

## **IOSIF SILIMON - ROMANIAN SAILPLANE DESIGNER**

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With two Romanian built aircraft in the QAM collection, the ICA-Brasov IS-28M/2/8 VH-GRF motor glider and the ICA-Brasov IS-29D VH-GWC glider/sailplane, it is interesting to take a look at the life and output of their distinguished designer, Iosif Silimon (1918-1981).

Silimon was born in July 1918. He graduated from the Aviation Section of the Politehnica of Bucharest in 1941 and joined the long established aircraft manufacturing firm IAR Brasov where he became the engineer in charge of the final assembly line. In 1945 the communist regime closed down the aviation section of IAR to concentrate on tractor development and manufacture. Silimon was involved in the design of the first of these, the IAR-22.

In 1950 along with another ex IAR staffer, Radu (engineer) Manicatide (1912-2004), using spare hangars alongside the tractor factory, he formed URMV-3, a glider manufacture and repair facility, of which he was head of department. URMV-3 lasted until 1960 and was replaced by either IIL or ICA-Brasov. ICA possibly not forming until c1968, which in turn passed back to IAR in 1991.

By 1949, using the adjacent facilities of the Sanpetru Aeroclub, Silimon had built for the club the first of his gliders, (Pleter 2017), listed generally as the IS-2. However it is possible that there was some confusion or staging in its development as in Anon (2011) it is referred to as possibly the IS-1 or IS-1-2 (See Table 1). It is possible the glider club aircraft was in fact the IS-1. In all listing IS-2 is shown as built by URMV-3 and not flying until mid August 1950. Pleter (2017) says the club glider was built in 1949. It hasn't been possible to clarify the IS-1, IS-2 situation.

At URMV he commenced his glider construction work in detail. From 1950 IS-2 was the precursor of 32 different types of gliders and motor gliders (Pleter 2017). After the URMV-3 IS-2 and 3 (variations up to 3f by 1959), came the IS-4, and onwards, built in these hangars by a new independent group, Intreprinderea de Industrie Locala (IIL). (Pleter 2017). This small group was replaced in 1968 with the start of ICA (Intreprinderea de Constructii Aeronautice). Silimon was appointed firstly its Chief Engineer and then Technical Director continuing with the design and manufacture of gliders. (Anon 2014).

It is interesting to note that Anon (2011) lists all numbers beyond IS-3 as built by ICA whereas the more recent Anon (2014) shows IIL as the maker for those from 4 to 19 at least. It has not been possible to resolve this situation

Only 20 basic IS numbers show in Table 1 but several had a number of variants, at least six for the IS-3. Even the IS-28M2, in the QAM collection, was one of a range of variants for IS-28. It would appear, from the missing IS prefixes, that the numbering series did not only contain Silimon's work with that of other designers, such as Manicatide?, being included without the IS prefix. (See more later under IAR-823)

There is some conflict between differing sources as to which ones were in fact Silimon's designs. For example Anon (2011) shows two utility and sports aircraft, as the IS-23 (flying 1968) and IS-24 (1971). It also lists IS-18 and a confused IS-18/25 but is unable to provide any details of the last two. The first two it states are definitely his. This is confirmed by Anon (2018) which gives a detailed description of IS-23, but it does not list 6,15,16,17,18 or 18/25.

The more recent Anon (2019) is rather clearer but still has some confusion. 23 & 24 still carry the IS prefix but both numbers then appear in the IAR 800 series. After IAR took over ICA those models still in production were retitled with an 8 in front of the old IS number (Pleter 2017). However IAR-823 is stated elsewhere as designed by Silimon's partner Manicatide, and not flying until 1973 with 78 built. Air Pictorial of September 1963, also contains a note on a light agriculture plane then being tested in Romania, the IAR 818. This could well be that referred to above as the IS-18 but this is far from certain. Manicatide, as co-founder of URMV-3 with Silimon, could well be responsible for the non IS numbers in the general series. However only IRA-823 is mentioned in his brief biography (Anon 2018b).

Of the later IS gliders, a number were mass produced. In the IS-28 series over 350 were produced, mainly for export. Of these over 200 went out of the country, 100 to the USA alone. Between May 8 and July 3 1980 three IS-28M2 flew over 22 000km from Brasov to Tocumwal, Australia. See further details of the QAM M2 in the attachment below.

At the time of his writing Pleter (2017) says production of the single seat 29D2 had reached over 250 with 175 exported. The Romanian original of Pleter's 2017 English translation is dated 2003 having been written much earlier. The reason that IS-28M2 VH-GRK was donated to QAM in 2014 was that ICA had

gone out of business and it was no longer possible to obtain the kit necessary to prolong its flight life. The 35 year production span suggests ICA disappeared before c1995, (actually 1991). IAR still exists to-day.

**TABLE 1**

**Gliders/Sailplanes, Motor Gliders and Aircraft Associated  
with Iosif Silimon**

<b>IS No</b>	<b>Builder</b>	<b>Type</b>	<b>Seating</b>	<b>No Built</b>	<b>Year Flew</b>	<b>Comments</b>
2	URMV-3	Training Glider	1	1?	1950	Confused name. IS-1 & IS -1-2 also used. The later possibly confused with ICAR-1-2, a 1930s company .
3	URMV-3	Wooden Glider	1	Many	1953	At least 6 sub-types through to (f) of 1959
4	IIL	Glider	1		1959	
5	IIL	Glider	2		1960	Development of IS-3
6		Glider				No details. Only shows Anon (2011)
7	IIL	Glider	2	1	1959	Experimental
8	IIL	Glider	2	Some	1960	Used by local flying clubs
9	IIL	Glider	1?	1	1959	Anon (2014) only shows motor version
9A	IIL	Motorised Glider	1?	1	1960	Experimental pod & boom motor.
10	IIL	Competition Glider	1		1960	Developed from IS-4
11	IIL	Aerobatic Glider	1	Small numb	1959	

12	IIL	Glider	2	1	1962	Experimental, Wood wing, metal fuselage
13	IIL	Glider	2	1	1962	Experimental, All wood IS-12. Flew 4 days later
13A	IIL	Glider	2	1?	1965	Longer span wings & shorter fuselage
18	IIL				1965	Details unknown. May not be an IS design. Simply ICA-18 & confused 18/25 but both show in Anon (2011) & (2014), as IS without any detail
19	IIL	glider			1967	No details only shows in Anon 2011
23	ICA	Light a/c	5	1(?)	1968	IS design in Anon (2011), (2014) & (2018). Radial eng. IAR 823 is not an IS design. Done by Manicatide (2018b).
24	ICA	Light a/c	5	10	1971	Variant of IS-23 with In line engine.
26				1?	1969	Ground effect test vehicle. May not be Silimon's. Only in Anon (2011).
28	ICA	glider	2	400?	1970	First of large number of variants.
28B	ICA	glider	2	350?	1973	More than 200 exported esp. to USA. At least 16 to Aust. Twin Lark (in USA?).
28M	ICA	Motorised glider	2	20?		M1 a B with motor, tandem seating

			2	400?		M2 redesigned with side by side seating. Motor Lark.
29	ICA	Glider	1	250?	1970	Many versions inc. motorised 29EM. Single seat versions of IS-28. Lark.
30	ICA	Glider	2			All metal 28B2 with new tailplane.
31	ICA	Glider	1			Variant of IS-29E3.
32	ICA	Glider	2	15	1977	Long span 28B2
33	ICA	Glider	1			Variant of IS-29 with 159kg water ballast tanks
46	IAR	Training glider	2		1993	IS-28M2 with reduced span & Rotax engine. cert. to JAR-VLA 1999. Post dates IS death.

#### Abbreviations - Builder/ Manufacturers

- URMV-3 - Uzinele de Reparatii Material Volant-3 (Glider Repair and Manufacture Company )(Aircraft maintenance plant URMV3 (Pleter Anon 2017)
- IIL - Intreprinderea de Industrie Locala (Enterprise of local Industries?)
- ICA - Intreprinderea de Constructii Aeronautice (Enterprise of Aeronautical Construction ICA Ghimbav)

In all Pleter says over 600 IS type gliders were manufactured at ICA Brasov in 35 years, one third of which were used by Romanian aero clubs. To-day the factory has been renamed IAR SA Brasov. Anon (2019) gives a total Romanian glider production of 830. It is presumed these cover URMV-3, IIL, ICA and later IAR outputs . The numbers shown for the mass produced models in Table 1 are approximate and should be regarded with considerable suspicion as it is highly possible there has been double counting between different variants of the same basic design.

As well as the design of aircraft Silimon himself took a direct interest in flying gaining his glider pilots licence in 1944 and his aircraft pilots licence in 1947. In 1956 he received the international FAI "C" Silver Badge for glider flying. Further honours came in 1960 in the form of the Paul Tissandier International Diploma from the Federation Aeronautique Internationale, (Pleter 2017)

He died in February 1981 aged 63.

This paper has been based on Google, mainly Wikipedia, searches. The responses are mostly in untranslated Romanian with many fewer entries in English. This has made it difficult to cross check conflicting statements in several places. For example all material, if any, that may shed light on the IIL - ICA relationship would be in Romanian.

See attachments for end notes on the QAM examples, the second from Cameron (2014). Performance details for the IS-2 & IS-10 are shown for comparison.

#### REFERENCES

- Anon (2011):- Romanian IS Designations (Iosif Silimon) -  
 . <https://www.secretprojects.co.uk/forum/index.php?topic=13446.0>
- Anon (2014):- Template:- Iosif Silimon Aircraft - <https://en.wikipedia.org/wik>
- Anon (2018a):- IS-23 - <https://en.wikipedia.org/wiki/ICA-IS-23>
- Anon (2018b):- Radu Manicatide - <https://en.wikipedia.org/wiki/Radu>  
 . Manicatide
- Anon (2019):- Industria Aeronautica Romania -  
<https://en.wikipedia.org/wiki/Category's:Science-and-technology-in-Romania>
- Cameron, Don (2014):- Forty Years On Queensland Air Museum Major  
 . Collections - ICA-Brasov IS-29D : 136
- Pleter, Octavian Thor (2017):- Iosif Silimon - Alumni Aviation & Astronautics.  
 . <http://www.aero.pub.ro/wordpress/index.php/en/2017/06/04/ing->  
 . iosif-silimon-/2

**SPECIFICATIONS & PERFORMANCE – URMV-3 IS-2**

Engine	None.	
Wing Span	12.3m	40ft 4in
Length	6.54m	21ft 5in
Height	.1.05m	3ft 5in
Wing Area	14.72sq m	158sq ft
Weight Empty	152kg	335lb
Weight Loaded- mto	250kg	551lb
Max Speed	180km/h	112mph
Max glide ratio	20 at 69 km/h	43mph
Stall Speed	42km/h	26mph

**SPECIFICATIONS & PERFORMANCE – IIL IS-10**

Engine	None.	
Wing Span	15.0m	49ft 3in
Length	7.44m	24ft 3in
Height	1.60m	5ft 3in
Wing Area	13.2sq m	142sq ft
Weight Empty	240kg	529lb
Weight Loaded- mto	340kg	750lb
Max Speed	230km/h	142mph
Max glide ratio	32.7 at 85 km/h	at 53mph
Stall Speed	62km/h	39mph

**QAM's TWO ICA-BRASOV SAILPLANES****ICA-BRASOV IS-28M2**

The IS-28, was the immediate predecessor of the single seat IS-29 sailplane. The 28 started life in August 1970 as a two seat tandem sailplane with 15 metre wings and was followed into production by the B with 17metre wings. This flew in April 1973 with aerodynamic refinements such as smaller tail and decreased dihedral on both tail plane and wings. The B was followed by the B1 and B2 which remained tandem seat versions. The B1 had DFS style air brakes and the

B2 Schempp-Hirth style airbrakes and was the first with flaps. These had one retractable main wheel on the centre line.

The first motorised version was the M1, simply a powered version of the B2 with the wing set lower on the fuselage. This was followed in 1976 by the M2 with a radically redesigned forward fuselage with side by side seating for two and again the low set wings. The undercarriage of the M2 had a tail wheel and two main wheels which semi-retracted backwards into the wings. The M2 was redesignated as the IAR-34 after the organisations name reverted to the historical Industria Aeronautica Romanica (IAR).

Other versions of the IS-28 to appear were the 28MA, the M2 with new wings and split flaps. The IS-30 was virtually the IS-28B2 with all metal control surfaces replacing the earlier fabric covered ones and a new tailplane while the IRA-46 was a trainer based on the 28M2 with reduced wing span and a Rotax 912A engine. A total of c400 IS-28/30 were built with a further 50 IS-28M2.



The ICA-Brasov IS-28M2/80 VH-GRK in pristine condition at Leeton/Narrandera with its owner, the late Manfred Rueff of Mount Beauty, Victoria in whose memory it has been donated to QAM by Manfred Jr. and Detlev Rueff. Built in Romania in 1981 it held Romanian and then Danish registrations before reaching Australia in 1983.

(Photo – Detlev Rueff)

A number of M2 came to Australia at least three making an 11 292nm ferry flight, apparently together, from Romania in the late 1970s - early 1980s. This is interesting as a recent listing of IS-28s on the Australian Aircraft Register contains 19 entries, 16 IS-28B2 and three M2, including VH-GRK, the latter is

shown with the SL1700 and a MTOW of 760kg. The other two have a L2000E01 engine and a MTOW of 745kg. They are VH-SSQ & SSU while a photo taken some years ago shows VH-SSR in flight and indicating it was one of the three that flew here. It is likely therefore that GRK was not one of that three.

Common names based on Lark appear to have been used, at least in the USA. With the IS-29s as the Lark. The IS-28 sailplanes the Twin Lark and the motorised versions the Motor Lark. It would appear these names were applied retrospectively.

QAM has been given the intact **ICA-Brasov IS-28M2/80 VH-GRK c/n 045** as it no longer could be flown. With ICA having gone out of business it meant the factory based Service Life Extension Program, normally 35yrs, was no longer available. This donation, in mid May 2014 by Detlev and Manfred Rueff Jr., was in memory of Manfred Rueff of Mount Beauty, Victoria. He had imported GRK in 1983, it being registered in late May that year. It had been built in Romania in 1981 where it was registered as YR-1025. It soon passed to Denmark as OY-XLC until exported to Australia. It will be displayed alongside the IS-29, already on hand. Together they will form a useful exhibit of the earlier Romanian sailplane industry under the leadership of Iosif Silimon.

#### **SPECIFICATIONS & PERFORMANCE – ICA-BRASOV IS-28M2**

Engine	1x 54kW (72hp) Linbach SL 1700E01	
Wing span	17m	55ft 9in
Length	7.5m	24ft 7.3in
Height	2.15 m	7ft 0.6in
Wing Area	18.23sq m	196.3sq ft
Weight Empty	530kg	1169lb
Weight Loaded	730 kg	1610lb
Max Speed	212km/h	138mph
Cruising Speed	165km/h	103mph
Initial Climb	186m/min	610.2ft/min
Range	450km	280mile

## ICA-BRASOV IS-29D

The Romanian company ICA (*Intreprinderea de Constructii Aeronautice*), with its headquarters at Brasov, was established in 1968 to take over the work of the earlier IAR-Brasov. IAR (*Industria Aeronautica Romania*) had operated at Brasov since 1926. For a period between 1950 and 1959 it had been known as URMV-3 Brasov. Up to 1968 IAR had been the main, but not sole, Romanian aircraft designer and manufacturer. ICA continued to produce IAR designs as well as branching out into the sailplane and motor glider field under its own label. In the sailplane field it became the sole Romanian designer and producer. Its chief designer was ex IRA engineer Iosif Slimon who died in 1981.

The IS-29D is a single seat high performance Standard Class sailplane that requires a high degree of skill from the pilot. In particular it is capable of entering a deep stall which at low altitudes can be, and has been, fatal and at higher levels requires advanced training levels for rapid recovery. The D2 is the Club Class version.



Seen here in its storage cradle at Caboolture is the ICA-Brasov IS-29D VH-GWC now in possession of QAM. A high performance sailplane it represents the first Romanian designed and built aircraft in the Museum's collection. With a 15m (49ft) wing span it weighs only 240kg (529lb) empty. (Photo- Vince Everett)

The IS-29 has retractable single line undercarriage, camber-changing flaps and Hutter type air brakes only on the upper wing surface. The T-tail has a fixed

stabiliser and elevator. The D model has improved controls, cockpit layout and rigging systems.

By 1986 over 200 29Ds had been sold with an annual production rate of 10-15 aircraft. It was widely certified including in Australia, Canada, USA, West Germany and elsewhere.

QAM has been fortunate to receive the **ICA-Brasov IS-29D VH-GWC c/n 050**. Built in 1975 it received Gliding Federation of Aust. Cert. of Registration No 588 in March 1976. After spending some time in southern NSW it went to an owner in Alice Springs in January 1978 and was damaged there on several occasions including in a landing at Bond Springs NT in October 1989. With a change of ownership it came to Queensland in 1990. By November 1993 it was operating at Gympie, Qld. After several further changes of ownership in South East Qld. it was acquired by Vince Everett, its final owner, in December 2006. By the time of its last flight in May 2010 it had 1252hrs and 928 landings in its log book. Mr Everett offered it to QAM in late December 2013 and was readily accepted as the first, and at this stage only, Romanian aircraft in the Museum's collection. It reached QAM in January 2014.

#### **SPECIFICATIONS & PERFORMANCE – ICA-BRASOV IS-29D2**

Engine	None.	
Wing Span	15m	49ft 1in
Length	7.03m	23ft 1in
Height	1.68m	5ft 6in
Wing Area	10.4sq m	112sq ft
Weight Empty	240kg	529lb
Weight Loaded	360kg	793lb
Max Speed	220km/h	137mph
Max glide ratio	37:1 at	58mph
Stall Speed (flaps down)	65km/h	41mph