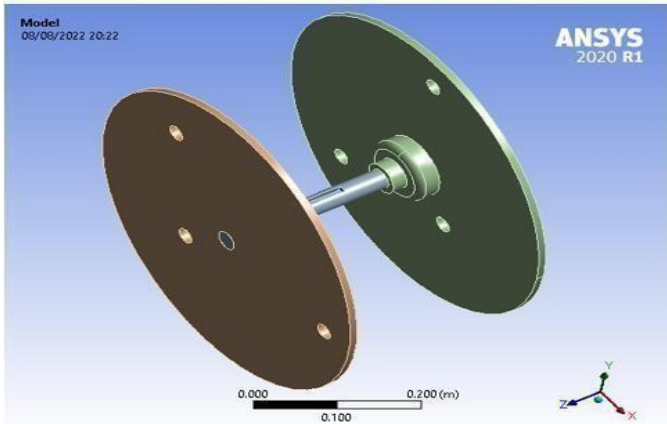


# LAMPIRAN

## Lampiran 1. Default Report / Laporan Bawaan

### Project\*

First Saved	Wednesday, July 13, 2022
Last Saved	Wednesday, July 13, 2022
Product Version	2020 R1
Save Project Before Solution	No
Save Project After Solution	No



Model structural poros

### Units

TABLE 1

Unit System	Metric (m, kg, N, s, V, A) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Satuan dalam simulasi ansys

### Geometry

TABLE 2  
Model (C4) > Geometry

Object Name	Geometry
State	Fully Defined
<b>Definition</b>	
Source	D:\OneDrive - UGM 365 Joki Tugas ANSYS\13190 detail fix.stp
Type	Step
Length Unit	Millimeters
Element Control	Program Controlled
Display Style	Body Color
<b>Bounding Box</b>	
Length X	0.5 m
Length Y	0.5 m
Length Z	0.287 m
<b>Properties</b>	
Volume	4.5339e-003 m <sup>3</sup>
Mass	35.591 kg
Scale Factor Value	1.
<b>Statistics</b>	
Bodies	3
Active Bodies	3
Nodes	33638
Elements	16528
Mesh Metric	None
<b>Update Options</b>	
Assign Default Material	No
<b>Basic Geometry Options</b>	
Solid Bodies	Yes
Surface Bodies	Yes
Line Bodies	No
Parameters	Independent
Parameter Key	ANS_DS
Attributes	No

Tabel Geometry

TABLE 3

Model (C4) > Geometry > Parts

Object Name	Part2(Solid1)	Part1(Solid1)	Part1_MIR(Solid1)
State	Meshed		
<b>Graphics Properties</b>			
Visible	Yes		
Transparency	1		
<b>Definition</b>			
Suppressed	No		
Stiffness Behavior	Flexible		
Coordinate System	Default Coordinate System		
Reference Temperature	By Environment		
Treatment	None		
<b>Material</b>			
Assignment	Structural Steel		
Nonlinear Effects	Yes		
Thermal Strain Effects	Yes		
<b>Bounding Box</b>			
Length X	3.1e-002 m	0.5 m	
Length Y	3.1e-002 m	0.5 m	
Length Z	0.287 m	6.e-002 m	
<b>Properties</b>			
Volume	2.0946e-004 m <sup>3</sup>	2.1622e-003 m <sup>3</sup>	
Mass	1.6443 kg	16.973 kg	16.974 kg
Centroid X	7.8124e-020 m	1.275e-004 m	-4.025e-006 m
Centroid Y	-2.2866e-004 m	-4.1682e-006 m	-1.2684e-004 m
Centroid Z	-0.1435 m	-0.27966 m	-7.3438e-003 m
Moment of Inertia Ip1	1.1633e-002 kg·m <sup>2</sup>	0.23884 kg·m <sup>2</sup>	
Moment of Inertia Ip2	1.9516e-004 kg·m <sup>2</sup>	0.47714 kg·m <sup>2</sup>	
Moment of Inertia Ip3	1.1636e-002 kg·m <sup>2</sup>	0.24059 kg·m <sup>2</sup>	
<b>Statistics</b>			
Nodes	3124	15311	15203
Elements	1624	7486	7418

Tabel Geometri Parts

**Coordinate Systems**

**TABLE 5**  
Model (C4) > Coordinate Systems > Coordinate System

Object Name	Global Coordinate System
State	Fully Defined

Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	

Koordinat system struktur poros

**TABLE 9**  
Model (C4) > Mesh

Object Name	Mesh
State	Solved
Display	
Display Style	Use Geometry Setting
Defaults	
Physics Preference	Mechanical
Element Order	Program Controlled
Element Size	8.e-003 m
Sizing	
Use Adaptive Sizing	Yes
Resolution	Default (2)
Mesh Defeaturing	Yes
Defeature Size	Default
Transition	Fast
Span Angle Center	Coarse
Initial Size Seed	Assembly
Bounding Box Diagonal	0.76313 m
Average Surface Area	2.7315e-002 m <sup>2</sup>
Minimum Edge Length	9.1714e-003 m
Quality	
Check Mesh Quality	Yes, Errors
Error Limits	Aggressive Mechanical
Target Quality	Default (0.050000)
Smoothing	Medium
Mesh Metric	None
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5
Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No

Meshing structural poros

**TABLE 16**

Model (C4) > Static Structural (C5) > Solution (C6) > Equivalent Stress

Time [s]	Minimum [Pa]	Maximum [Pa]	Average [Pa]
1.	360.16	4.7747e+007	3.9502e+005

Tabel Hasil Equivalent Stress

**TABLE 17**

Model (C4) > Static Structural (C5) > Solution (C6) > Total Deformation

Time [s]	Minimum [m]	Maximum [m]	Average [m]
1.	0.	9.9682e-005	5.517e-005

Tabel Total Deformation

**TABLE 18**

Model (C4) > Static Structural (C5) > Solution (C6) > Equivalent Total Strain

Time [s]	Minimum [m/m]	Maximum [m/m]	Average [m/m]
1.	1.1224e-008	3.3163e-004	2.4705e-006

Tabel Hasil Equivalen elastic strain

**Material Data**

*Structural Steel*

**TABLE 19**  
Structural Steel > Constants

Density	7850 kg m <sup>-3</sup>
Coefficient of Thermal Expansion	1.2e-005 C <sup>-1</sup>
Specific Heat	434 J kg <sup>-1</sup> C <sup>-1</sup>
Thermal Conductivity	60.5 W m <sup>-1</sup> C <sup>-1</sup>
Resistivity	1.7e-007 ohm m

**TABLE 20**  
Structural Steel > Color

Red	Green	Blue
132	139	179

Data Material Structural Steel

**Structural Steel > Compressive Yield Strength**

Compressive Yield Strength Pa
2.5e+008

**TABLE 23**

**Structural Steel > Tensile Yield Strength**

Tensile Yield Strength Pa
2.5e+008

**TABLE 24**

**Structural Steel > Tensile Ultimate Strength**

Tensile Ultimate Strength Pa
4.6e+008

**TABLE 25**

**Structural Steel > Isotropic Secant Coefficient of Thermal Expansion**

Zero-Thermal-Strain Reference Temperature C
22


**TABLE 26**

**Structural Steel > S-N Curve**

Alternating Stress Pa	Cycles	Mean Stress Pa
3.999e+009	10	0
2.827e+009	20	0
1.896e+009	50	0
1.413e+009	100	0
1.069e+009	200	0
4.41e+008	2000	0
2.62e+008	10000	0
2.14e+008	20000	0
1.38e+008	1.e+005	0
1.14e+008	2.e+005	0
8.62e+007	1.e+006	0

Koefisien Sekan Isotropik dari Ekspansi Termal, Kekuatan hasil

Lampiran 2.

**PERKUMPULAN PENGELOLA PENDIDIKAN UMUM DAN TEKNOLOGI NASIONAL MALANG**  
**INSTITUT TEKNOLOGI NASIONAL MALANG**  
FAKULTAS TEKNOLOGI INDUSTRI  
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN  
PROGRAM PASCASARJANA MAGISTER TEKNIK

PT. BNI (PERSERO) MALANG  
BANK NIAGA MALANG

Kampus I : Jl. Bendungan Sigura-gura No. 2 Telp. (0341) 551431 (Hunting), Fax. (0341) 553015 Malang 65145  
Kampus II : Jl. Raya Karanglo, Km 2 Telp. (0341) 417636 Fax. (0341) 417634 Malang

Malang , 01 Maret 2022

Nomor : ITN-8 /I.TA/2022  
Lampiran : .....  
Perihal : BIMBINGAN SKRIPSI

Kepada : Yth Sdr. **Dr. Komang Astana Widi, ST,MT**  
Dosen Institut Teknologi Nasional  
di MALANG

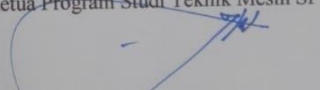
Sesuai dengan permohonan dan persetujuan dalam Skripsi untuk saudara mahasiswa :

Nama : **GERARLDIOVIC SARANGNGA**  
Nim : **1811153**  
Jurusan : Teknik Mesin  
Program studi : Teknik Mesin (S1)

Maka dengan ini pembimbingan Skripsi tersebut kami serahkan sepenuhnya kepada saudara selama 6 (enam) bulan terhitung mulai bulan :

**Maret 2022 S/d Agustus 2022**

Adapun tugas tersebut untuk menempuh Ujian Akhir Program Sarjana S1. Demikian agar maklum dan atas perhatian serta bantuannya kami ucapkan banyak terima kasih.

Ketua Program Studi Teknik Mesin S1  
  
Dr. I Komang Astana Widi, ST, MT  
NIP . P 1030400405

*Tembusan Kepada Yth :*  
1. Bapak/Ibu Dekan FTI ITN Malang  
2. Mahasiswa yang bersangkutan  
3. Arsip