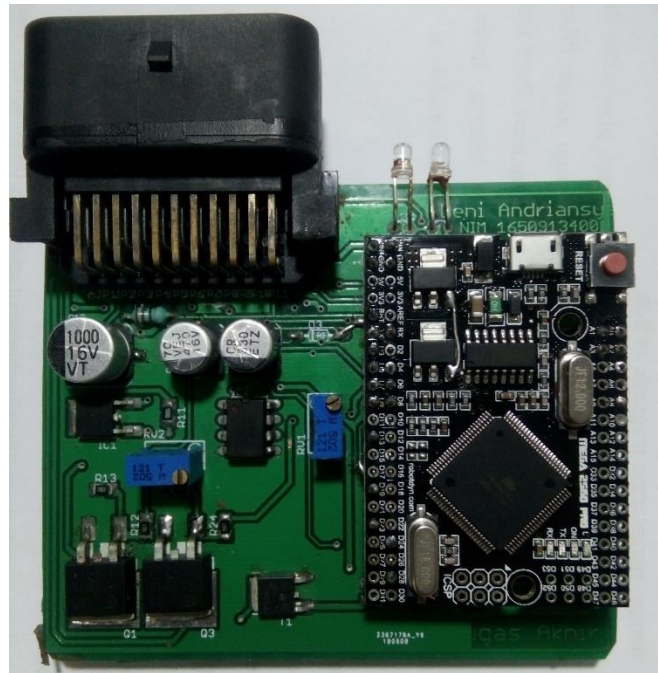
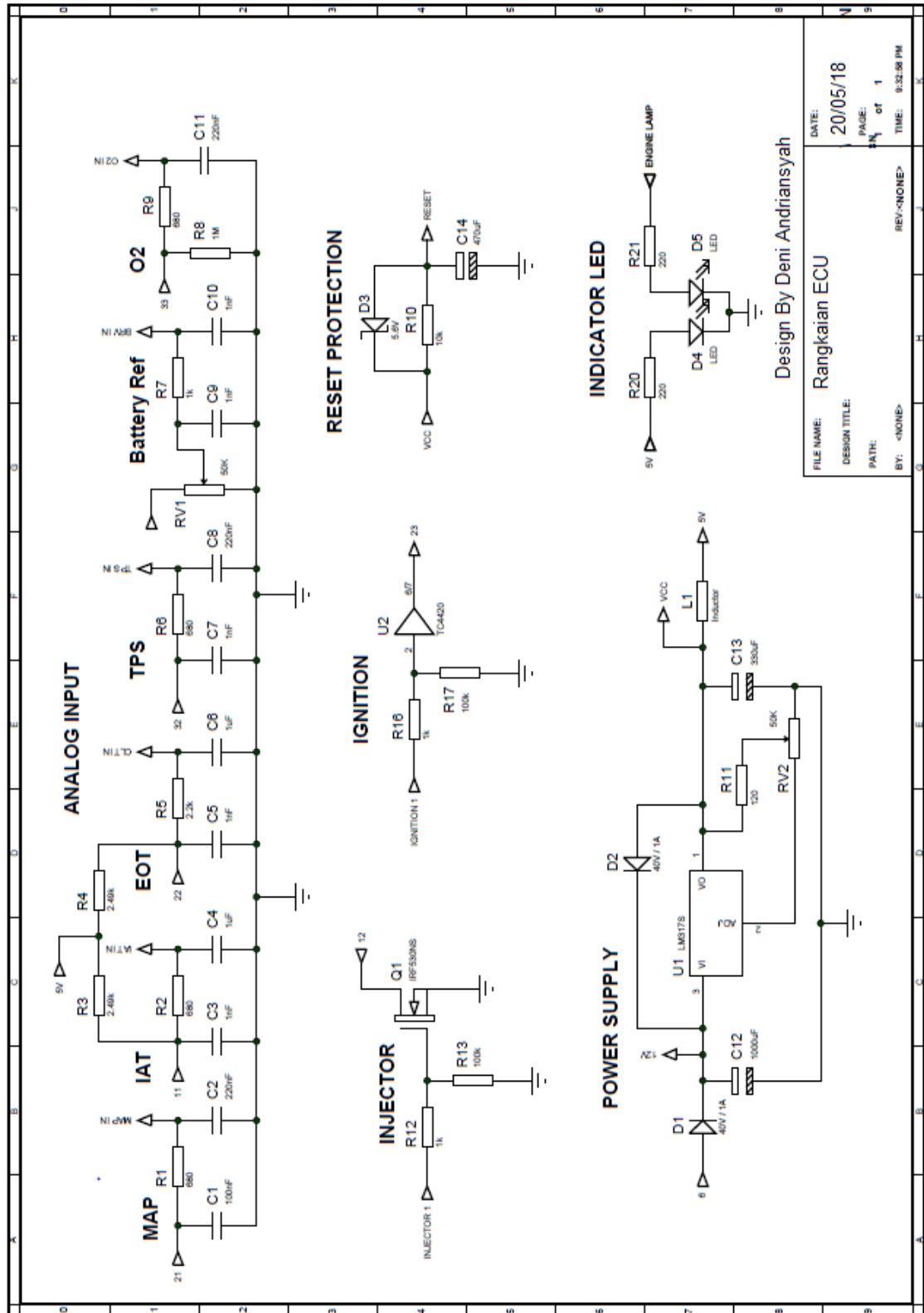


LAMPIRAN

Lampiran 1. Produk Tugas Akhir ECU Programmable



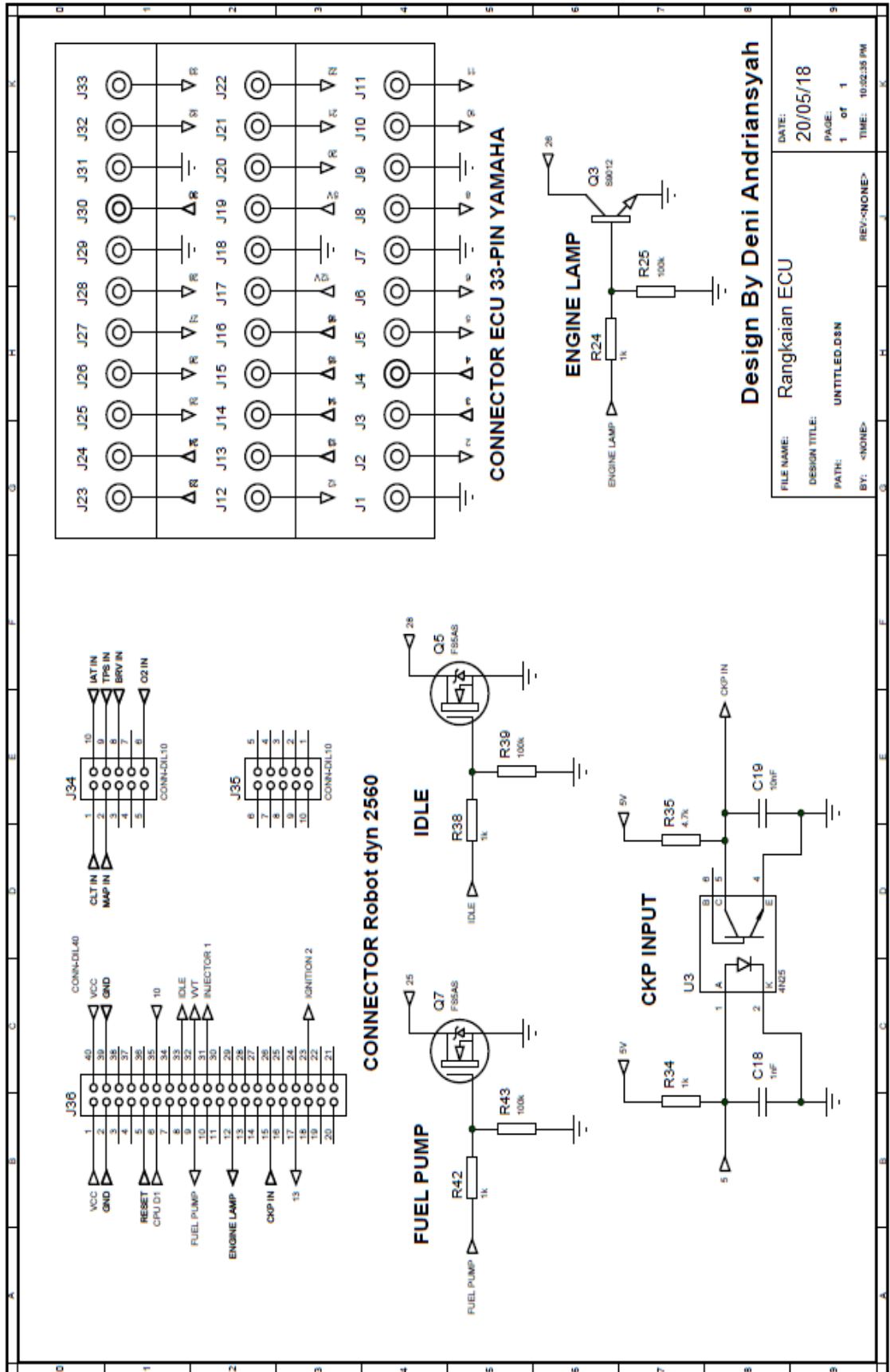
Lampiran 2. Skema Rangkaian ECU Programmable



Design By Demetri Andriansyah
 Rangkaian ECU

FILE NAME: Rangkaian ECU
 DESIGN TITLE: Rangkaian ECU
 PATH: <NONE>
 BY: <NONE>
 REV: <NONE>

DATE: 20/05/18
 PAGE: 1 of 1
 TIME: 9:32:58 PM



Lampiran 3. Fungsi Setiap Pin Connector ECU Programmable

Connector 33-Pin ECU Programmable	
PIN	Function
1	Ground Engine
2	NC
3	NC
4	NC
5	Signal CKP Input
6	12V Input ECU
7	Ground ECU
8	NC
9	Ground Sensor
10	RX (D0)
11	5V Signal IAT
12	Injector Ground
13	CPU D23
14	NC
15	NC
16	NC
17	12V Output ECU to Actuator
18	Ground Sensor
19	5V Supply Sensor
20	NC
21	Signal MAP
22	5V Signal EOT
23	Ignition Output Signal
24	TX (D1)
25	Fuel Pump Ground
26	Ground Engine Lamp
27	NC
28	IDLE
29	Ground Sensor
30	Tachometer Signal
31	Ground Sensor
32	Signal TPS
33	Signal O2

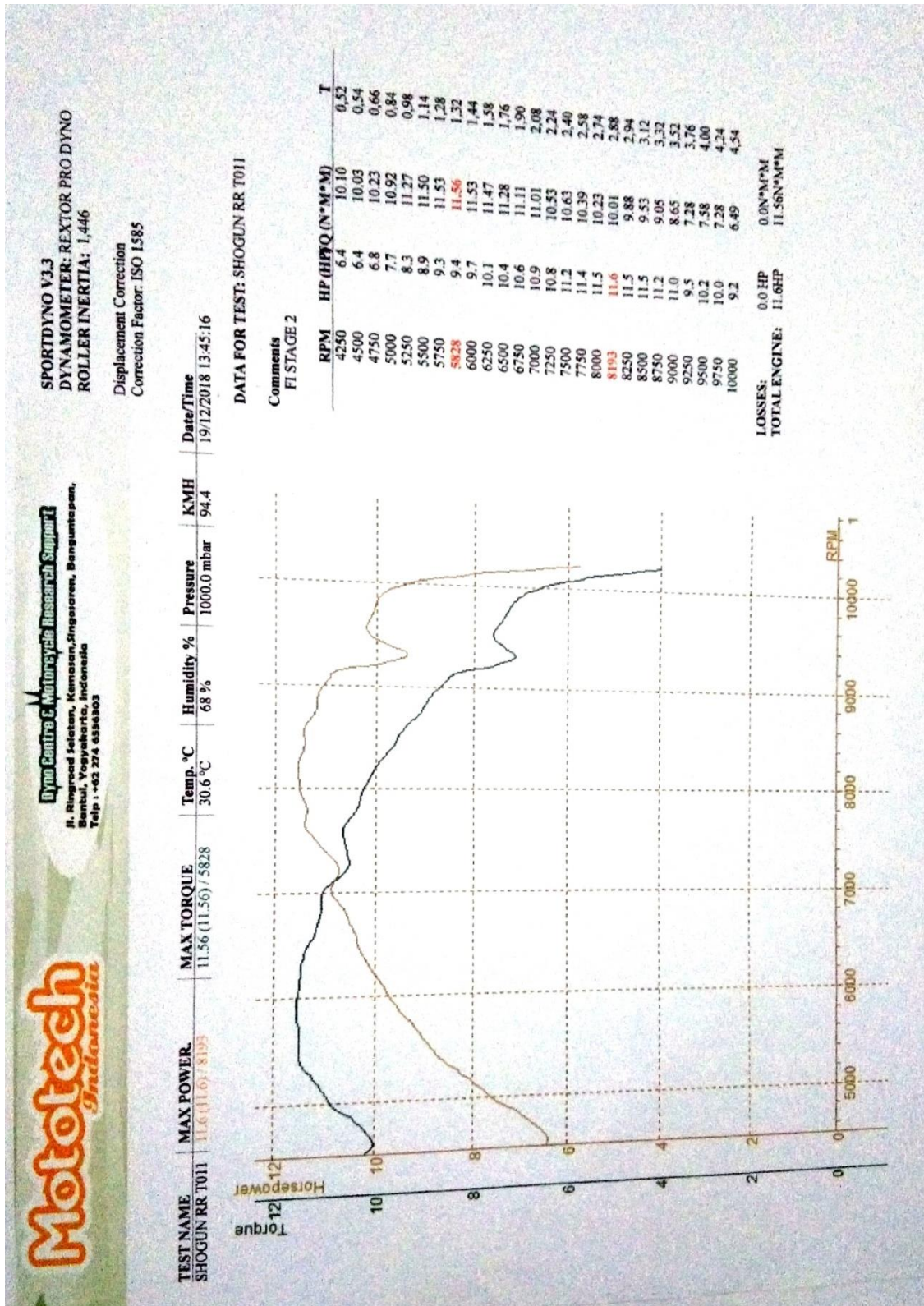
Lampiran 4. Proses Perakitan ECU Programmable pada Papan PCB



Lampiran 5. Proses Pengujian *Performance* mesin menggunakan *Dyno Test*

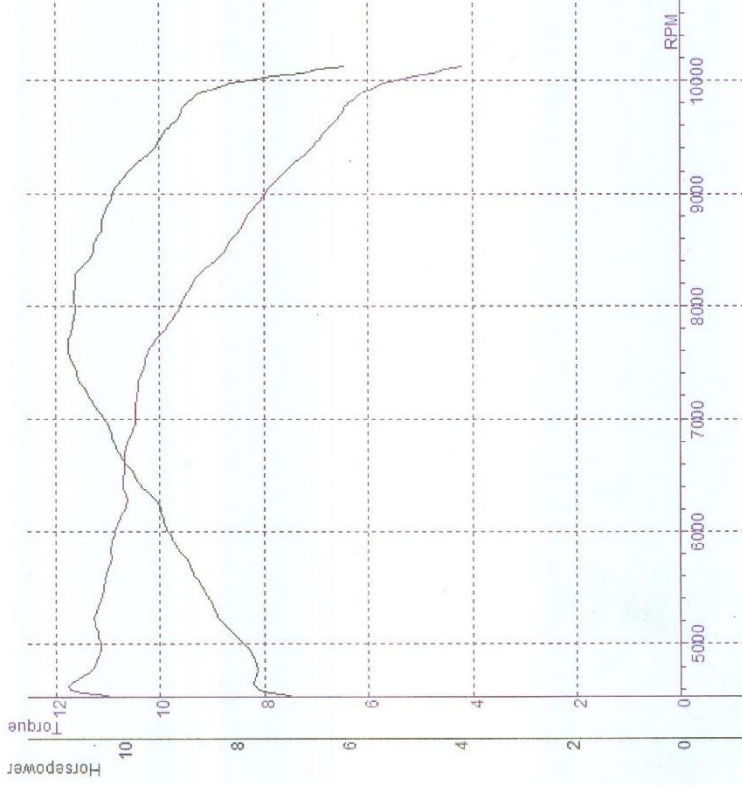


Lampiran 6. Data Pengujian *Performance* menggunakan *Dyno Test*



TEST NAME: SHOGUN RR 125 T032 | MAX POWER: 11.0 (11.0) / 7645 | Temp. °C: 33.3 °C | Humidity %: 48 % | Pressure: 1000.0 mbar | KM/H: 94.0
 Date/Time: 12/10/2018 14:32:02

DATA FOR TEST: SHOGUN RR 125 T032



Comments
 CDI STD SHOGUN

RPM	HP (HP0) (N*M*M)	T
4250	7.4	11.50
4500	7.5	11.72
4633	7.6	11.76
4750	7.6	11.36
5000	7.8	11.14
5250	8.3	11.26
5500	8.6	11.08
5750	8.8	10.93
6000	9.2	10.86
6250	9.4	10.63
6500	9.8	10.68
6750	10.1	10.62
7000	10.3	10.47
7250	10.7	10.42
7500	10.9	10.28
7645	11.0	10.17
7750	10.9	9.98
8000	10.8	9.88
8250	10.8	9.26
8500	10.5	8.73
8750	10.3	8.35
9000	10.1	7.97
9250	9.7	7.45
9500	9.3	6.89
9750	8.9	6.45
10000	7.6	5.33

LOSSES: 0.0N*M*M
 TOTAL ENGINE: 11.0HP
 0.0N*M*M
 11.76N*M*M

Lampiran 7. Pengujian Konsumsi Bahan bakar



Lampiran 8. Pembuatan Pick Up (gigi tonjolan 12-1) pada *Rotor Flywheel*



Lampiran 9.Jasa Pencetakan Papan PCB oleh JLC PCB

0,00KB/s 07.15 12%

Invoice

No.2367178A20180613081416Y6



Ship From:

Ship To:

Billing Address:

JIALICHUANG
 TECH.DEVELOPMENT Deni
 CO.LTD.
 30A, Area A, Shennan
 Garden Bldg,
 Nanshan Dist.
 Shenzhen 518000
 China
 +86 13738561292

Andriansyah
 Jalan Hasyim
 Tahir Dusun 1
 Paya Gambar,
 Batang Kuis
 Deli Serdang
 20372
 ID

082370128989

Date Ordered: 2018-06-08 14:29:42

Products

PCB	Unit Price	Quantity	Total Price
- File: ECU TA DENI_Y6 - 77mm * 95mm; - Layers: 2; - PCB Thickness: 1,6mm; - PCB Quantity: 10; - PCB Color: Green; - Surface Finish: HASL(with lead); - Copper Weight: 1 oz;	\$0,2	10	\$2

Sub-Total: \$2
 Express: \$8,51
 Total: \$10,51

Process

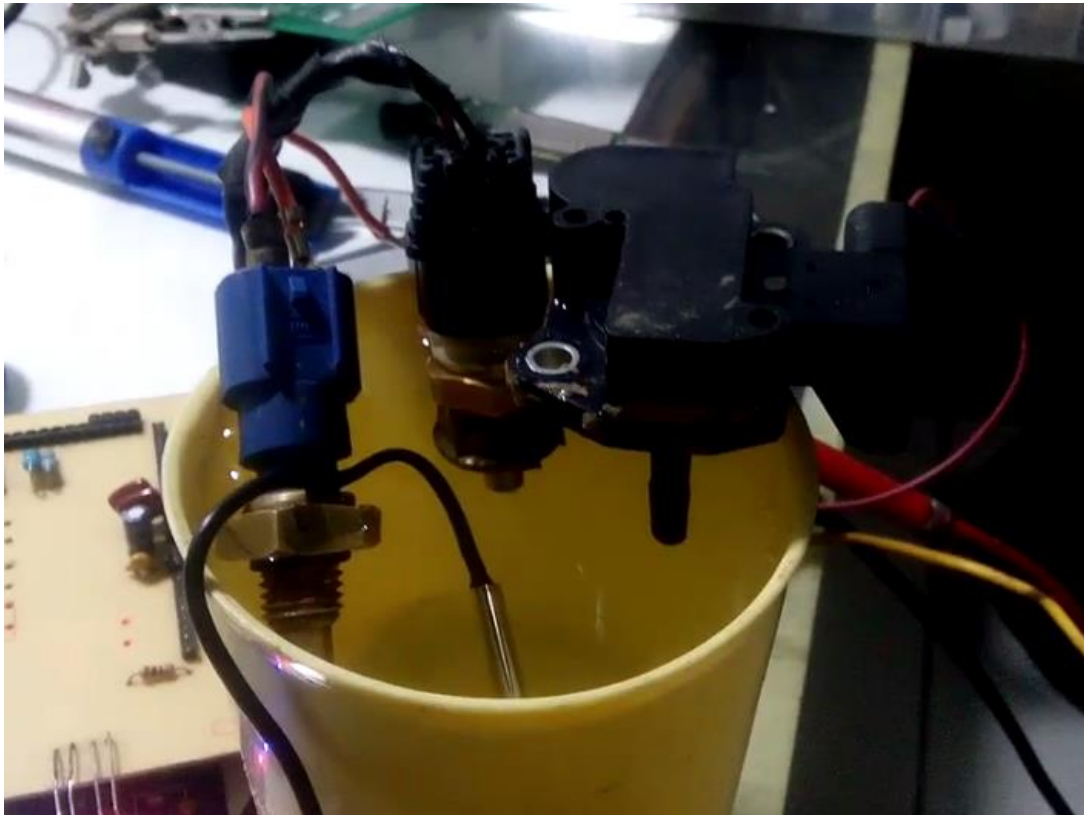


1MI	2018-06-08 18:32:37
2Drilling	2018-06-08 19:12:49
3Copper Deposition	2018-06-08 22:35:03
4Image the outer layers	2018-06-08 23:30:02
5Pattern Plating	2018-06-09 01:25:09
6Automatic Optical Inspection(AOI)	2018-06-09 04:36:57
7Solder Mask	2018-06-09 04:49:16
8Silkscreen	2018-06-09 13:36:08
9Hot Air Solder Leveling(HASL)	2018-06-09 17:22:45
10Electrical Test	2018-06-09 23:19:37
11Profiling,V-cut scoring	2018-06-10 03:57:16
12Final inspection	2018-06-10 06:11:41
13Packaging,Delivery	2018-06-10 06:55:01

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Lampiran 10. Proses Kalibrasi Temperatur pada Sensor Suhu



Lampiran 11. Bukti Selesai Revisi Proyek Akhir



KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS TEKNIK
PROGRAM STUDI TEKNIK OTOMOTIF
Alamat : Kampus Karangmalang, Yogyakarta, 55281;Telp. (0274)586168

BUKTI SELESAI REVISI PROYEK AKHIR D3

Nama Mahasiswa : Deni Andransyah
NIM : 16509134003
Program Studi : Teknik Otomotif
Judul TA : PEMBUATAN ENGINE CONTROL UNIT
PROGRAMMABLE (ECU PROGRAMMABLE)
MENGUNAKAN MIKROKONTROLLER
ATMEGA2560

Dosen Pembimbing : Dr. Ir. Zainal Arifin, M.T.

Dengan ini saya menyatakan mahasiswa tersebut telah selesai revisi.

No.	Nama	Jabatan	Paraf	Tanggal
1	Dr. Ir. Zainal Arifin, M.T.	Ketua Penguji		06/09 2019
2	Drs. Moch. Solikin, M.Kes.	Sekretaris Penguji		05/09 2019
3	Drs. Kir Haryana, M.Pd.	Penguji Utama		05/09 2019

Keterangan:

1. Arsip Jurusan
2. Kartu wajib dilampirkan dalam Proyek Akhir D3

Lampiran 12. Formulir Bimbingan Tuga



KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS TEKNIK
PROGRAM STUDI TEKNIK OTOMOTIF
 Alamat : Kampus Karangmalang, Yogyakarta, 55281; Telp. (0274)586168

FORMULIR BIMBINGAN TA

Nama Mahasiswa : Deni Andriansyah
 Dosen Pembimbing : Dr. Ir. Zainal Arifin, M.T.
 NIM : 16509134003
 Program Studi : Teknik Otomotif
 Judul TA : PEMBUATAN ENGINE CONTROL UNIT
 PROGRAMMABLE (ECU PROGRAMMABLE)
 MENGGUNAKAN MIKROKONTROLLER
 ATMEGA2560

NO.	HARI/ TANGGAL BIMBINGAN	MATERI BIMBINGAN	HASIL/SARAN BIMBINGAN	PARAF DOSEN PEMBIMBING
1	21/06 2019	Pemb. I.	Review LB.	
2	26/06 2019	Pemb I.	Lampir Pemb. II	
3	9/07 2019	Pemb II	Review	
4	22/07 2019	Pemb II	Lampir Pemb. III	
5	30/07 2019	Pemb III	Lampir Pemb. IV	
6	7/08 2019	Pemb IV	Lampir Pemb V	
7	12/08 2019	Pemb. V.	Lampir Ujian	

Mengetahui,
 Ketua Prodi Teknik Otomotif,

Drs. Moch. Solikin, M.Kes
 NIP.196680404199303 1 001

Yogyakarta, 16 Agustus 2019
 Mahasiswa,

Deni Andriansyah
 NIM. 16509134003