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"ROMTECH"

An aviation industry with special characteristics

"ROMTECH" AVIATION IDUSTRY WITH SPECIAL CHARACTERISTICS

In a world where diverging matters are called Girom, Tarom or Rompetrol for convenience sake the aviation industry could be called Romtech. A branch of industry with an own face specially looking at the special developments that came out of it. We are speaking now of the Romanian Aviation Industry that profiles itself from the Balkan with quality products that can easily compete with European norms at all times !

INDUSTRIAL TURBULENCE

In the period 1968-1972 a new and own aviation industry came into exictence, six companies were part of it that all at their own eventhough cooperated in some way. When Romania decided in 1968 not to 'co-occupy' Prague they were sanctionised on aviation parts by the Russians. The complete Romanian aviation existed out of Russian types. What came next was a tour through Europe where a number of licences was gained. I.A.R. (Industria Aeronautica Romana) initially started with five vestigingen. IAR s.a. in Brasov specialised in helicopter production and produced the licenced Alouette 3 and the Puma. Avioane Craiova s.a. in Craiova concentrated on building their own jets. Turbomecanica/IAR Bucuresti was in business with Rolls Royce for the production of the Rolls Royce Viper jetengine and Aerofina / IAR Avionics in Boekarest which produced avionics ariginally joined forces with IAR Spare Parts in Costina. The by that time formed Romaero built the BAC-111 (Rom-BAC), for amongst others Tarom and the Britten Norman BN.2A Islander amongst others licenses, for the Police. Romaero nowadays is a private company at Baneasa airport the 2e airport of Bucharest. Finally we have Aerostar s.a. in bacau which came out of Intreprinderea de Reparatii Avioane, a maintainance concern which originally maintained Russian Migs and jet-engines. One of the majot contributions in Romanian aviation industry was the introduction of Israelian avionics and techniques which was applied in several projects.

TRANSPARANCY IN TECHNOLOGY

To upgrade the Mig-21 to LanceR bij Elbit Systems Ltd. a very venerable concept was bought. The main part of the 400 million dollar project was paid for only software and the systemrights. Hardware could be ordered inside or outside Israel, or Romania itself. A 3rd generation cockpit (F-16 technology with digital techniques) is the base. This was enlarged with typical Israeli inventions like the 'DASH' helmet with possibilities for aiming weapons on the target with the eye of the pilot and at the same time all data projected on the Head Up Display (HUD). Finally this new

technology (Dash-helmet) was applied in the SOCAT-Puma of IAR-Brasov, Aerostars Mig-21 LanceR and Avioane Craiova's IAR 99 Soim trainer.

MOST ADVANCED TRAINER IN THE WORLD

The IAR 99 Soim (hawk) – recommended as the most advanced trainer in the world – knows a history. Avioane Craiova s.a. formerly produced the attackplane IAR 93 in Corporation with former Yugoslavia where this type is known as Soko J-22 Orao. Only the full complete turn out of the Yugoslavian batch never took place because of the UN boycott early nineties. What remained for IAR was a big financial disaster and a large number of not completely built fuselages, they kept looking for new projects. Tests with an improved version of the IAR-93 with afterburner on the Viper-jets gave not enough satisfaction in results. When the need to order attack-planes decreased, The IAR-93 was placed aside but in the Airforce there was a need for a new light trainer/attack aircraft. The decision was made to develop this product completely in Romania, and the result was a really marvellous trainer with excellent aerodynamic aualities, a plane that besides that was really easy to handle for the pilot: the IAR-99 ! Acrobatis conditions could be asked from this plane like a 'vrille' of which the plane could recover easily. The Romanian Airforce ordered a first batch of 12 examples.
In 1997 the idea was born to equip the IAR-99 with the same avionics as the Mig-21 LanceR. That way about 2,5 months later a demonstrator saw the life-light which was called SOIM and it was first shown at Le Bourget – Paris.

JPATS WAS A TARGET

Romania was so very convinced about the qualities of the SOIM that it was seriously presented as a candidate for the big American Joint Primary Aircraft Training System (JPATS) project halfway the nineties. The winner could look forward to an order of more than 700 examples for training purposes in USAF and US Navy. As we now know the megaproject was given to Raytheon/Beechcraft who build the Pilatus PC-9 mk. 2 licenced as the Texan 2. Though SOIM guaranteed high quality in relationship with a cheap price, some not to avoid conditions were also part of the game in this heavy aviation selling business like an absolute deliverance security. The Americans mostly create this facility by stipulating licensed building which conditions were agreed upon with Pilatus. If the Romanian lobby possibilities were not sufficient compared to the concurrents with a very strong image we'll never know, and besides that IAR was dependent on its own turn from aviation systems from Israel. Next to that Avioane possibly lost a large part of the market in Asia because of a not strong enough marketing-strategy which advantage was taken by the Bae Hawk which was more than a pity because SOIM undoubtedly has many good things to offer and is even in more respects more advanced than the Bae hawk (with the analog cockpit that is) included a lower price, even cheaper than the Pilatus Turboprop.

VIRTUAL TRAINING

Most remarquable element in SOIM's possibilities is the capacity of in-flight virtual training ! A modular multirole computer can simulate all kinds of circumstances for a

ground-attack or air-to-air attack, using virtual radar. In this way an interception or ground attack can be simulated and practised by means of software like real circumstances while flying ! A 'miss' or 'kill' is immediately confirmed and all data are being transferred via data-link to the groundstation or the other planes on the own side. Datalink also allows during groundattack if a 'miss' appears to send the exact coordinates of the target immediate to a second plane. Without interference of a FAC (Forward Air Controller) this plane can take-over and the precision attack can take place immediately after the 'miss'. A small camera in the very front of the canopy records the data from the Head Up Display (HUD) and these are immediately transferred to the instructor. While the HUD display has been directly linked to the DASH-helmet which reacts on what the eye of the pilot sees, the instructor can actually see what the pupil sees. Next to that digital cartridges can be found on board with mission-data and the results the trainee scored. During debriefing these data are compared and interpreted with the former data-link data which makes the circle round. The trainee-pilot is then informed and in this way a very quick learning-proces exists around the "weaponsdelivery" without any weapon being fired. The Romanian Airforce already had the twelve present standard-versions reconstructed to the new SOIM configuration and and they ordered also twelve new SOIM's. With this potential RoAF plans to unite various tasks.

SOIM is designed for initial jet-training and very fast to learn, if neccessary the more 'classical' systems (being present for backup) can be used for training also. A second task is advanced weapon-training, and with integrated virtual capacity one can say that there is a very short and effective stretch to the modern combat-aircraft of this present time. To repeat for once the words of Valentin Bernovschi, business development manager of Avioane Craiova s.a. : 'The capacities of a turboprop are so very often exaggerated as lead-in to a Mach-II airplane, there's nothing but a real jet-trainer'. Also as a real attack-plane with real weapons the plane has been thoroughly designed. It has five hardpoints which can carry infrared missiles, smart bombs (infrared / laser), a laser/ Forward Looking Infra Red pod or Electronic Counter Measures pod can be carried or a 20 mm. gunpod with ammo. Smart thing is that three hardpoints have been designed in a way that they can carry Nato standard- as well as Russian arms (different distances in hang-up points)

ROMENIA ALONE IN AEROSTARS LANCER ALTERNATIVE

Without modern avionics the MIG-21 doesn't stand a chance against modern Western planes, but as a LanceR in many aspects this plane is equal, and in some respects even better ! (a.o. Dash-helmet).Like we said before the Elbit cockpit-technology has also been applied here, and the system integration was done by Aerostar s.a. in Bacau. In total 110 LanceR's in the A/B/C versions were delivered.

Because of the new avionics the plane is much more suitable to handle for the pilots,

and therefor very appreciated. In the Dutch magazine 'Piloot en Vliegtuig' of december 2003 and januari 2004 we reported extensive about the LanceR.

THE FUTURE

Avioane Craiova s.a. is working on the second batch SOIM's but in a lower gear at

the moment. This has everything to do with Airforces budgets. While export orders from abroad lack, the concentration falls within the inside market. Possibly under the wings of Elbit Systems Ltd. Some foreign customers can be found. It is tried to sign-in for the MAKO-project of EADS, but this attempt ended early because of the too large investments that were asked. For the civil market spare parts are produced. Avioane Craiova is very proud on the official certificate to deliver parts to STORK-FOKKER for the Gulfstream 4 and to the belgian SABCA for the 'tailcone' of the airbus 380. They would very much like to enlarge their participation in civil projects.

AEROSTAR S.A.

The most wellknown project, the Mig-21 LanceR for the Romanian Airforce has been rounded off. As we know the Mig-29 Sniper upgrade version didn't come to serial-production because the orders didn't come. But they remain active for repair and maintainance of the ownRomanian LanceR's as well as the R-11-F-300 and R-13-300 turbojet engines. Since 1997 this work is also done for foreign airforces and later on enlarged to upgrade-level. This way twelve Cratian Mig-21's have been modernised. Also for the L-39ZA work came to Aerostar a.o. for the airforces of Bangla Desh and Egypt(only engines) and ten ex-airforce L-39's were completely modernised for the American civil market and sold to Worldwide Warbirds. Another well known type is the Yak-52 of which Aerostar gained the productionrights of the designer Yakovlev from Russia. Over 1800 examples were produced and the production-line is still running. Military orders were scored for Romania itself next to Russian ones, Viet Nam and Hungary. This last one fancied the Super Tucano at first, but discovered that for the price of one Tucano ten Yak's could be bought !
The plane is still wanted in the civil market. Modernised versions like the Jak-52W and the Jak-52TW had small 'Western'modifications and it is hoped that these versions can also be sold to American customers. Aerostar also is in the business of ultra-lights, produced 80 airframes for the German 'Wild Thing WT-01' and designed the own Aerostar 01 "Festival". Other civil activities are amongst others the under JAR-145 (Joint Aeronautica) certificated maintainance on the Bae ATP, Saab 340 and Boeing 737.

IAR S.A. BRASOV

The last SOCAT-Puma's for the Romanian Airforce are very prominent on the end of the productionline. Much attention is given to implementing and testing of the advanced avionics. Much knowledge was gained with modificating the Puma's which were produced in large numbers here and though licenses were given also to the Portugese OGMA and the Indonesian IPTN, the IAR productionline is the most complete and advanced one. Eurocopter, who's predecessor Aerospatiale designed the Puma, went over to the Cougar-concept and sees IAR as the most important facility factory for the Puma. This resulted finally in a 51% Eurocopter 49% Eurocopter Romania joint venture as part of EADS.

ISRAËL OFF SIDE

IAR already had some experience in delivering Puma's to Islamitic countries such as

Soedan, and they were given the order by the U.A.E. (United Arabic Emirates) to modernise fifteen (partly delivered before) Puma's with advanced avionics and besides that ten examples extra (second hand from South Africa) Here the Turmo 4 engines are being replaced by Makila 1A1 (Cougar-engine) with 30 % more power. Much better results are made in the 3-H zones (Hot, High and Heavy terrain). Other modifications are the composite tailrotor, NVG's, digital displays and Flight Management System, all obtained from the United Kingdom, Canada and France.

It's not strange that these countries make their choice for non-Israelian suppliers. On the other hand Israel is in charge with Elbit for a small deliverance of Puma's to Ivory-Coast. They hope to get an order by the large Puma-operators, specially aiming on Pakistan. Next to that the civil market is also 'in the game' but less predictable. The big question is what is Royal Air Force going to do with their Puma's, if they are going to be upgraded and modified it looks like IAR has the best position. In between they also work on projects such as (motor)gliders and they have been involved concerning parts of the American Liberty. What IAR, Avioane Craiova and Aerostar have in common is that the specific knowledge is very well present, but the foreign market is only served very small, on short commons because of the biting concurrence.

Actually looking at the continuance it is crystal clear that the necessity is present to turn over the situation to a more suitable one. The appliance to make synthetic window-frames should not be, or become necessary anymore for an aviation industry of the kind we have seen. To achieve such a situation elements such as expensive stone-hard image- and marketingstategies in the direction of foreign countries are absolutely necessary. 'Romtech' should be hopefull of finding the means to be able to sell their fine products on a much larger scale.

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