

## Dick VanGrunsven...The Monarch of Homebuilding

By David Gustafson



On the home page of the Van's Aircraft website, there is a replica of a Hobbs Meter. It doesn't count hours; however, it counts aircraft completions...the number of RVs that have been finished and flown. The count this afternoon was 7,607! No other design in the homebuilt movement has come close to that. What's equally amazing is that the number of RVs currently under construction (or abandoned) may exceed that total. What's even more remarkable about all this is the man behind those designs, plans and kits: Dick VanGrunsven. He fits the Dutch stereotype: intelligent, clever, quiet, soft-spoken, conservative, and stubborn. People who try to talk him into modifying one of his designs sometimes get to see a different side of Dick. That's not to say that he doesn't respond to the market. He started out with a single seat, got talked into a two-place tandem, then a side by side model and eventually a four-seat design. In any case, his subdued demeanor makes him an unlikely candidate to be the world leader in producing kits that have made it to the flightline...until you get to know where he's coming from.



Dick VanGrunsven has become the undisputed leader in kit plane sales.

There's more to it than sheer numbers. It has spawned a kind of cult; a band of brothers, who take their RV building and flying very seriously. There are RV clubs out there, RV flying formations, an online chat room and blog that's hosted by volunteers. EAA sets aside an enormous area for RV tie downs to accommodate those who visit the annual Fly-In. There are guys who have built 5, 6, even 7 copies of the RV designs. They finish one, fly it for a while, sell it and buy another model. They just love building them.

A lot of kit makers have come and gone since Dick sold his first limited kit at Oshkosh in 1974. Van's Aircraft may be the oldest continuous kit company in the business today. A number of factors have contributed to the on-going success of Dick's Designs: aluminum, new products, ease of construction, ruggedness, builder support, integrity, and performance, performance, performance. There's another factor: success...the kind that feeds on itself,

stimulating even more success. Few people get serious about homebuilding today without at least taking a look at the RVs.

Dick launched Van's Aircraft with the RV-3. That airplane and all that have followed have been built out of 2024-T3 aluminum. Obviously, Dick prefers that material over composite, tube and fabric or all-wood designs. Aluminum is well understood for its strength, durability, and endurance. It has dominated the military and commercial worlds for 75 years. Every so often, as one design begins to fade a little, Dick manages to come out with something new and there are a lot of people who built the last design, who can't wait to line up for a new kit so they can build a copy of the next design.

Builder support has been a hallmark for Van's Aircraft, with newsletters and websites that have handled just about every question a builder can think of. Nowadays, if someone tackles an RV design, it's very likely that someone else in the neighborhood has already been through the drill and can provide answers to most issues that a new builder will face.

It's the performance and handling of the RVs that has won over most builders. Van's designs are fast, strong and highly maneuverable. The early models were designed to be fully aerobatic and some of them have found their way into IAC entry-level competitions. The later designs tend to cater to pilots who are more interested in utility than high performance handling and certainly the RV 10 and 12 are outside the aerobatic envelope.

The story of how Dick's stable evolved from the RV-1 up through the RV-12 (RV stands for Richard VanGrunsven, not Recreational Vehicle) is a study in passion, commitment, and a perfect eye for what works and what doesn't. This is the story of how one man changed from a quiet country boy to a Homebuilt Guru, the world's leading producer of homebuilt aircraft kits.

**How it came to be.** Dick and his older brother, Jerry, grew up on a farm near Cornelius, Oregon. As kids they developed a fascination for aviation, shaping balsa wood and covering it with tissue. Their father had taken some flying lessons (in the mid-1930s) before he got married and the stories of his experiences aloft inspired the young boys. In his involvement with flight, Dick's father had hooked up with a homebuilder who was very prominent in the 1930's and that gave Dick some early insight into the whole field of homebuilding. That coupled nicely with Dick and Jerry's frequent construction projects around the farm. His parents learned early on that Dick had a high aptitude for all things mechanical.

It wasn't long before he and his brother worked their way up to owning an old J-3 Cub. They were

soon flying off a 670' strip on their farm. Dick had that mystical experience of learning to fly at 15 and getting his license at 16 in the kind of aircraft that not only produced a respect and understanding for stick and rudder, but which inspired and gave flying a sense of romance that seems to have disappeared. Dick was airborne whenever he could squeeze the time from his schedule or the gas money out of his pockets. He made CFI by 19 and later added the IFR and worked his way up to an ATP rating. When it was time to go off to the University of Portland in 1957, he chose to major in General Engineering. They didn't have a program in aeronautical engineering or he'd have been in it. Following graduation, he went into the Air Force for three years and then tried his hand at engineering which seemed like an erratic career.



Dick's RV-1 evolved from this Stits Playboy.



RV-1

While he was in the Air Force, he came across a Stits Playboy in 1962. He bought it. Soon, however, he had it torn apart and rebuilt it. Still unhappy with the performance and handling, he took it apart a second time, in 1965, and fitted the aircraft with cantilevered aluminum wings he had designed and built in place of the strut braced wood wings. That was the RV-1. After flying it three years, further upgrading it and enjoying it immensely, he somewhat reluctantly sold it to an airline captain. Being bereft of an aircraft, he had the impetus to begin designing the RV-3. In between, however, there was the RV-2, a flying wing glider that was never completed. "It's probably better that there are parts lying around rather than having it flying." He never drew up plans, has no photos and believes it will never be finished.

**The RV-3.** Dick wanted to create his own design and he kept the Playboy in mind as he sketched out the basic configuration, but where the Playboy is wood, steel tube and fabric, Dick was determined to create an all aluminum airframe. "It was based on what I already knew and it became a kind of cornerstone for the business. It was an opportunity to get started." He began by building a prototype in 1969 and first flew it in



The RV-3 was designed to go fast and be aerobatic.

1971. He was delighted with the aerobatic performance and high speed of the design. He drew up plans. In those days an "aircraft kit" had a whole different meaning. They weren't complete. They did include plans and some of the difficult parts like wing ribs, bulkheads, cowling, engine mount, fairings, canopies,

some of the aluminum parts that had critical bends. Builders still had to find sheets of aluminum, rivets, bolts, paint upholstery, instruments and an engine. "It was an easier business to get into, because you didn't need to be set up with intricate, sophisticated tooling for complete kits. CNC machines didn't exist then." Builders had to find their own materials, do most of their own shaping, drill holes, insert clecos and rivets. His first shop space was a one car garage and a somewhat larger shop was located in the loft of a barn. After about two years, he had purchased a property with a house and a more spacious sized shop which became his one-man-factory.

"That soon changed. The industry was evolving and people wanted more complete kits. Within a couple years, Dick was shipping out complete kits with all materials and with all of the bending completed. The goal now was to do the kind of work for which typical builders didn't have the tools or the skills to do it right. It was assumed that the builder would do some minor welding and fabricating, but today all that kind of work is also done at the factory. CNC machines now pre-punch all the holes, all of the steel parts are ready to bolt in, and there is very little fabrication left. It's mainly an assembly process now. "You really can't compare the early kits with our current kits. They're very different now, much more complete."

Dick still sells RV-3 kits and it is possible to get a Quick Build Wing Kit that is essentially assembled. Very little work is left to be done by the builder. Dick points out that the work done at the factory still complies with the FAA's 51% rule, which dictates that the builder has to build over half of the aircraft. Over the years, and through the

different designs, Dick has been very careful to avoid any conflict with the FAA over the 51% rule that governs Experimental Amateur Built aircraft.



RV-4 and RV-3: After years of appeals, Dick gave the market what it wanted: a two-seat tandem version of the RV-3.

**The RV-4.** Almost as soon as Dick introduced the RV-3, he began getting questions about developing a two-seat aircraft. He was reluctant at first, believing that two-seat aircraft tend more toward utilitarian flying. He was so happy with the performance of the RV-3 that he didn't want to give up any of the speed and aerobatic capability. In those days there were a lot of single place homebuilt aircraft and two-seaters were still somewhat rare, but certainly desired by a lot of people.

He resisted.

They persisted.

Eventually, about 1975, he began to think about the configuration that became the RV-4: a two-seat tandem arrangement. He worked on it between shipments of kits for the RV-3. When it finally flew in August of 1979, Dick had a pleasant surprise. It turned out to be a high performance aircraft...more than he'd expected. "I had feared that we would have to give up a lot of the maneuverability of the RV-3. But there was just more and more call for a two-place." In the end, he let go of about 10 mph and an almost negligible reduction in roll rate. In configuration it was an expanded version of the RV-3. It had about 20% more wing area, a longer fuselage, but it

was also a taildragger, low wing, and all metal construction. Unlike the typical biplanes of that age, solo flight was in the front seat instead of the rear, providing much better visibility on landing.

He found a huge audience was waiting for the new model when he took it to Oshkosh for the first time in 1980. Orders started pouring in and Dick began hiring full time people to help out with the plans and kits. "Of course developing a prototype is one thing, getting into the business of shipping kits is another. It takes time to set up a production line for kits." As demand went geometric, Dick began with tail group kits, then added wing kits, then fuselages. It took three years to be able to ship out complete kits. One policy Dick has adhered to from the beginning is not taking money for products he doesn't have. He will not accept advance payments on kits. "We weren't always able to keep people happy by having what they wanted, when they wanted it...but we weren't going to have anyone feeling strung out for something they'd already paid for and couldn't get."

**The RV-5.** The RV-5 was a one-off design program that Dick put together in 1975 to create a group project for his local EAA Portland Chapter 105. It was intended to utilize a two-cylinder Volkswagen engine project that one of the local members had created. The engine man needed an airframe and Dick set out to design a single seat airframe that would accommodate the engine. The configuration was a little different than Dick's normal low-wing designs, utilizing instead a shoulder height, flat, one piece wing that would pivot (not fold) for trailering. It was a kind of scissors-wing.

It flew reasonably well, though the engine fell short of Dick's expectations. After a couple years of flying, the aircraft was retired. Plans are not available for the RV-5 and never will be. It was not intended as a commercial venture. "Because of the way it evolved it simply was not practical." Several years later, Dick pulled it out of storage and hung a 40hp Rotax two-stroke engine on it. With the Rotax, performance improved dramatically, but it was soon retired again. Reportedly, one of Dick's employees is in the process of restoring the aircraft "as a lark".

**The RV-6.** "People are never happy with what you have. One of the principal factors was that more and more pilots were being trained in side by side aircraft. That's what they were used to and it's what they wanted. It's also what their spouses wanted. They didn't want to sit in a back seat." There was definitely a transition taking place in the pilot population. They weren't as interested in pushing the envelope in performance. "Gee whiz, can't the baggage compartment be made larger. Well, yes, but when you do that you give up aerobatic capability." Dick began to realize that newer pilots weren't cut from the same cloth he was. They were looking for Sunday afternoon adventures, not an aerial rush.





RV-6: There were those who demanded side by side seating... and got it!

Dick thought the side by side would detract from the objectives he'd always had in mind when he called out: "Clear!" Reluctantly, he agreed to design what he considered a "fat" airplane. "If they want a fat airplane, we'll give them a fat airplane." It went against his engineering penchant for optimizing everything in performance, usually at the cost of utility (i.e. large baggage compartments) "and curtains on the windows". He set out in 1985 to satisfy the marketplace, working wherever he could to optimize his engineering goals. There were a number of components in the R-4 that could be used, like the tail group, or expanded a little, like the wing, to accommodate the 6. They weren't identical, but they were as similar as was practical. He wound up with a two-seat, side by side aircraft that had baggage space, but also aerobatic capabilities in excess of his expectations. "Turned out that it worked out very well. We hardly lost any speed and it



RV-6A: The number of pilots proficient and comfortable in a taildragger was diminishing, so Dick created a tricycle version.

still had good handling qualities. Despite going into the design with reservations and modest enthusiasm, it has turned out to be the best selling homebuilt design in the world...ever!" He flew the new design in 1986 and took it to Oshkosh that year.

The 6 did not generate the kind of revolution that some other designs, like the VariEze or Quickie had, but it started with a respectable number and just grew and grew. As he had in the past, Dick started out with tail kits and worked up into a complete airplane in the months that followed. Two years after first flying the RV-6, he made a departure from his traditional designs by creating the RV-6A, or tricycle gear version. He could see that more and more builders had only flown tricycles and were leery of taildraggers. Thereafter he usually featured both types of gear. The RV-6 was in production until 2000, when it was retired from the kit inventories and replaced by newer models that delivered more room and performance. Even though kit production was halted, Dick is still seeing completions today, as many as 50 a year. Altogether, Dick believes that close to 2,500 have



RV-8: This was a substantial upgrade of the RV-4.

been completed, hundreds more are still under active construction, and maybe a thousand have been abandoned... by guys who found themselves in over their heads. There are probably a lot of unfinished or poorly finished tail kits out there.

**The RV-8.** For reasons difficult to understand (or recall), the next offering from Van's Aircraft was designated the number 8. It was, according to Dick, "a version of the RV-4 on steroids". The popularity of the 4 began to fall off with the advent of the 6. Questions began to surface about the future of the tandem design: should it be retired? Has the 6 polished it off? Being committed to the kind of flying that the 4 allowed, Dick wasn't ready for any kind of funeral. He began sketching out some improvements which he turned over to his



aeronautical engineers and his CAD draftsmen. The primary changes included an increase in cockpit space and more horsepower. Dick made Oshkosh 96 with the 8 and announced that there would be an 8A tricycle version of the aircraft in another year or so. With a casual glance, the 8 looks like a 4, but Dick felt there were enough changes to justify a new model designation. The 8/8A kits were certainly more advanced than the original 4 kits.



RV-8A: Once again Dick made the move to accommodate those who preferred tricycle landing gear.

There was more in the kits and there were more pre-fabricated

parts. It was designed to make building much easier and quicker. The CNC machines, new to Dick's shop, were kept busy shearing, punching and shaping. Alignment became much easier, assuring accuracy in assembly which in turn brought up the quality and safety of the finished product.

**The RV-7/7A.** One good turn deserves another. Chronologically, the 8/8A reached the market before



RV-7: This was an upgrade of the RV-6, with an improved kit. It was followed by a Tricycle version, the RV-7A.

the 7/7A. The quality and sophistication of the kit had moved so far ahead, that Dick decided to rework the RV-6. Again, there's little difference in the three views for the 6 and the 7. "This is one where the difference is found under the paint." It was a marked advancement in what the

builder got when he opened up the boxes of components. The workload for the builder was substantially reduced, as were the tools and skills required to assemble the aircraft. All of the holes would line up perfectly, requiring the insertion of a cleco, followed by a rivet. “This would lead to a finished product so superior to the old RV-6 kits that it just was not practical to consider them under the same designation.” There were a few changes in measurements, expanding the cockpit and enlarging the wing area slightly to accommodate heavier pilots and passengers, but otherwise the change was in the kit components.



RV-9A: This is the third generation of the RV-6, with significant changes.

**The RV-9.** In 1998 Dick introduced the RV-9, which he describes as an RV-6 fuselage on a much larger wing. The reduction in wing loading, along with lowering of stall and landing speeds were intended for lower time pilots or pilots who weren't up to the skill levels required for a high performance aircraft. “Experience showed that a lot of pilot weren't really as qualified as they should be for flying these higher performance sport aircraft. So the 9 was an effort at detuning the aircraft a bit, giving it some more trainer-like qualities. We still tried to retain as many of the performance and handling qualities as we could. It was a compromise airplane.”

It was given a slower speed airfoil, a more aggressive flaps system to slow it down more which made it less sensitive and more manageable. It was rated for lower horsepower and had a larger wing which removed the option of doing aerobatics. There were several factors contributing to Dick's decision to detune the aircraft: most pilots had learned to fly in a low performance tricycle aircraft, many of them didn't maintain proficiency, and some just don't have the quick reflexes needed in a high performance airplane. “We decided to tailor the airplane to the pilot rather than just assume the pilot would acclimate to the aircraft.” Over time it has met with a high level of approval from builders and pilots.

**The RV-10.** “Through the years there had been many requests for a four-place aircraft. Initially, the market was flooded with good used four-place aircraft that were very affordable. There really weren't any two-



RV-10: It took a long time, but the inevitable came to pass: a four-seat RV-10.

place airplanes coming out of the factories that were anywhere near competitive so that market was wide open to us. There was no competition. We also realized that a four-seater was going to be bigger, heavier, and harder to build.” As time went on, the four-seaters got older, began to require more maintenance and began rising in price. Concurrently, Van’s Aircraft kits were becoming more mature, more advanced and so much easier to work with. As time worked over the four-seat fleet and diminished the numbers, it began to look like a four-seat kit would find a market. It did. Introduced in 2003, the response wasn’t quite as great as the two-seat models, but it was certainly respectable with well over a thousand kits going out the door in the first decade.

The RV-10 was a clean sheet design, because of the size of it. On the other hand, aluminum aircraft tend to have common themes running through them in construction and though the wing ribs were unique in size, they were very similar in shape to all the kits that preceded the 10. “Concepts yes, actual components no.” With the RV-10 Van’s Aircraft had transitioned into CAD and other advanced forms of design work. A vast majority of the components were created by computer assisted tools. Prototype parts produced from the computer specs were basically production line parts. “The days of building prototype aircraft from chalk marks on the shop floor are gone.”

**The RV-11.** “It’s a concept I began working on more years ago than I care to admit. Basically it’s a high performance single seat motorglider. It’s been an on and off, after hours project and it’s just not that significant. It’s been back-burnered a lot and is not yet finished. It’s an anomaly in the product line that may never make the flightline. Dick is concerned that there may not be sufficient market response to justify the high cost of



developing a kit of the quality builders now expect. Don't expect to see this one soon, if at all.

**The RV-12.** It's Dick's response to the LSA movement. This is an LSA in a kit format. "The thinking there was that we would be able to bear the expense of a kit, which is what our business has always been focused on. Even if we never evolved to producing a ready to fly aircraft, we felt there was enough of a market to justify making a kit for this

category." It has been selling well as a kit and Dick considers the program a success. The RV-12 can be built as an ELSA (Experimental Light Sport Aircraft), in which case it has to be built precisely as spelled out in the plans with no customizing, or it can be built as an Experimental Amateur Built.



RV-12: Van's Aircraft has finally entered the ELSA market with the RV-12.

In the RV tradition, this is a low-wing, all aluminum aircraft. It has side by side seating, removable (not folding) wings. The powerplant is a Rotax 912ULS 100 hp engine. The useful load is very generous, allowing for a pair of 210 lb. people, 20 gallons of fuel and 50 lbs of baggage. It handles like an RV within the restrictions of the LSA licensing. Dick did not want to create something that handles like a 150, preferring instead a more sporty kind of handling for people who enjoy responsive controls. Builders can install some extras like a lighting package for night flying, a two-axis autopilot, wheel pants and a complete interior package with carpets, sidewall covering and seats.

Construction time for the 12 as an LSA is estimated at 700 to 900 hours (plus painting time) depending on the shop space and builder skills going in. It literally can be assembled with simple hand tools and comes with everything but the paint. The illustrated instructions are arranged in a kind of "fail safe" sequence. "We're very satisfied with the final product and feel that the response in the market has endorsed the track we took with it."

Over the years, Dick has seen a lot change in the homebuilt market. "I think it's broadened out from the

pure hobbyist who had extensive skill and tools to people who don't have as much mechanical background and aren't so focused on building as on flying the finished product. They want to get there as quickly as they can, and yet they an airplane that has utilitarian value as well as sporty performance.

If you are thinking about building your own airplane, Van's Aircraft is an excellent place to start. They have a solid reputation, an incredibly loyal following, and a design to fit just about any mission profile in the sport aviation world. Learn more at [www.VansAircraft.com](http://www.VansAircraft.com).