

## DAFTAR PUSTAKA

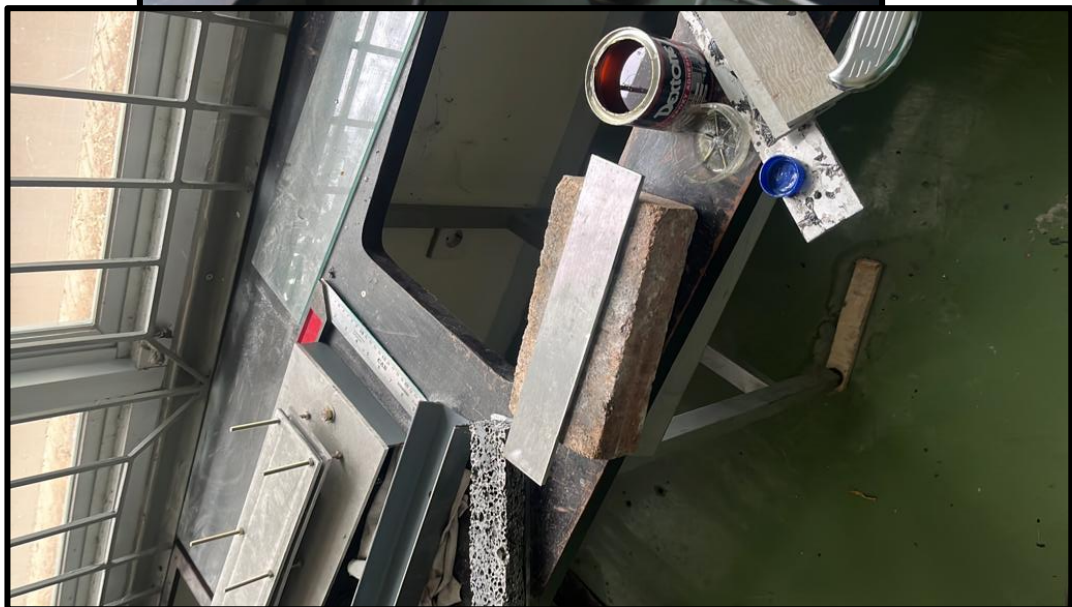
- A. K. Shaik dawood dan S. S. Mohammad Nazirudeen, 2010. *A Development of Technology for making porous metal foams castings*, Jordan Journal of Mechanical and Industrial Engineering, 4(2): 292-299
- Adriansyah, Yudha Izma, 2021. *Analisis Uji Bending Komposit Sandwich yang Di*
- Ainulmakhrus. 2015. *Modifikasi Alat Uji Bending Sistem Mekanik Hidrolik Dan Hasil Pengujian Untuk Bahan Besi Cor*. Universitas Diponegoro.
- Amaliyah, Eka Firda, dkk. 2020. *Analisa Tegangan dan Regangan Pada Perkerasan Porus Dengan Skala Semi Lapangan dan Software Ansys*. Universitas Brawijaya: Malang
- Anggry, Adhe. 2021. *Kekuatan Bahan Tegangan Regangan Pada Batang*. Polman Babel Press: Bangka Belitung
- Ardiyanto, Pramaditya. 2014. *Analisa Pengaruh Ketebalan Inti (Core) Polyurethane Terhadap Karakteristik Bending Komposit Sandwich*. Institut Teknologi Sepuluh Nopember : Surabaya
- Arini, Resti Nur, Reflangga Pradana. 2021. *Analisa Tegangan Regangan Pada Balok Dengan Menggunakan Software Abaqus CAE V6*. Jurnal Artesis. Vol.1(2): 193- 198
- ASME section II. 2001. "Materials". New York : The American Society of Mechanical Engineers New York.
- ASTM, 2006 "Annual Book of ASTM Standard", 100 Barr Harbor Drive, PO BOX C700, West Conshohocken, united States, Volume 15.03, p.36-39
- Banhart, 2003, *Aluminum Foams: On the Road to Real Applications*, MRS BULLETIN
- Dahlan Ahmad, Rusiyanto. 2021. *Pengaruh Penambahan Unsur Aluminium Murni Pada Bahan Aluminium Scrap Terhadap Ketangguhan Impak dan Struktur Mikro Hasil Pengecoran Velg Motor Honda*. Jurnal Dinamika Vokasional Teknik Mesin, Volume 6 Nomor 1 April 2021 Hal 58-68
- Fajar, Wahyu. 2018. *Pengaruh Variasi Temperatur Tuang Terhadap Hasil Coran Aluminium (Al) Dengan Cetakan Pasir*. Universitas Muhammadiyah Surakarta: Surakarta

- Firstyawaty,Zulfhis Shara,2021. *Analisis Kemampuan Penyerapan Energi Material Alumunium Foam Sebagai Pengisi Komponen Fender Kapal*.Universitas Hasanuddin:Gowa
- Gabungkan 3D Printing*.Universitas Islam Indonesia:Yogyakarta
- Haifeng Chang, Lele Zhang, Weiyuan Dou & Haifeng Zhang.2021. *Improved Strategies for the Load-Bearing Capacity of Aluminum-PVC Foam Sandwich Floors of a High-Speed Train*. Journal of Mechanical Science and Technology
- Kabir,Kaveh.,Tania V.,Mark.,2014. Response of aluminium foam-cored sandwich panels to bending load.Journal.Composites 2014,24-32:Elsevier
- Kadarisman,Muh,2017.*Kebijakan Transportasi Kereta Api Cepat Jakarta-Bandung Dalam Mewujudkan Angkutan Ramah Lingkungan*. Universitas Muhammadiyah Jakarta: Jakarta,
- Kaw,Autar K,2008.*Mechanics Of Composite Materials Second Edition*.Taylor &Francis : London
- Mulsy, Muh. Hisyam. 2022. *Analisis Penyerapan Energi Absorber Module Terhadap Frontal Crash Dengan Material Aluminium Foam Menggunakan Metode Elemen Hingga*. Universitas Hasanuddin: Gowa.
- Mulyati,2019.*Diktat Mekanika Bahan*.Institut Teknologi Padang:Padang
- Musyafriadi.2021. *Analisis Elemen Hingga Pada Crach Box Kendaraan Terisi Alumunium Foam*. Universitas Hasanuddin : Gowa
- Pratomo,Arief Nur dkk.2018. *Numerical Study of Experiment Setup for Aluminum Foam Sandwich Construction Subjected to Blast Load*.Jurnal Mesin.2018,1,19-31
- Renreng, I., Djamaluddin, F., & Furqani, F. 2020. *Energy Absorption Analysis of aluminum Filled Foam Tube Under Axial Load using Finite Element Method with Cross Section Variations*. IOP Conference Series: Materials Science and Engineering

- Rochman , Hariyati P , Purbo C,2010.*Karakterisasi Sifat Mekanik dan Pembentukan Fasa Presipitat pada Aluminium Alloy 2024-T81 Akibat Perlakuan Penuaan* . ITS.Semarang
- Sadek.SeifAllah Hassan Mahmoud,2016. *Aluminum Foam Sandwich with Adhesive Bonding Computational Modelling*.University of Porto: Portugal
- Safrisal,Muchammad Detta Rizky.2016.*Analisa Pengaruh Pengelasan GMAW Terhadap Perubahan Distorsi Pada Aluminium Dengan Variasi Variabel Heat Input*.Institut Teknologi Sepuluh Nopember:Surabaya.
- Schmid,dkk.2008. *Effect of the Bending Potential on Molecular Arrangement in Alkaneselenolate Self-Assembled Monolayers*. Jurnal. Phys. Chem. C 2008, 112, 12495–12506
- Sigve Takle, 2003, "Experimental and Numerical Studies of Impact Behaviour of GRP Reinforced Composite Sandwich Materials", Thesis of Department of Mathematics, Mechanics Division, University of Oslo.
- Surdia, T. dan S, Saito. 1999. *Pengetahuan Bahan Teknik*. Pradnya Paramita:Jakarta
- Zainuri,Achmad, Nasmi H.S, M.Zidan J.2011.*Kekakuan Bending Eksperimen Komposit Sandwich Serat Sabut Kelapa-Matrik Polyester Dengan Core Kertas Kardus*. Universitas Mataram : Mataram
- Didik, Eko, Mardjuki, Jumiadi ,2015.*Analisa Pengaruh Deformasi Plastis Terhadap Struktur Mikro dan Kekerasan Pada Baja ST 42*.Jurnal. TRANSMISI, Vol. XI-Edisi-1/ Hal. 19-26
- Wang,Xinyuan,Zhukun C,Gaofeng F,2022. *Quasi-Static Three-Point Bending Behavior of Aluminum Foam Sandwich with CFRP Face-Sheets*. Northeastern University : Shenyang

## LAMPIRAN

Lampiran 1 proses pembuatan spesimen



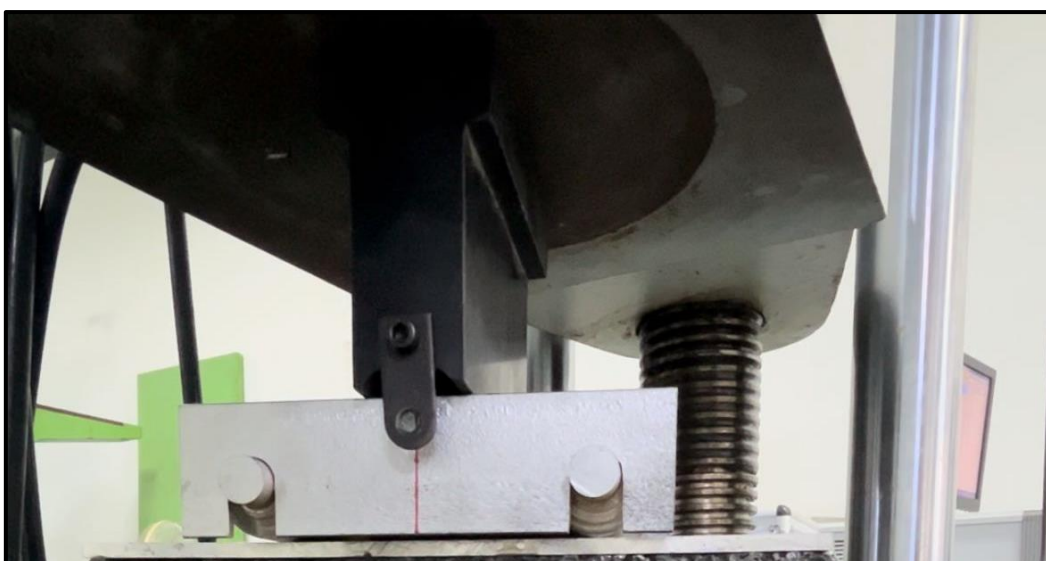
Lampiran 2 Spesimen *sandwich aluminium foam*



Lampiran 3 mesin uji bending



Lampiran 4 penekan yang digunakan dalam proses pengujian



Lampiran 5 proses pengujian dan pengambilan data





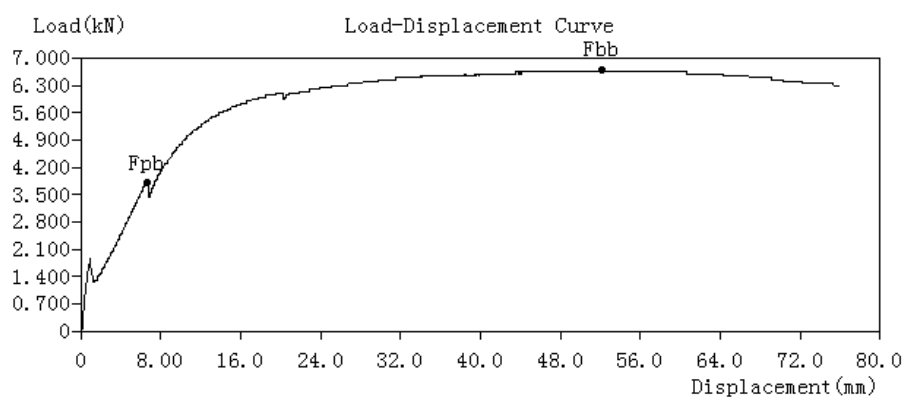


Lampiran 6 Grafik Hasil Pengujian *three point bending* spesimen dengan ketebalan inti 25 mm

### ALUMINIUM FOAM

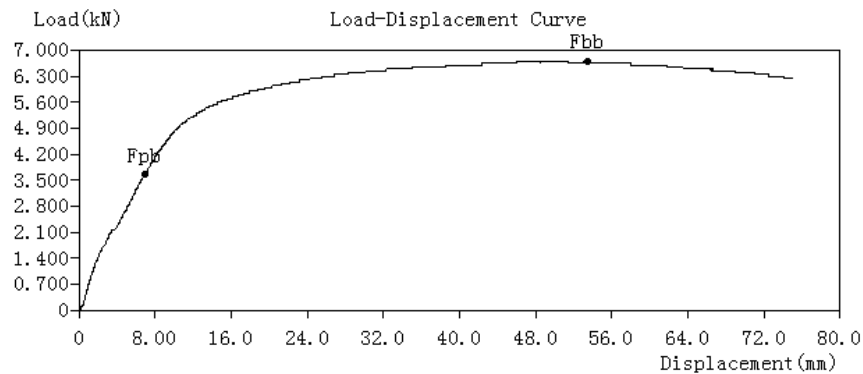
#### 3 POINT BENDING T 25 MM SAMPEL 1

SampleID	t : 25 MM	TestDate	2015/1/1 星期四
Operator	EDI ISKANDAR	Type	Flat
Size(mm)	54*37	So(mm <sup>2</sup> )	1998.00
Ls(mm)	240	Fbb(kN)	6.70
Rbb(MPa)	33	Fpb(kN)	3.80
Rpb(MPa)	19	Eb(GPa)	0.5
U(J)	449.990		



ALUMINIUM FOAM  
3 POINT BENDING T 25 MM SAMPEL 2

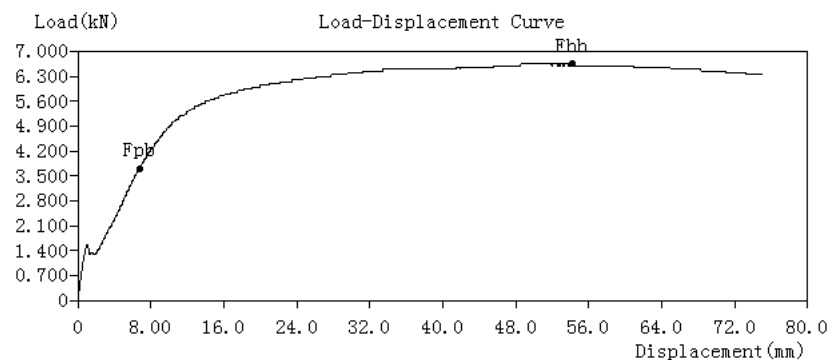
SampleID	t : 25 MM	TestDate	2015/1/1 星期四
Operator	EDI ISKANDAR	Type	Flat
Size (mm)	54*37	So (mm <sup>2</sup> )	1998.00
Ls (mm)	240	Fbb (kN)	6.70
Rbb (MPa)	33	Fpb (kN)	3.65
Rpb (MPa)	18	Eb (GPa)	0.5
U (J)	440.306		



Lampiran 7 Grafik Hasil Pengujian *three point bending* spesimen dengan ketebalan inti 30 mm

ALUMINIUM FOAM  
3 POINT BENDING T 30 MM SAMPEL 1

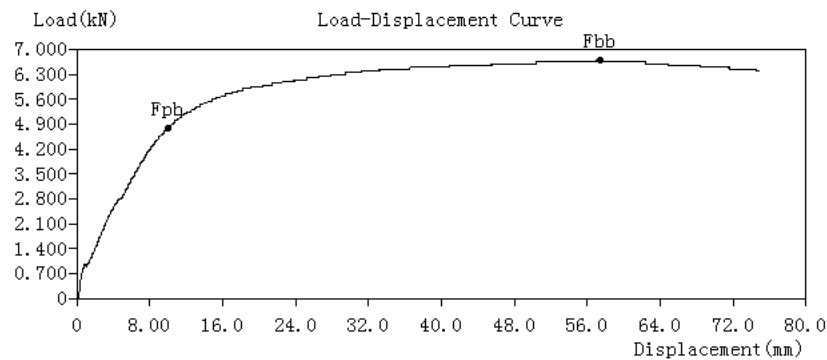
SampleID	t : 30	TestDate	2015/1/1 星期四
Operator	Edi Iskandar	Type	Flat
Size (mm)	54*37	So (mm <sup>2</sup> )	1998.00
Ls (mm)	240	Fbb (kN)	6.65
Rbb (MPa)	32	Fpb (kN)	3.70
Rpb (MPa)	18	Eb (GPa)	0.5
U (J)	441.691		



## ALUMINIUM FOAM

## 3 POINT BENDING T 30 MM SAMPEL 2

SampleID	t : 30	TestDate	2015/1/1 星期四
Operator	Edi Iskandar	Type	Flat
Size(mm)	54*37	So(mm <sup>2</sup> )	1998.00
Ls(mm)	240	Fbb(kN)	6.70
Rbb(MPa)	33	Fpb(kN)	4.80
Rpb(MPa)	23	Eb(GPa)	0.5
U(J)	440.139		

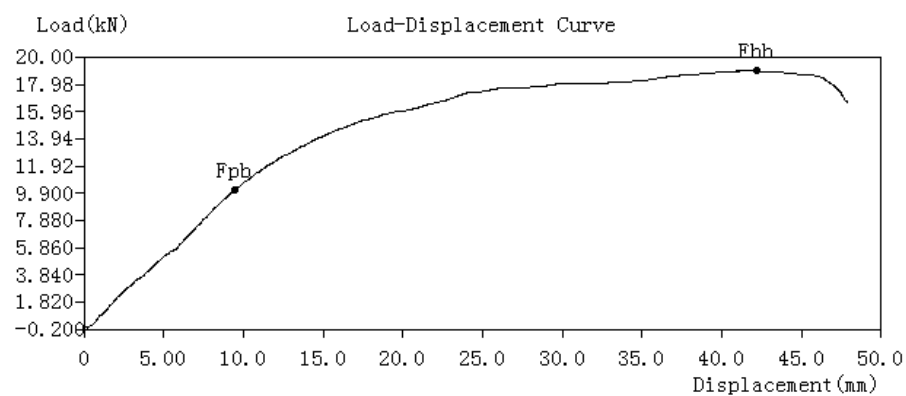


Lampiran 8 Grafik Hasil Pengujian *four point bending* spesimen dengan ketebalan inti 25 mm

## ALUMINIUM FOAM

## 4 POINT BENDING T 25 MM SAMPEL 1

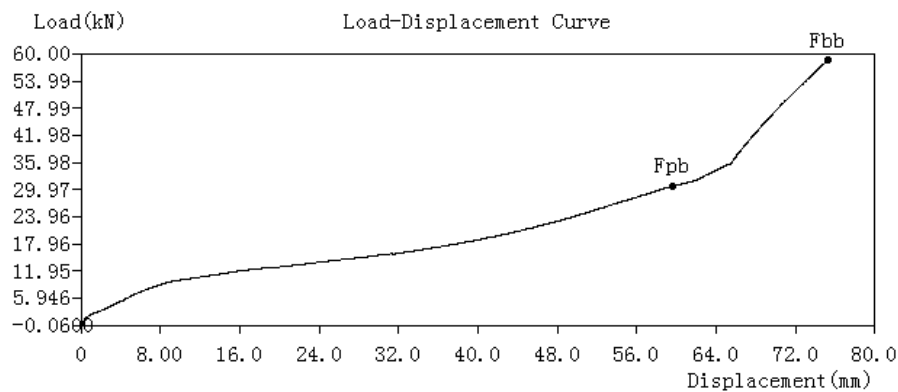
SampleID	t : 25	TestDate	2015/1/1 星期四
Operator	Edi Iskandar	Type	Flat
Size(mm)	54*37	So(mm <sup>2</sup> )	1998.00
Ls(mm)	240	Fbb(kN)	19.00
Rbb(MPa)	93	Fpb(kN)	10.10
Rpb(MPa)	49	Eb(GPa)	1.5
U(J)	695.591		



## ALUMINIUM FOAM

## 4 POINT BENDING T 25 MM SAMPEL 2

SampleID		TestDate	2015/1/1 星期四
Operator		Type	Flat
Size (mm)	54*37	So (mm <sup>2</sup> )	1998.00
Ls (mm)	240	Fbb (kN)	58.65
Rbb (MPa)	285	Fpb (kN)	30.70
Rpb (MPa)	150	Eb (GPa)	1.0
U (J)	1627.749		

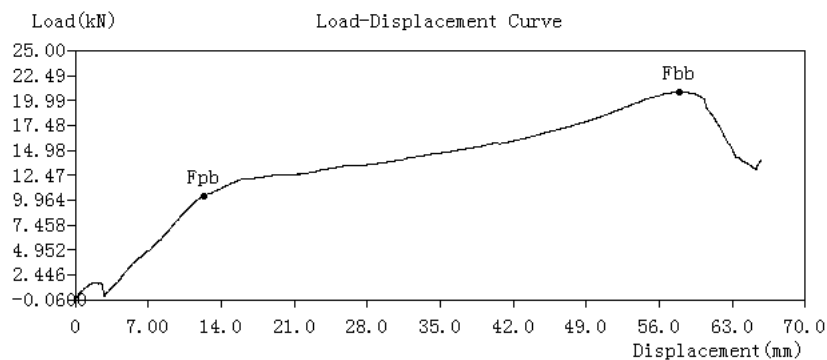


Lampiran 9 Grafik Hasil Pengujian *four point bending* spesimen dengan ketebalan inti 30 mm

## ALUMINIUM FOAM

## 4 POINT BENDING T 30 MM SAMPEL 1

SampleID		TestDate	2015/1/1 星期四
Operator		Type	Flat
Size (mm)	54*42	So (mm <sup>2</sup> )	2268.00
Ls (mm)	240	Fbb (kN)	20.90
Rbb (MPa)	79	Fpb (kN)	10.40
Rpb (MPa)	39	Eb (GPa)	1.0
U (J)	885.767		



ALUMINIUM FOAM  
4 POINT BENDING T 30 MM SAMPEL 1

SampleID	t : 30	TestDate	2015/1/1 星期四
Operator	Edi Iskandar	Type	Flat
Size(mm)	54*37	So(mm <sup>2</sup> )	1998.00
Ls(mm)	240	Fbb(kN)	20.70
Rbb(MPa)	101	Fpb(kN)	12.35
Rpb(MPa)	60	Eb(GPa)	0.5
U(J)	960.137		

