

Test Class

```
theWing.calculateFormFactor(theWing.getAerodynamics().calculateCompressibility(
    theOperatingConditions.get_machCurrent());
double cD0WingPolar= theWing.getAerodynamics().calculateCd0Parasite();

double oswaldFactor = aircraft.get_theAerodynamics().calculateOswald(
theOperatingConditions.get_machCurrent(), MethodEnum.HOWE);
System.out.println("oswald factor " + oswaldFactor);

cD0WingPolarArray = new double [alphaStabilityArray.size()];
cDiWingPolarArray = new double [alphaStabilityArray.size()];
cDWaweWingPolarArray = new double [alphaStabilityArray.size()];
cDWingPolarArray = new double [alphaStabilityArray.size()];

for (int i=0; i<alphaStabilityArray.size(); i++){
double cLLocal = theCLWingCalculator.nasaBlackwellAlphaBody(
    Amount.valueOf(Math.toRadians (alphaStabilityArray.get(i)), SI.RADIAN));
cD0WingPolarArray[i] = cD0WingPolar;
cDiWingPolarArray[i] = (Math.pow(cLLocal, 2))/(Math.PI * theWing.get_aspectRatio() * oswaldFactor);
cDWaweWingPolarArray[i] = theWing.getAerodynamics().getCalculateCdWaveDrag()
    .lockKorn(cLLocal, theOperatingConditions.get_machCurrent());

cDWingPolarArray[i] = cD0WingPolar + cDiWingPolarArray[i] + cDWaweWingPolarArray[i];
}
```

LSAerodynamicManager

CalculateCD0Parassite

This method calculates the CD0 for a lifting surface

$$CD_0 = C_{fe} \left(\frac{S_{wet}}{S} \right)$$

$$\frac{CL^2}{\pi Re}$$