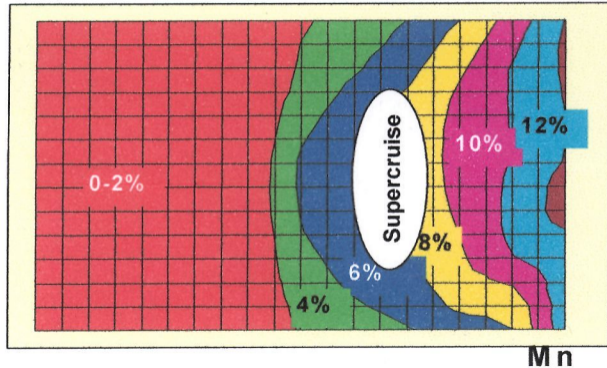


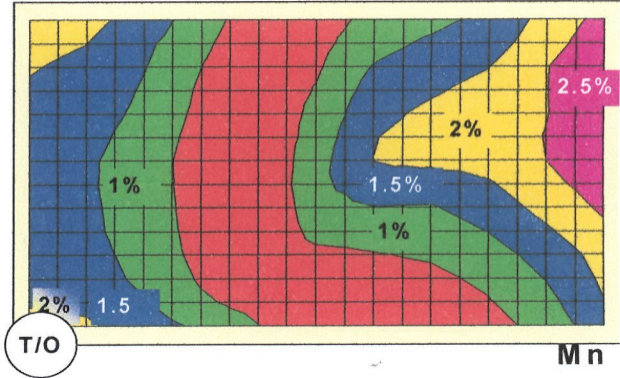


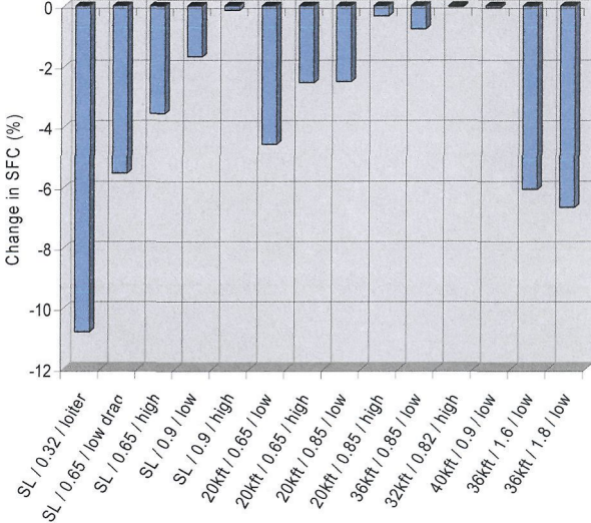
MAX DRY

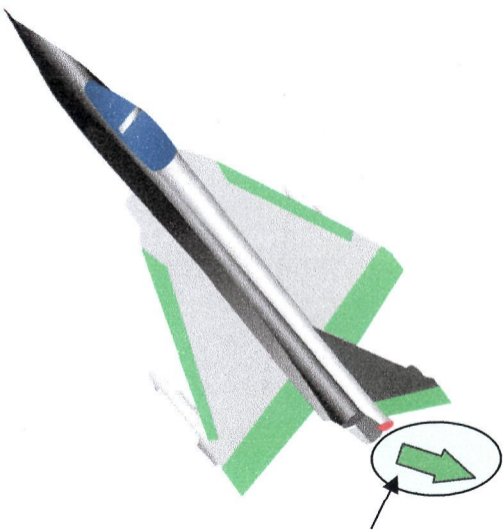
Altitud



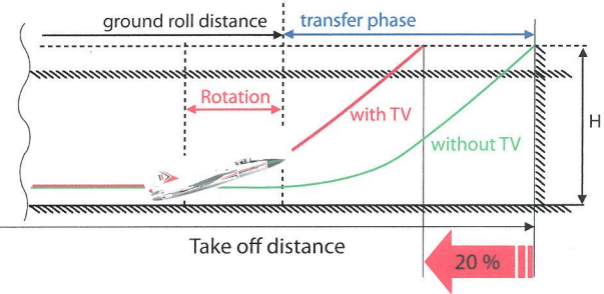
MAX REHEAT



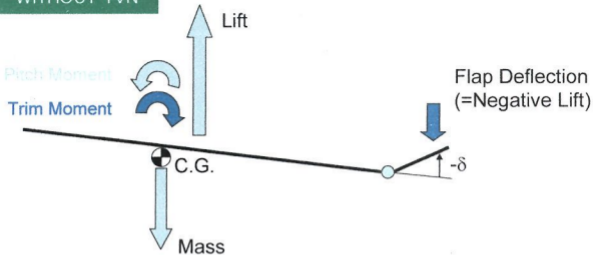




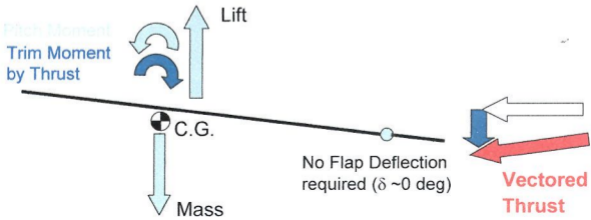
“Additional Control Device”

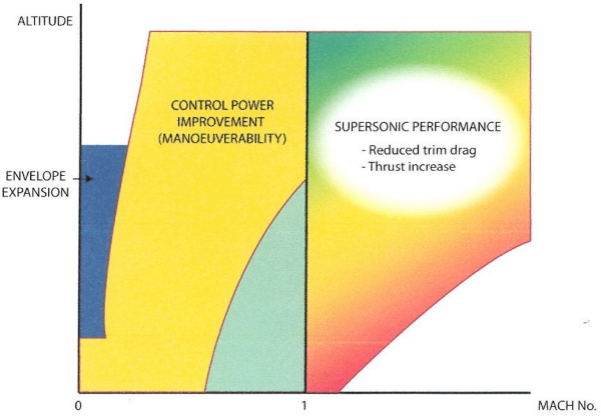


WITHOUT TVN



WITH TVN





Airframe

TVN Concept Confirmation

No FCS/TVN Integration

FCS SW with integrated TVN

Full FCS/TVN Integration

TVN Integration Concept Study

Manned Simulation

Initial TVN Flight Test (1 Nozzle only) with twin engine A/C

TVN Flight Test with Full Integrated FCS/TVN

FT Results

TVN Model

Delivery of bench/ATF qualified EJ200 with TVN

Updated TVN Model

EJ200 TVN for Bench/ATF Testing only

EJ200 with TVN for Flight Test

Initial FT Validation, TVN Model Update

Final TVN Validation

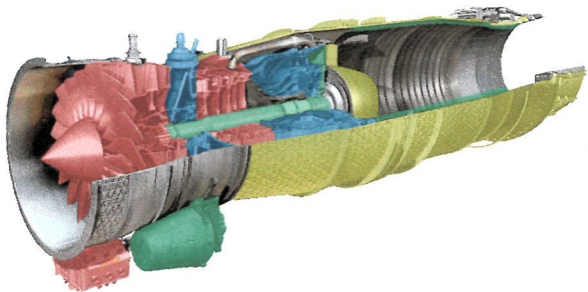
No TVN/FADEC Integration

Full TVN/FADEC Integration

Engine

Increased Integration Level

Stepped Approach = Low risk

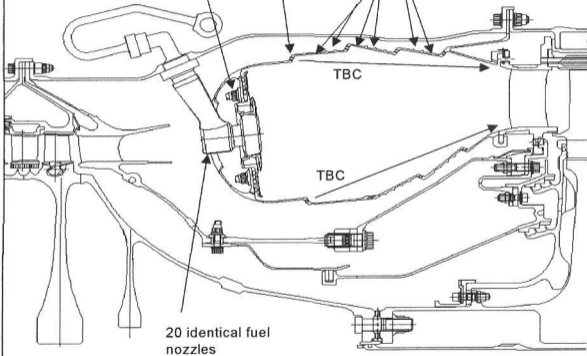


Typical mass flow	76 kg/s
Bypass ratio	0.4
Fan pressure ratio	4.2
Overall pressure ratio	26
Max Reheat thrust class	90 kN
Max dry thrust class	60 kN
Typical SFC Max Dry	22 g/kNs
Typical SFC Reheat	48 g/kNs

Box structure

Z cooling ring

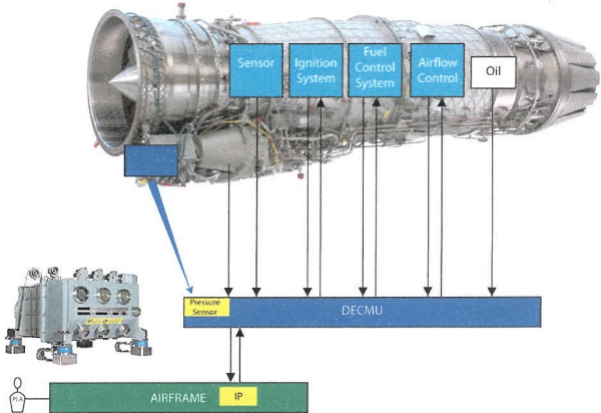
External cooling ribs

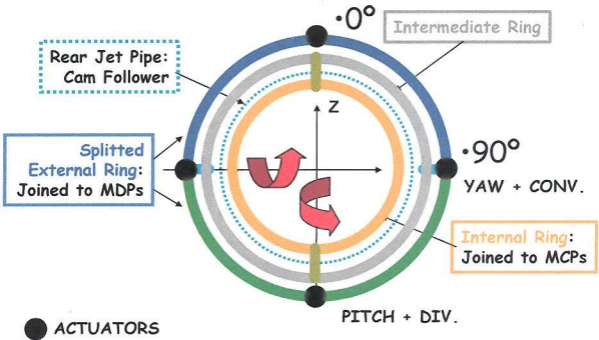


TBC

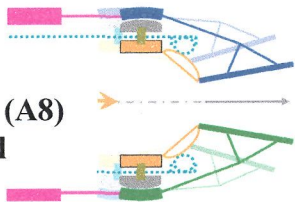
TBC

20 identical fuel
nozzles

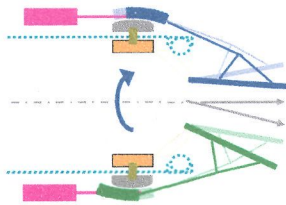




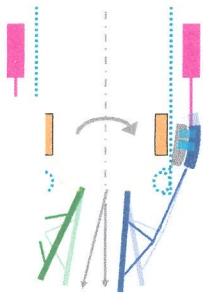
a)
Throat (A8)
Control



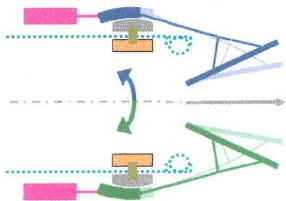
b)
Pitch Vectoring



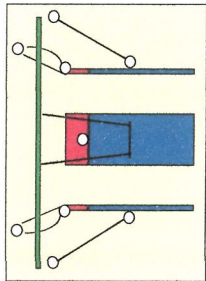
c)
Yaw
Vectoring



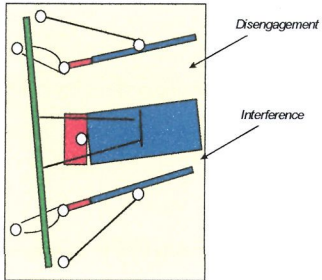
d)
A9/A8 Control



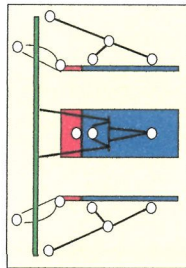
SIMPLE REACTION STRUTS



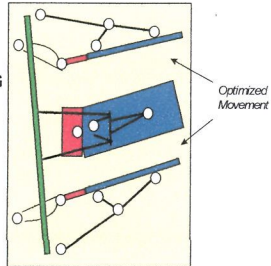
VECTORIZING



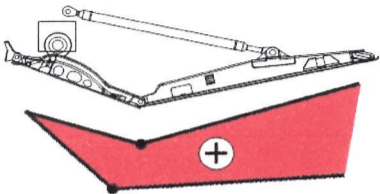
HINGED REACTION STRUTS



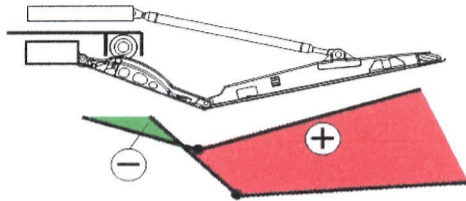
VECTORIZING



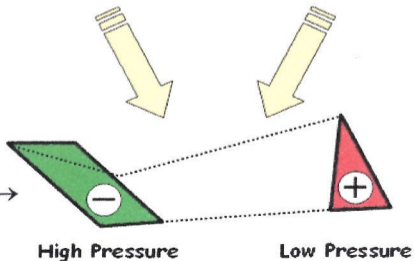
without Balance Beam



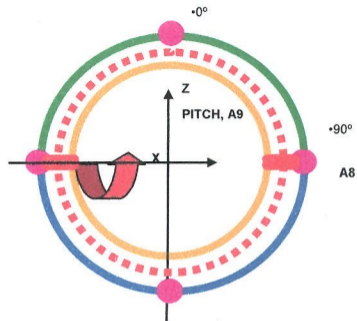
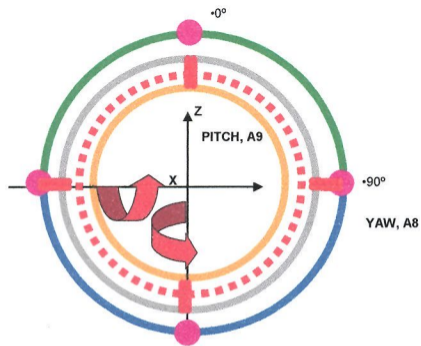
with Balance Beam



Delta Work →



**-15%/25% Lower actuator loads.
- Nozzle self-closing if hydraulic
loss occurs**



- 3-Ring system
- A8, A9, Pitch, Yaw
- 4 actuators
- Suitable for applications where Post-Stall and conventional performance are both equally important

- Simplified 2-Ring
- A8, A9, Pitch
- 4 actuators
- Suitable for applications without Post-Stall