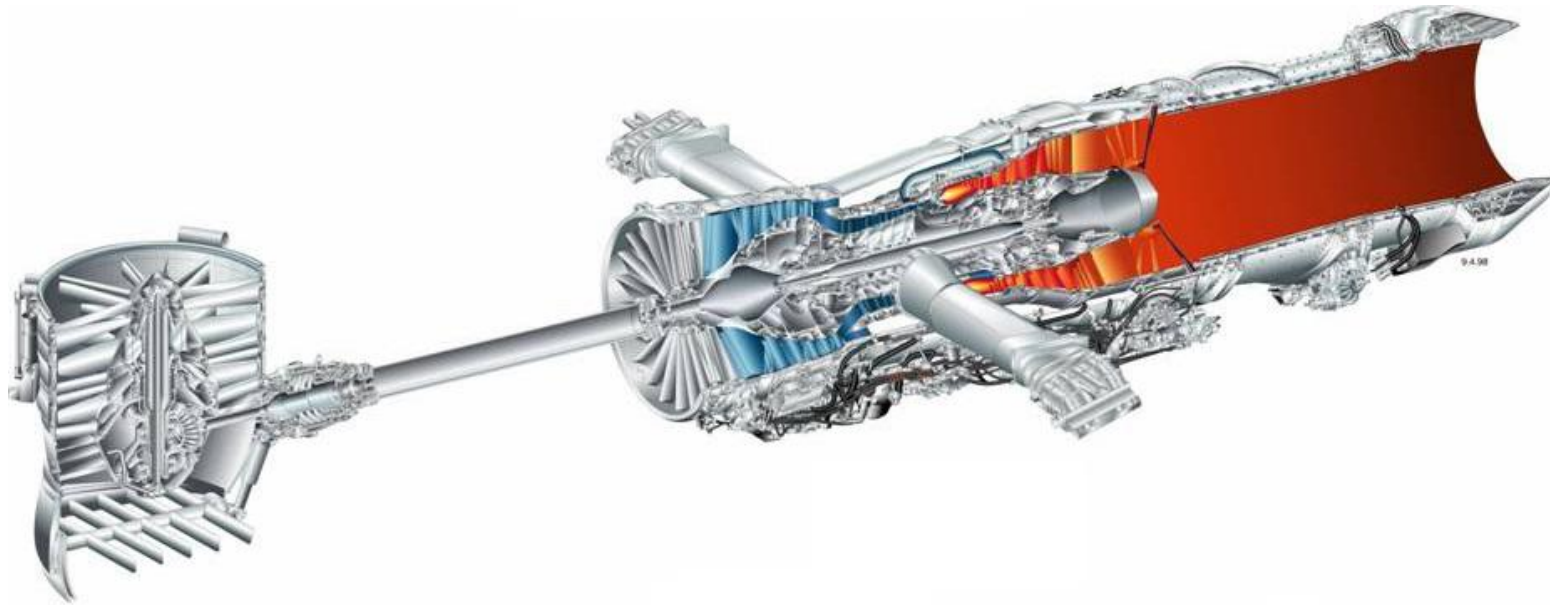


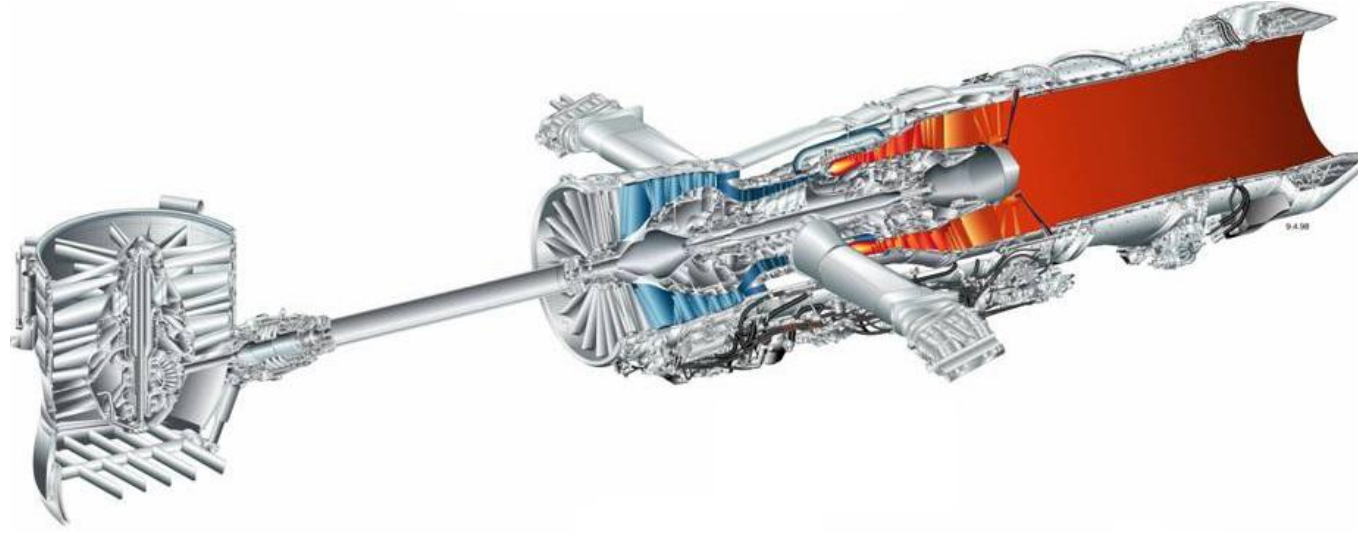
Matteo De Luca Picione N35004144
Antonio Di Mauro N35004105

3 BEARING SWIVEL MODULE

del
Motore Pratt & Whitney F135-PW-600



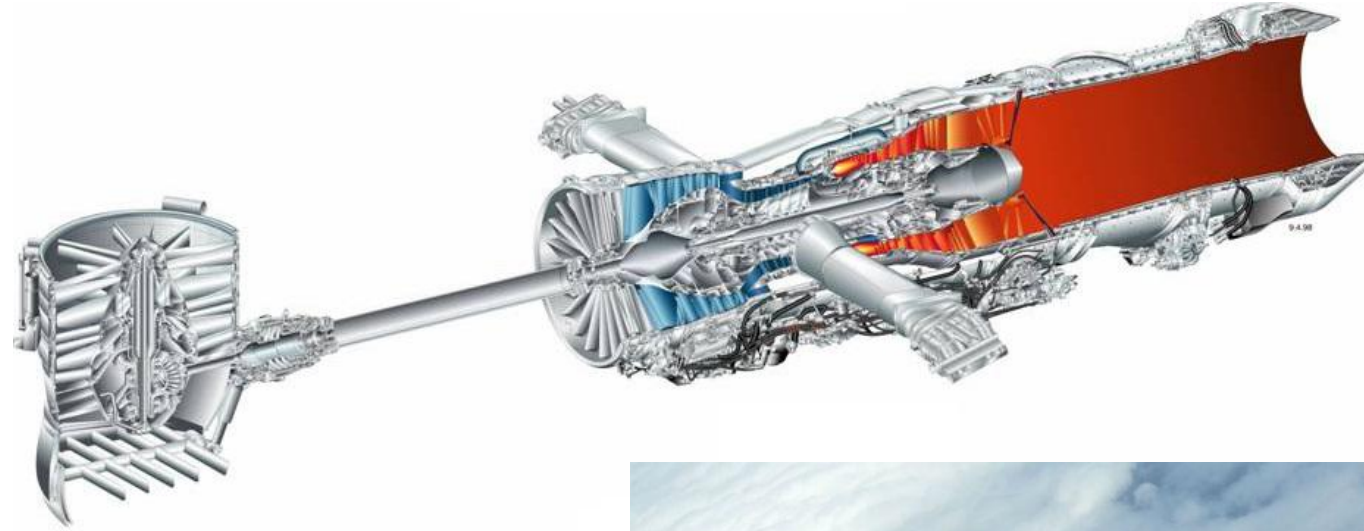
Motore Pratt & Whitney F135-PW-600



Evoluzione del segretissimo F119 ➡ Impiegato nell'F22-Raptor



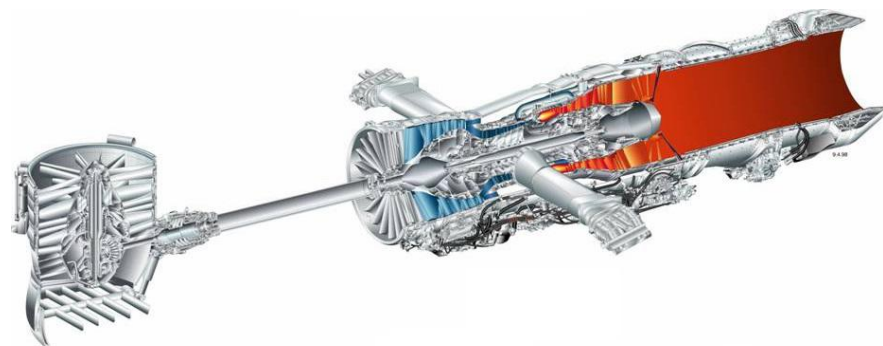
Motore Pratt & Whitney F135-PW-600



**Attualmente impiegato
nell'F35 Lightning II**



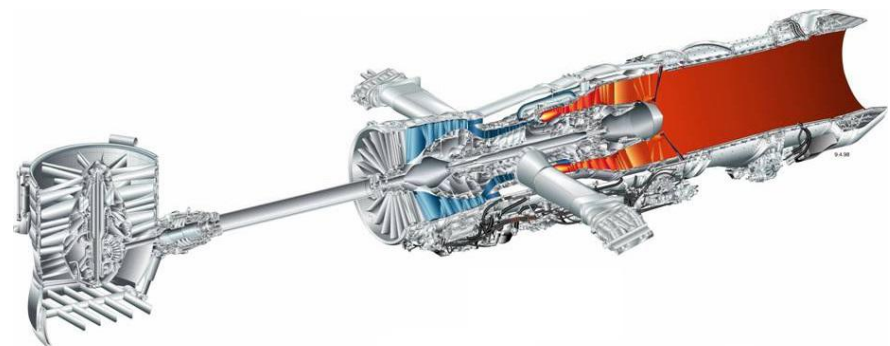
Motore Pratt & Whitney F135-PW-600



Specifiche Tecniche

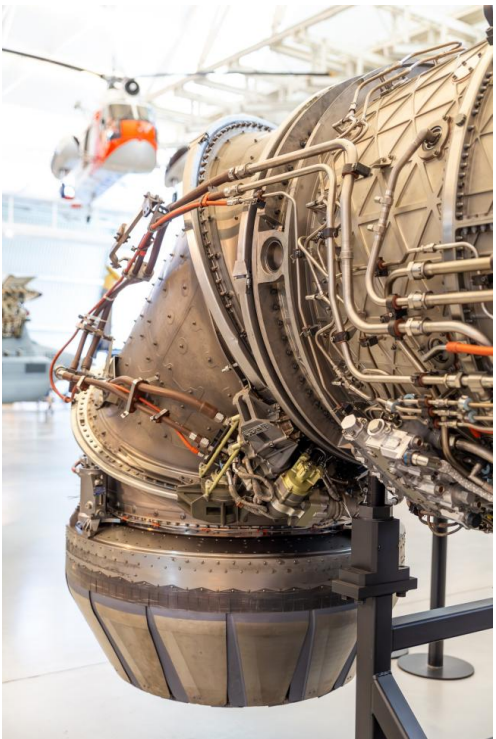
Maximum Thrust Class	41,000 lbs
Intermediate Thrust Class	27,000 lbs
Short Takeoff Thrust Class	40,740 lbs
Hover Thrust Class	40,650 lbs
Length	369 in
Inlet Diameter	Main Engine: 43 in Lift fan: 51 in
Maximum Diameter	Main Engine: 46 in Lift fan: 53 in

Motore Pratt & Whitney F135-PW-600



Specifiche Tecniche

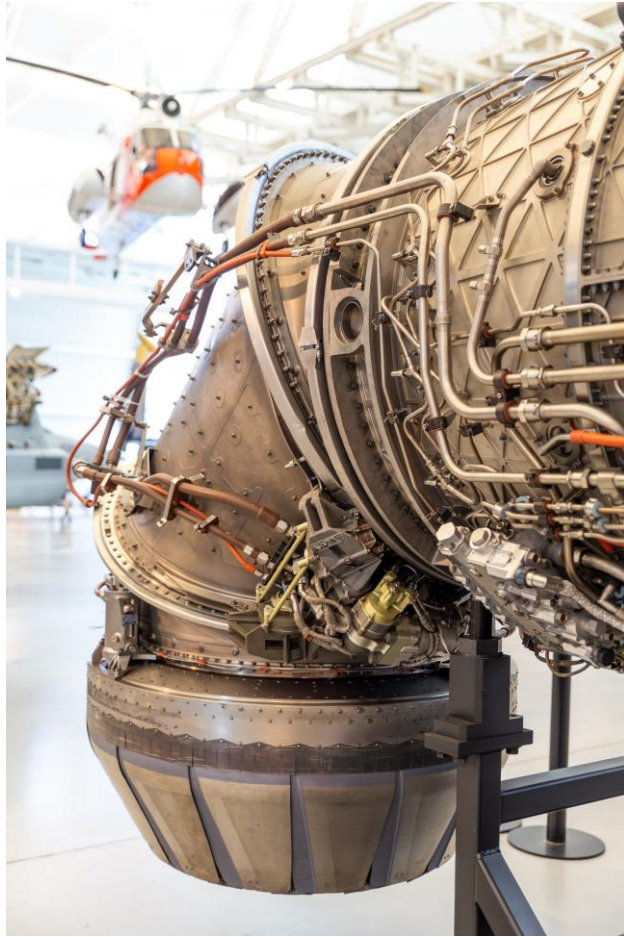
Maximum Thrust Class	41,000 lbs
Intermediate Thrust Class	27,000 lbs
Short Takeoff Thrust Class	40,740 lbs
Hover Thrust Class	40,650 lbs
Length	369 in
Inlet Diameter	Main Engine: 43 in Lift fan: 51 in
Maximum Diameter	Main Engine: 46 in Lift fan: 53 in



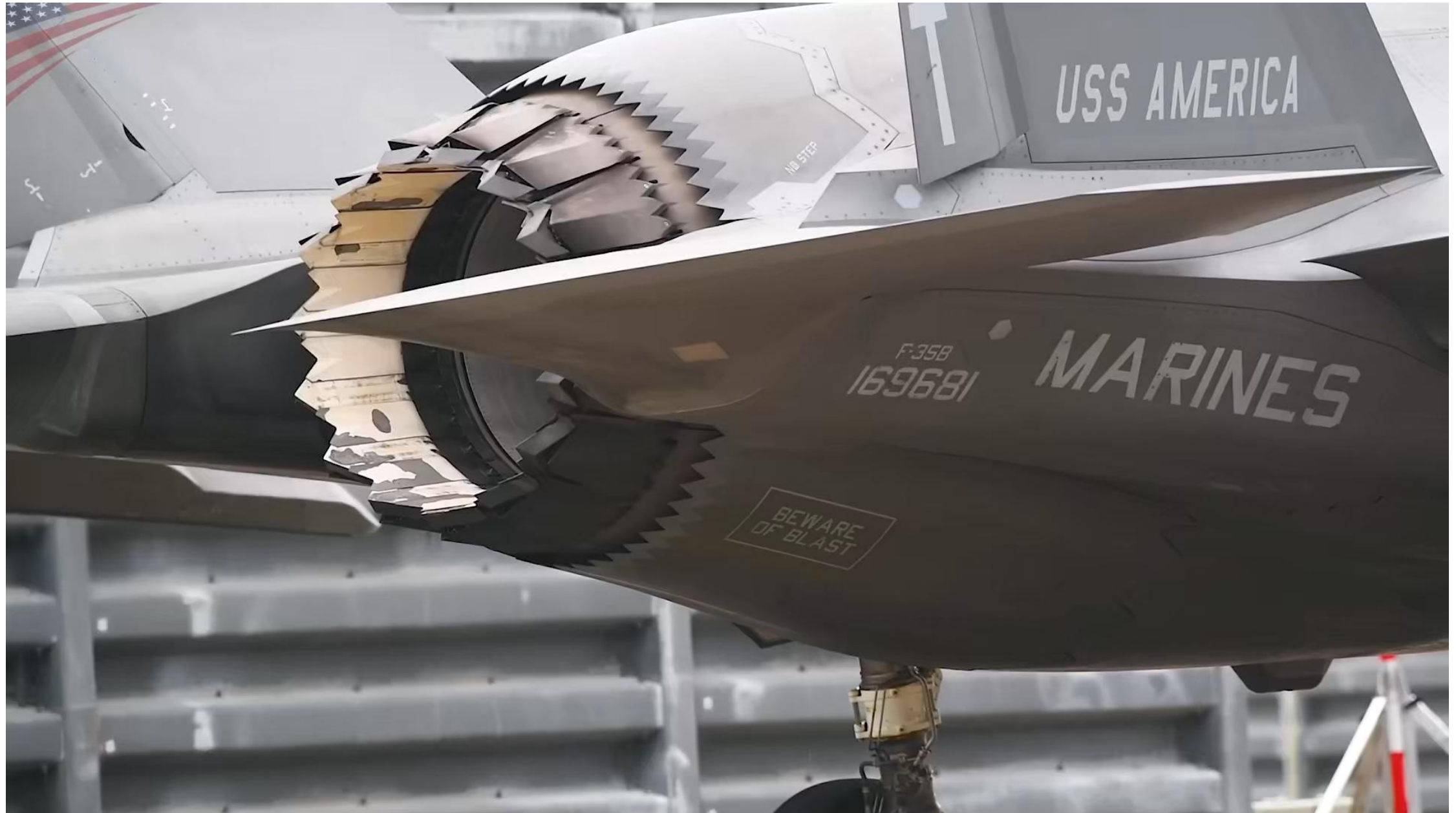
3 Bearing Swivel Module

Posto prima del Nozzle

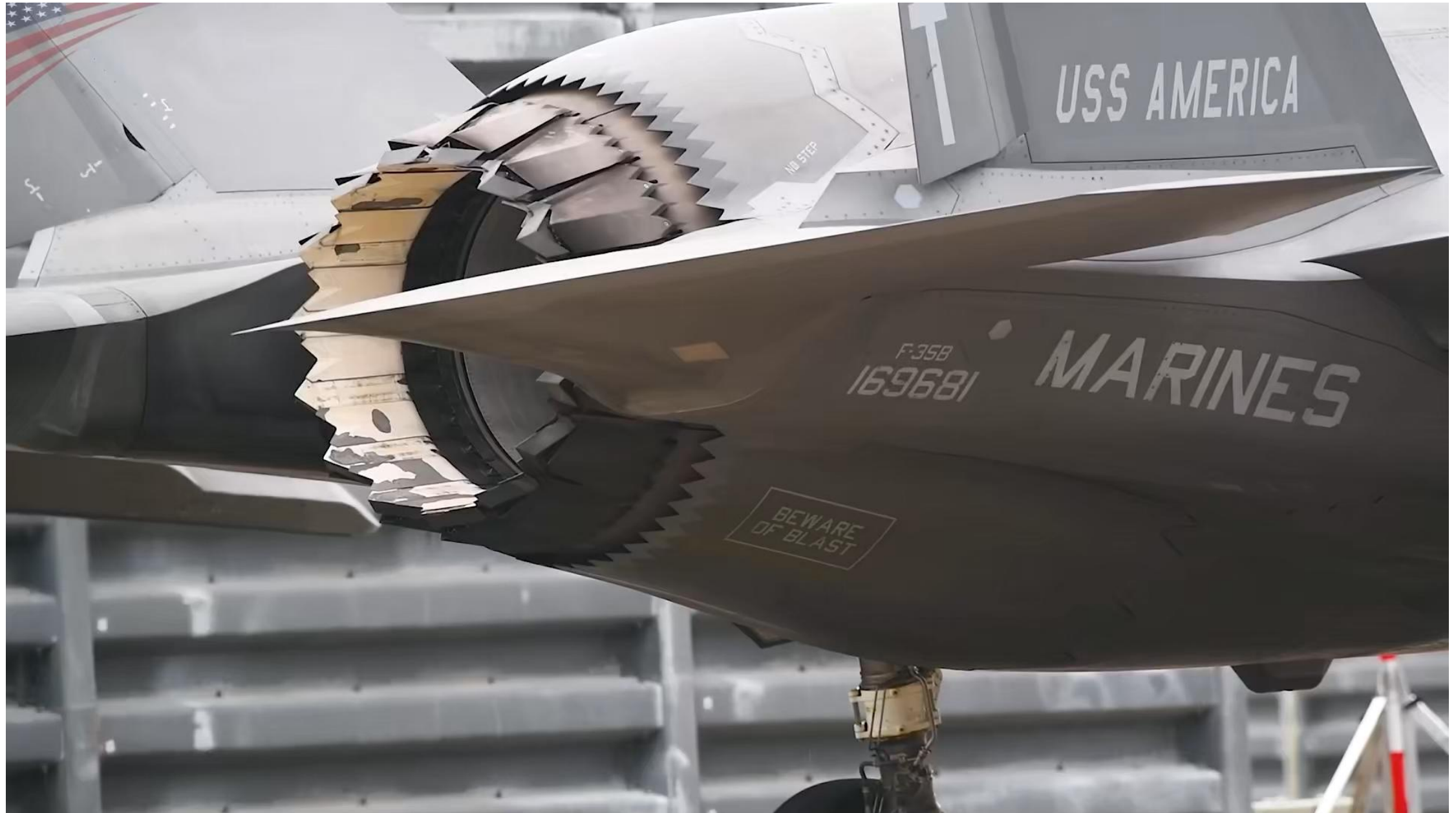
3 Bearing Swivel Module



3 Bearing Swivel Module



3 Bearing Swivel Module



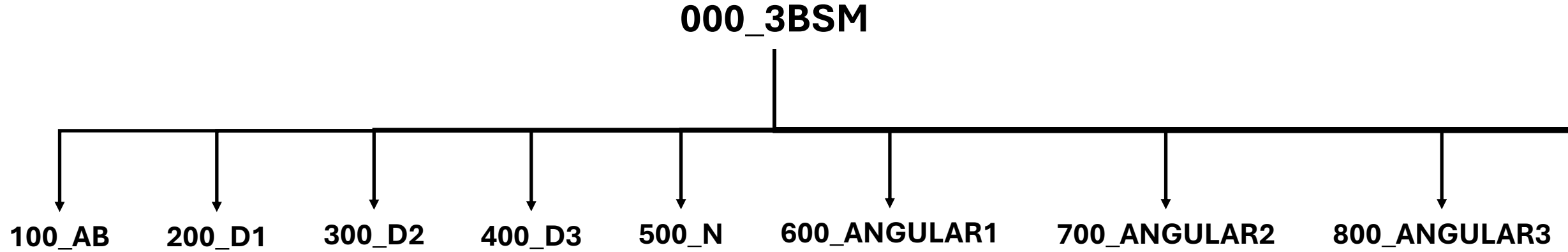
3 Bearing Swivel Module



3 Bearing Swivel Module

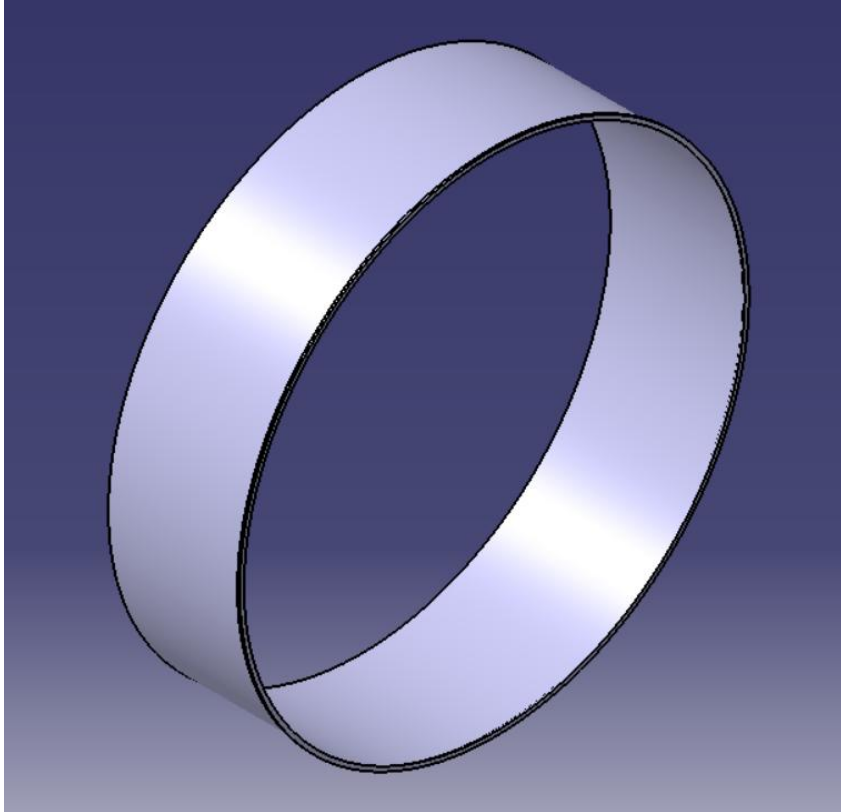


STRUTTURA DI PRODOTTO

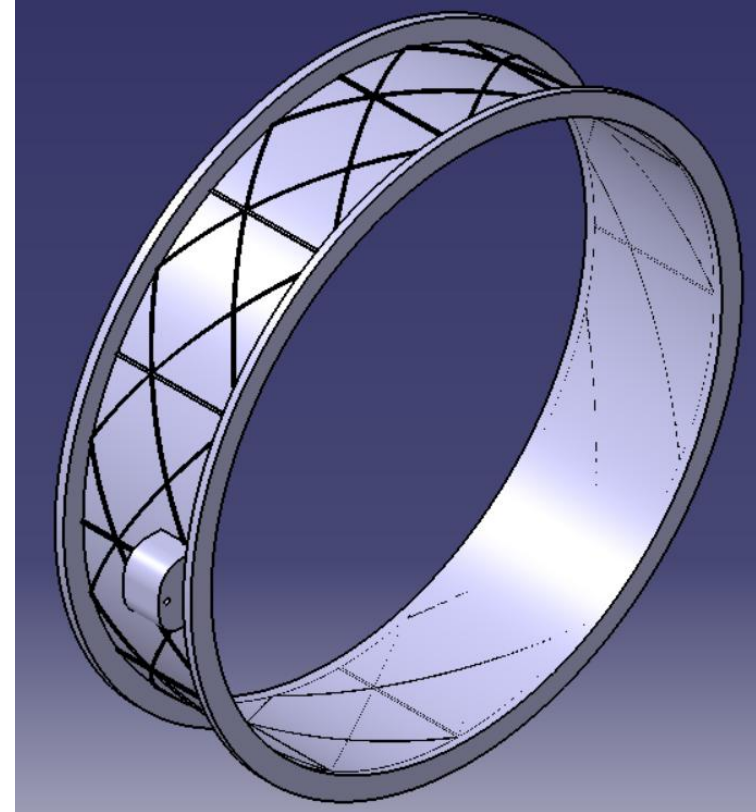


100_AB

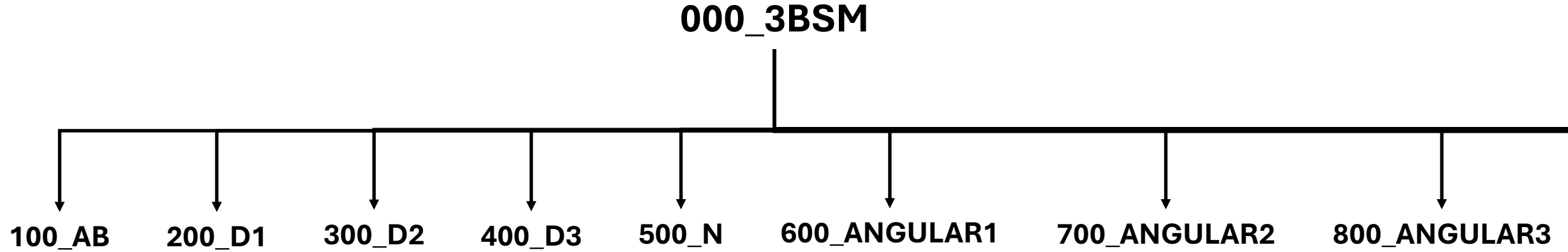
101_ABHOT



102_ABCOLD



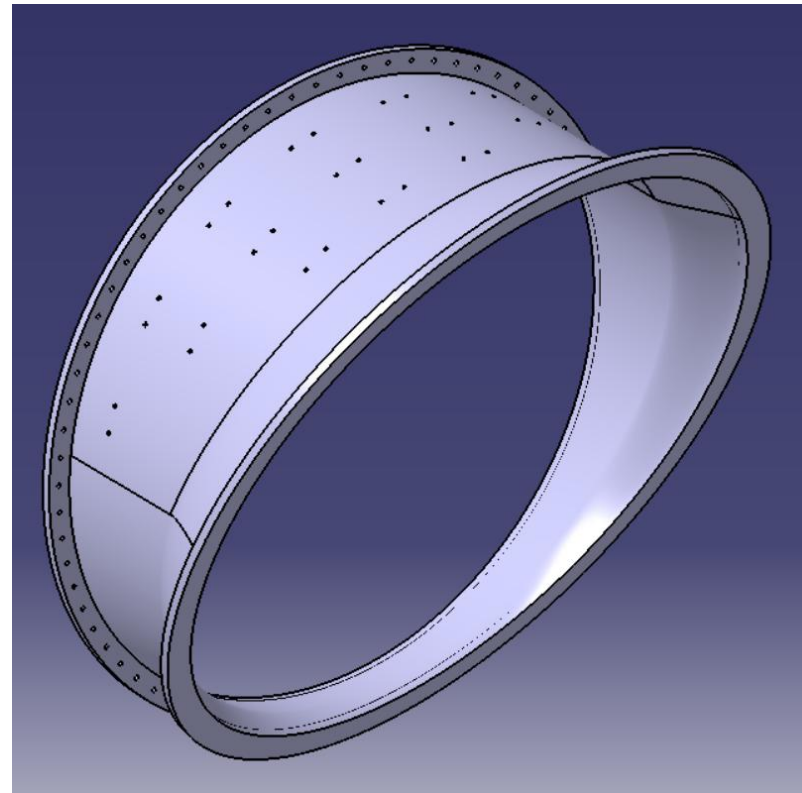
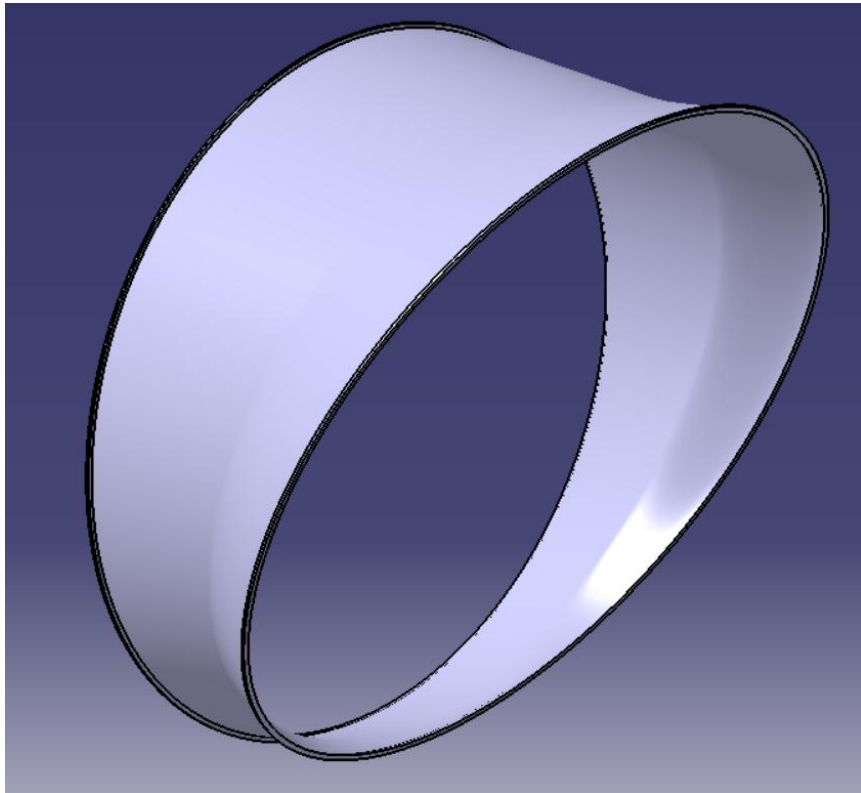
STRUTTURA DI PRODOTTO



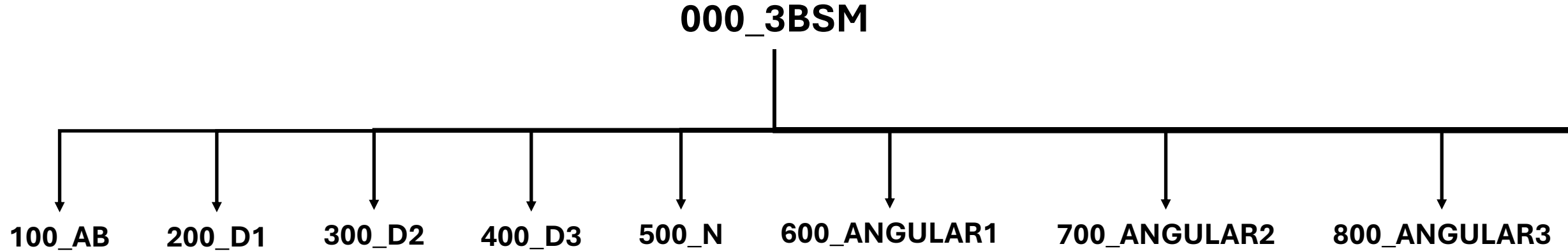
200_D1

201_D1HOT

202_D1COLD



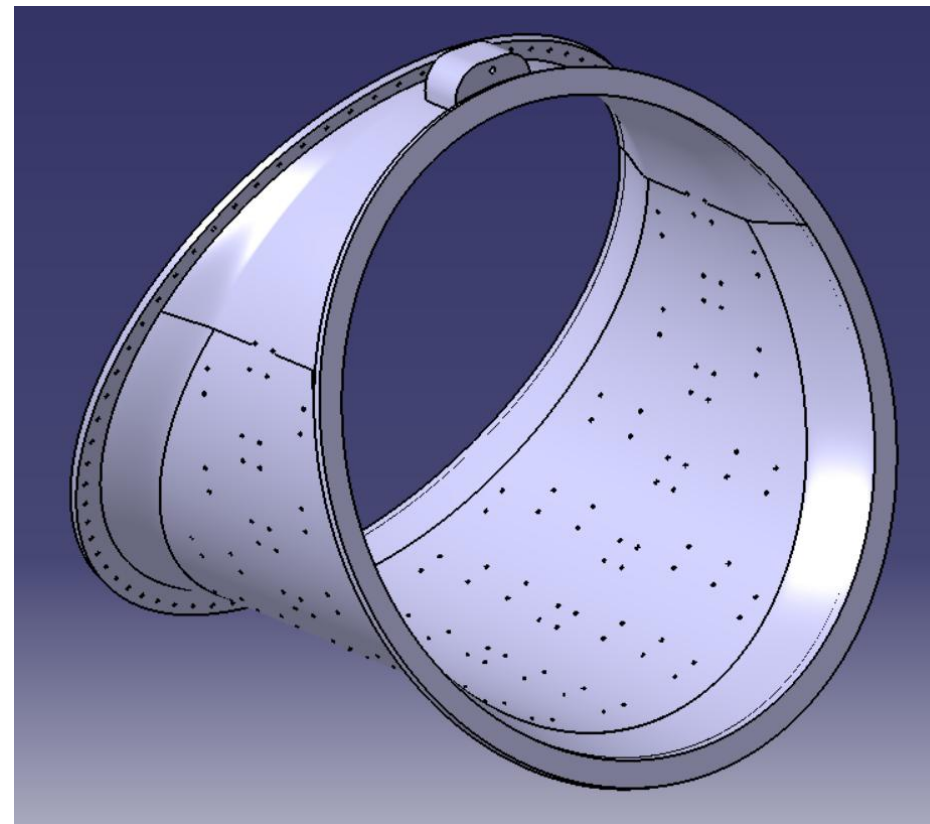
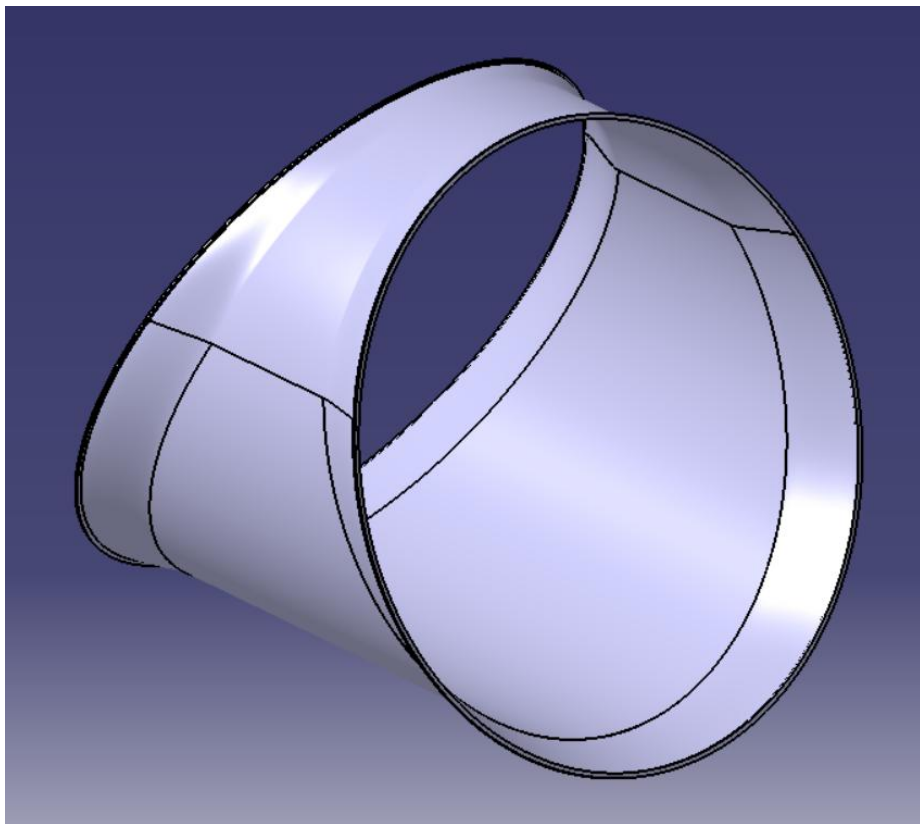
STRUTTURA DI PRODOTTO



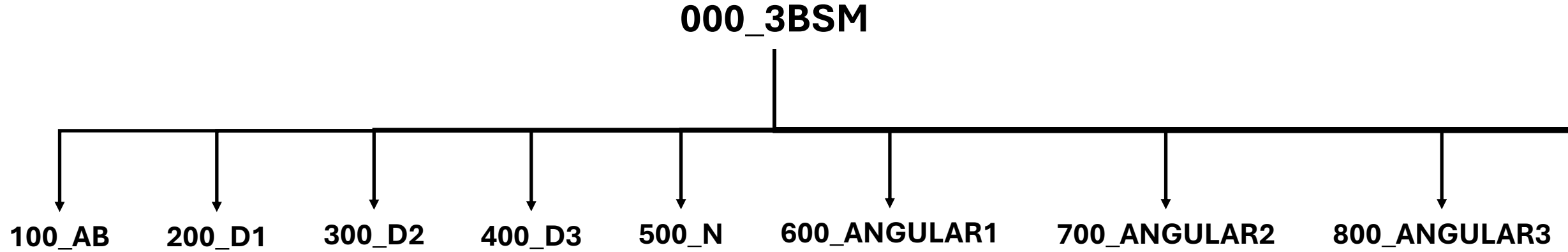
300_D2

301_D2HOT

302_D2COLD

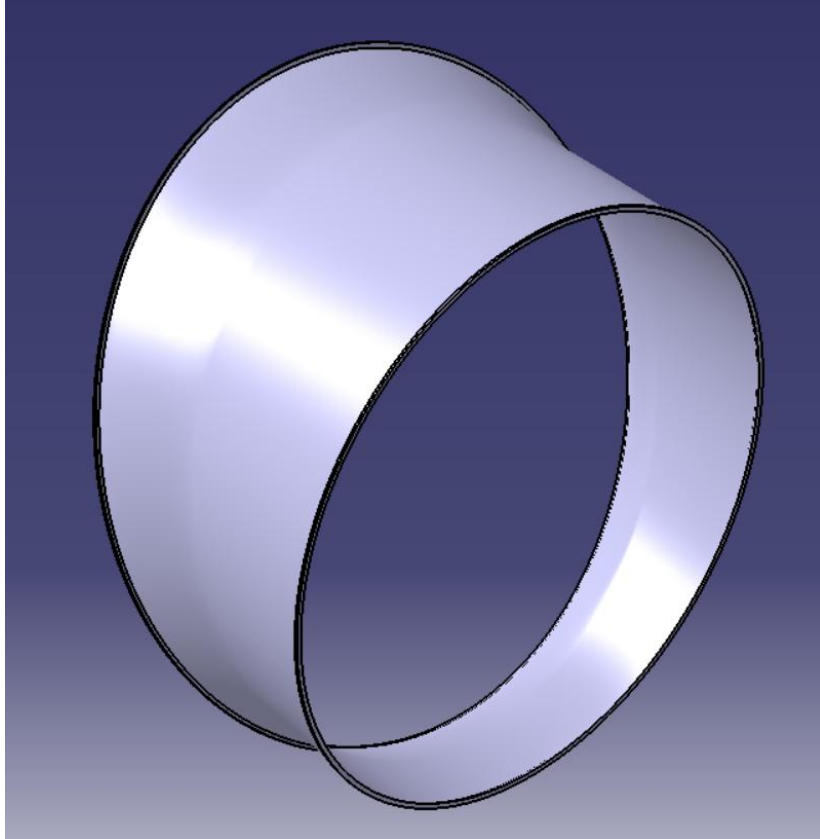


STRUTTURA DI PRODOTTO

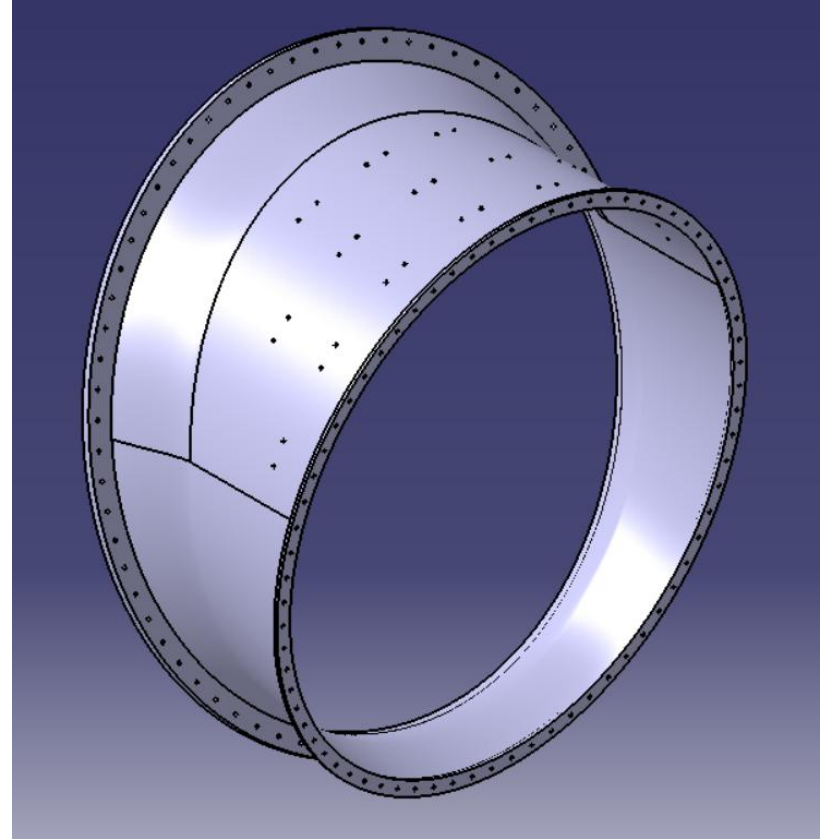


400_D3

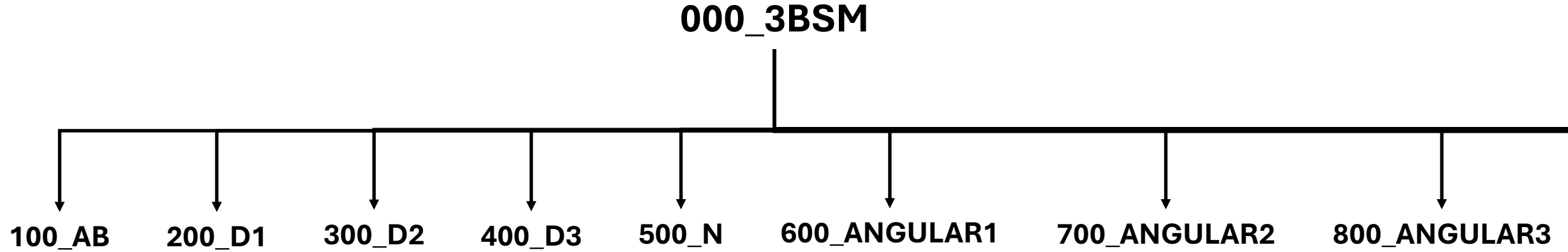
401_D3HOT



402_D3COLD



STRUTTURA DI PRODOTTO

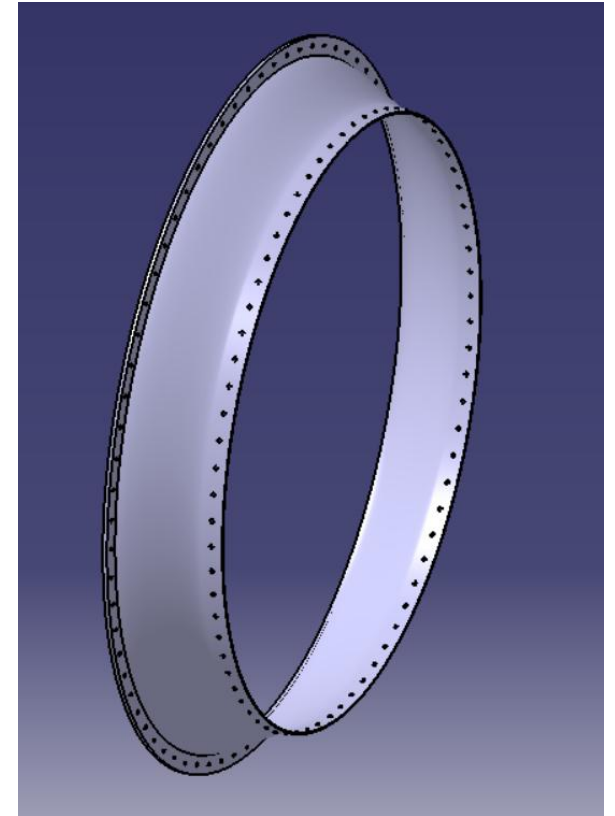
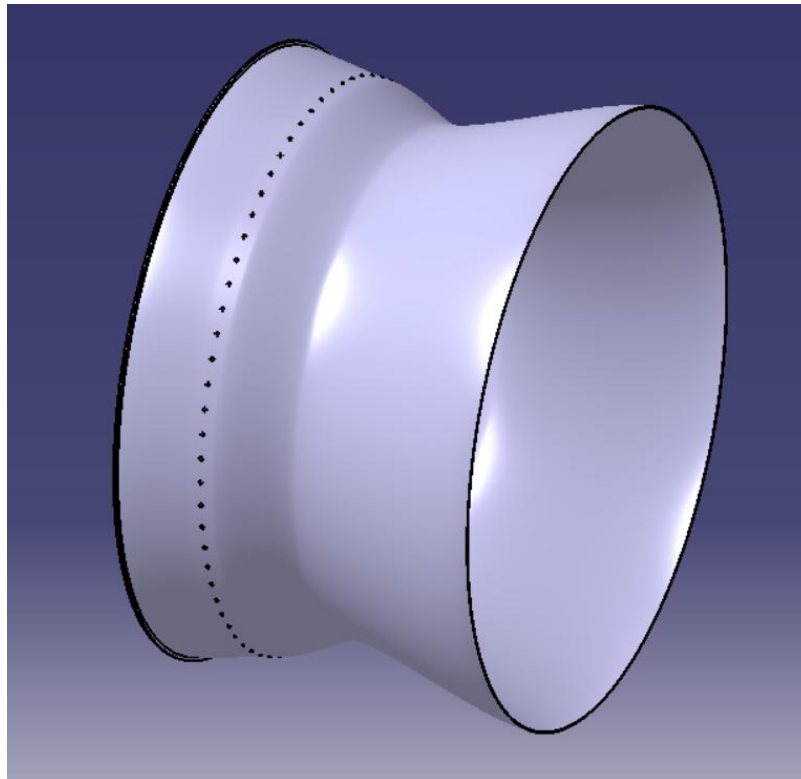
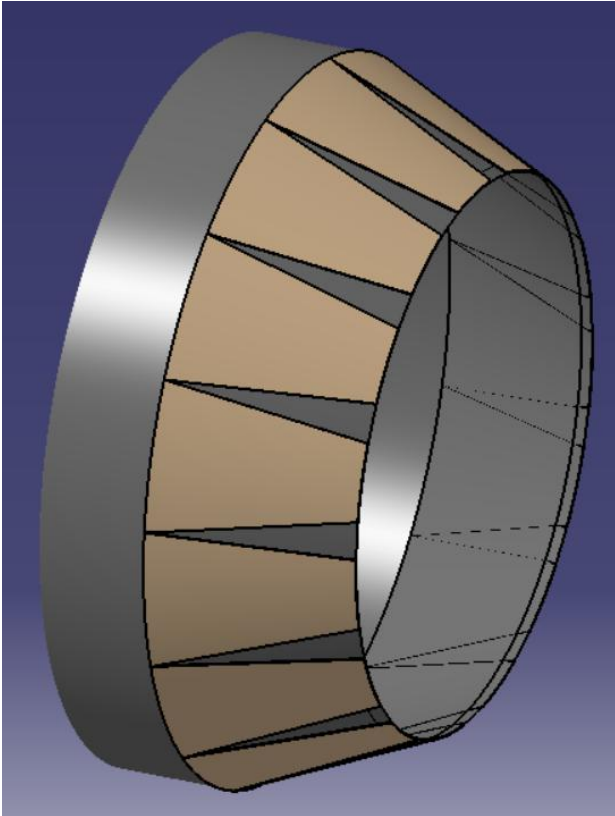


500_N

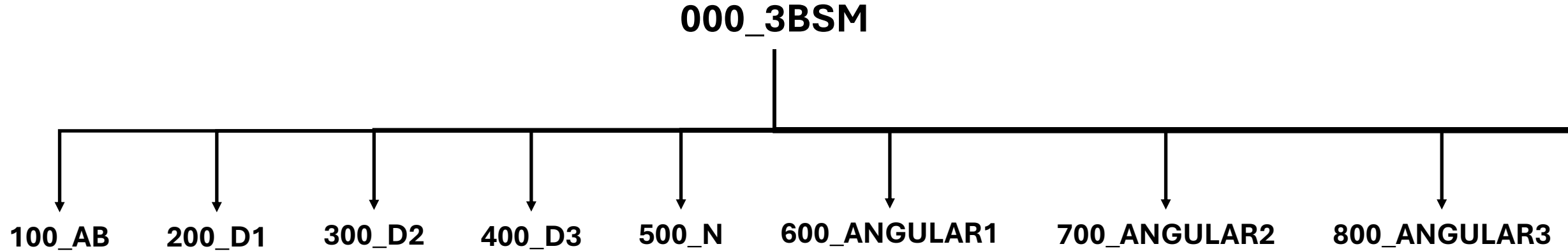
501_EXT

502_INT

503_JUNCTION



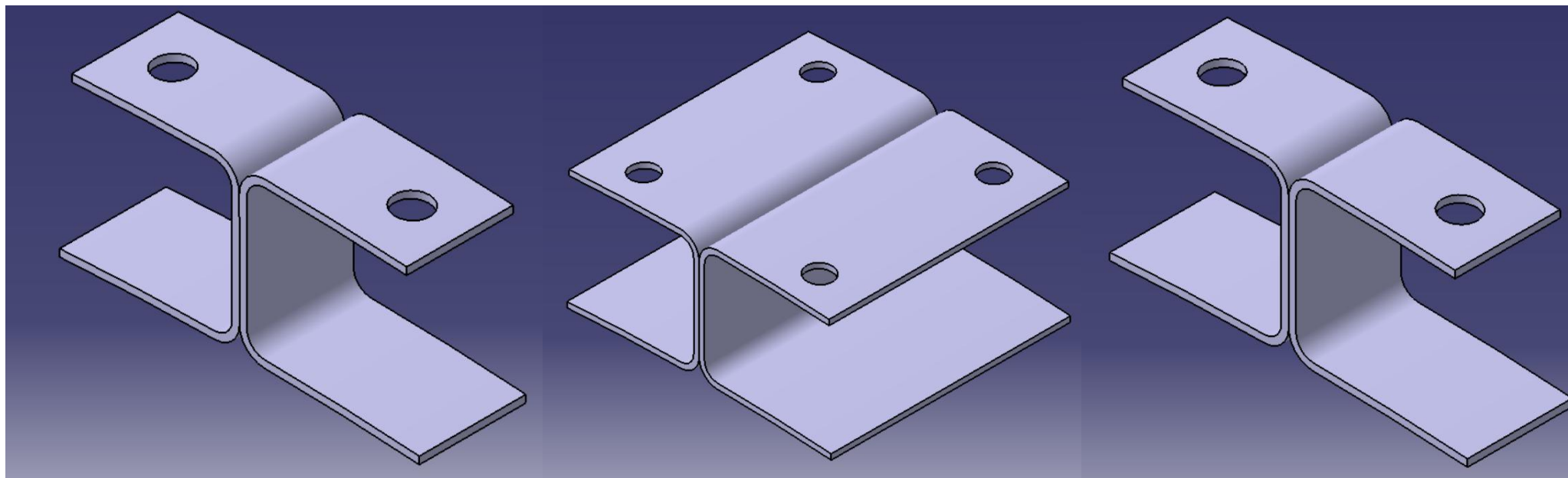
STRUTTURA DI PRODOTTO



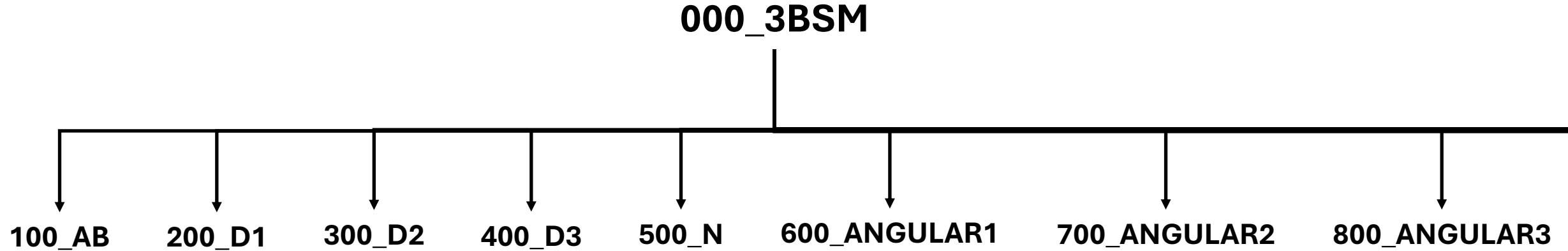
600_ANGULAR1

700_ANGULAR2

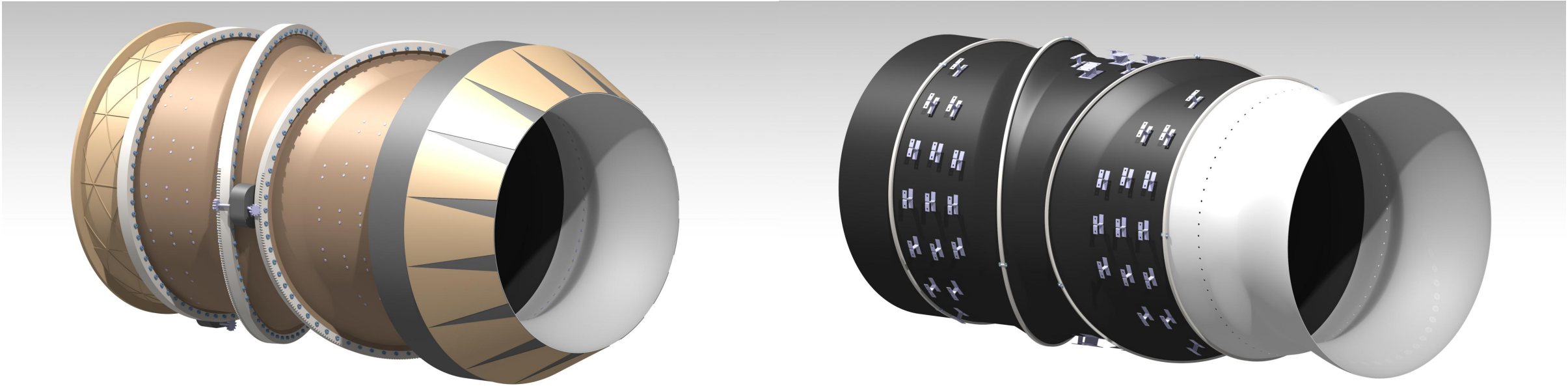
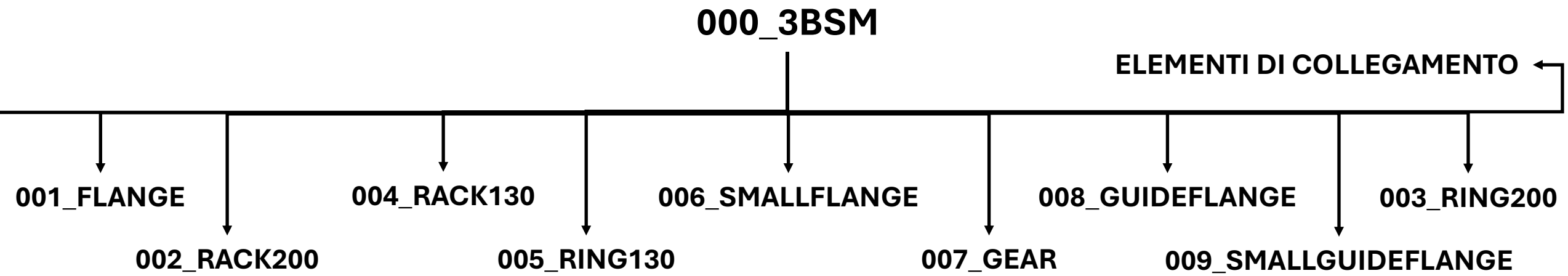
800_ANGULAR3



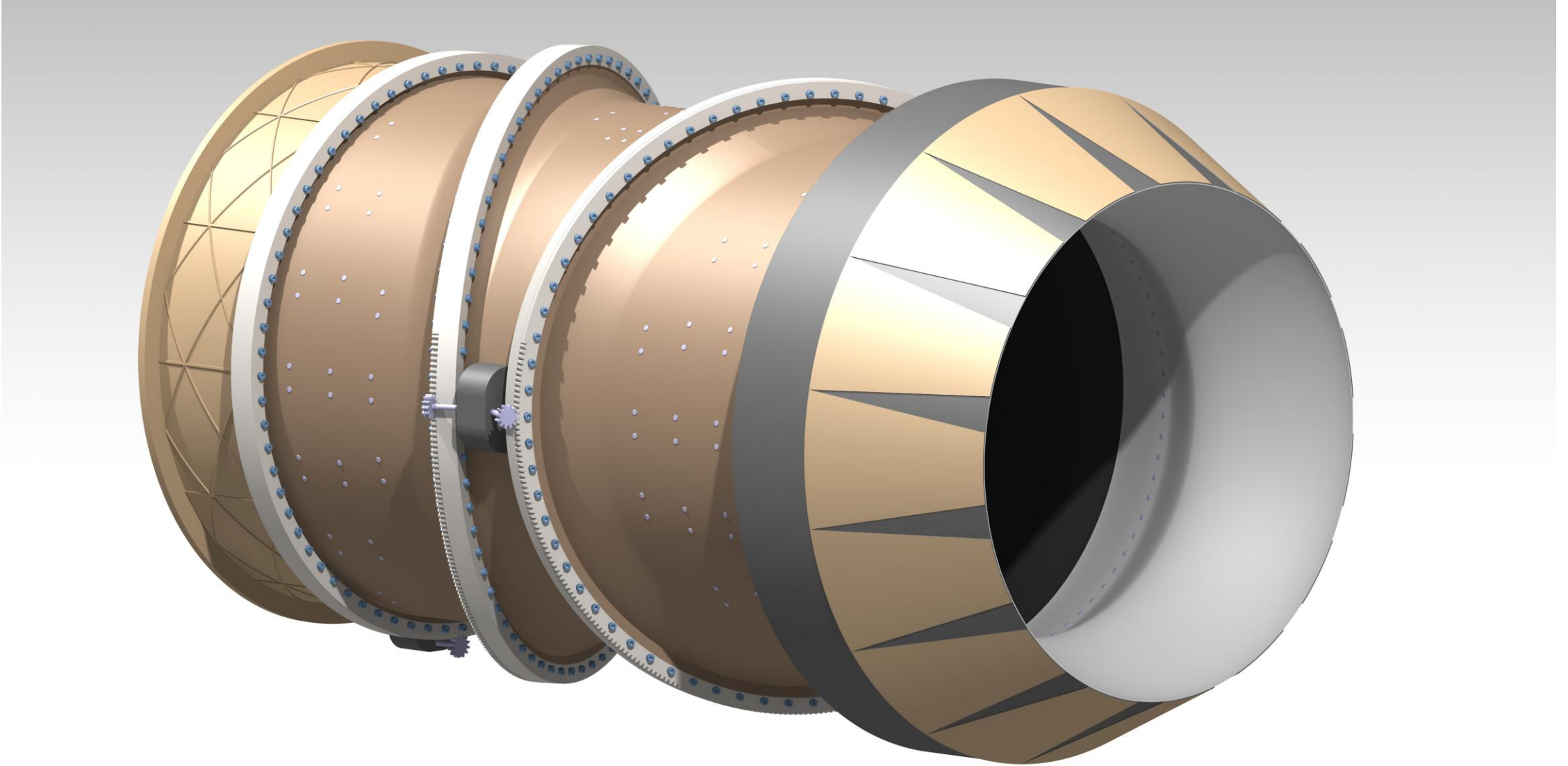
STRUTTURA DI PRODOTTO



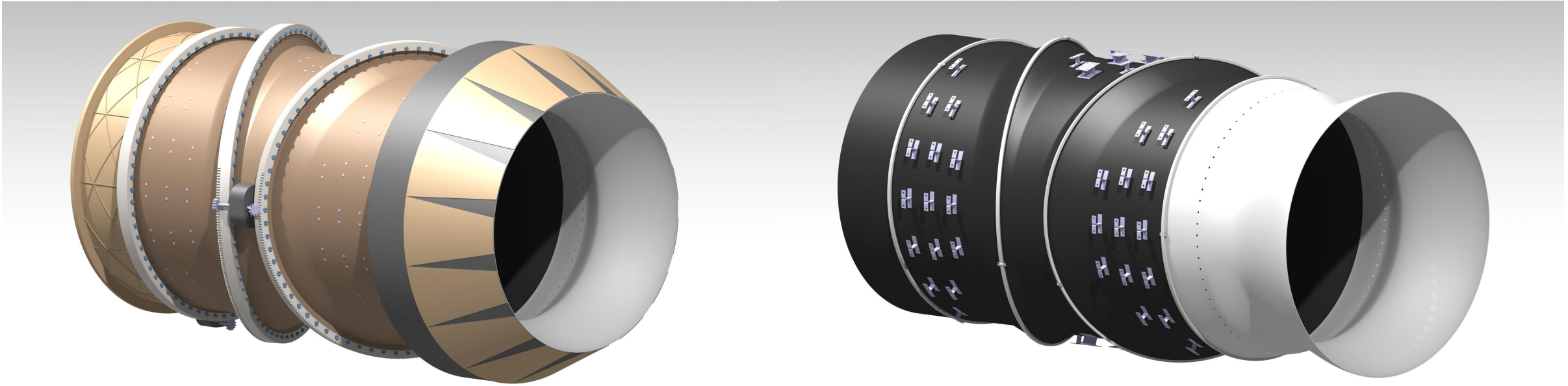
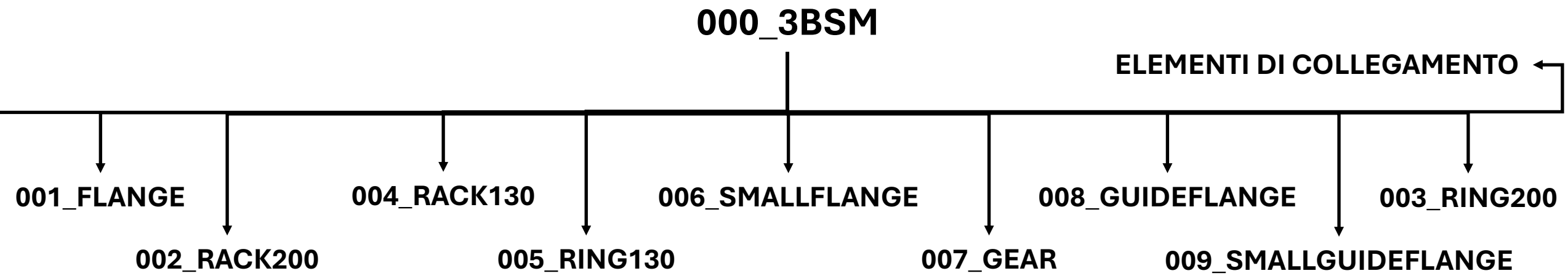
STRUTTURA DI PRODOTTO



001_FLANGE
002_RACK200
004_RACK130
005_RING130
006_SMALLFLANGE
007_GEAR
008_GUIDEFLANGE
009_SMALLGUIDEFLANGE
003_RING200



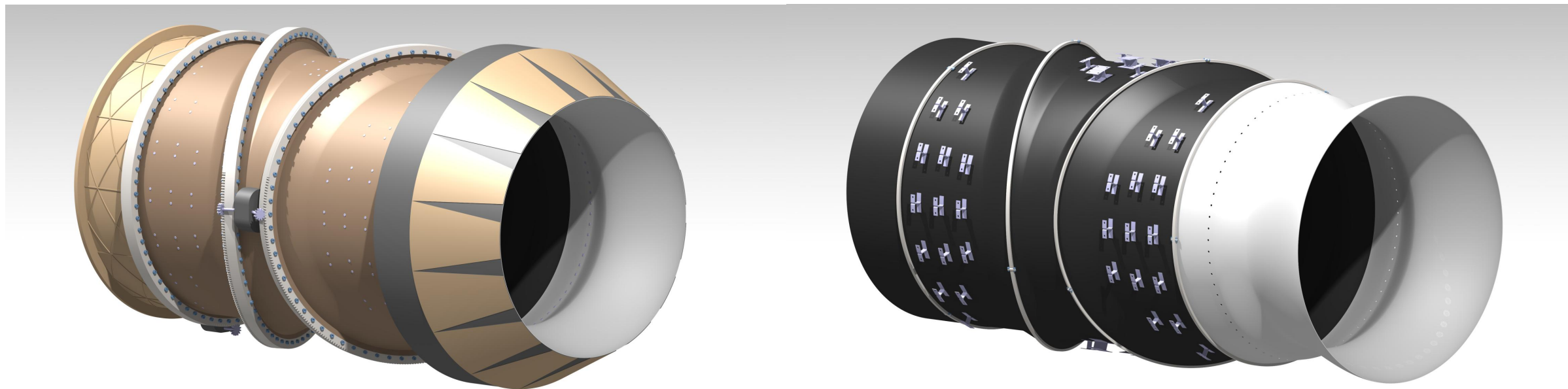
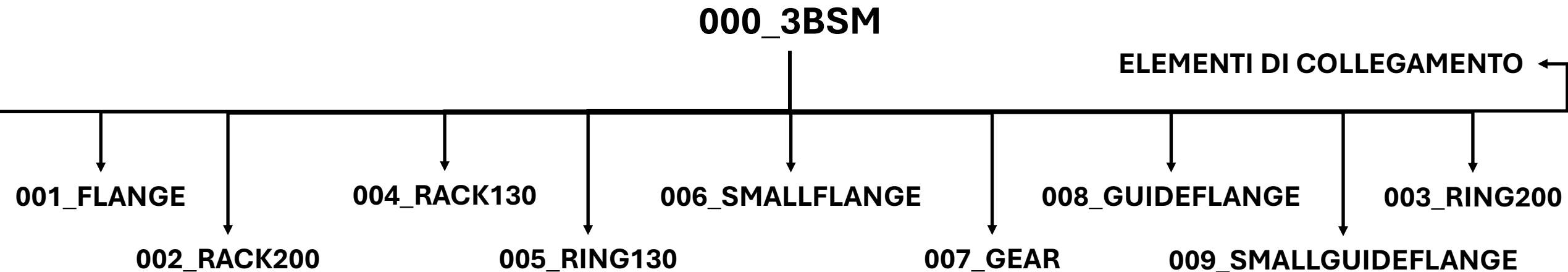
STRUTTURA DI PRODOTTO



001_FLANGE
002_RACK200
004_RACK130
005_RING130
006_SMALLFLANGE
007_GEAR
008_GUIDEFLANGE
009_SMALLGUIDEFLANGE
003_RING200

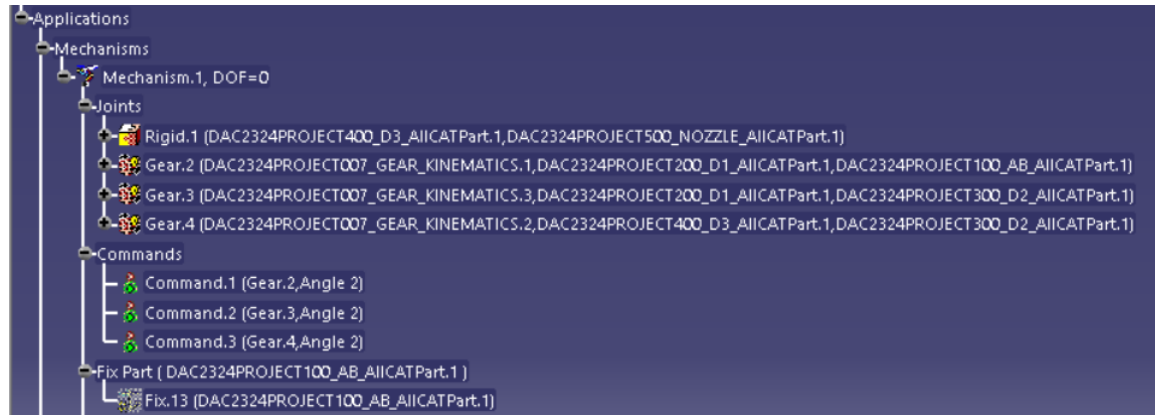


STRUTTURA DI PRODOTTO

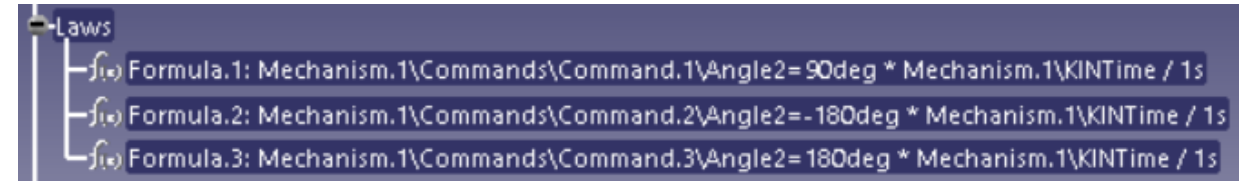


ANALISI CINEMATICA

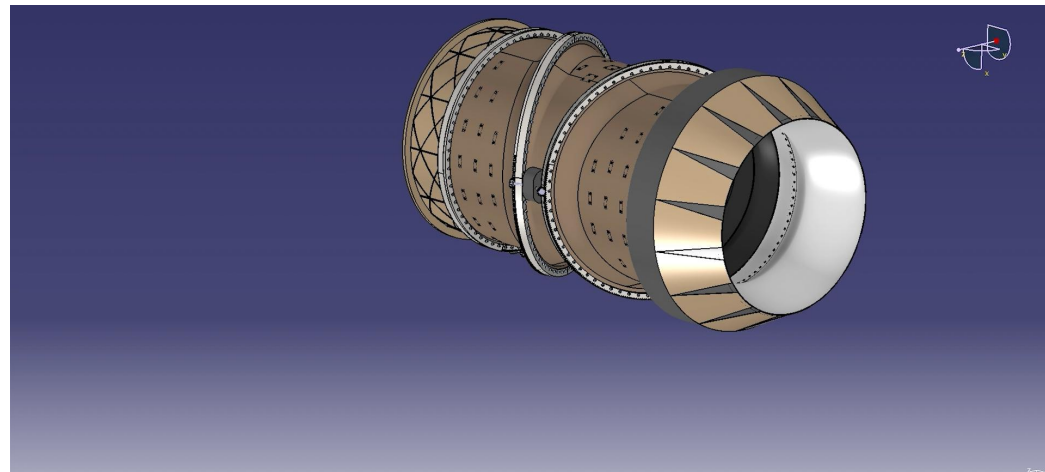
GIUNTI



LEGGI

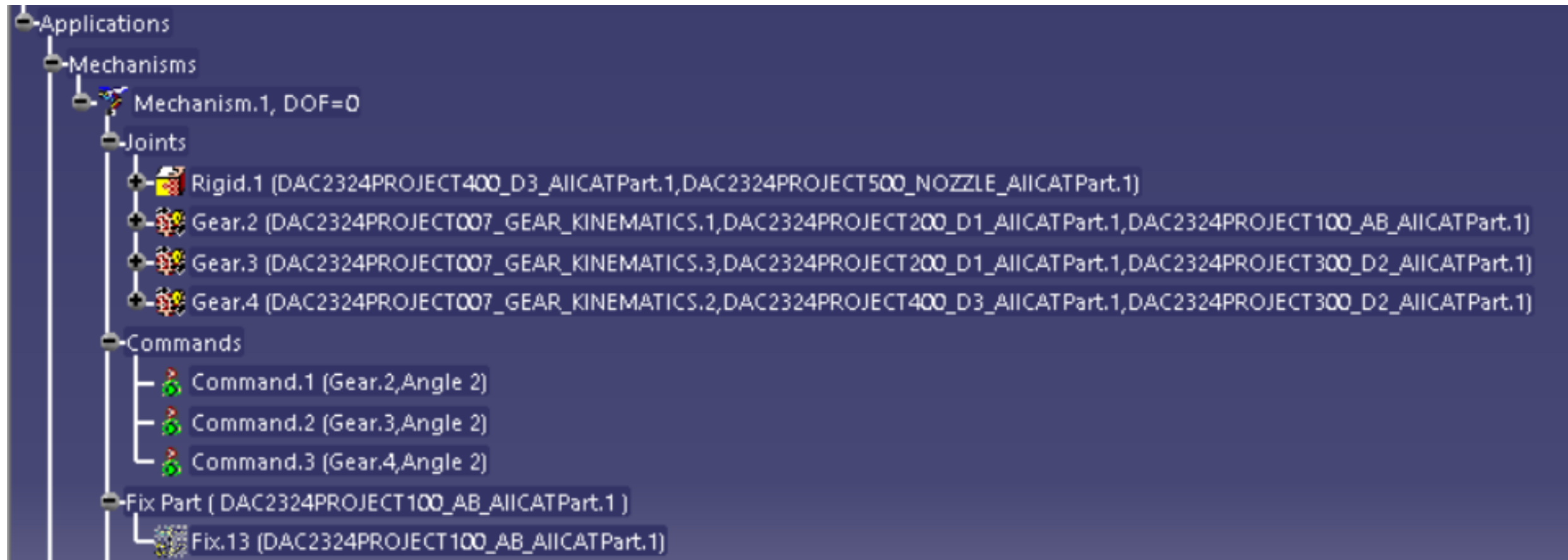


SIMULAZIONE



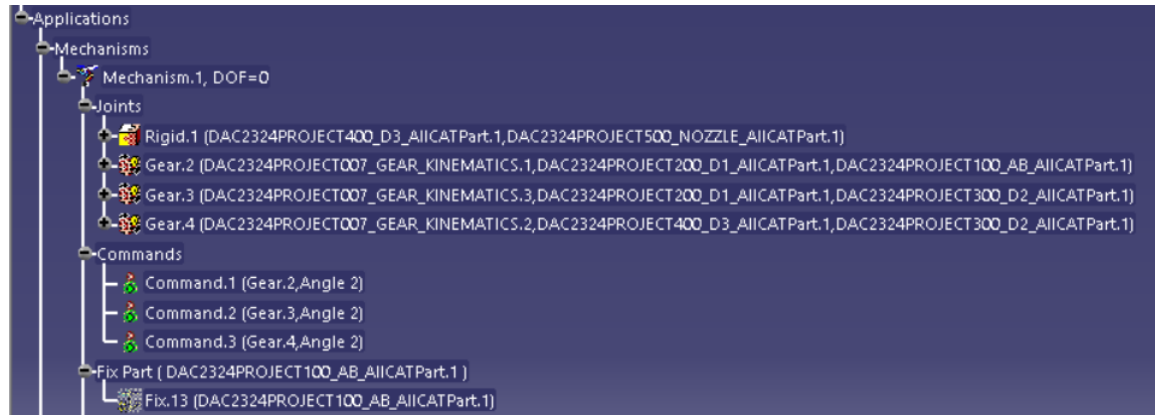
ANALISI CINEMATICA

GIUNTI

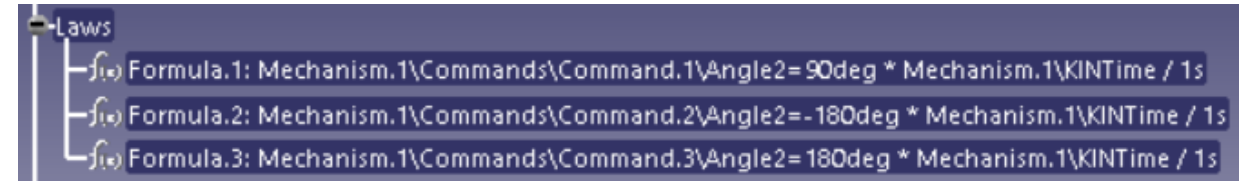


ANALISI CINEMATICA

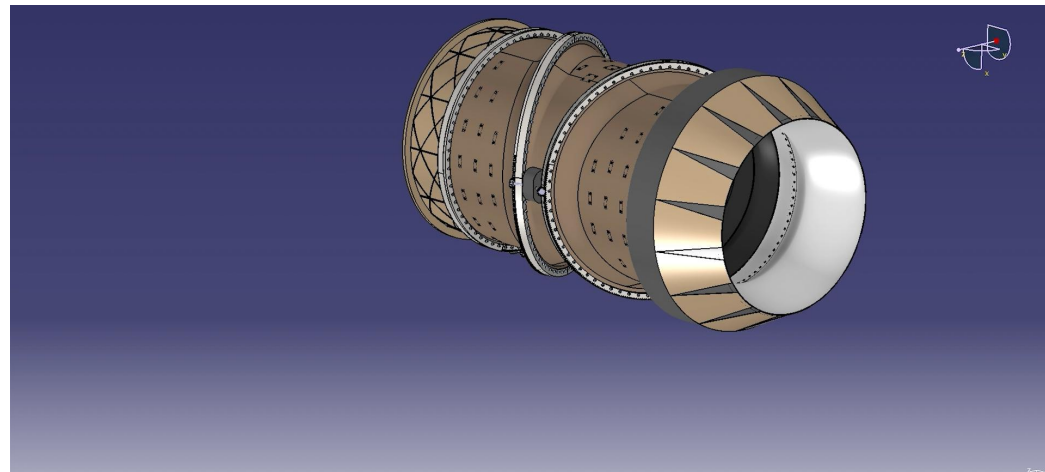
GIUNTI



LEGGI



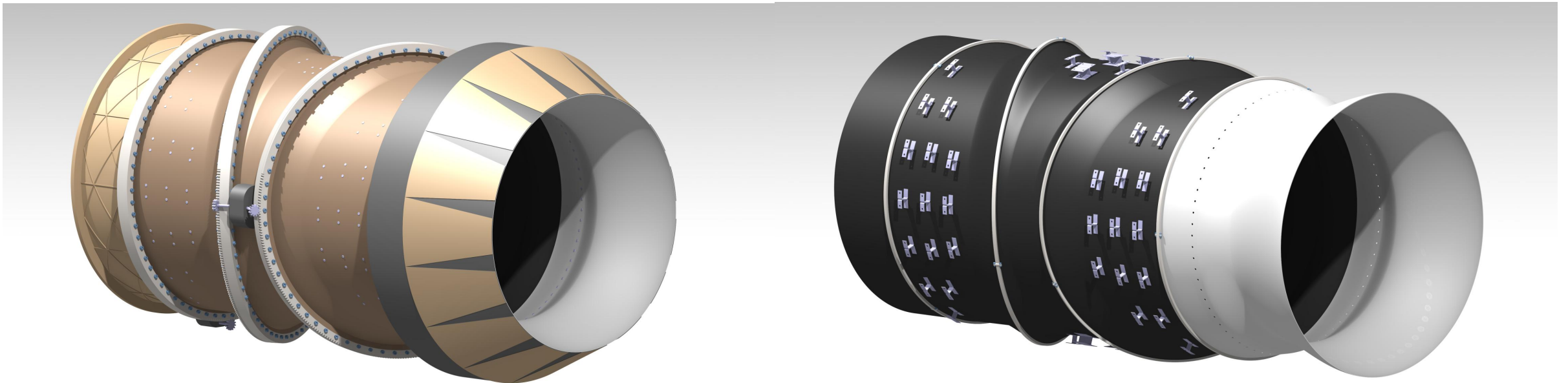
SIMULAZIONE



ANALISI CINEMATICA

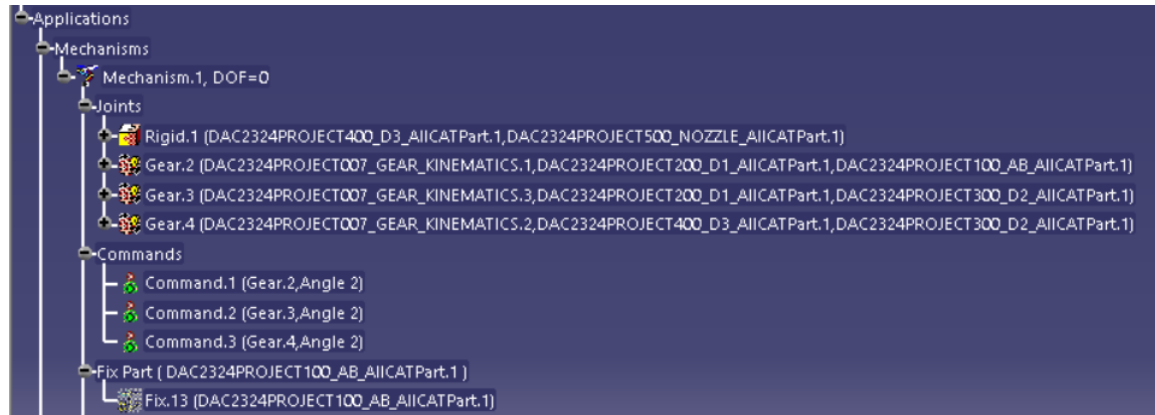
LEGGI

Laws	
f1	Formula.1: Mechanism.1\Commands\Command.1\Angle2=90deg * Mechanism.1\KINTime / 1s
f2	Formula.2: Mechanism.1\Commands\Command.2\Angle2=-180deg * Mechanism.1\KINTime / 1s
f3	Formula.3: Mechanism.1\Commands\Command.3\Angle2=180deg * Mechanism.1\KINTime / 1s

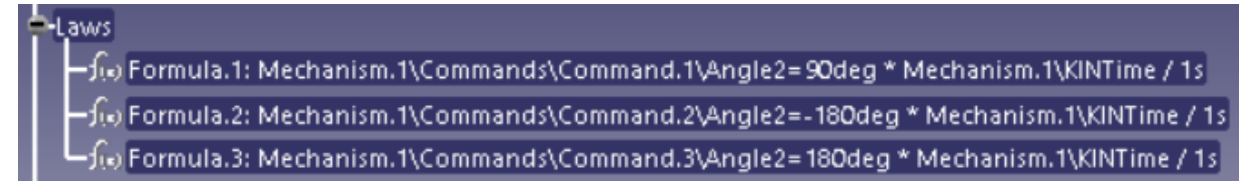


ANALISI CINEMATICA

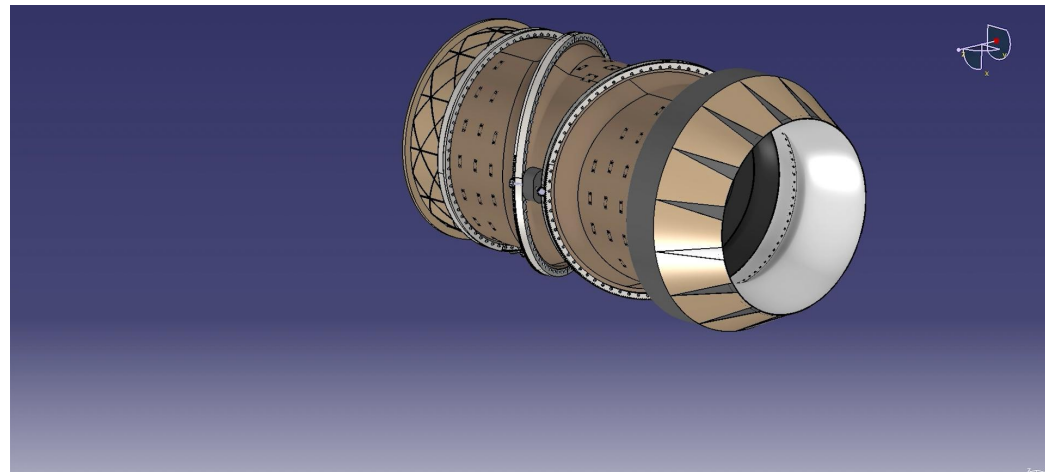
GIUNTI



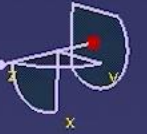
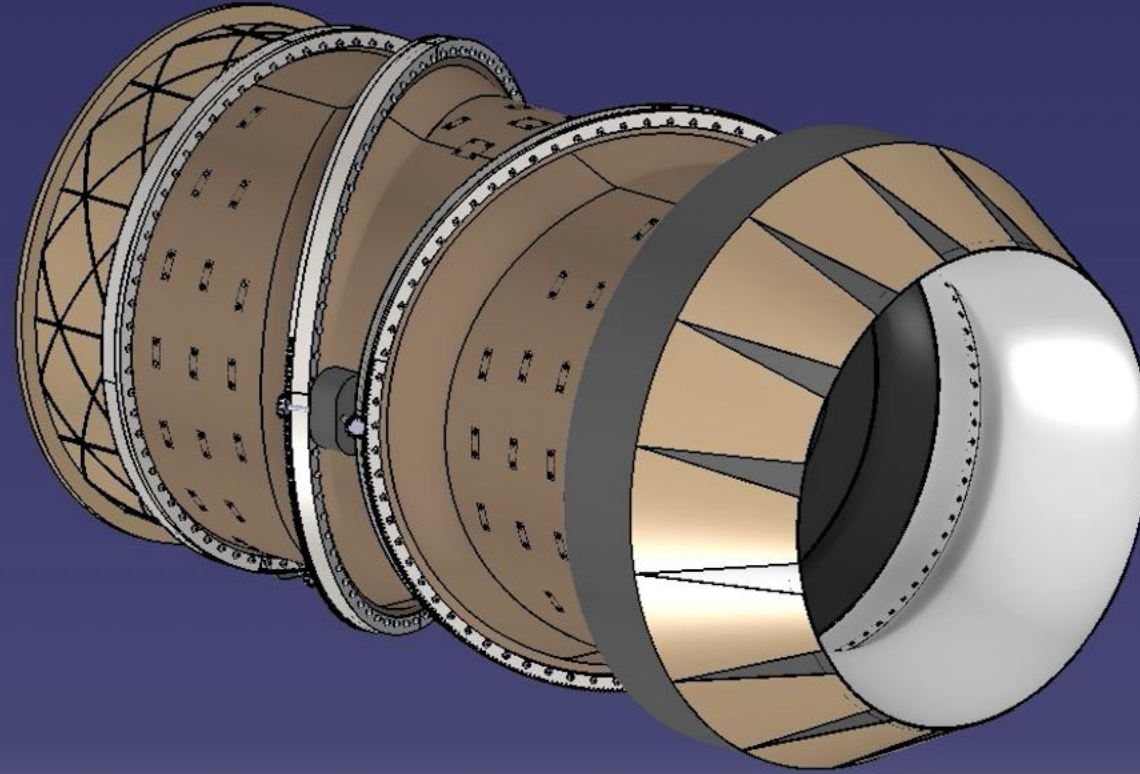
LEGGI



SIMULAZIONE

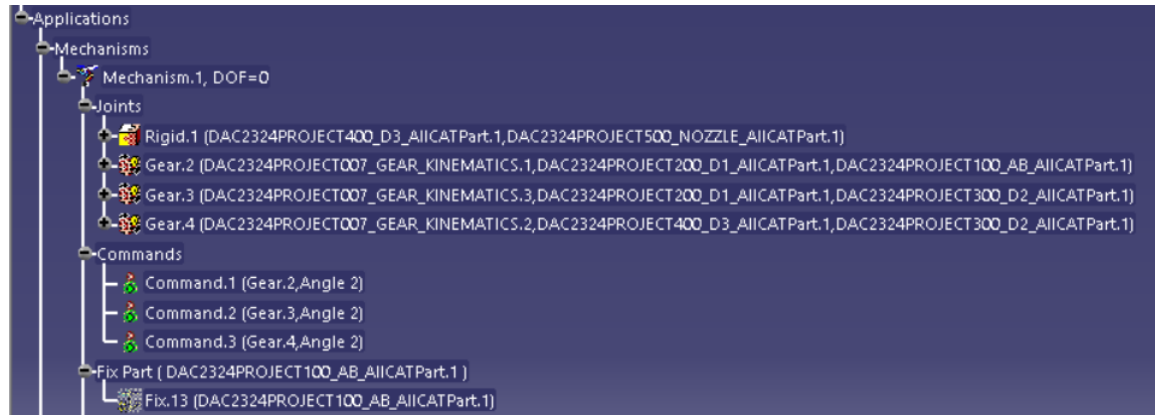


ANALISI CINEMATICA

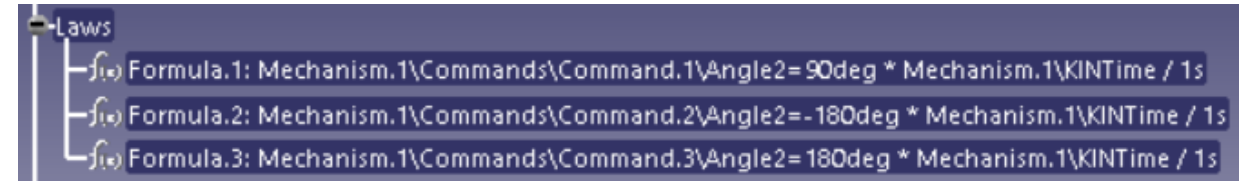


ANALISI CINEMATICA

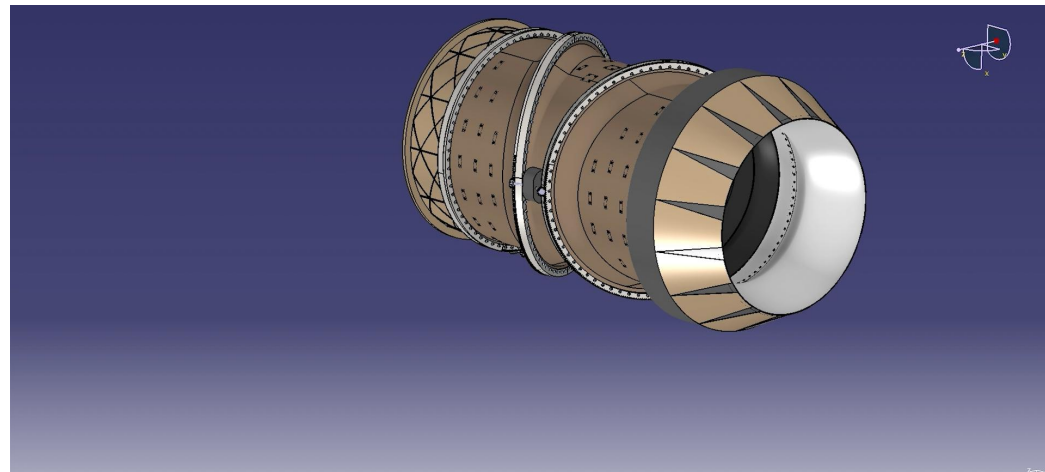
GIUNTI



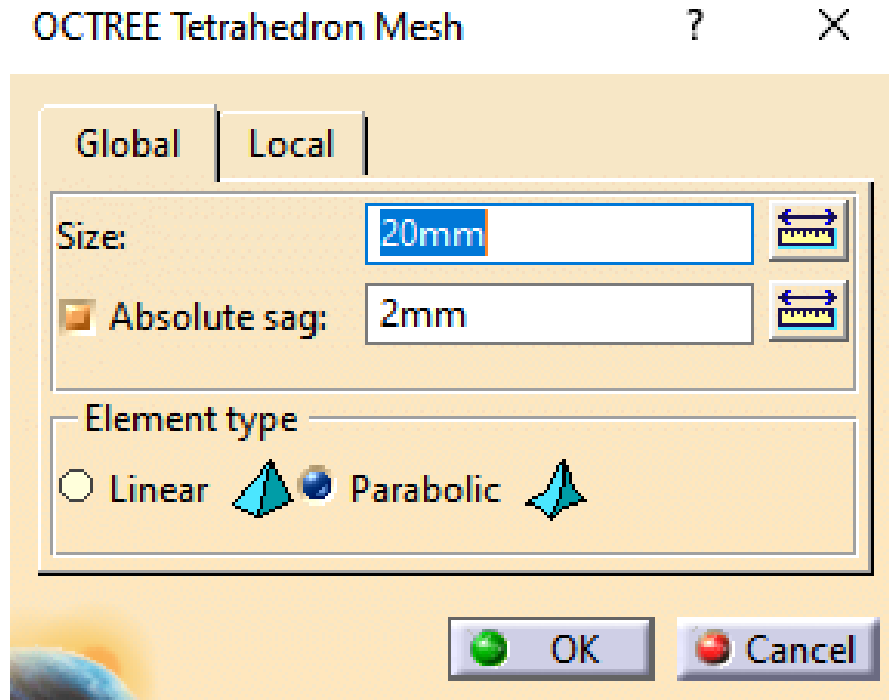
LEGGI



SIMULAZIONE

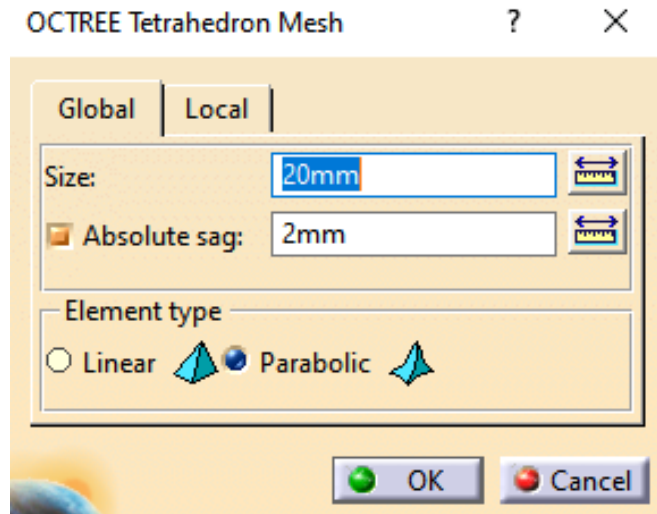


ANALISI AGLI ELEMENTI FINITI

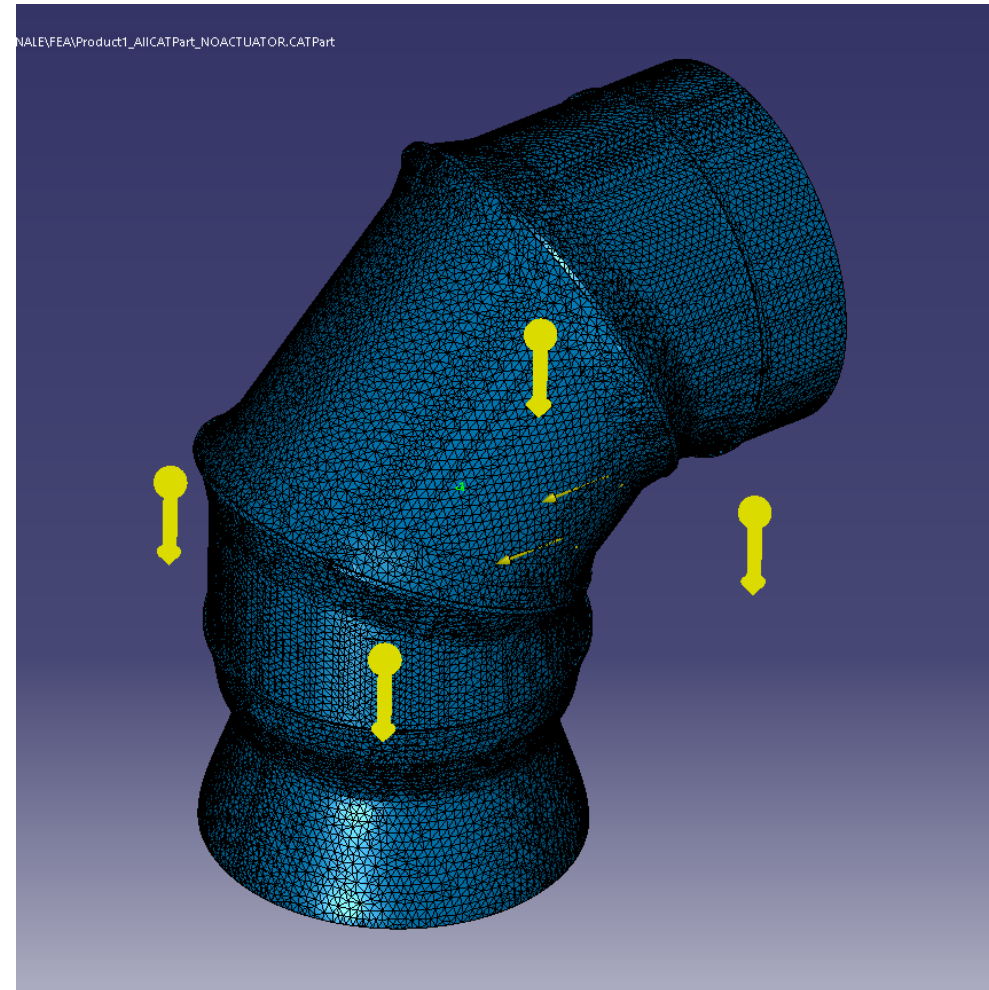


**Mesh con elementi
tetraedrici parabolici**

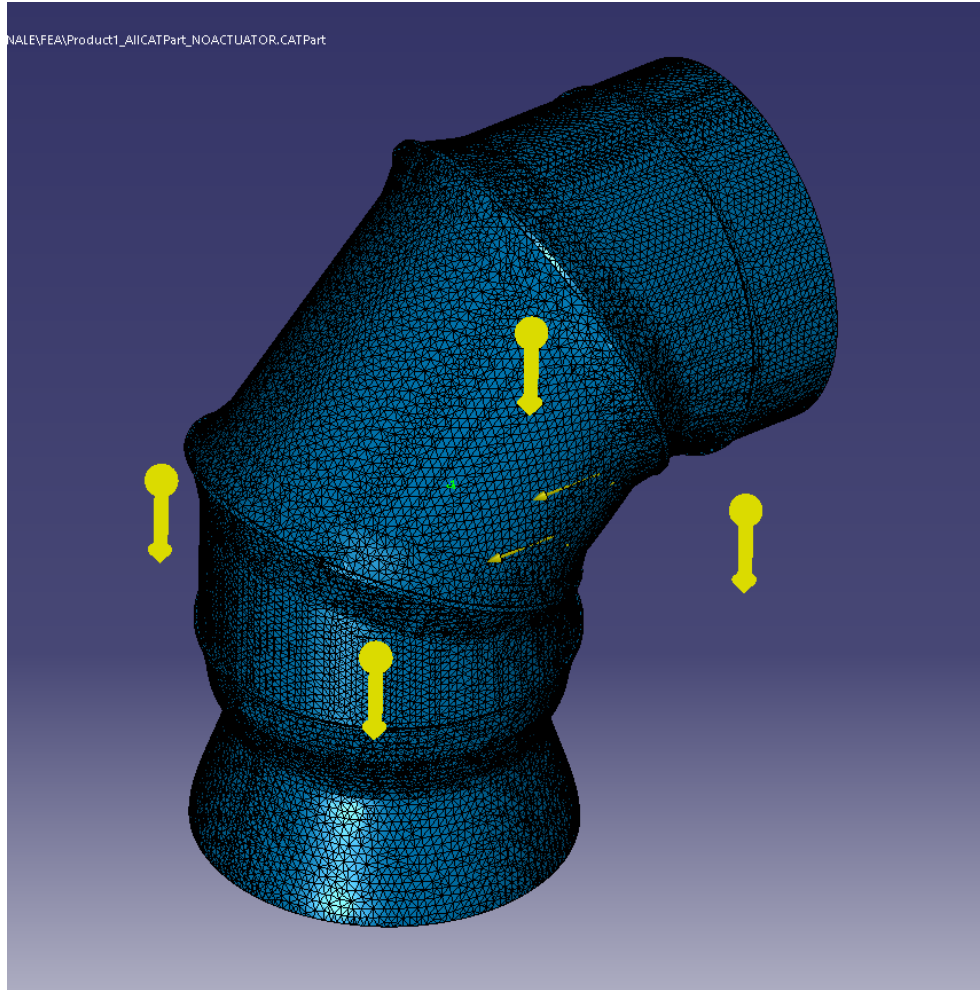
ANALISI AGLI ELEMENTI FINITI



**Mesh con elementi
tetraedrici parabolici**



ANALISI AGLI ELEMENTI FINITI



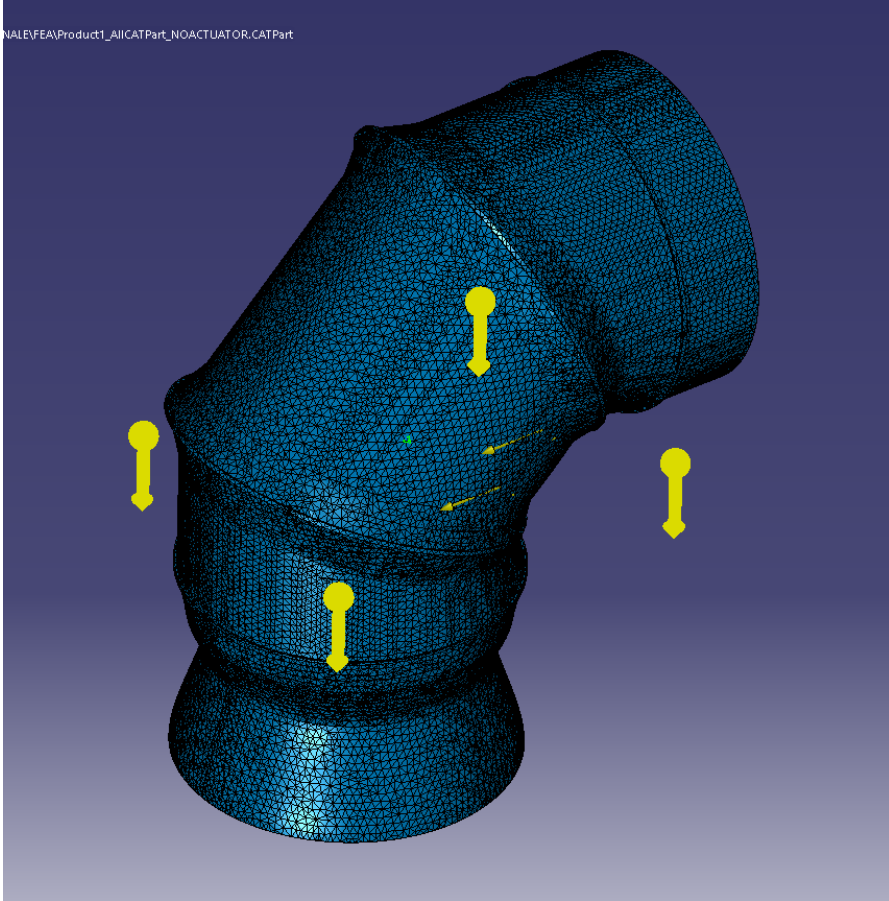
Carichi applicati:

Accelerazione di gravità

$$g = 9.81 \, m/s^2$$

Carico distribuito di impingement
avente risultante $F = 100000 \, N$

ANALISI AGLI ELEMENTI FINITI



**Carico distribuito di impingement
avente risultante $F = 100000 \text{ N}$**

Stimata come $F \approx q \cdot (1 \text{ m}^2)$

$$q = p_t - p = p \left(\frac{p_t}{p} - 1 \right) = p (\psi^{1/k} - 1) = \frac{\rho R T_t}{\psi} (\psi^{1/k} - 1)$$

$$\psi = 1 + \frac{\gamma - 1}{2} M^2 \quad k = \frac{\gamma - 1}{\gamma} \quad \gamma = 1.33 \quad R = 287 \frac{\text{J}}{\text{Kg K}}$$

ANALISI AGLI ELEMENTI FINITI

**Carico distribuito di impingement
avente risultante $F = 100000 \text{ N}$**



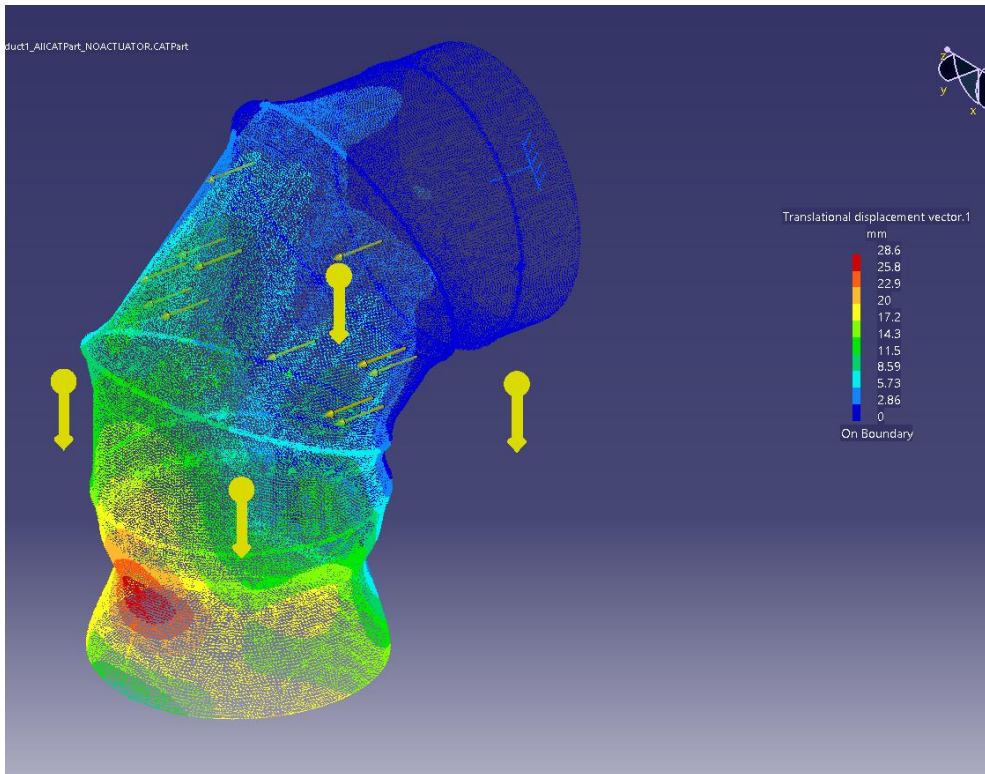
Risultati:

ANALISI AGLI ELEMENTI FINITI

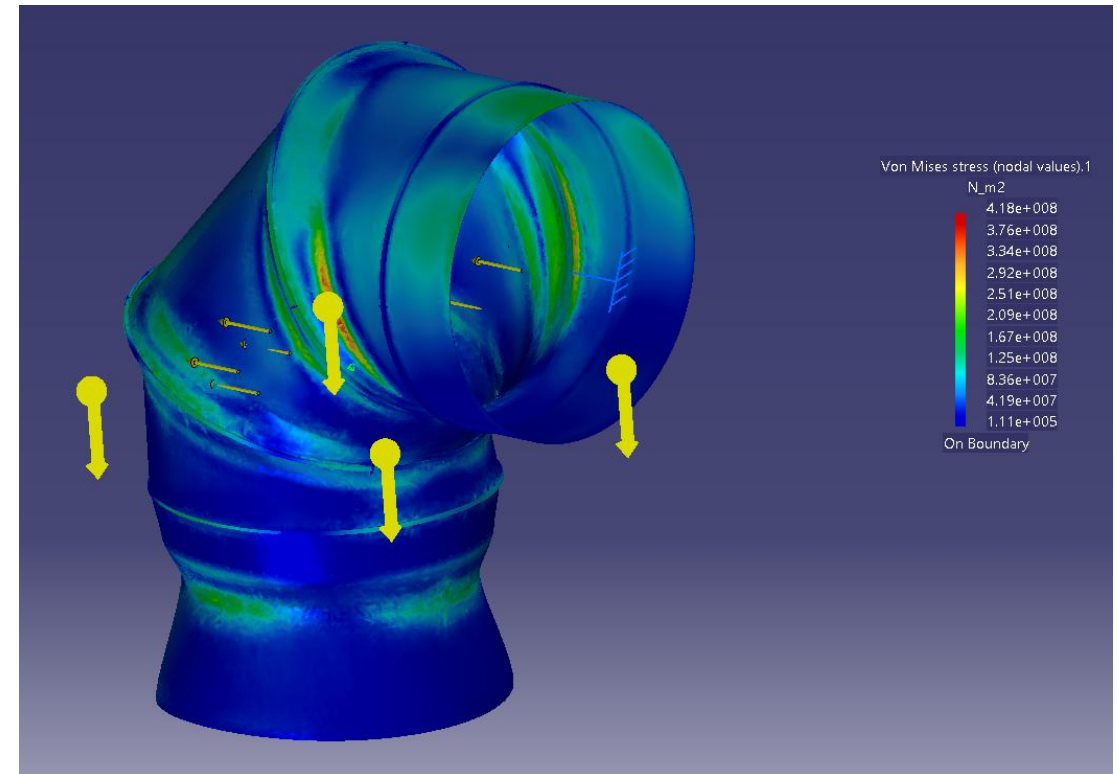
Carico distribuito di impingement
avente risultante $F = 100000\text{ N}$



Risultati:

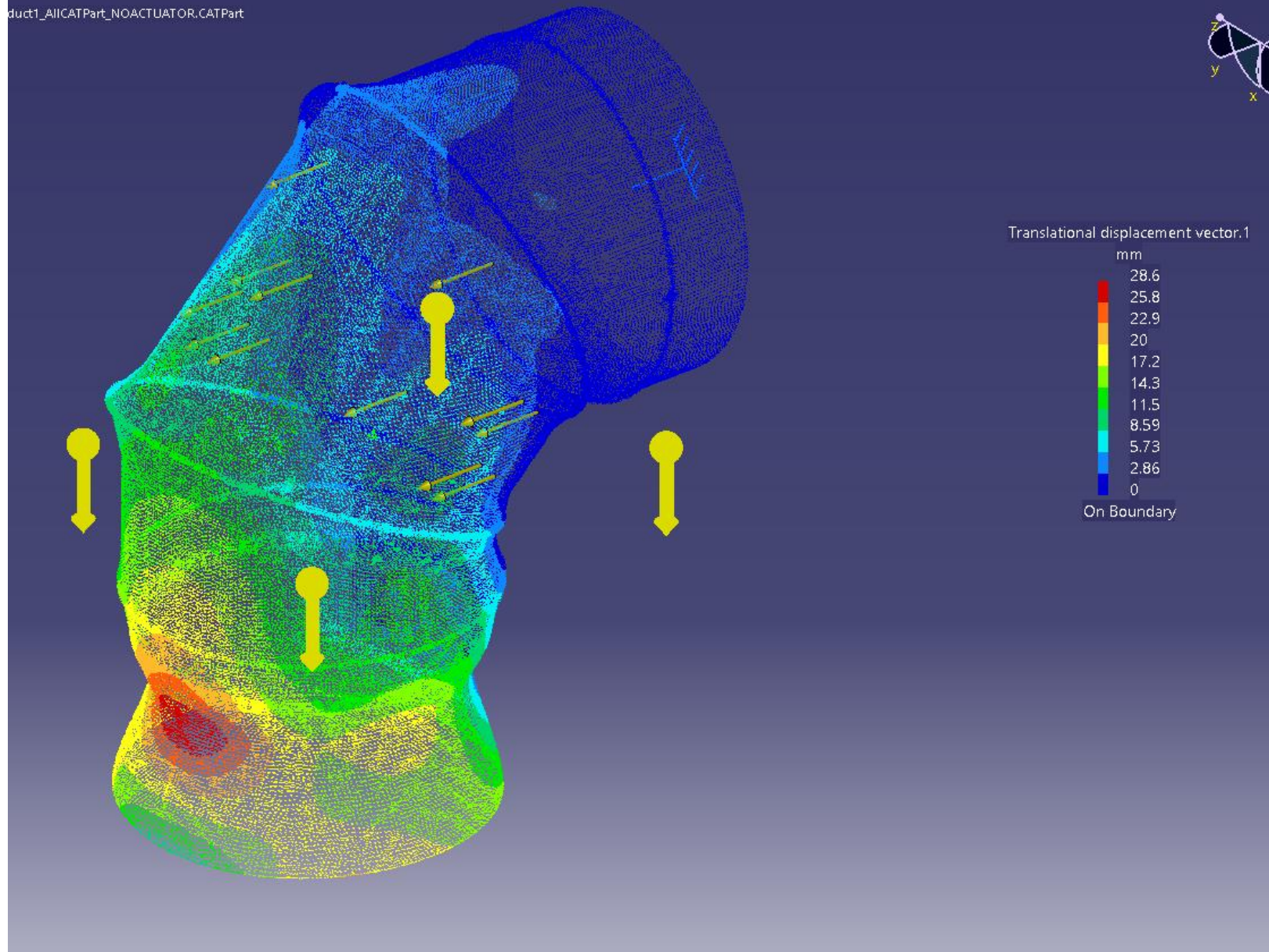


Spostamenti

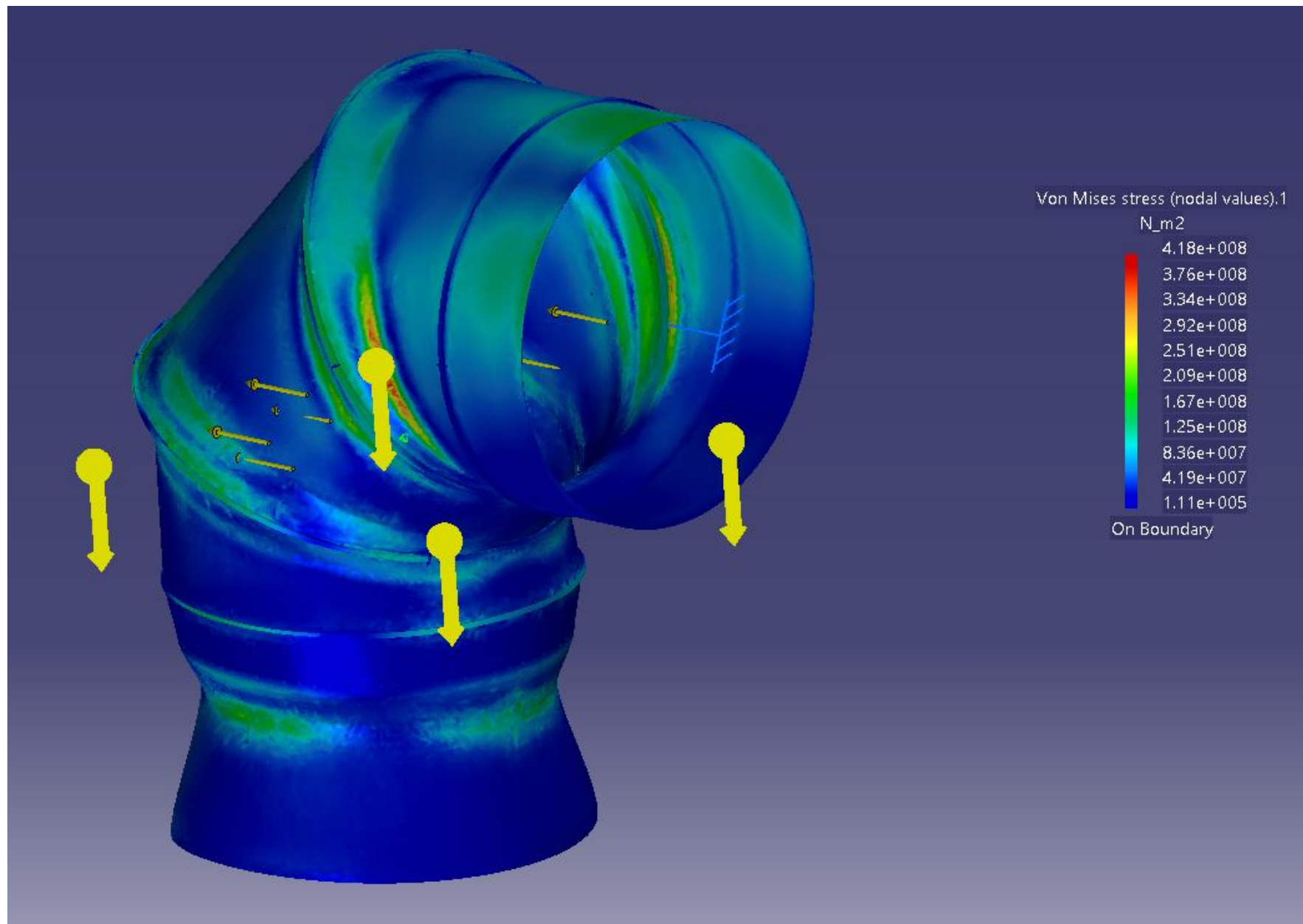


Von Mises Stress

duct1_AllCATPart_NOACTUATOR.CATPart



Spostamenti



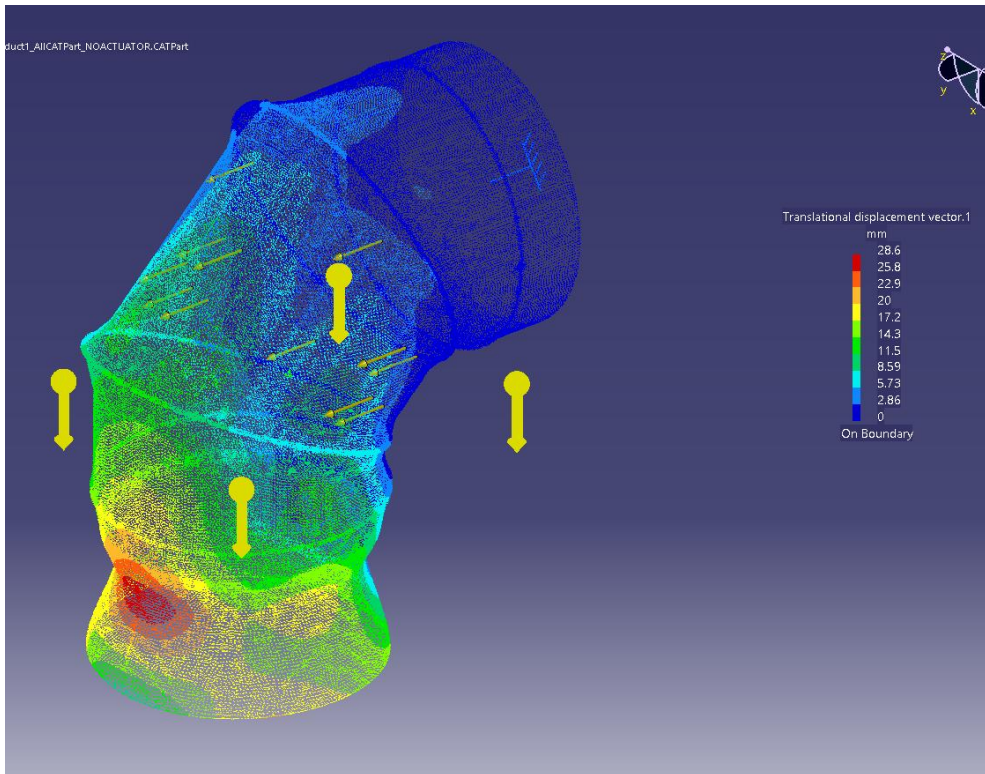
Von Mises Stress

ANALISI AGLI ELEMENTI FINITI

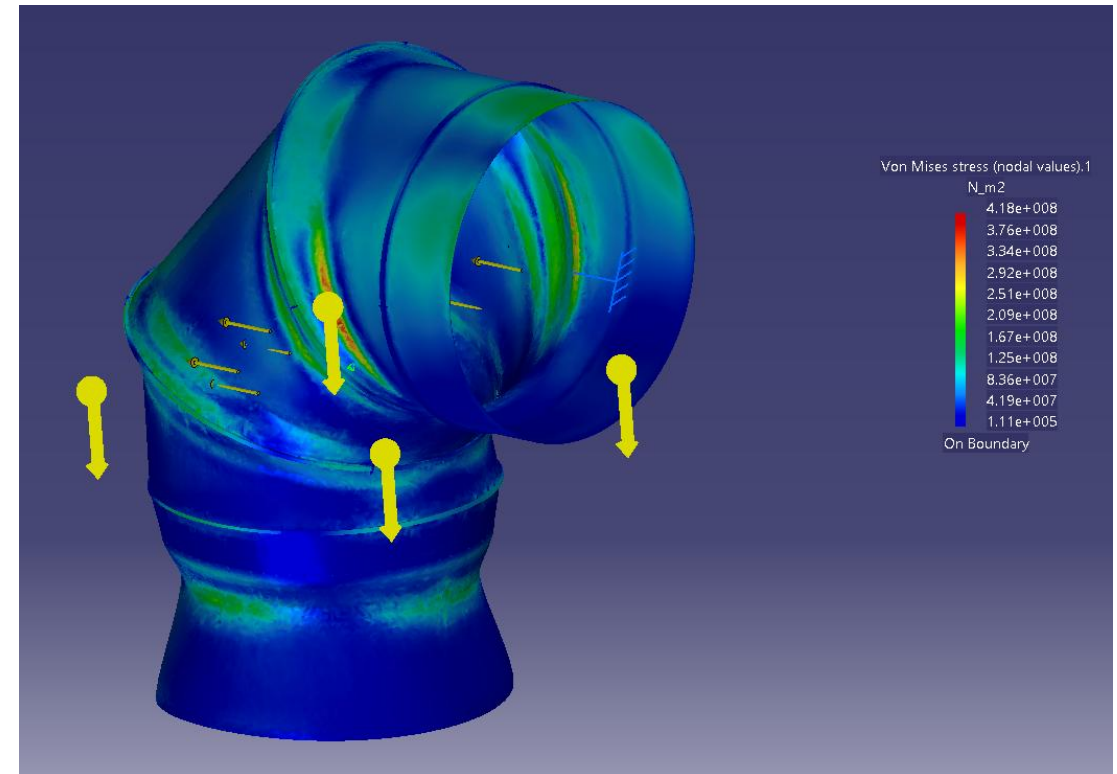
Carico distribuito di impingement
avente risultante $F = 100000\text{ N}$



Risultati:



Spostamenti



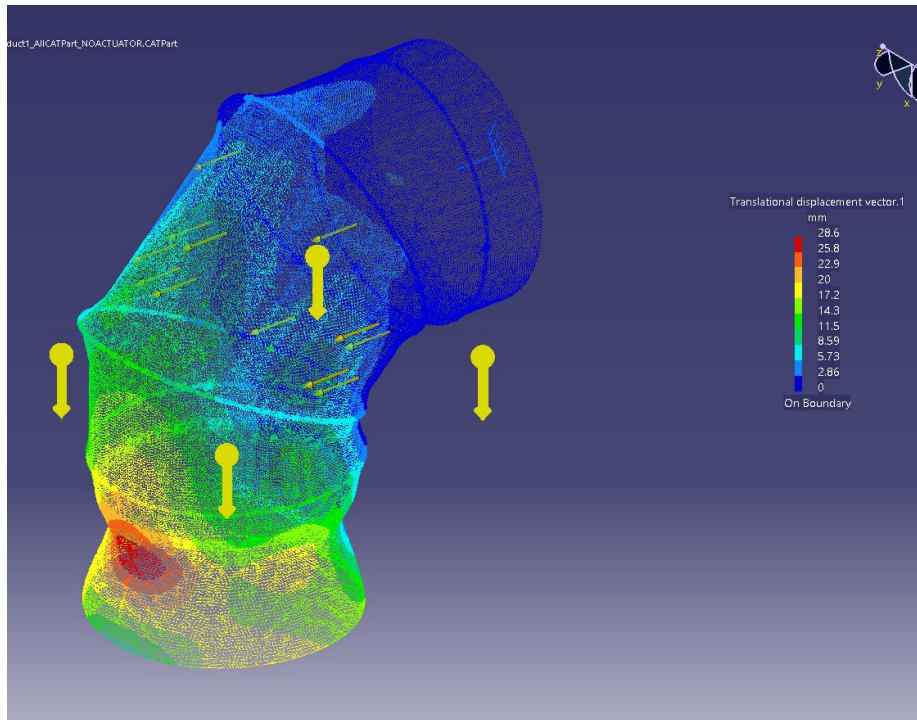
Von Mises Stress

ANALISI AGLI ELEMENTI FINITI

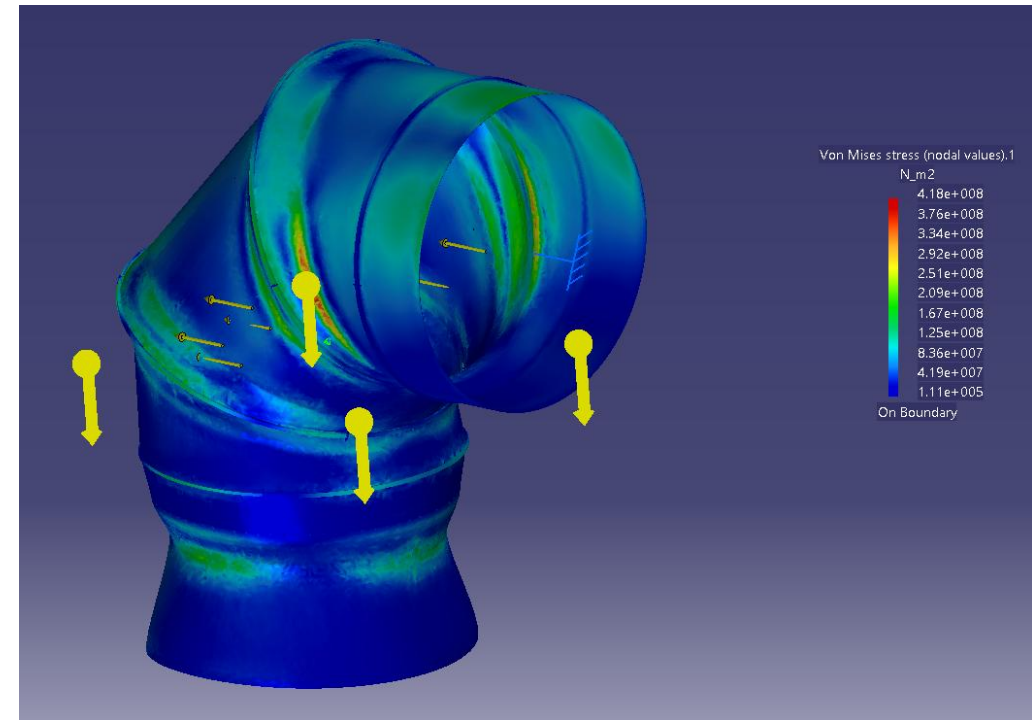
Carico distribuito di impingement
avente risultante $F = 100000\text{ N}$



Risultati:



Spostamenti



Von Mises Stress

REPORT