3.6-litre 964 flat-six unit allied to an inverted five-speed G50 gearbox. The Icon 917 chassis is 100 per cent tubular and uses five different diameters of tube, as did the factory originals. The original 917 racecar chassis were constructed in jigs from hand-drawn blueprints, while Icon have followed a similar process, but the complete chassis and all jigs were designed and





manufactured using computer-aided-design. 'We used the most expensive cad software,' says Dave, 'and the chassis was set-up with co-ordinates which run from one end of the car to the other. The two datums I set up were the front and rear axle positions, and then I ran lines between them for all the chassis tubes runs, and that basically developed the whole chassis model.' Dave's archive includes many photos, scaled blueprints and drawings, various books including a special edition dedicated to the so-called Hippie 917 from 1970. Although the original 917 was in aluminium tube, the Icon chassis is of steel tube in the interests of safety. 'It is incredibly rigid, because the chassis is so well triangulated, and in steel it's twice as rigid as a GT40 monocoque.' In aluminium, they were prone to flex, which explains why the suspension has such a range of settings.

Back in the day, the 917's aero evolved relatively swiftly, morphing through adjustable rear aerofoils and side-ailerons in 1969, with

fins on either side of the nosecone, via long-tail (Langheck) configuration body-style to short-tail (Kurzheck), with full-width rear wings on the LH and upright fins on the 1970 and '71 KH. Early cars were notoriously unstable at high speed, and the LH body provided stability on long straights like Masta and Mulsanne. The Icon 917 clearly emulates a rudimentary version of the later KH bodyshell. It's presented in the blue and orange Gulf colour scheme of JW Automotive, too, the quasi-privateer squad who configured the optimum aero configuration. Aside from the works Ferrari 512 opposition, the Gulf cars' main rivals were the official Porsche Konstruktionen 917s crewed by the likes of Richard Attwood, Vic Elford, Gijs van Lennep and Hans Hermann, usually painted white or, in 1971, in Martini livery and, in the case of the 1970 Le Mans winner, in red. Not forgetting 1971's Pink Pig, of course. On the whole, the JW squad had a wider spread of talent amongst its driver roster:

Rodriguez, Jo Siffert, Brian Redman, Jackie Oliver, Mike Hailwood – and Attwood in '71. Now, having driven a replica that gives away 1.5-litres to the original, I get a hint of what it must have been like, and to have driven a 917 flat-out over a six-hour race (let alone 24-hours) deserves much respect.

Originality doesn't come cheap. Flat-12 engines are available from our friend Uwe Niermann at Scuderia m66 klassische und historische Rennfahrzeuge in Aachen – but Icon's pragmatic solution was to fit a rebuilt 964 engine to ensure reliability and practicality as well as affordability. 'Apart from the engine and transmission, we've reverse-engineered the 917 very accurately. With the appropriate funding and time spent refurbishing a complete original engine, you could have a flat-12 – or buy an original engine from Aachen – because they actually manufacture a fully-dressed, brand-new, air-cooled flat-12, which costs circa €1.3 million. Takes your breath away, doesn't it?' When contemplating

Access all areas. Moulds have been taken from an original 917 shell

Left: That is a number plate that you can see on the back of the Icon 917, so yes, it is road legal! Below: There's a reason that the 917 tops so many greatest race car of all time polls, and a lot of that is aesthetic





installation of the driveline, John recalls a 'light-bulb moment' when he says, 'without major surgery we weren't going to be able to mate the engine to the transaxle, but by turning the gearbox upside down we managed it.' In the course of rebuilding the 964 engine, John plumbed in the oil system, 'as it should be for a race car, same with the fuel system, low pressure lift pumps and high-pressure main pumps.' His engineering background enabled him to source appropriate components such as wheel bearings, steering rack, track-rod end joints, wishbones, brakes, and driveshafts from motor sport suppliers and leading manufacturers.

There are still hurdles to clear to gain approval for road use, rather like a manufacturer obtaining type approval. 'Priority right now is to get IVA (Individual Vehicle Approval) granted by the DVSA,' says John, 'but we have to meet specific criteria, and it's a lengthy process.' For instance, the windscreen is an incredibly complex single curvature double-drop design, made by Pilkington. Dave explains, 'the screen is

subjected to a test in which a laser is shone through the screen and gauges the percentage of deflection, as the more rake you have the more glass you look through, effectively, and the glazing manufacturer has to get the screen to come within the required deformation range. It's the most rake that Pilkingtons have ever done, and to get it past the test was difficult.' The screen also incorporates a dual heating element, so there are no misting-up issues for road use. There's also a little heater mounted in the inner wing within the original chassis constraints, which is plumbed into the vents that feed onto the windscreen as an additional insurance to keep it from misting up, also providing heating as well. Two fans feed fresh air into the cockpit, whereas the race car would have had just a tube with a flap on it to cool the driver. 'We've got our own moulds for the body,' says John. 'We made some corrections on the original nosecone mould because the curvature around the light pod on the lower righthand side was incorrect, possible due to Piper's car having a ding during the filming of Le Mans. So, obviously the new moulds

would produce a correct body shape now.' The only thing left to finish are the two little aerofoils on the tail ends of the bodywork.

Because of the IVA regs, the 964 engine has standard bore-and-stroke and compression ratio. 'It was quite impressive on the rolling road,' declares John, 'because although the cams are standard 964, and the standard engine is 250bhp, but with a 964 RS flywheel it produced 295bhp at 7000 rpm. So, we achieved a 45bhp increase with a modern management system, Jenvey throttle bodies, injectors and a BTB exhaust system. And that's running cats as well, so if you took the cats off and fitted straight-through pipes it could well exceed 300bhp on standard cams, which is pretty impressive.' Despite the ancillary equipment on board, it's still under 900kg with fuel, and, bearing in mind the minimum weight limit for a Group 5 prototype in 1969 was 800kg, it must have been close to 900kg back in the day, including the driver. The 12-cylinder motor and transmission would be heavier than a flat-six, despite the widespread use of lightweight magnesium for the crankcase and transmission case.

You could stick a real Porsche flat-12 in the back. They are available but at a cost of over £1m. Icon, like others, have opted for a 964 engine. With a rebuild, 964 RS flywheel and Jenvey throttle bodies, it makes around 300bhp

Cad designed steel spaceframe is a work of art and very stiff. Original, of course, used titanium



Above: Open for business. Right: Recumbent driving position dictated by ultra low roofline



In the cockpit, niceties such as the brackets for the seat belt mounts have to have two mounting points on the bulkhead, one for racing restraints and accommodating a helmet, and another for regular motoring, because the IVA regs call for a maximum 50mm gap between the top of the seat and the headrest. The headlights will be the minimum distance from ground to centre-of-lens, and the mirrors on the tops of the wheelarches have to be adjustable from the cockpit to achieve IVA approval, too, which means they're not perfectly placed for optimum rearward vision. That responsibility falls on the tiny camera mounted at the back of the car, relaying the view behind to a small screen inboard of the passenger door-shut.

The wheels are to the original 917 pattern, designed by Dave in CAD, and cast by Creasey in Sittingbourne. 'These widths are for road use, a little bit narrower than racing wheels, because of road-going tyre availability.' Tyres are Michelin 18/60 R15 TB15 Racing on the front and 29/61 R15 TB15 Racing on the back. 'These Michelins are 'E' marked, so they are a legal road tyre, and you can get Dunlop full-race rubber, and Goodyear and Firestone in America still make the full-race 10½ and 12in fronts and 15- and 17in rears.' The centre-lock hubs are machined and are slightly different from the originals because of the design of the uprights. John points out that, 'one of the

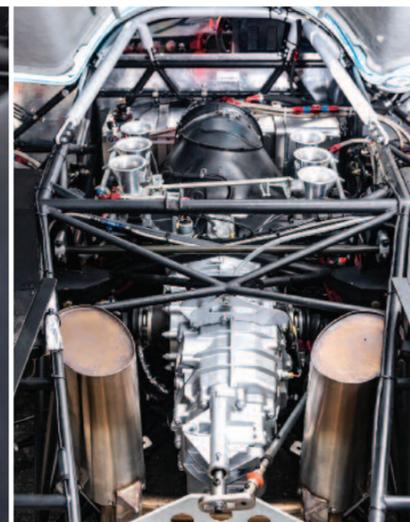
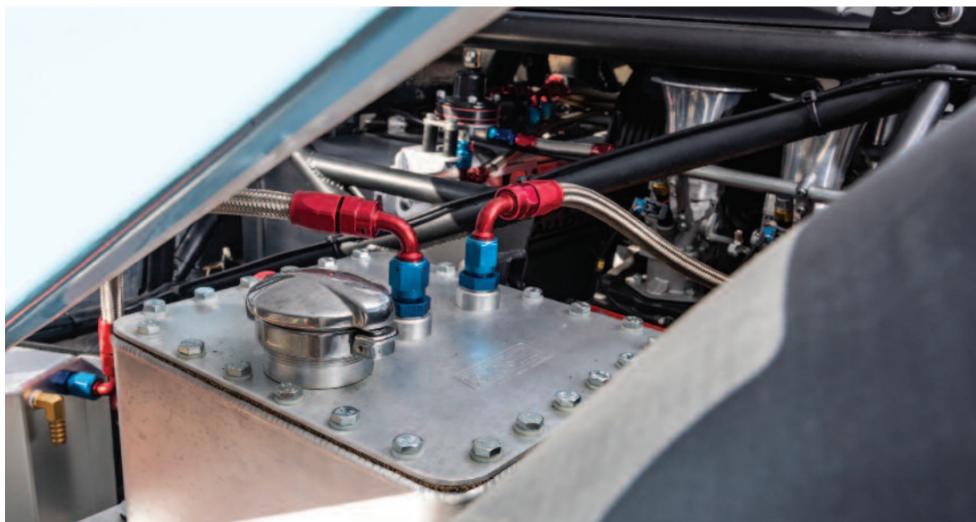
Below: Work in progress. We dropped in to see the Icon being built in Dave Eaton's workshop last year. Right: Iconic duo Dave Eaton left and John Hartland

main reasons for 917s not finishing races was wheel-bearing failure, particularly the rears because the pre-load on the bearings was very difficult to set up, and they had a nasty habit of locking up and shearing off. So, we redesigned the hub and fitted those instead.'

Icon will make the 917 to order, and John's is the next one in build. He tours European circuits in his Ultima, and hopes to do the same in a 917. 'I've got the jigs at the workshop, and the next step is to get the tubes ordered up, cut to length by laser, and then start building the chassis. There are 220 tubes, and it's a very elaborate space-frame.' Like our test car, they'll be in steel, though John is in awe of the 50-year old technology: 'The amount of titanium on the original cars is just incredible: titanium rods, titanium hubs, nuts and bolts in titanium, all to keep the weight down. The aluminium spaceframe weighed less than 50kg, and the 1971 Martini car was a magnesium tube-frame and that was approximately 42kg.' The works cars ran oil through the two main chassis rails, front-to-rear along the inside of the sills to the oil cooler, though John Wyer decided not to do that in the JW-Automotive 917s in case they cracked and covered drivers in hot oil. Instead, they ran Aeroquip hoses throughout, which is how the Icon car is constructed.

Time for the ride of my life. It's easy enough to access the cockpit. The sill panel

provides a step, and it's okay to stand on the seat, clutching the roof as I tuck my head down and pivot into the car. I'm struck by the racing car rawness, and the immediacy and proximity of the bodywork contours to the cockpit interior – these great whale-like humps on either side of the windscreen, and I could almost touch the tops of the wheelarches if I could contort myself enough to reach out of the mini ventilation window. Settling down in the cockpit is a relative experience: it's extremely tight for me – though people under 5ft 10in wouldn't have the same issue – as my head is crushed against the roof, and my knees are against the dash panel. When Dave closes the gullwing door, it strikes the top of my head, and I'm glad I've kept my hat on: my helmet, which I'd brought along for the benefit of photographic realism, is redundant. I contemplate the dramatically different surroundings. One of the first things that strikes me is how high up the steering wheel seems to be, though it is in its original position, and when you look at period photos it's clear that the steering wheel does dominate the cockpit. It's a recumbent driving position, unsurprisingly, reclining in a tight bucket seat, and the pedals are a good stretch for the legs. There's a single wiper arm to sweep the windscreen, and I'm seeing the slats in the tops of the wings and the large diameter steering wheel rim right in





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front of me. Stretching away behind in the rear-view mirrors are the two long parallel panels of the rear bodywork.

I turn on the ignition and crank it on the key. It's as straightforward to fire up as a normal 964. A barely silenced flat-six bark: anticlimactic? Too much else going on to worry about that. I think you'd soon get used to the fact that this is its soundtrack, rather than spend the time yearning for a harsher flat-12 scream. There's a slight issue with the G50 linkage, due to the stress in selecting reverse (now resolved) at the Excel hall at the recent LCCS Show, and only 2nd and 4th gears are available. Never mind, there's plenty of torque to get it rolling in 2nd, and the runways are long enough and broad enough to get the adrenaline going in 4th. Yowzer... We have lift off! The 917 surges forward on the empty straight. It's so light that the absence of the in-between gears hardly matters, and in no time at all I'm travelling way faster than I should be, given what the regular 3.6-litres would be capable of. I swing it around the broad airfield perimeter road; the steering is light and the car responds instantaneously to inputs, from both steering and accelerator. I jiggle this way and that to see just how responsive it is and judge immediately that this is a chassis that you

could do almost anything with. I can switch lanes very easily, as if overtaking a competitor. How that would be with 5.0-litres-worth of propulsion is another matter, but meanwhile this will do just fine. My natural instinct is to look in the wing-top mirrors to check the view behind, and it's a wee bit of a pain to keep glancing over at the passenger door to see what the small screen is showing. I've factored in a couple of tight turns on my impromptu circuit, and brake ever more sharply ahead of turn-in. The brakes are effective, though the pedal feels a tad spongy. The ride is firm yet smooth, considering its purposeful pedigree. As for handling, it corners flat and seems entirely compliant and predictable, certainly not the awesome monster I'd been anticipating.

If I wasn't so tall, this would be quite a relaxing car to drive. Apart from the din: you'd have earplugs, presumably. Dave is prepared to modify the chassis tubes to lower the seat rails, which would give me – a six-footer – a little bit of headroom in the otherwise restrictive cabin. 'I was being conservative on the first build,' he admits. 'I can drop the seat down as much as 10- or 12mm, by cutting a slot in the bottom of the seat to accommodate the chassis tube, so, basically, your seat is on the floor of the car. It would

have an aluminium and glassfibre laminate as a bottom panel so the floor underneath the seat would be protected.' Racing drivers have traditionally been wiry and short of stature, with notable exceptions such as Richard Attwood, Jürgen Barth, Hans-Joachim Stuck, not to mention their biggest driver Udo Schütz, so the likes of Siffert, Müller and Rodriguez would have felt completely at home. I recall driving a Porsche 910 around Chobham for a story we ran a few years back, and that would have been equally cramped had the roof panel not been detachable.

But is the Icon 917 forever destined to be a road- or trackday car? A demo-car, as seen at the Goodwood Festival of Speed? 'If you wanted to race it in SCCA events in the USA I'm sure they would accept it,' thinks John, 'because they like to have full fields, and they're not quite as restrictive as we are over here. The FIA and Motor Sport UK are pretty strict on what they allow in historic events, and it's got to be a workshop replica.' So, there we are: the reality is, you could have yourself a beautifully engineered 917 replica with a reliable stock drivetrain, use it for road and trackdays and, maybe, a spot of historic racing. Me, I'd commission a long-tail – as driven at Le Mans by Quick Vic... **PW**

Above: Our man Tipler discusses his build requirements with Icon's Dave Eaton. Below: Scratch that, he doesn't really fit

