

# Combat



**A** number of highly advanced combat aircraft are currently seeking footholds in the regional market with varying degrees of success. While both Australia and India undertake high-profile aerial defence capability upgrade programmes, and countries with smaller defence budgets focus on affordable and capable Russian technologies, the mix of aircraft deployed and on order across the region is growing in diversity.

## Super Hornet

Earlier this year, the Royal Australian Air Force (RAAF) took delivery of the first of 24 Boeing F/A-18F Block II Super Hornets, ordered in March 2007 as part of an ongoing programme to expand and upgrade the Australian Defence Force's (ADF's) combat aircraft fleet.

The remaining fleet is scheduled to be delivered to the RAAF by the end of 2011.

The multi-role F/A-18E/F marks the next generation of air defence capabilities for the RAAF. The aircraft is fitted with the Raytheon-built APG-79 Active Electronically Scanned Array (AESA) radar, and is capable of performing almost every mission in the tactical spectrum, including air superiority, day and night strike with precision guided weapons, fighter escort, close air support, maritime strike, reconnaissance, forward air control and tanker missions.

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*The first RAAF F/A-18F Super Hornet arrives in Australia © Boeing*

for the fleet. The aircraft is being purchased under a Foreign Military Sale with the US government, and a number of RAAF specific upgrades are being made to the fleet to meet capability requirements, including an avionics upgrade that will incorporate enhancements to improve situational awareness, and radar and electronic warfare capabilities that will enable air defence tasks to be performed more effectively. Specifically, the upgrade will include full colour displays, moving map capability, secure data link, Helmet Mounted Cueing system, counter-measures dispensing system, electronic counter-measures jammer, and new radar warning receivers. Structural modifications have also been made to the fleet, including the centre barrel replacement

# Aircraft:

## A regional report

Combat aircraft manufacturers are recognising the potential within the Asia-Pacific region as armed forces increase investment in their defence capabilities and demand for increasingly sophisticated platforms and weapons systems grows. The region is quickly becoming one of the biggest importers of military products in the world, as well as developing a healthy manufacturing market as various nations focus on establishing themselves as suppliers.

*by John Mulberry*



*Australian Super Hornets  
ferry across the Pacific to  
Australia © Boeing*

on selected aircraft.

The Super Hornet has been acquired by the ADF in order to replace the RAAF's ageing fleet of F-111s that are being retired from service throughout 2010. The F-111 has served as the backbone of the RAAF's strike capability for the past forty years, but the decision was taken to retire the fleet due to their increasing maintenance and operational costs. Originally it was hoped the F-111 would remain in service until the deployment of the Joint Strike Fighter 35 Lightning II (F-35), however the age of the F-111 fleet

*The Boeing F-15 is developing footholds in the Asia-Pacific market © Boeing*



and ongoing delays with the F-35 programme required an interim replacement for the F-111 fleet to be found; the RAAF signed the contract for the Super Hornets in 2007 to fulfil this role.

### Joint Strike Fighter

The F-35 has come under intense scrutiny from both the international media and defence analysts both of whom question the suitability of the aircraft for the RAAF's long-range strike requirements. Australia is one of eight countries that have invested in the development of the F-35, but with a number of key milestones failing to be met on agreed timescales, questions have been raised over



whether there are alternative off-the-shelf aircraft that would be a better match for the RAAF's requirements at a more palatable price.

Canberra looks determined to continue with the F-35 programme, and from what has emerged from the programme, the aircraft looks highly capable, with prime contractor Lockheed Martin calling the supersonic, highly agile fifth generation fighter the world's most advanced multirole aircraft, with very low observable stealth, unprecedented situational awareness, and unmatched lethality and survivability. Three variants of the aircraft are being produced, the F-35A conventional takeoff and landing, the F-35B short takeoff/vertical landing, and

*The Dassault Rafale is in contention for the IAF's MMRCA competition © US Navy*



the F-35C carrier variant.

### MMRCA

While the US Navy operates over 420 of the Super Hornet aircraft, the RAAF contract marked the first sale of the Super Hornet outside the US. Boeing has its sights set on the Asia Pacific region, with a number of countries within the area showing interest in the aircraft. The Indian Air Force (IAF) has short-listed the aircraft for its Medium Multi-Role Combat Aircraft (MMRCA) competition, along with the Lockheed Martin F-16IN, the MiG-35, the Dassault Rafale, the Eurofighter Typhoon, and the Saab Gripen.

The IAF's MMRCA competition is one of the most prominent combat aircraft programmes underway in the Asia-Pacific region. The programme, launched in 2001, is being carried out in order to bring the IAF's

squadron numbers up to target with the acquisition of 126 aircraft, and provide a stop-gap measure between the phasing out of the MiG-21 squadrons, and the completion of the Light Combat Aircraft (LCA) Tejas Mk2, being developed by the IAF in partnership with EADS. With the delivery of the Tejas looking increasingly unlikely before the second half of the decade, and with the introduction of the medium-heavy 4.5 generation Su-30 MKIs being carried out gradually, the

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*The F-35 Lightning II A-variant (CTOL) undergoes flight testing @ JSF.mil*

MMRCA competition is going to source a medium combat aircraft to ensure the airstrike capabilities of the IAF remain at sufficient levels during this period of transition and fleet integration.

Ongoing trouble with the MMRCA competition continues; over the last few weeks India's notoriously slow defence channels have thrown up delays with the programme, with vendors notified that they will need to rebid for the contract, following delays with flight trials and bid evaluations.

The aircraft in contention for the MMRCA competition represent the body of combat aircraft currently competing for contracts within the wider Asia-Pacific. While Dassault and Eurofighter have yet to achieve

a sale within the region, the increasing success of sophisticated western platforms, bar the Russian MiG-35s, reveal the extent to which requirements within the region are shifting. Against a backdrop of heavy investment in aerial defence by a number of nations, the level of technology being sought by operators as they seek to enhance their air strike and defence capabilities is steadily increasing.

That said, the Russian mainstays of the combat aircraft market remain prevalent amongst the Air Forces of many regional armed forces, with the Su-30 and MiG-35 increasingly replacing ageing Su-27, MiG-21, MiG-29 and MiG-27 fleets.

The Mikoyan MiG-35 has an advantage over other aircraft in the MMRCA competition due to its compatibility with the existing IAF fleet. The aircraft comes with enhanced weapons payload able to deliver up to 12,000 lbs of ordnance with high accuracy; and the Zhuk-AE AESA radar, able to track up to 30 targets within a range of up to

*Russian aircraft such as the MiG-35 are growing in popularity in the region © Russian Aircraft Corporation*

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160 km. Importantly, the MiG-35 also comes with full technology transfer - something Western manufacturers are more reluctant to deliver - which will inject highly desirable skills into the burgeoning Indian defence industry. The other focus of Russian technology in the region, the Sukhoi Su-30, has been ordered by both Malaysia and Indonesia in addition to the IAF fleet. India is upgrading its Su-30 fleet, 40 of which will be fitted with the Indian/Russian BrahMos missile, and plans to field an operational fleet of 280 units by 2015.

#### Gripen

Also seeing success within the region in the Saab Gripen, which is also being offered for the Indian MMRCA competition with a 'freedom of choice' full technological transfer. The aircraft, fitted with General

Electric's F414G engine and fully integrated avionic mission system, offers a light, agile multi-role combat aircraft capable of supercruise, enhanced range and endurance, increased payload and weapons carriage. The naval version of the aircraft is also under consideration for the Indian Navy's (IN's) future fighters contract, giving the added incentive of cross-fleet commonality, which may prove attractive to the Indian defence force.

The new generation Gripen has also been selected by the Royal Thai Air Force (RTAF) for its multi-role fighter requirement. A total of 12 aircraft have been ordered to replace the RTAF's fleet of F-5 B/E aircraft, along with two Saab Erieye Airborne Early Warning (AEW) aircraft, associated equipment and services. The RTAF selected the Gripen for its true multi-role/swing capability, sophisticated avionics and weapons, and new generation flight control and communications systems.

#### Boeing

Also developing a foothold in the Asia-Pacific market is the Boeing F-15. Singapore became the first country in the region to order the Boeing F-15SG multi-role fighter



when 12 were ordered in 2005 for the Republic of Singapore Air Force. This was followed with a further order in 2007, bringing the total to 24, with delivery scheduled to be complete by 2011. The Singapore order marked the F-15SG out as a continuing aircraft of significant capability, despite growing competition from Rafale and Typhoon. The F-15SG are fitted with Lockheed Martin navigation and targeting suite, including LANTRIN navigation pod with terrain following radar and forward-looking infrared, and Sniper XR EO/laser targeting pod, as well as the AAS-42 Tiger Eyes search and track system. The aircraft also features the Raytheon APG-63 (V) 3 AESA radar, and Israeli mission computer and electronic warfare system. The weapon suite includes AIM-9X Sidewinder, AIM-120C AMRAAM, JDAM GPS-guided bombs and the AGM-154 standoff weapon.

The latest F-15 product is the F-15 Silent Eagle, which is an upgraded and enhanced F-15 with the addition of stealth technologies. The aircraft features Raytheon AESA radar, digital flight control system, BAE's Digital Electronic Warfare System (DEWS), and redesigned conformal fuel tankers (CFTs) that allow for internal weapons carriage, and can be altered for optimum fuel capacity and external weapons carriage depending on mission specifics. Internally, the F-15SE will be capable of carrying air-to-air missiles such as the AIM-9 and AIM-20, and air-to-ground weapons including the Joint Direct Attack Munition (JDAM) and Small Diameter Bomb (SDB).

### Lockheed Martin

Lockheed Martin's F-22 Raptor is growing in demand amongst Air Forces within the region, due to the aircraft's high spec and performance sophistication. The fifth generation fighter is capable of conducting simultaneous air-to-air and air-to-ground combat missions with what Lockheed Martin calls 'near impunity'. The aircraft is the USAF's most prominent air-superiority multi-mission fighter with wide mission spectrum including intelligence, reconnaissance and electronic attack.

Within the Asia-Pacific region, a number of governments are believed to have shown interest in importing the F-22. Defence analysts have widely recommended the F-22 as a far superior and cost-effective alternative to the troubled Australian F-35 programme; and among others, Japan's ATD-X Shinshin



programme, to develop an indigenous stealth fighter has grown out of a frustration with US refusal to export their most advanced technologies, following repeated expressions of interest by Tokyo in the F-22 Raptor. Japan is now looking for foreign engines to incorporate into its prototype stealth fighter for the programme, and is understood to be studying the F-35, F-15E, as well as the Typhoon and F/A-18E/F.

The F-22 highlights the fact that US interests in the Asia-Pacific continue to be mixed. While emerging security threats in the region, including the build up of China, India

*The Su-30 equips several air forces in the region © DoD*

and North Korean military pushes the requirement for US allies to field sophisticated and capable aerial defences, the desire to retain a stronghold over its own technological property remains strong. However, the Asia-Pacific region is the fastest growing arms importer market in the world, and with military investment in the region increasing, Russian manufacturers, who are also willing to undertake technology transfer contracts, will only continue. **AMR**