BAB VII

KESIMPULAN

Dari data-data hasil pengujian yang telah dilakukan dapat ditarik beberapa kesimpulan :

a. **Daya Efektif**

Dimana penggunaan Bahan Bakar MDO dari Viscositas 9,25 cst ke Viscositas 7,40 est dan ke Viscositas 5,80 cst ternyata mampu meningkatkan daya efektif rata-rata sebesar 4,2 % pada berbagai kondisi pembebanan pada RPM Constan.

- Meningkatkan Daya Efektif 0,6% pada putaran constan 700 RPM dengan berbagai pembebanan.
- Meningkatkan Daya Efektif 1,3% pada putaran Constan 800 Rpm dengan berbagai pembebanan
- Meningkatkan Daya Efektif 2% pada putaran constan 900 Rpm.
- Meningkatkan Daya Efektif 6,8% pada putaran constan 1000 Rpm.
- Meningkatkan Daya Efektif 10,5% pada Coust 1050 Rpm.

b. **BSFC**

Penggunaan Bahan Bakar spesifik menurun rata-rata 7% dari viscositas 9,25 cst ke 7,40 cst dan ke 5,80 cst pada berbagai pembebanan dan Rpm constan

- Penurunan BSFC rata-rata sebesar 12% pada berbagai pembebanan dan putaran constan 700 Rpm.
- Penurunan BSFC rata-rata sebesar 8% pada putaran 800 Rpm
- Penurunan BSFC rata-rata sebesar 5,5% pada putaran 900 Rpm.
- Penurunan BSFC rata-rata sebesar 2,3% pada putaran 1000 Rpm.
- Penurunan BSFC rata-rata sebesar 5,8% pada putaran 1050 Rpm
- Bahwa telah terbukti secara eksperimentif dimungkinkannya penggunaan alternatif bahan bakar (khususnya MDO) dengan selisih atau perbedaan viscositas tertentu sebagai bahan bakar alternatif dari motor diesel, beserta dengan segala aspek konsekwensinya atau pengaruhnya terhadap motor diesel bersangkutan sebagai bahan pertimbangan teknis dalam menentukan kebijaksanaan ditingkat operasional.

PENUTUP

Dengan memanjatkan puji dan syukur kepada Allah SWT, penulis dapat menyelesaikan Tugas Akhir ini sebagaimana dengan yang diharapkan.

Dengan selesainya penyusunan Tugas Akhir yang berjudul "Studi Perbandingan Penggunaan Bahan Bakar Jenis Minyak Diesel (MDO) dengan Selisih Viskositas Tertentu Terhadap Performa dari Engine, Melalui Suatu Uji Percobaan" ini penulis mengharapkan adanya kritik dan saran yang bersifat membangun demi tercapainya kesempurnaan.

Akhirnya sekali lagi penulis ucapkan terima kasih yang sebesar-besarnya kepada semua pihak yang telah membantu terselesaikannya Tugas Akhir ini dan semoga Tugas Akhir ini nantinya dapat bermanfaat bagi penulis khususnya para pembaca pada umumnya.

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5. WHARTON, A.J. 1977, Diesel Engines, Stanford Maritime Limited

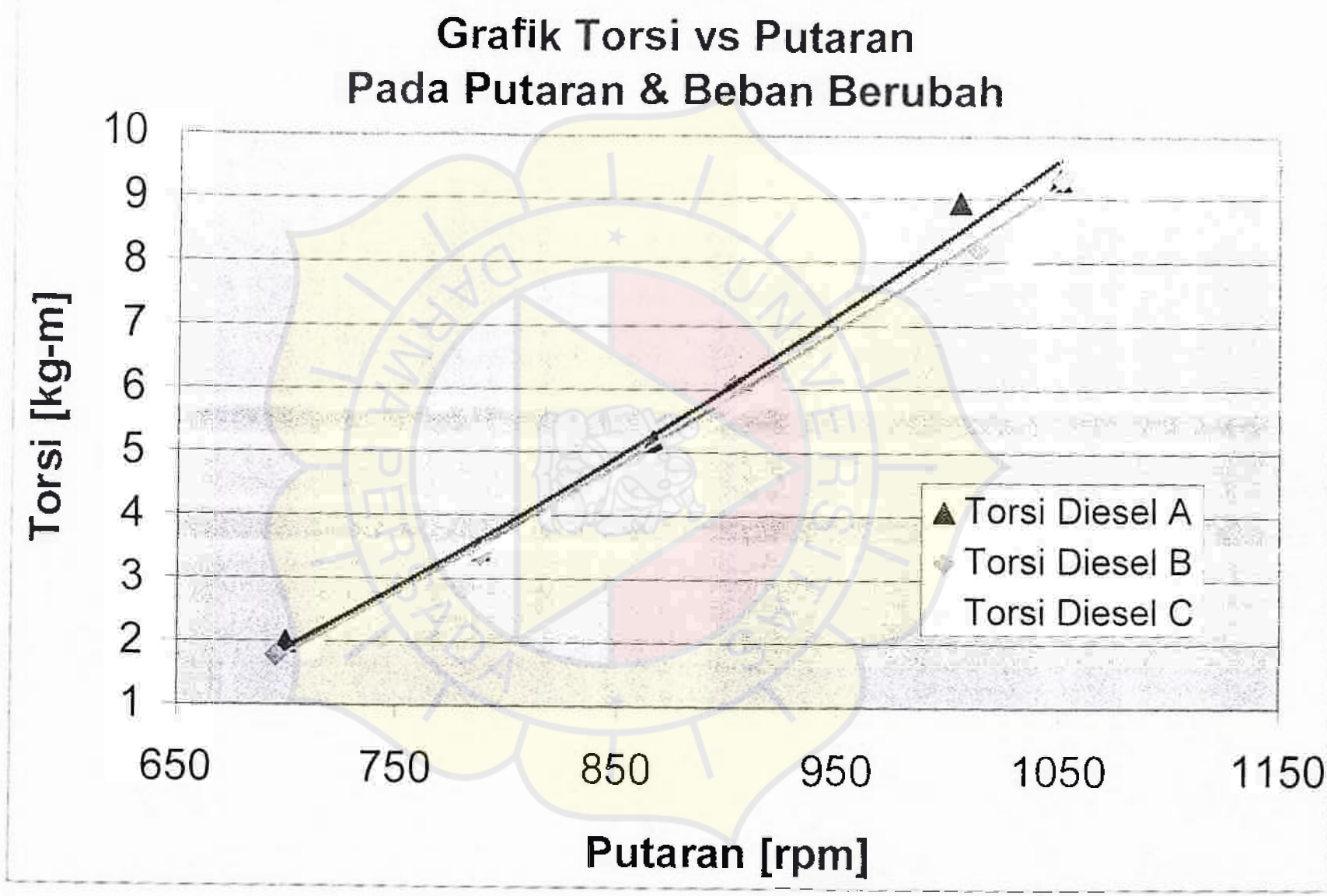
DATA HASIL PENGUKURAN & PERHITUNGAN

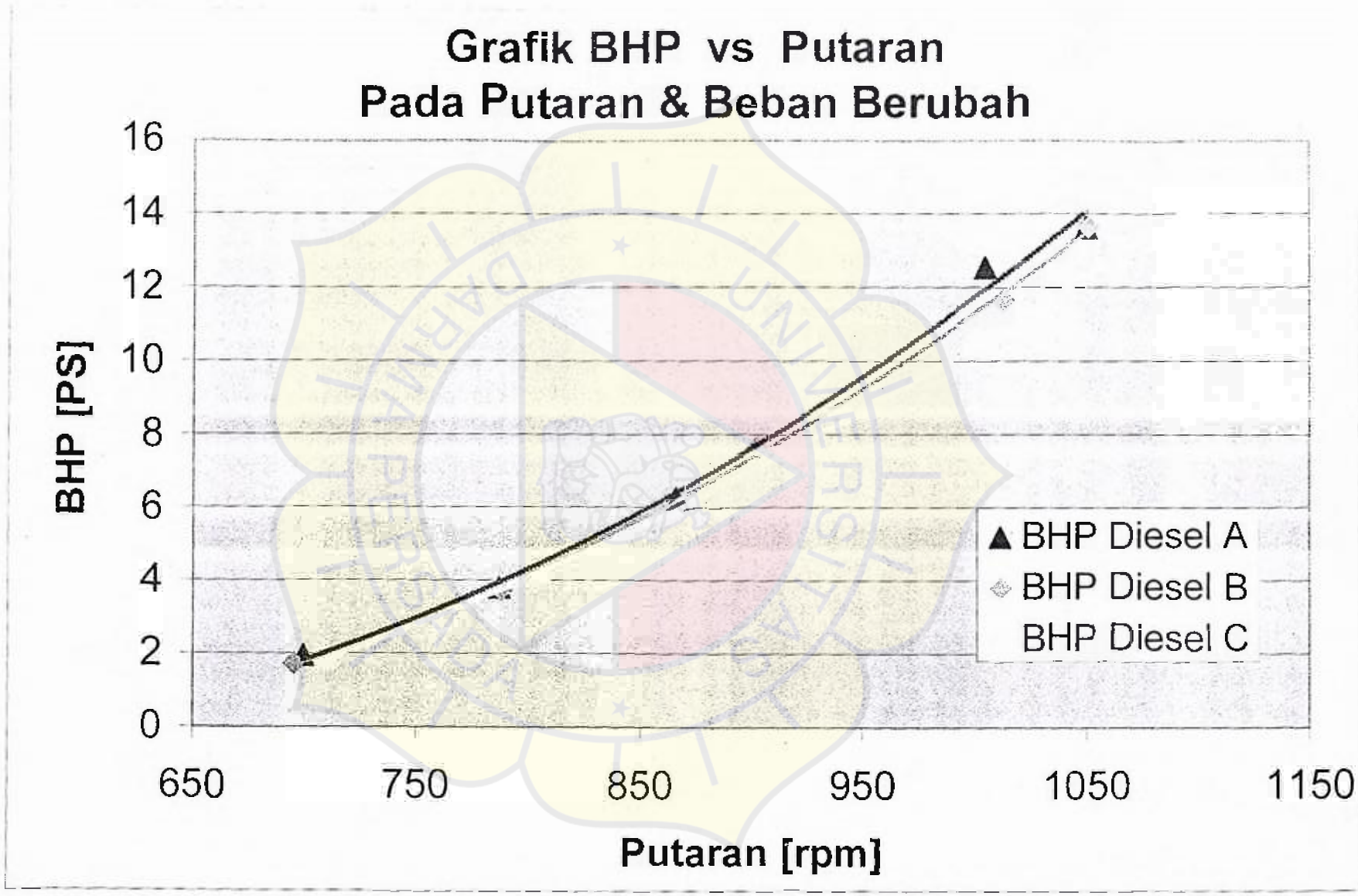
Tabel : 6.1
Pengujian : Putaran & Beban Berubah
Jenis : Data Perbandingan

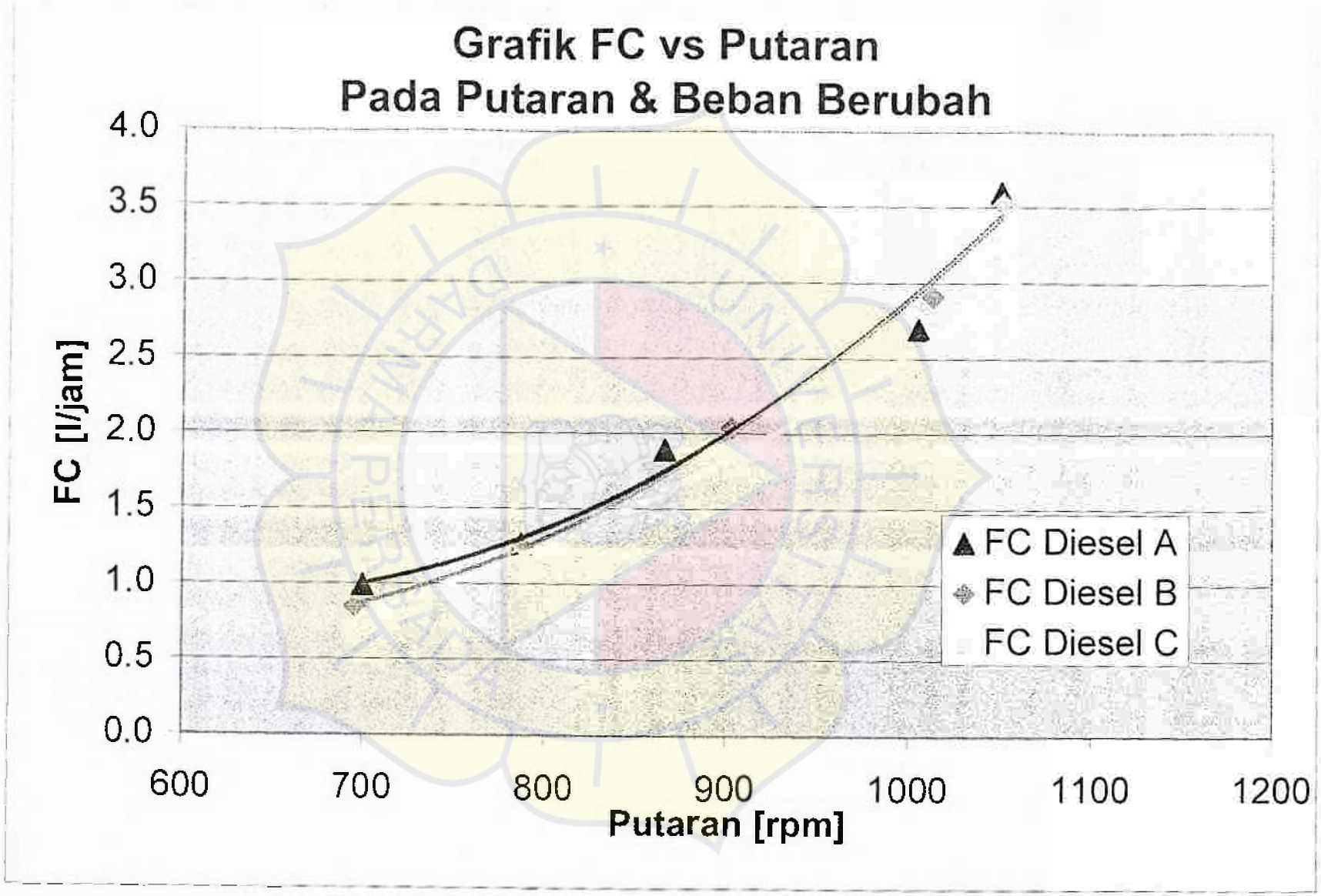
Diesel A (9,25 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	8	12	16	20
Putaran	(rpm)	710	805	916	1032	1100
Beban	(kg)	5.25	10.5	16.5	22.5	26
Torsi	(kg-m)	1.88	3.759	5.907	8.055	9.308
BHP	(PS)	1.864	4.227	7.558	11.611	14.302
FC	(liter/jam)	0.841	1.296	1901	2.833	3.345
BSFC	(kg/PS.Jam)	0.338	0.23	0.189	0.183	0.175

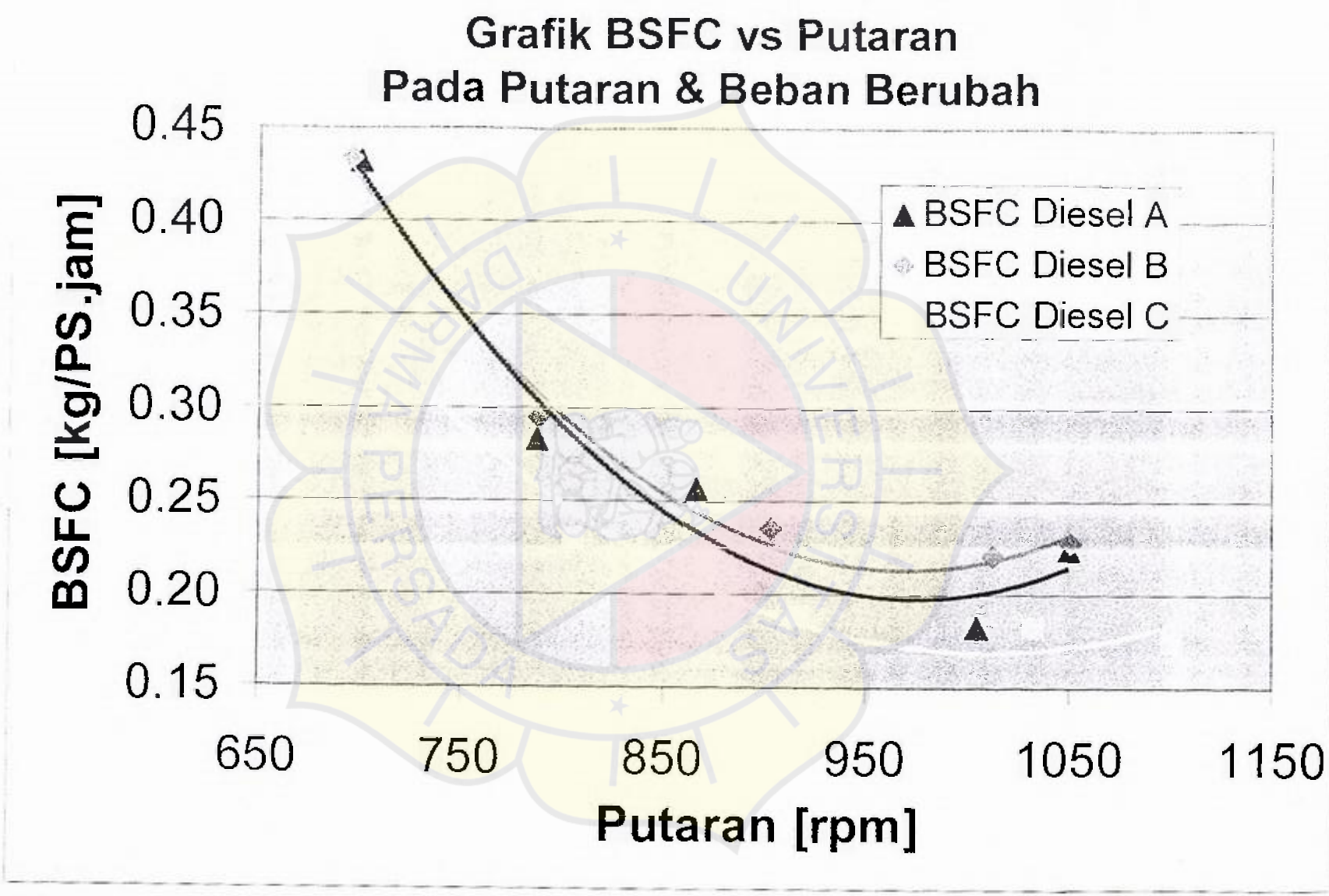
Diesel B (7,40 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	8	12	16	20
Putaran	(rpm)	700	787	866	1005	1050
Beban	(kg)	5.6	9.7	14.5	25	26
Torsi	(kg-m)	2.005	3.473	5.191	8.95	9.308
BHP	(PS)	1.960	3.817	6.279	12.564	13.652
FC	(liter/jam)	0.994	1.270	1.897	2.700	3.600
BSFC	(kg/PS. Jam)	0.432	0.283	0.257	0.183	0.225

Diesel C (5,80 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	8	12	16	20
Putaran	(rpm)	696	788	903	1013	1051
Beban	(kg)	5	9.5	17	23	26
Torsi	(kg-m)	1.790	3.401	6.086	8.234	9.308
BHP	(PS)	1.740	3.743	7.676	11.651	13.652
FC	(liter/jam)	0.854	1.252	2.042	2.919	3.53
BSFC	(kg/PS. Jam)	0.434	0.296	0.235	0.221	0.228


Grafik Torsi vs Putaran
Pada Putaran & Beban Berubah
Torsi [kg-m]
10
9
8
7
6
5
4
3
2
1
650
750
850
950
1050
1150
Putaran [rpm]
Torsi Diesel A
Torsi Diesel B
Torsi Diesel C


Grafik BHP vs Putaran
Pada Putaran & Beban Berubah
BHP [PS]
16
14
12
10
8
6
4
2
0
650
750
850
950
1050
1150
Putaran [rpm]
BHP Diesel A
BHP Diesel B
BHP Diesel C


Grafik FC vs Putaran
Pada Putaran & Beban Berubah
FC [l/jam]
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
600
700
800
900
1000
1100
1200
Putaran [rpm]
FC Diesel A
FC Diesel B
FC Diesel C


Grafik BSFC vs Putaran
Pada Putaran & Beban Berubah
BSFC [kg/PS.jam]
0.45
0.40
0.35
0.30
0.25
0.20
0.15
650
750
850
950
1050
1150
Putaran [rpm]
BSFC Diesel A
BSFC Diesel B
BSFC Diesel C

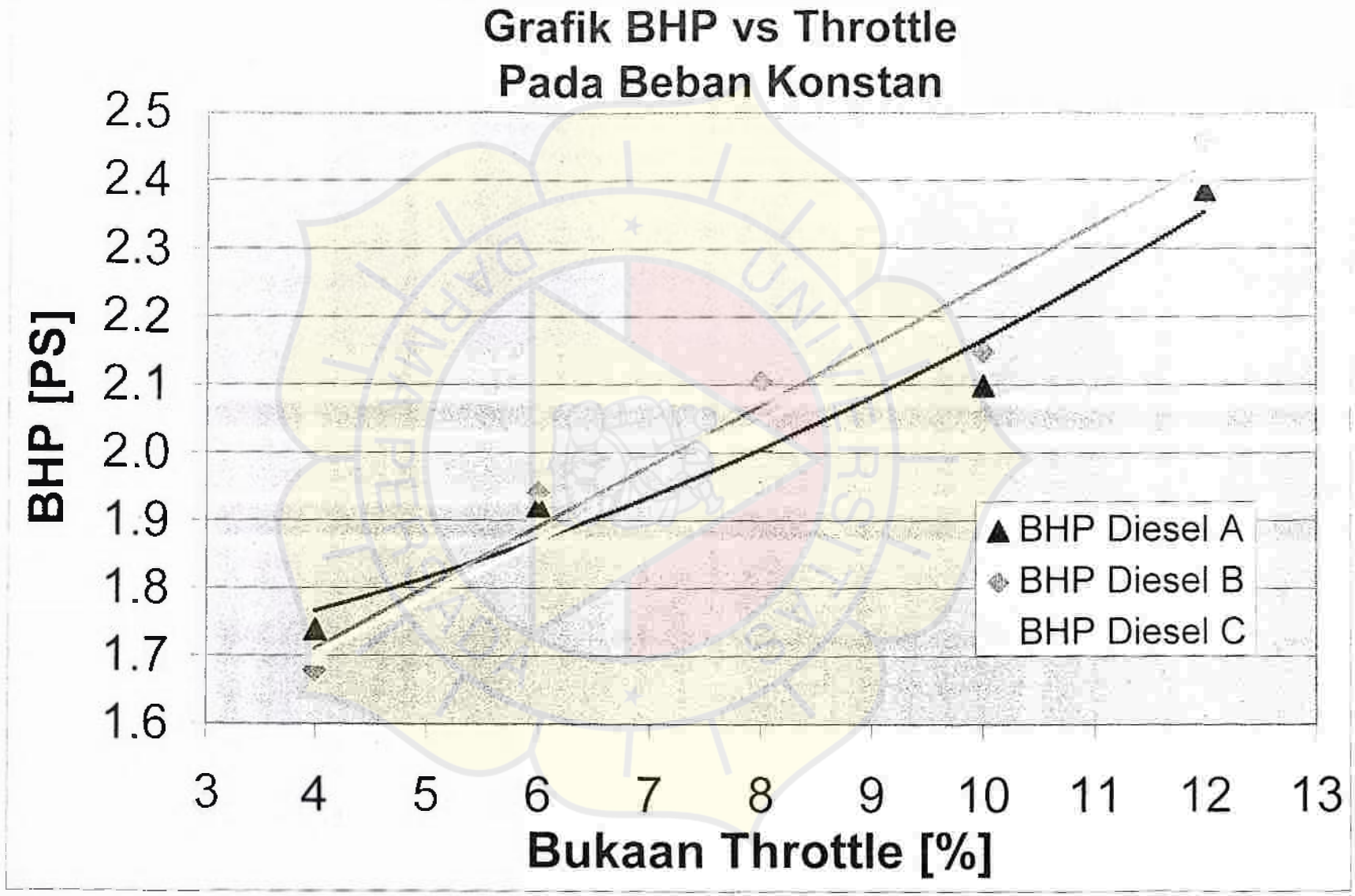
DATA HASIL PENGUKURAN & PERHITUNGAN

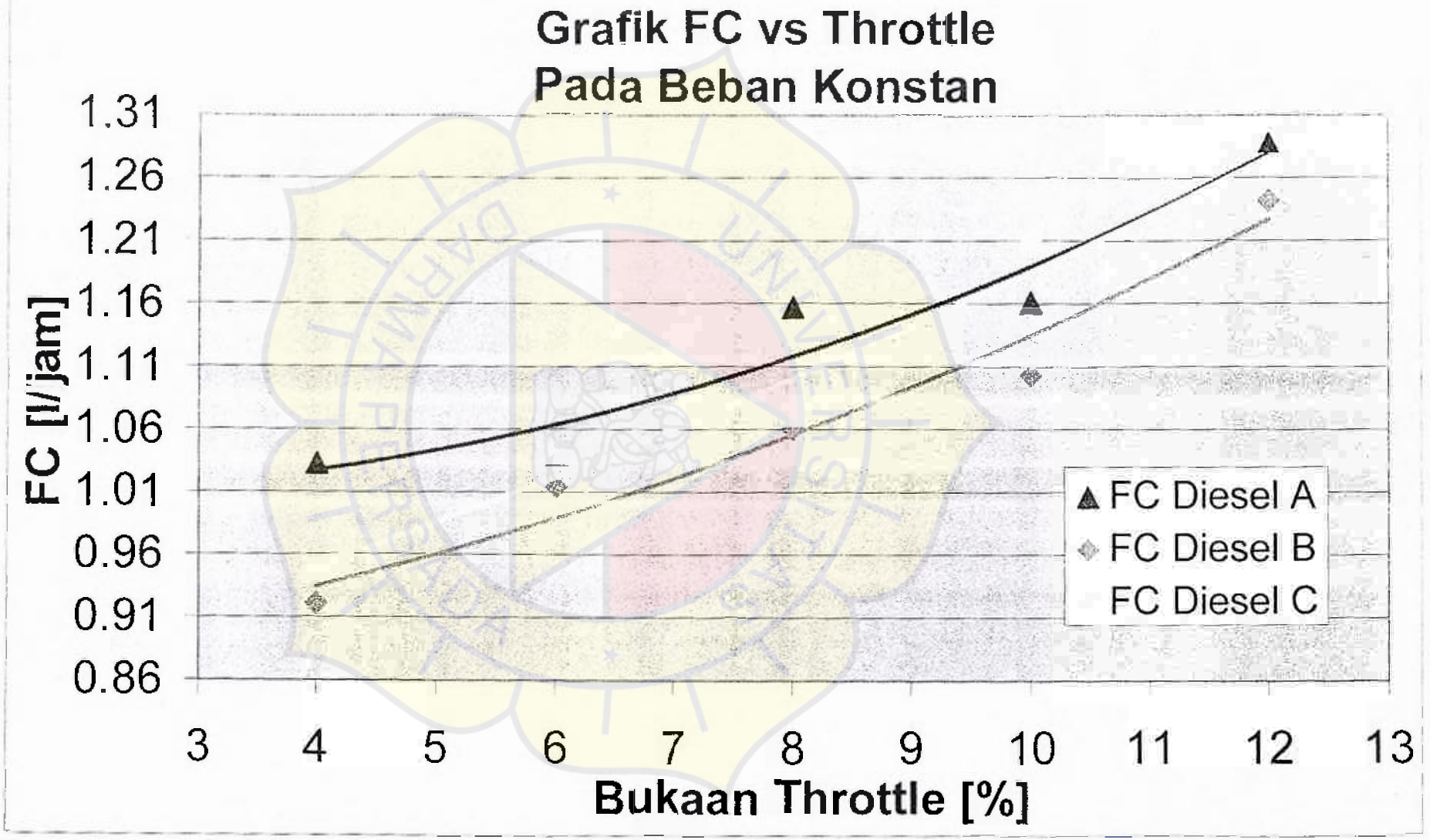
Tabel : 6.2
Pengujian : Beban Konstan
Jenis : Data Perbandingan

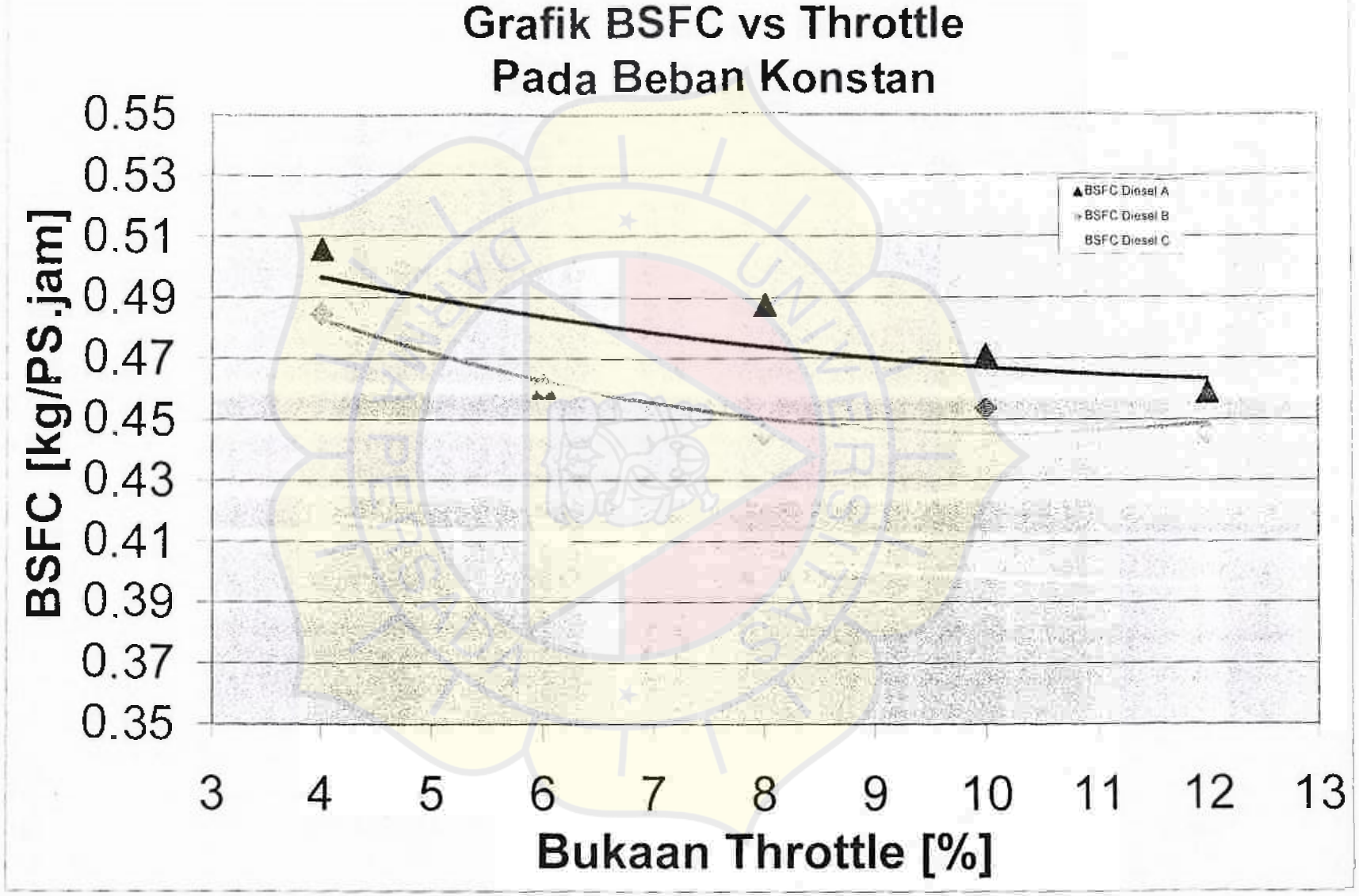
Diesel A (9,25 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	6	8	10	12
Putaran	(rpm)	696	769	808	840	955
Beban	(kg)	5	5	5	5	5
Torsi	(kg-m)	1.790	1.790	1.790	1.790	1.790
BHP	(PS)	1.740	1.923	2.020	2.100	2.388
FC	(liter/jam)	1033	1041	1.158	1.162	1.287
BSFC	(kg/PS. Jam)	0.506	0.461	0.488	0.471	0.459

Diesel B (7,40 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	6	8	10	12
Putaran	(rpm)	700	777	842	860	985
Beban	(kg)	4.8	5	5	5	5
Torsi	(kg-m)	1.718	1.790	1.790	1.790	1.790
BHP	(PS)	1.680	1943	2.105	2.150	2.463
FC	(liter/jam)	0.922	1.015	1.061	1.104	1.242
BSFC	(kg/PS. Jam)	0.485	0.462	0.445	0.454	0.446

Diesel C (5,80 Cst)						
Parameter	Satuan	Data & Perhitungan				
Throttle	(%)	4	6	8	10	12
Putaran	(rpm)	681	754	808.5	899.5	965
Beban	(kg)	5	5	5	5	5
Torsi	(kg-m)	1.790	1.790	1.790	1.790	1.790
BHP	(PS)	1.703	1.885	2.022	2.249	2.413
FC	(liter/jam)	0.947	1.041	1.071	1.208	1.271
BSFC	(kg/PS. Jam)	0.417	0.414	0.397	0.403	0.395


Grafik BHP vs Throttle
Pada Beban Konstan
BHP [PS]
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
3
4
5
6
7
8
9
10
11
12
13
Bukaan Throttle [%]
BHP Diesel A
BHP Diesel B
BHP Diesel C


Grafik FC vs Throttle
Pada Beban Konstan
FC [l/jam]
1.31
1.26
1.21
1.16
1.11
1.06
1.01
0.96
0.91
0.86
3
4
5
6
7
8
9
10
11
12
13
Bukaan Throttle [%]
FC Diesel A
FC Diesel B
FC Diesel C


Grafik BSFC vs Throttle
Pada Beban Konstan
BSFC [kg/PS.jam]
0.55
0.53
0.51
0.49
0.47
0.45
0.43
0.41
0.39
0.37
0.35
BSFC Diesel A
BSFC Diesel B
BSFC Diesel C
3
4
5
6
7
8
9
10
11
12
13
Bukaan Throttle [%]

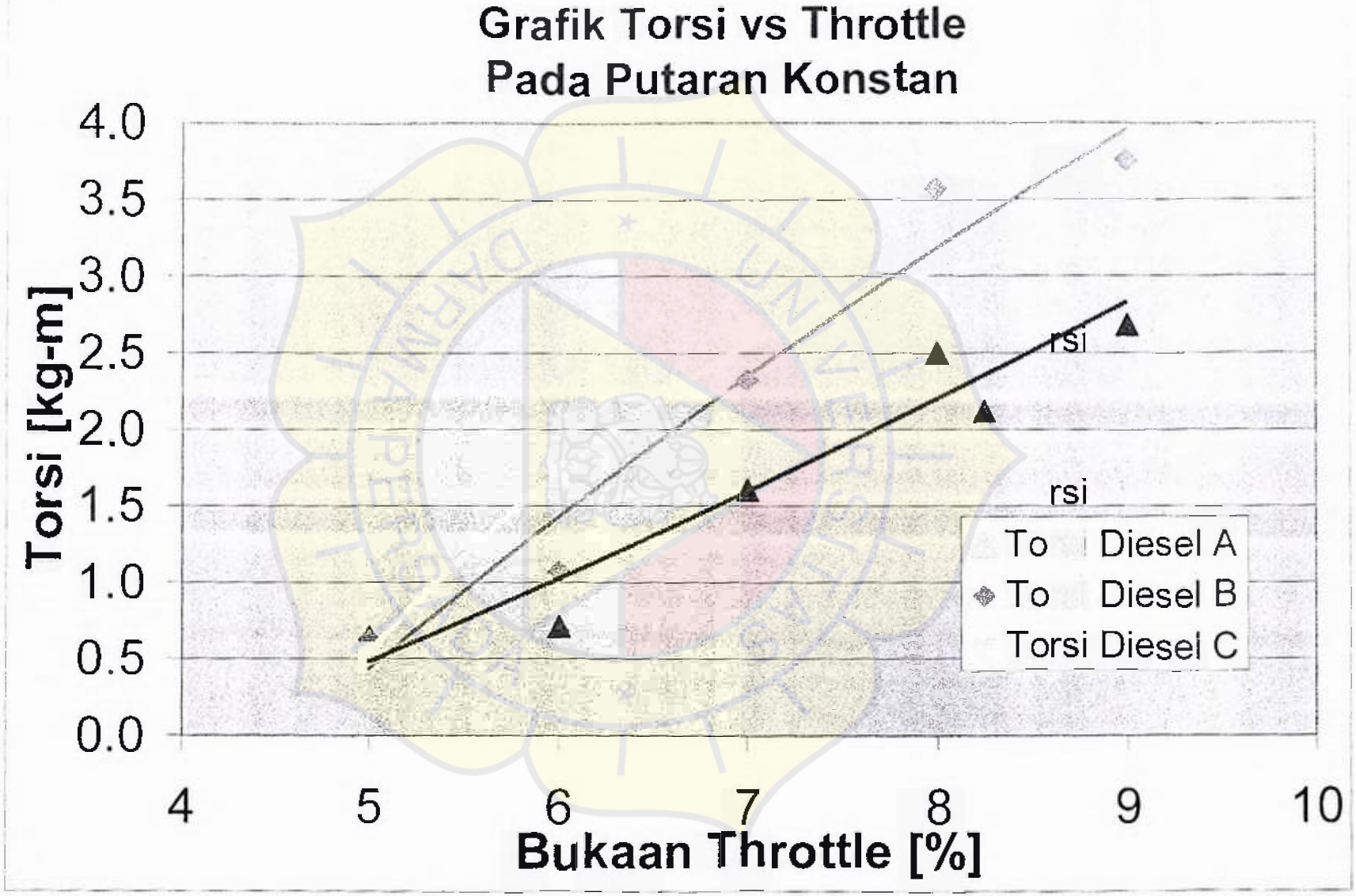
DATA HASIL PENGUKURAN & PERHITUNGAN

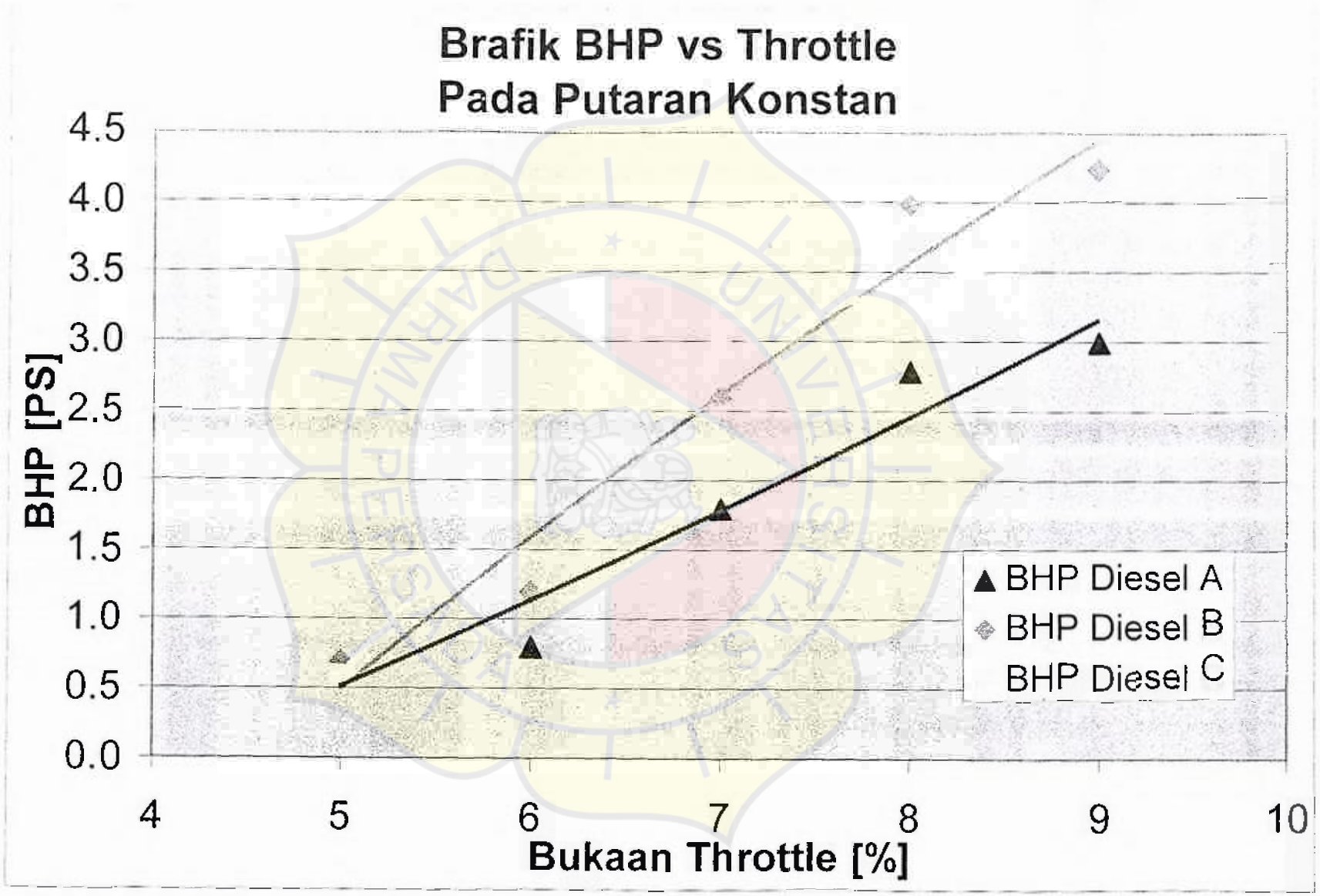
abel : 6.3
engujian : Putaran Konstan
enis : Data Perbandingan

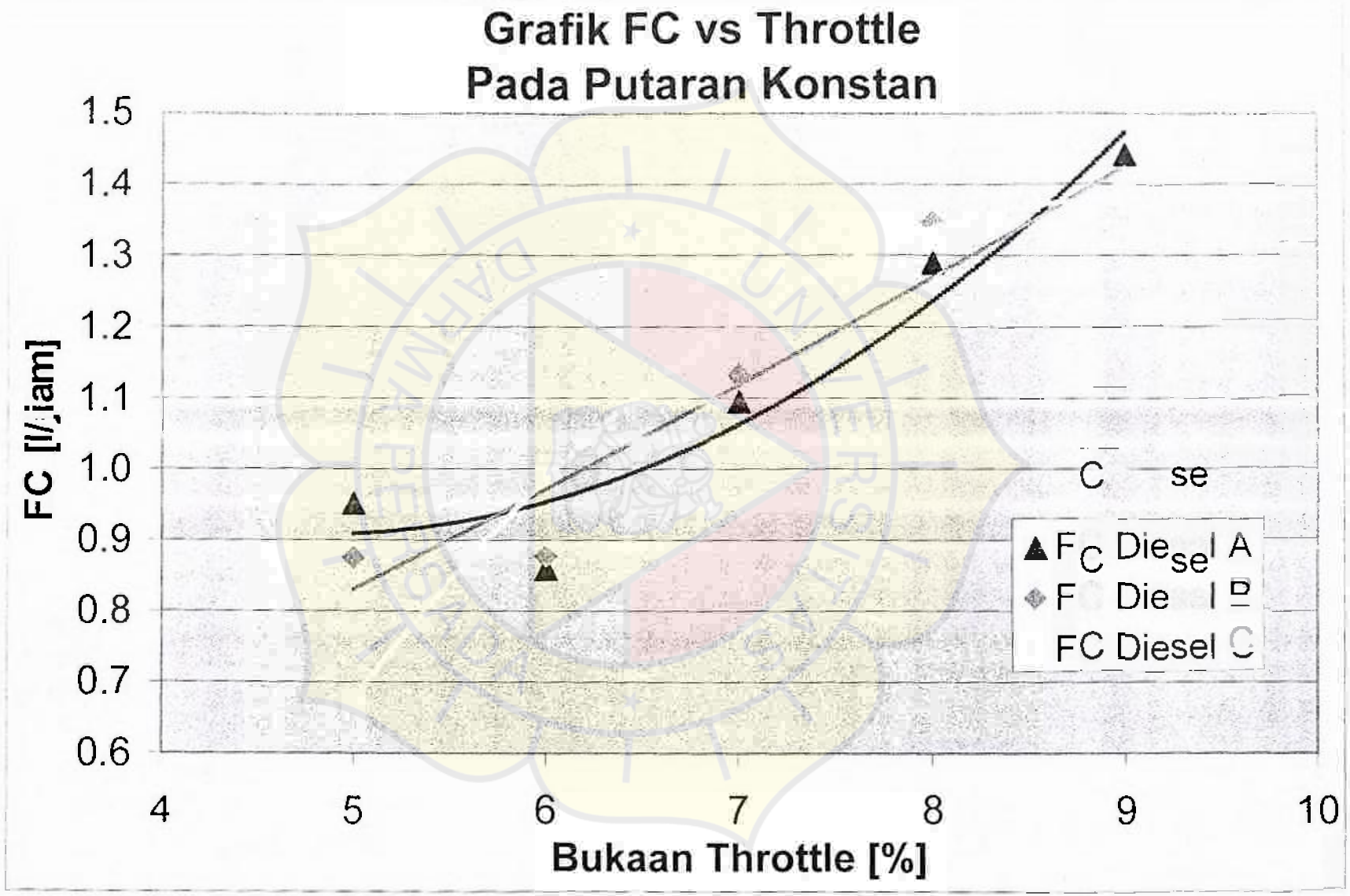
Diesel A (9,25 Cst)						
Parameter	Satuan	Data & Perhitungan				
rottle	(%)	5	6	7	8	9
utaran	(rpm)	765	802	800	796	800
eban	(kg)	1.8	2	4.5	7	7.5
orsi	(kg-m)	0.644	0.716	1.611	2.506	2.685
HP	(PS)	0.689	0.802	1.800	2.786	3.000
C	(liter/jam)	0.952	0.859	1.095	1.290	1.442
SFC	(kg/PS. Jam)	1.178	0913	0.518	0.394	0.409

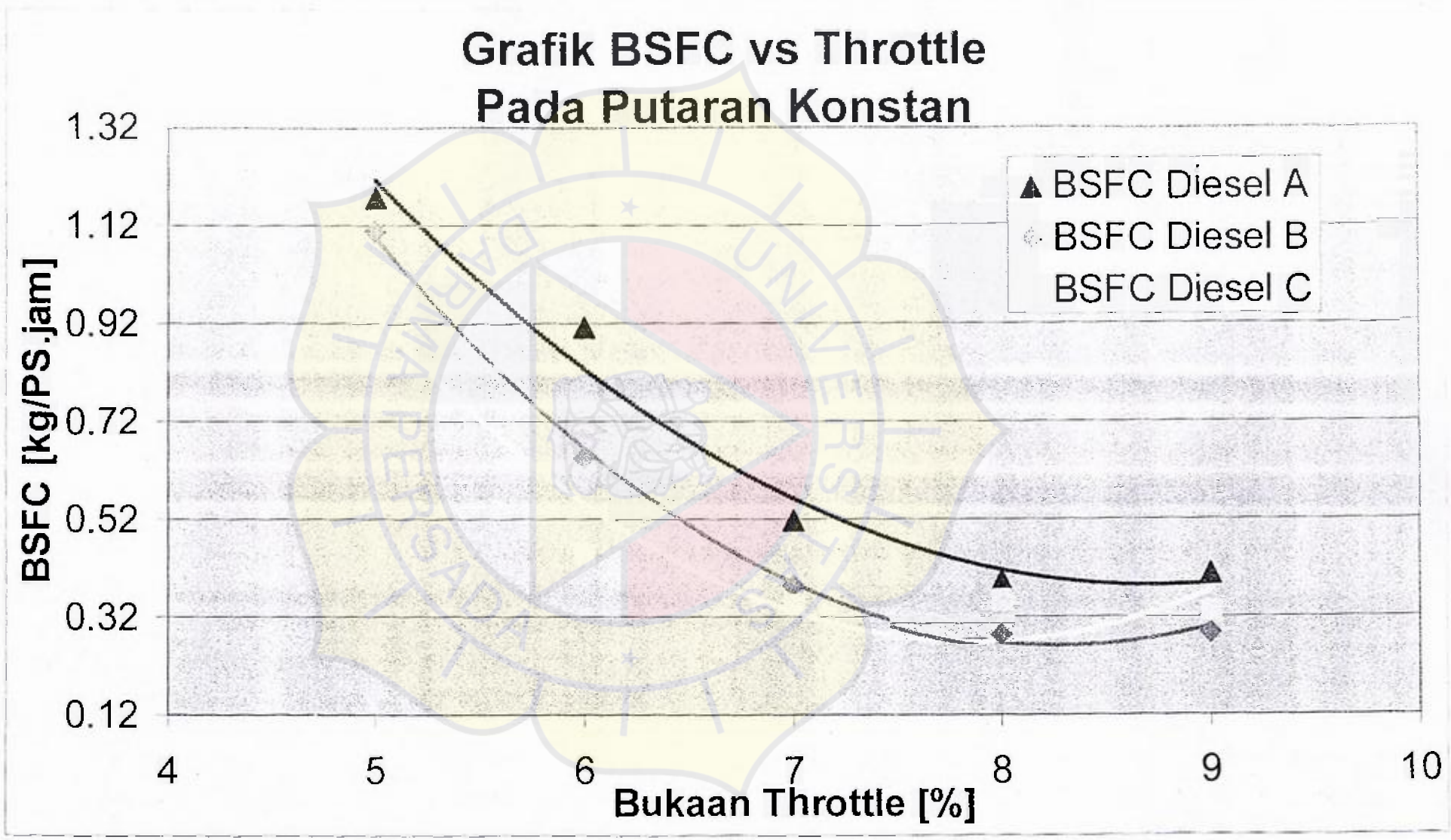
Diesel B(7,40 Cst)						
Parameter	Satuan	Data & Perhitungan				
rottle	(%)	5	6	7	8	9
utaran	(rpm)	798	800	800	797	807
eban	(kg)	1.75	3	6.5	10	10.5
orsi	(kg-m)	0.627	1.074	2327	3.580	3.759
HP	(PS)	0.698	1.200	2.600	3.986	4.237
C	(liter/jam)	0.877	0.878	1.133	1.346	1.384
SFC	(kg/PS. Jam)	1.109	0647	0.385	0.299	0.289

Diesel C(5,80 Cst)						
Parameter	Satuan	Data & Perhitungan				
rottle	(%)	5	6	7	8	9
utaran	(rpm)	791	795	814	805	804
eban	(kg)	1.5	4.8	7.5	8	9
orsi	(kg-m)	0.537	1.718	2.685	2.864	3.222
HP	(PS)	0.593	1.908	3.053	3.220	3.618
C	(liter/jam)	0.675	0.989	1.220	1.323	1.385
SFC	(kg/PS. Jam)	0.986	0.449	0.346	0.356	0.332


Grafik Torsi vs Throttle
Pada Putaran Konstan
Torsi [kg-m]
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4
5
6
7
8
9
10
Bukaan Throttle [%]
rsi
rsi
To Diesel A
To Diesel B
Torsi Diesel C


Brafik BHP vs Throttle
Pada Putaran Konstan
BHP [PS]
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4
5
6
7
8
9
10
Bukaan Throttle [%]
BHP Diesel A
BHP Diesel B
BHP Diesel C


Grafik FC vs Throttle
Pada Putaran Konstan
FC [l/jam]
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
4
5
6
7
8
9
10
Bukaan Throttle [%]
FC Diesel A
FC Diesel B
FC Diesel C

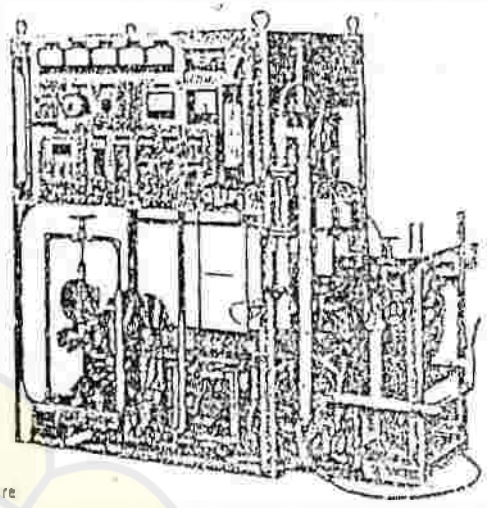

Grafik BSFC vs Throttle
Pada Putaran Konstan
BSFC [kg/PS.jam]
1.32
1.12
0.92
0.72
0.52
0.32
0.12
4
5
6
7
8
9
10
Bukaan Throttle [%]
BSFC Diesel A
BSFC Diesel B
BSFC Diesel C

ENGINE RESEARCH AND TEST BED

GASOLINE AND DIESEL ENGINE PERFORMANCE TEST AND ANALYSIS SYSTEM

FEATURES

- Full performance test possible
- Full engine instrumentation
- Full heat balance obtainable
- Full quantitative studies possible
- Teaches basic principles of engine testing
- Engine and Electric Dynamometer completely accessible
- Other engines may be used, including gasoline, diesel, petrol and Wankel
- Ideal for classroom demonstrations as well as laboratory experimentation
- Components and instruments by internationally known manufactures
- Engine torque speed and cooling water temperature may be used in conjunction with CONTROL UNIT INCORPORATED FEED BACK SYSTEM (OPTIONAL EXTRA)



MODEL GWE-30-30-JS-AV

RANGE OF EXPERIMENTS

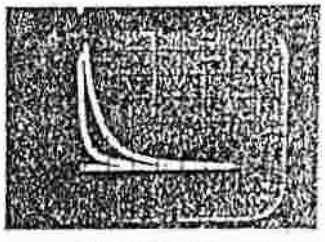
- Performance tests over the engine speed range to measure:
  - ①Brake horse power, Brake thermal efficiency, Brake mean effective pressure
  - ②Torque
  - ③Brake specific fuel consumption
  - ④Air/fuel ratio, Excess air factor
  - ⑤Suction air flow rate, Charging efficiency, Volumetric efficiency
  - ⑥Exhaust gas flow rate, Temperature and Pressure
  - ⑦Lubricating oil Temperature and Pressure
  - ⑧Indicated horse power, Indicated thermal efficiency and Indicated mean effective pressure
  - ⑨Mechanical efficiency, Mechanical loss
  - ⑩Combustion efficiency, Excess air factor
- Heat balance (Energy distribution)
  - ①Shaft work
  - ②Energy in exhaust
  - ③Energy in cooling water
  - ④Radiation and others

SPECIFICATIONS

MODEL	GWE-30-30-RS-AV	GWE-80-100-HS-AV	DWE-47-50-HS-AV
Engine	Gasoline, 4-cycle, water cooled		Diesel 4-cycle, water cooled
No of cyl-bore × stroke	4-73mm × 70mm	4-78mm × 82mm	4-83mm × 100mm
Piston displacement	1171cm³	1567cm³	2164cm³
Compression ratio	9 : 1		22 : 1
Output (Normal)	30bhp at 3200 rev/min	80 bhp at 5000 rev/min	47bhp at 3200 rev/min
Accessories	Universal propeller shaft, stainless steel exhaust pipe, guard		
Dynamometer	Eddy-current electro brake dynamometer		
Absorption power (Max)	30 bhp	100 bhp	50bhp
Rev. of shaft (Max)	7000 rev/min	7000 rev/min	7000 rev/min
Torque indicator	Spring balance		
Tachometer	Electric tachometer, panel indicator (Non-slip Noncontact type)		
Cooling water measuring device	Head tank with Square weir, overflow view, Rota flow meter.		
	Panel thermo indicator of cooling water inlet and outlet (0—100℃/1℃)		
Mounting base and panel	Welded steel base, Instrument panel		
Fuel consumption measuring Device	Three bullets fuel consumption meter, Fuel thermometer and Density meter		
Throttle open, governor set indicator	Panel indicator of throttle open, governer set		
Exhaust gas pyrometer, pressure gage	Exhaust gas temp pick up, panel type pyrometer (0—1000℃/20℃)		
	Exhaust gas pressure panel indicator		
Suction air flow measuring device	Round nozzle, inclined manometer or Dial indicator, Surge tank		
	Panel thermo indicator of suction air (0—100℃/1℃)		
Lubrication measuring device	Pressure gage (0—10kg/cm²)		
	Lub. oil panel thermo indicator (0—200℃/2℃)		
Ignition plug seat thermometer	Thermo pick-up, panel thermo indicator (0—200℃/2℃) (Gasoline engine only)		
Engine cylinder pressure p-v diagram device	Alt, cyl. pressure transducer, Amplifier, Cathodray oscilloscope.		
	Rotational function generator		

OPTIONAL EXTRA

①Engine cooling water temperature automatic control unit
②Engine torque and speed automatic control unit (manual set)
③Engine torque and speed automatic control unit (program set)
(These units are incorporated Proportional, Integral and Derivative control function system)
④Exhaust gas analysis device (CO, CO_2, O_2)



P-V Diagram

SERVICES REQUIRED

Cold water supply at mains pressure, overflow to drain and exhaust extention
A.C.100V 50/60Hz Supply to panel or to suit customer's supply

DIMENSIONS and WEIGHTS

NETT(approx)	GWE-30-30-JS-AV	GWE-80-100-JS-AV	DWE-47-50-JS-AV	GROSS(approx)	Packed for Export		
					GWE-30-30-JS-AV	GWE-80-100-JS-AV	DWE-47-50-JS-AV
Width	1800mm	1800mm	1800mm				
Depth	1000mm	1000mm	1000mm	Volume	7.2m³	7.2m³	7.2m³
Height	1800mm	1800mm	1800mm	Weight	1200kg	1200kg	1200kg

SPECIFICATIONS

) Diesel Engine Tester

(1) Test engine, supporting mechanism and joining device

Type : Water cooled 4 cycle, diesel engine

The No. of cylinder-bore x stroke (piston displacement)

: 4-83 x 100mm (2163 cc)

Compression ratio

: 22to 1

Power at specific r.p.m.

: 47 PS/3200 r.p.m. (max)

Engine supporting mechanism

: Channel welding structure plate mounting system

Joining device to a dynamometer

: Splined, double universal joint shaft or suitable coupling

Exhaust tube

: Stainless flexible tube attached with connection holes for pick up of exhaust gas pressure, exhaust gas temperature and exhaust gas sample

Attached machineries and fittings

: Battery, start switch, cell motor, regulator, throttle valve and emergency stop valve, glow signal, battery charging lamp

(2) Dynamometer & Joining device

Model : EWS-50

Form : Water cooled eddy-current electro dynamometer.

Max. absorbing horse power

: 50 PS

Max. absorbing shaft rotational speed (r.p.m.)

: 7000rpm

Torque indicator

: Spring balance

Tachometer

: Electro-panel-indicator (non-slip. non-friction, non-contact Digital)

(3) Device to measure the loss of cooling water and panel stand,

panel to install meters

Constant water head guaranteed flow control device

: Water head tank with overflow and crest weir, manual control valve

Flow meter for cooling water

: Float type area flow meter (eye view) 1000ℓ/H

Thermometer for cooling water

: (Supply & Delivery) Remote panel indicating thermometer (0 to 100°C/1°C)

Attached tools and machineries

: Supplying valve of cooling water for indicator, switch for electric source, Electric outlet for meters

(4) Fuel consumption measuring device

Fuel consumption meter

: Skewer type 3-burette 30, 50, 100cc

Attached tools and machineries

: Fuel tank (processed to prevent rust, with level meter stoppage cock)

Fuel thermometer, fuel density meter

(5) Throttle valve open indicator device

Throttle valve open angle Transducer and indicator

: Resistance, D.C. generator Transducer, accurate electric indicator with D.C. power source

(6) Exhaust gas measuring device

: Exhaust gas temperature sensor and indicator

Chromel-alumel thermocouple Transducer (Exhaust gas proof flexible protecting tube, shield compensating lead wire)

Panel accurate thermometer (0 to 1000°C/20°C)

Exhaust gas pressure meter

"U" tube water manometer

(7) Engine suction air flow measuring device

: Suction air flow & pressure measuring machine

Round accurate nozzle, magnification changeable panel inclinomanometer or dial manometer, pulsation absorbing surge tank with diaphragm tension changeable

: Suction air thermometer

Remote panel indicatng thermometer (0 - 100°C/1°C)

Atmospheric condition measuring device

Dial barometer, wet and dry bulb thermometer

(8) Lubricating measuring device

: Lubricant pressure meter

Remote panel pressure meter (0 to 10 kg/cm^2)

: Lubricant temperature sensor & indicator

Iron-constantan thermocouple detector (stainless flexible gas protecting tube) panel accurate thermometer (0 - 200°C/2°C)

(9) -BLANK-

(10) Engine cylinder pressure P-V diagram device

: Indicator diagram

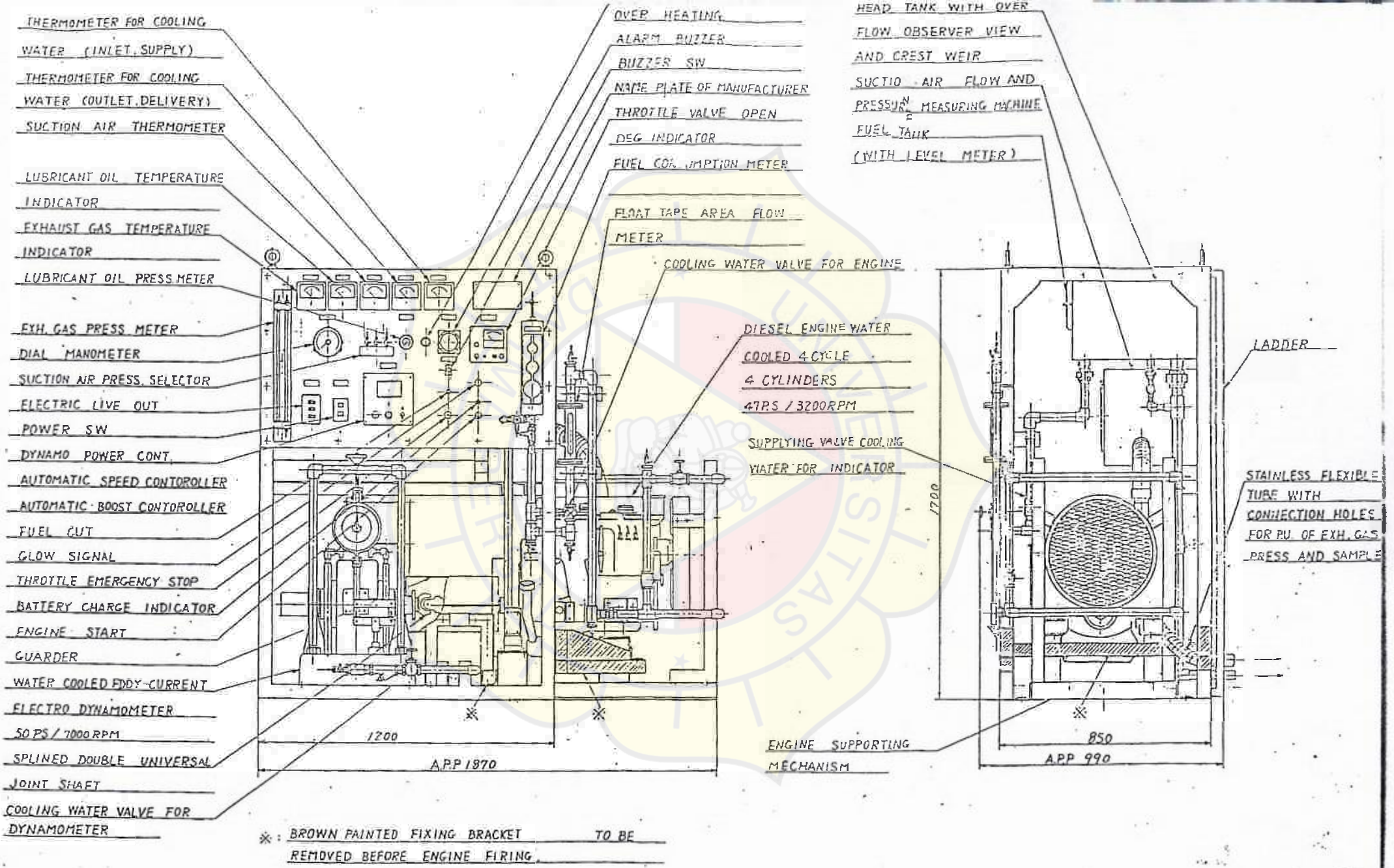
Alternative cylinder pressure transducer, amplifier, trigger cathode-ray oscilloscope.

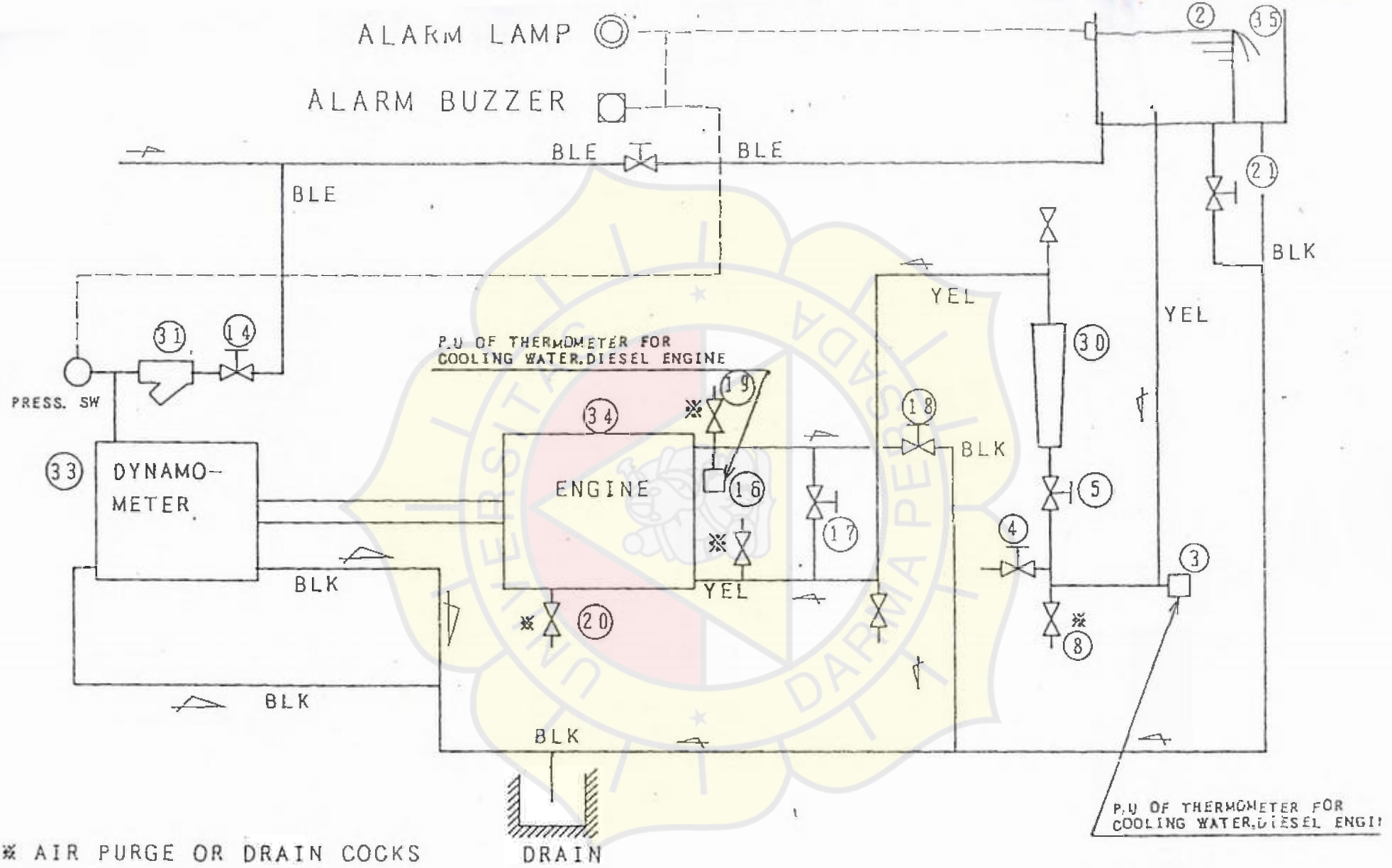
: Tools to install to cylinder

Transducer adaptor fixed in a glow plug hole of diesel engine

: Computerized function wave generator

MODEL : CFWG-101-SA


THERMOMETER FOR COOLING WATER (INLET, SUPPLY)
THERMOMETER FOR COOLING WATER (OUTLET, DELIVERY)
SUCTION AIR THERMOMETER
LUBRICANT OIL TEMPERATURE INDICATOR
EXHAUST GAS TEMPERATURE INDICATOR
LUBRICANT OIL PRESS METER
EXH. GAS PRESS METER
DIAL MANOMETER
SUCTION AIR PRESS. SELECTOR
ELECTRIC LIVE OUT
POWER SW
DYNAMO POWER CONT.
AUTOMATIC SPEED CONTOROLLER
AUTOMATIC BOOST CONTOROLLER
FUEL CUT
GLOW SIGNAL
THROTTLE EMERGENCY STOP
BATTERY CHARGE INDICATOR
ENGINE START
GUARDER
WATER COOLED EDDY-CURRENT ELECTRO DYNAMOMETER
50 PS / 7000 RPM
SPLINED DOUBLE UNIVERSAL JOINT SHAFT
COOLING WATER VALVE FOR DYNAMOMETER
OVER HEATING
ALARM BUZZER
BUZZER SW
NAME PLATE OF MANUFACTURER
THROTTLE VALVE OPEN
DEG INDICATOR
FUEL CONSUMPTION METER
FLOAT TAPE AREA FLOW METER
COOLING WATER VALVE FOR ENGINE
DIESEL ENGINE WATER COOLED 4 CYCLE 4 CYLINDERS
47PS / 3200RPM
SUPPLYING VALVE COOLING WATER FOR INDICATOR
ENGINE SUPPORTING MECHANISM
HEAD TANK WITH OVER FLOW OBSERVER VIEW AND CREST WEIR
SUCTIO AIR FLOW AND PRESSURE MEASURING MACHINE
FUEL TANK (WITH LEVEL METER)
LADDER
STAINLESS FLEXIBLE TUBE WITH CONNECTION HOLES FOR PU OF EXH. GAS PRESS AND SAMPLE
1200
A.P.P 1870
1200
850
A.P.P 990
※ : BROWN PAINTED FIXING BRACKET TO BE REMOVED BEFORE ENGINE FIRING

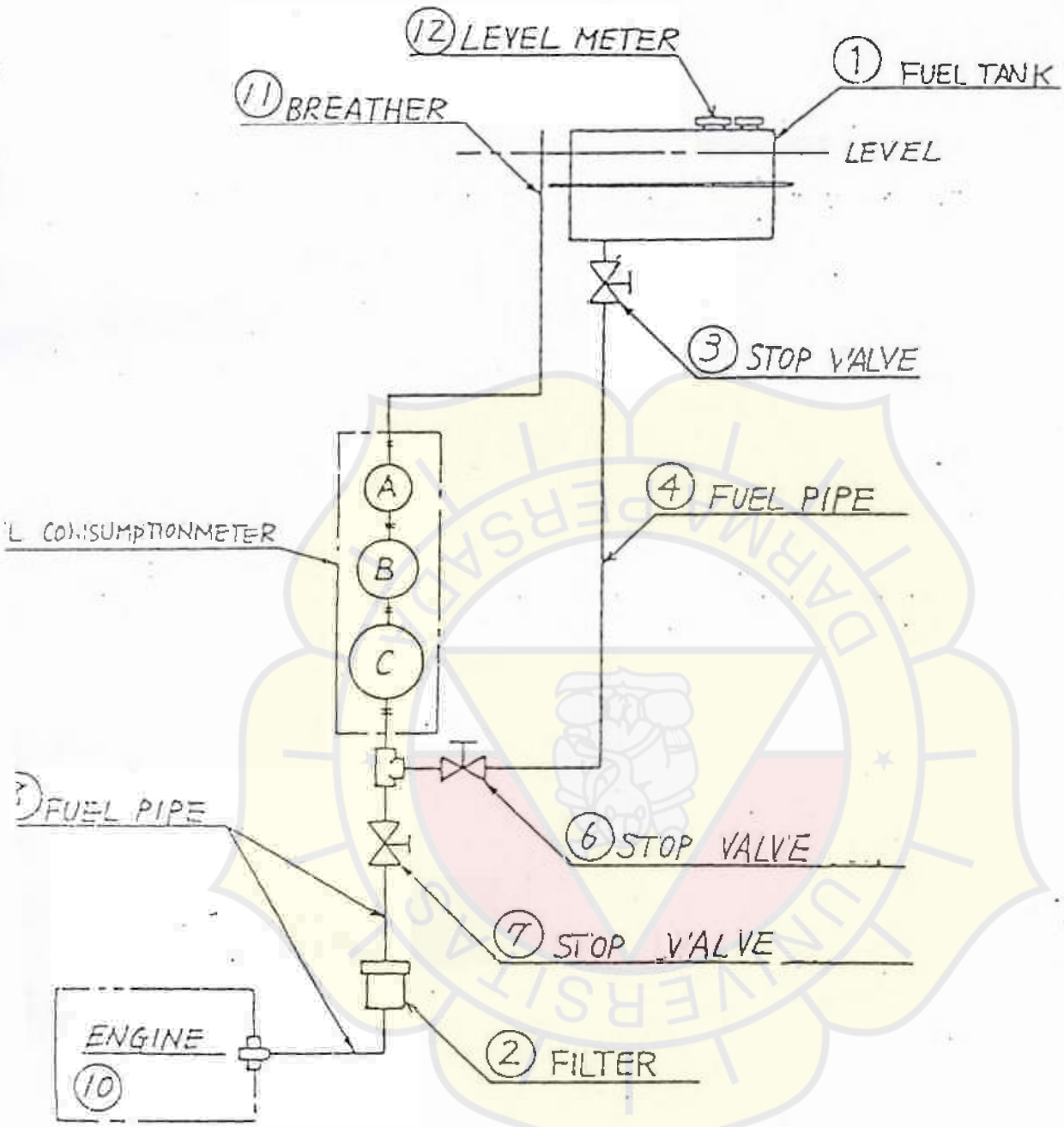


PIPE COLOR DETAIL

BLE	: BLUE	CITY WATER SUPPLY
BLK	: BLACK	DRAIN
YEL	: YELLOW	ENGINE COOLING WATER

COCLING WATER SYSTEM

FIG 7-1) - (3) - 16



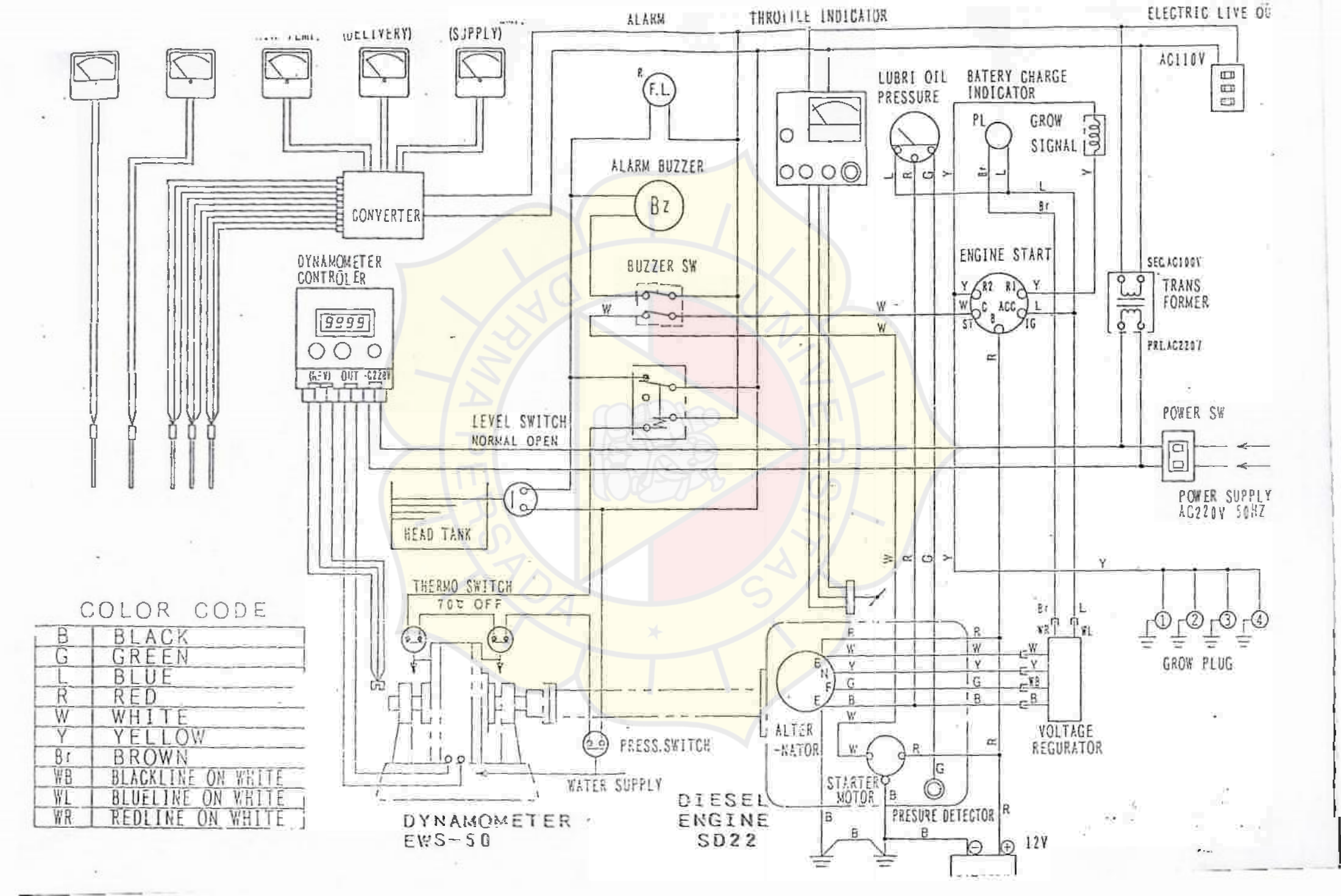
Alternation of position and removal of certain Valves and Filters are made in actual apparatus.

FUEL CONSUMPTION METER

MODEL	A	B	C
BE-35'10	30	50	100

FUEL PIPE LINE

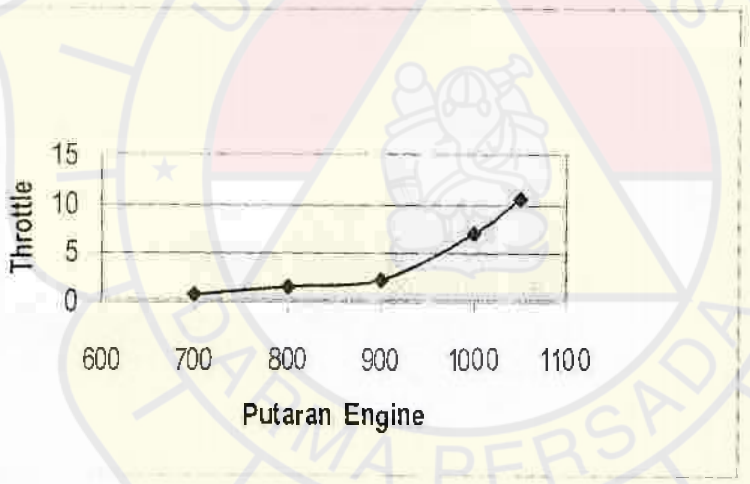
FIG 7-1)-(4)-②



COLOR CODE

B	BLACK
G	GREEN
L	BLUE
R	RED
W	WHITE
Y	YELLOW
Br	BROWN
WB	BLACKLINE ON WHITE
WL	BLUELINE ON WHITE
WR	REDLINE ON WHITE

Jika ditarik nilai rata-rata prosentase kenaikan daya efektif untuk masing-masing kecepatan putaran engine, seperti yang terdapat pada tabel-tabel di halaman lampiran, maka akan didapatkan hasil sebagai berikut : untuk kecepatan putaran engine 700 Rpm prosentase rata-rata kenaikan daya efektif sebesar 0,6%, untuk kecepatan putaran engine 800 Rpm sebesar 1,3%, kecepatan putaran engine 900 Rpm sebesar 2%, kecepatan putaran engine 1000 Rpm sebesar 6,8%, dan kecepatan putaran engine 1050 Rpm sebesar 10,3 % yang mana hal tersebut seperti yang dapat kita lihat dan perhatikan pada gambar 5.1. seperti tersebut dibawah ini.



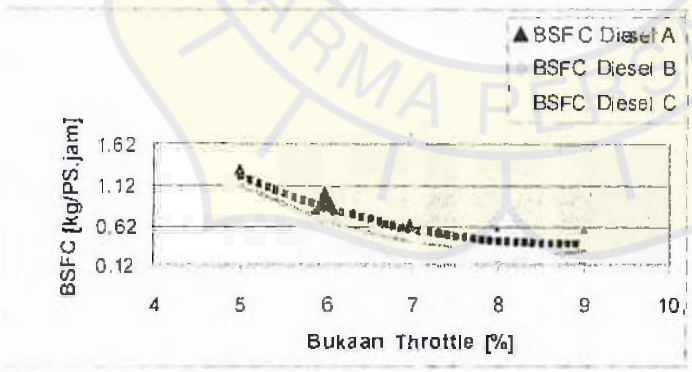
gambar 5.1. Prosentase Kenaikan Daya Efektif & Putaran pada Putaran& Beban Berubah

V.2. PEMAKAIAN BAHAN BAKAR SPESIFIK (BSFC)

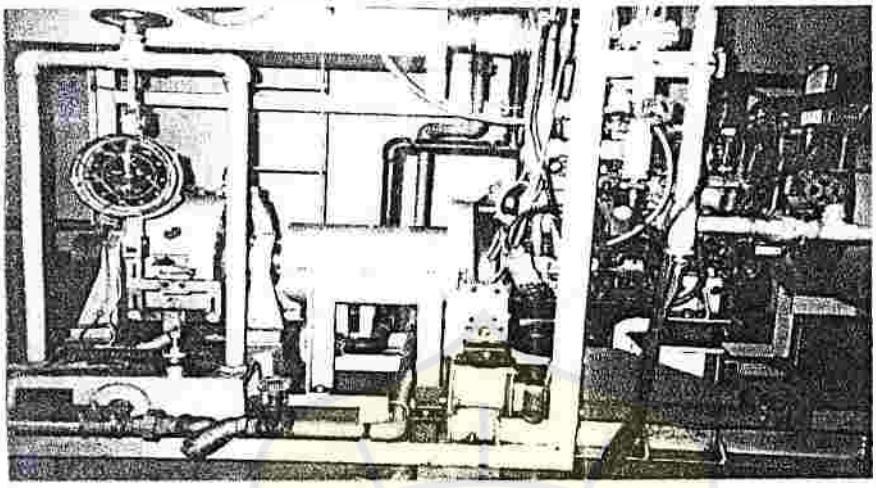
Secara umum pada motor diesel dengan kondisi operasi dan pembebanan yang sama, harga BSFC yang tinggi adalah tidak menguntungkan karena hal tersebut berarti bahwa motor diesel tersebut

pemakaian bahan bakarnya besar atau boros. Jadi ditinjau dari pemakaian bahan bakarnya, penggunaan bahan bakar MDO dari viskositas 9,25 Cst ke viskositas 7,40 Cst dan 5,80 Cst, ternyata cukup menguntungkan, karena dapat mengurangi jumlah pemakaian bahan bakar. Hal ini terbukti dari data-data hasil percobaan, yang mana perhitungan datanya diwujudkan dalam bentuk tabel seperti yang dapat dilihat pada halaman lampiran, dimana dengan pemakaian bahan bakar yang sama dengan viskositas yang lebih rendah (±2 Cst) ternyata mampu memperkecil nilai rata-rata SFOC (jumlah pemakaian bahan bakar) yaitu berkisar antara 3 % - 12 %, yang mana hal tersebut berarti bahwa pemakaian bahan bakar semakin sedikit (lebih irit).

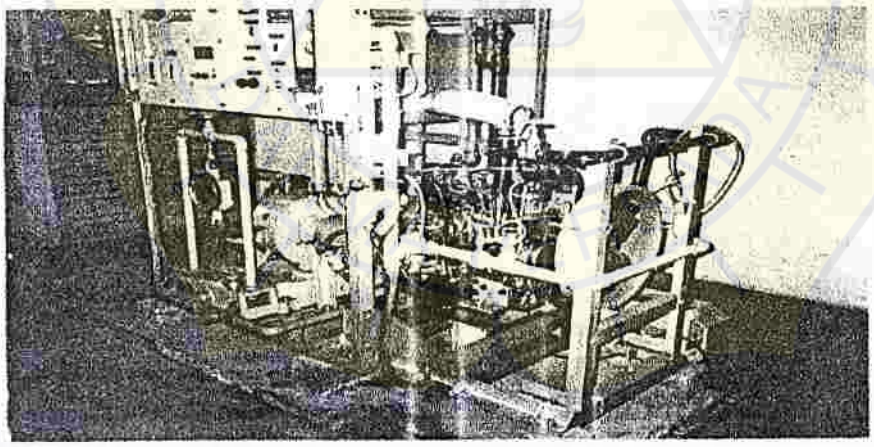
Jika ditarik nilai rata-rata prosentase penurunan nilai BSFC untuk masing-masing titik kecepatan putaran engine, seperti yang terdapat pada tabel-tabel dihalaman lampiran, maka akan didapatkan hasil seperti pada gambar 5.2. sebagai berikut dibawah ini:



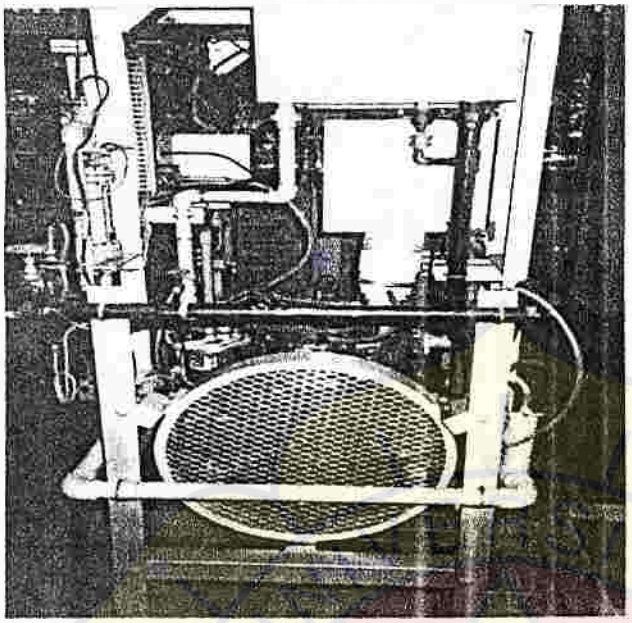
Gambar 5.2. Grafik BSFC vs Throttle pada Putaran Konstan



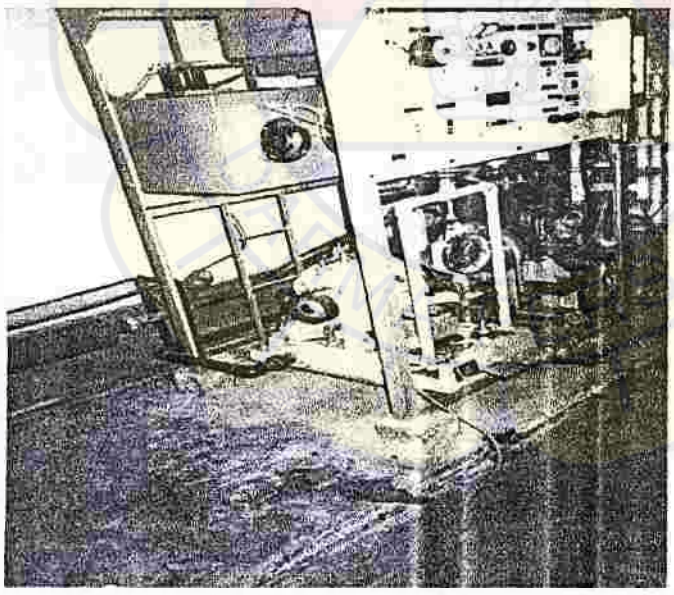
Gambar 4.1. mesin uji Nissan DWE 47.50.HSAV & Dynamometer EWS.50



Gambar 4.2. Mesin uji & asesories



Gambar 4.3. Sistim bahan bakar untuk mesin uji



Gambar 4.4. Sistim pendingin & water breaker