

Deponigazından Enerji Üretimi Teknolojisi

Prof. Dr. Ertugrul ERDIN

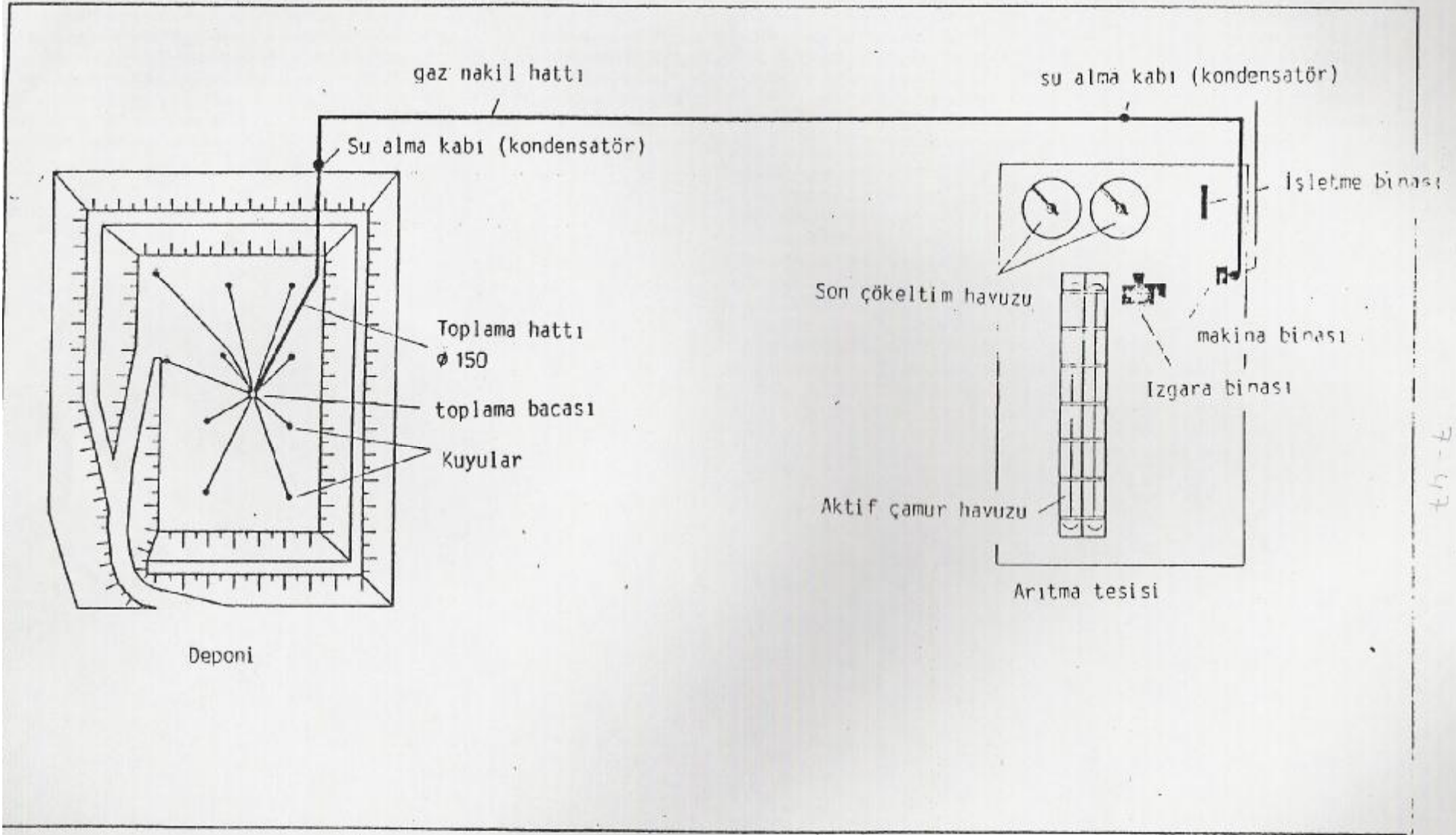
Dokuz Eylül Üniversitesi Mühendislik Fakültesi Çevre Mühendisliği Bölümü

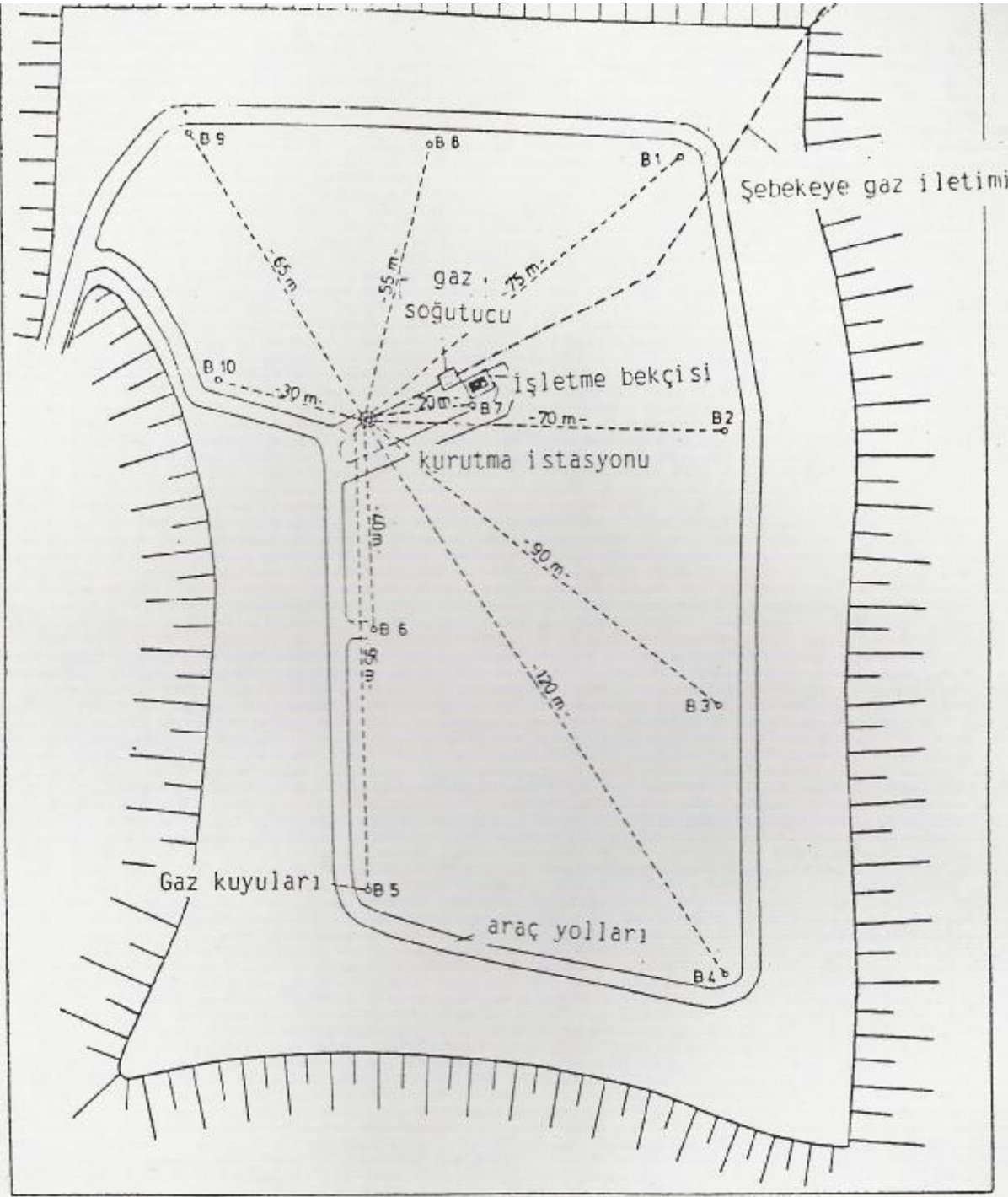
3160 BUCA- IZMIR TURKIYE

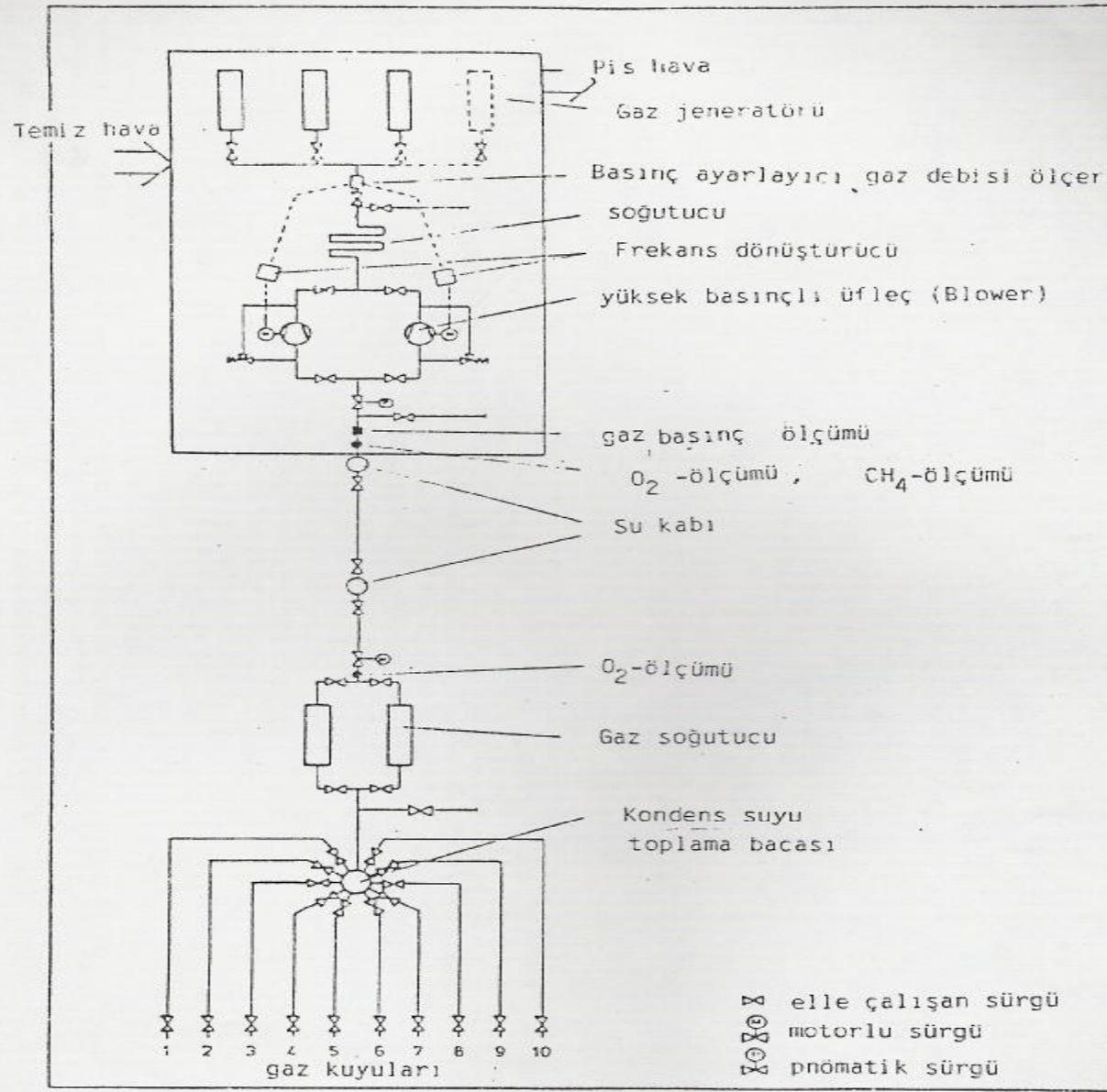
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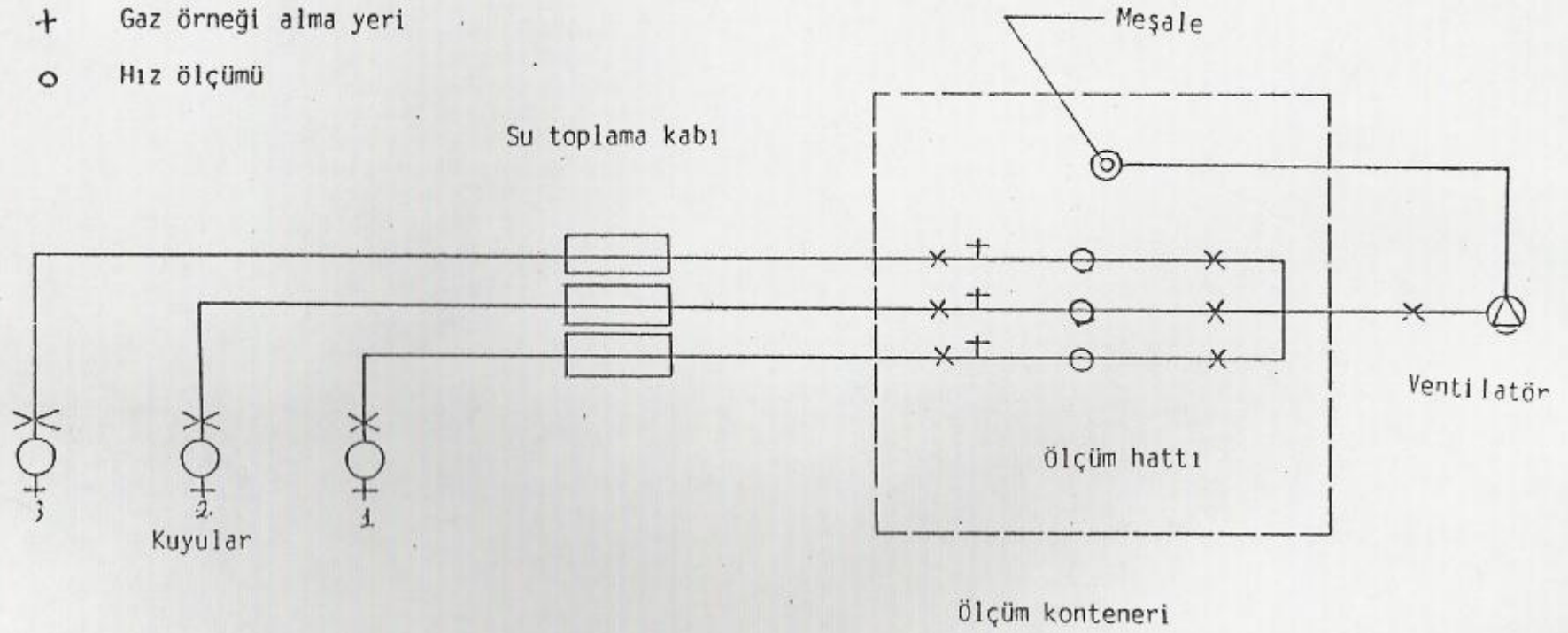






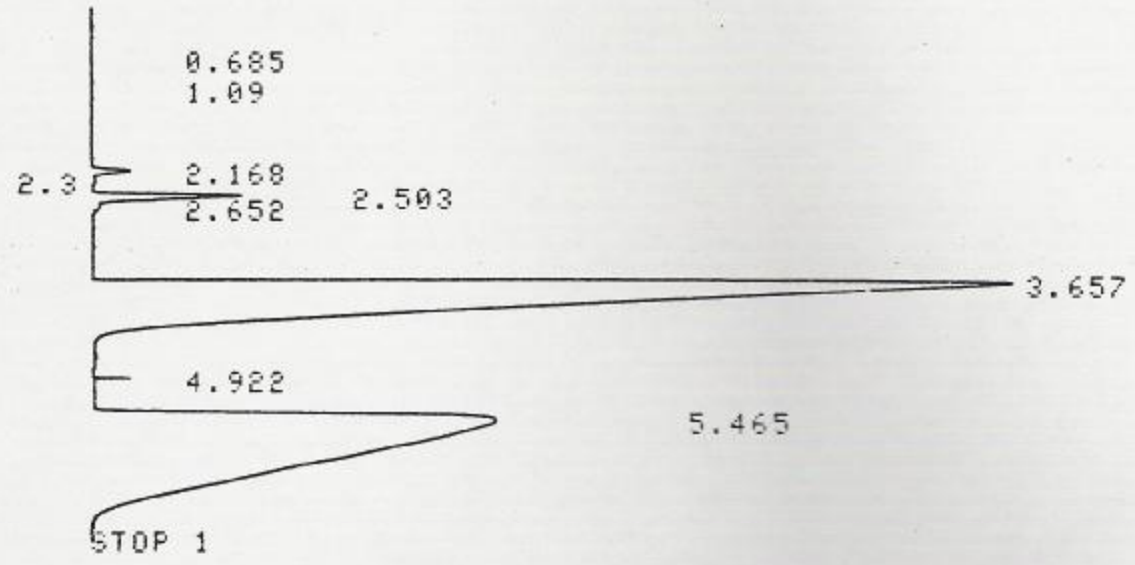
Şekil : Gaz alma ve gaz değerlendirme tesisinin genel şeması

- × Sürgü
- + Gaz örneği alma yeri
- Hız ölçümü



Şekil 7.4 : Hamburg Georgswerder deponisinde deponi gazı çalışmalarını düzenleyen akış şeması

83/06/22 16:59:15



PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.685	1184				
2	1.09	4413				
3	2.168	43757		2	0.389	O2
4	2.3	1980	V	2	0.0176	O2
5	2.503	177312	SV	3	1.5455	N2
6	2.652	1522	T			
7	3.657	4522377	S	4	59.3242	CH4
8	4.922	10827	T			
9	5.465	4233018	V	5	38.7237	CO2
TOTAL		8996389			100	

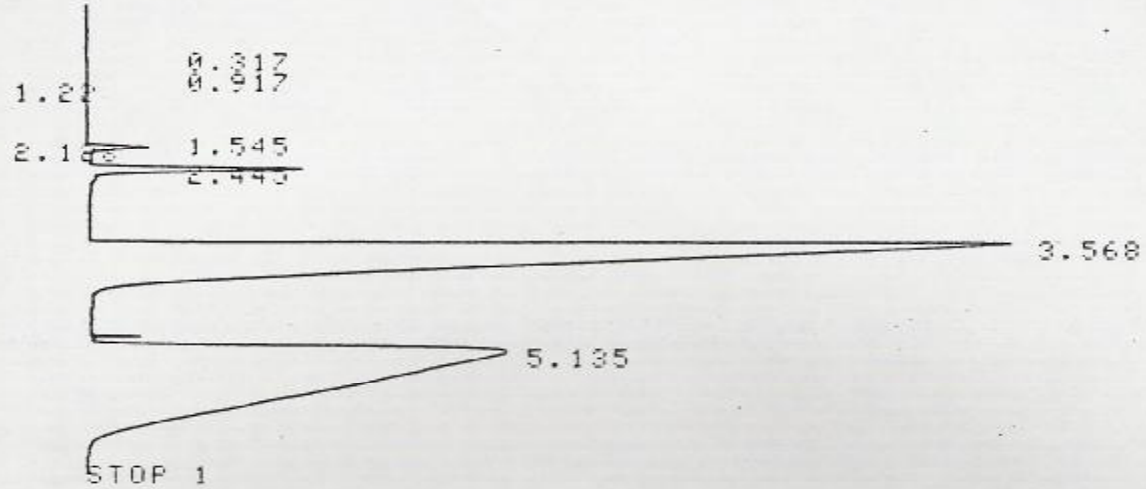
LUFTANTEIL=1.85798 %

LUFTKORREKTUR

O2=0 N2=0.0959083 CH4=60.4473 CO2=39.4568

Şekil : Hamburg-Georgwerder deponisinde 1 nolu kuyudaki gaz örneğinin

START 1
83/06/22 17:08:02



PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.317	3142				
2	0.917	1528	V			
3	1.22	3003	V			
4	1.545	3714	V	1	1.6882	H2
5	2.128	65018	V	2	0.5658	O2
6	2.445	239669	V	3	2.0453	N2
7	3.568	4350100		4	55.868	CH4
8	5.135	4447481	V	5	39.8327	CO2
TOTAL		9113654			100	

LUFTANTEIL=2.58587 %

LUFTKORREKTUR

O2=0

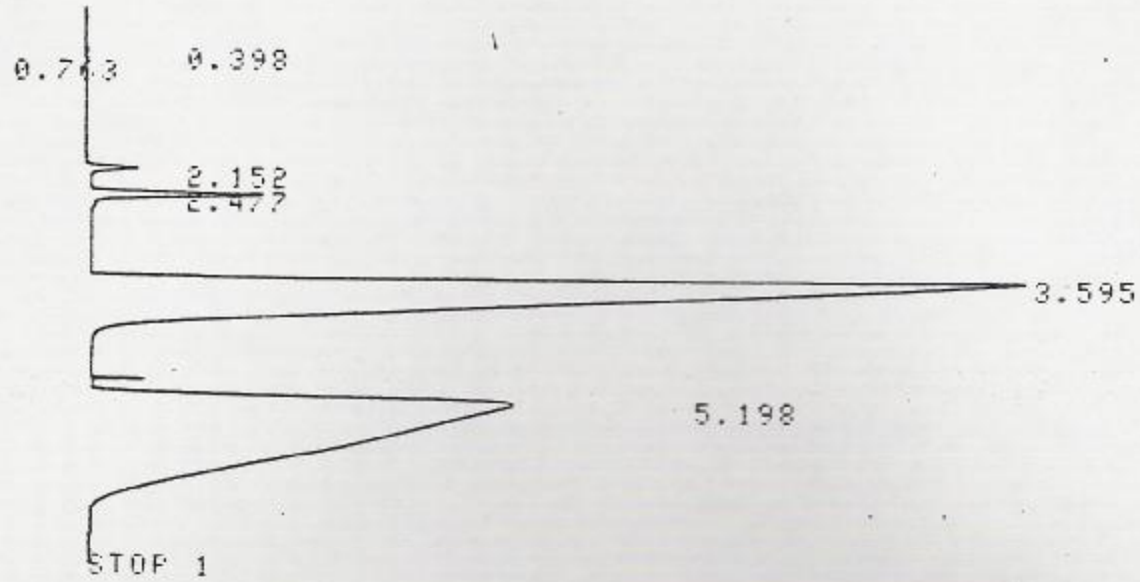
N2=0.0263759

CH4=58.3624

CO2=41.6112

Şekil 1 : Hamburg-Georgwerder deponisinde 2 nolu kuyudaki gaz örneğinin analiz sonucu

05/06/88 17:18:27



PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	0.398	1193				
2	0.763	2210	V			
3	2.152	50395		2	0.4383	O2
4	2.477	188244	V	3	1.6056	N2
5	3.595	4480241		4	57.5097	CH4
6	5.198	4518319	V	5	40.4463	CO2
TOTAL		9240601			100	

LUFTANTEIL=2.00325 %

LUFTKORREKTUR

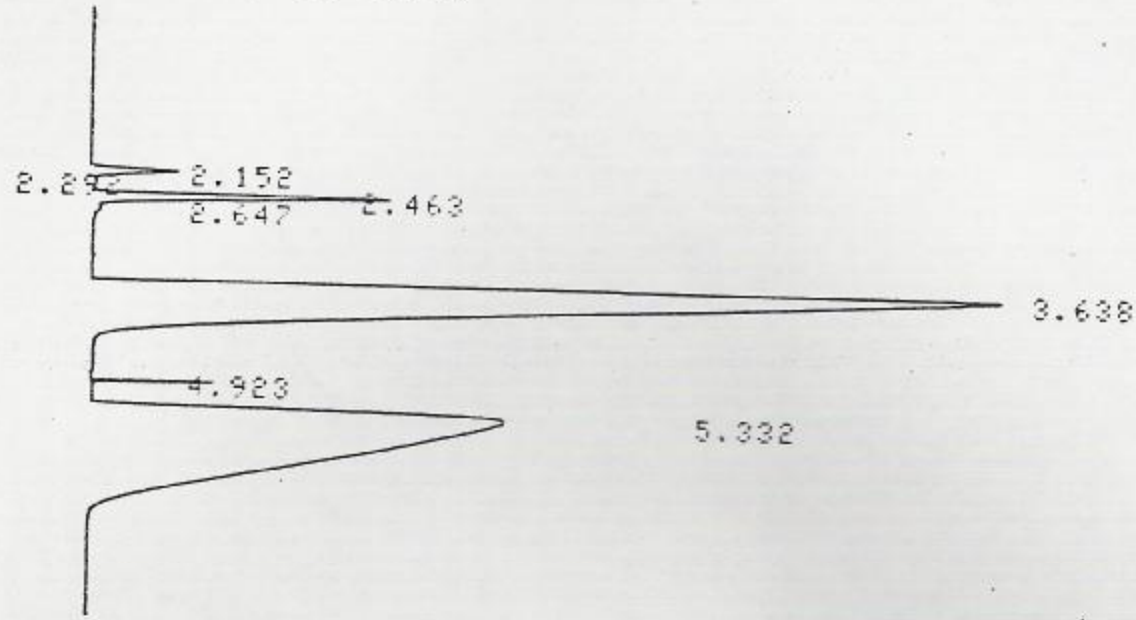
O2=0

N2=0.0415403

CH4=58.6853

CO2=41.2731

Şekil : Hamburg-Georgwerder deponisinde 3 nolu kuyudaki gaz örneğinin analiz sonuçları



PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.152	91907	S	2	0.8216	O2
2	2.463	342678	SV	3	3.0038	N2
3	2.647	2057	T			
4	3.638	4330809		4	57.1316	CH4
5	4.923	31760	V			
6	5.332	4243983	V	5	39.043	CO2
TOTAL		9043192			100	

LUFTANTEIL=3.7546 %

LUFTKORREKTUR

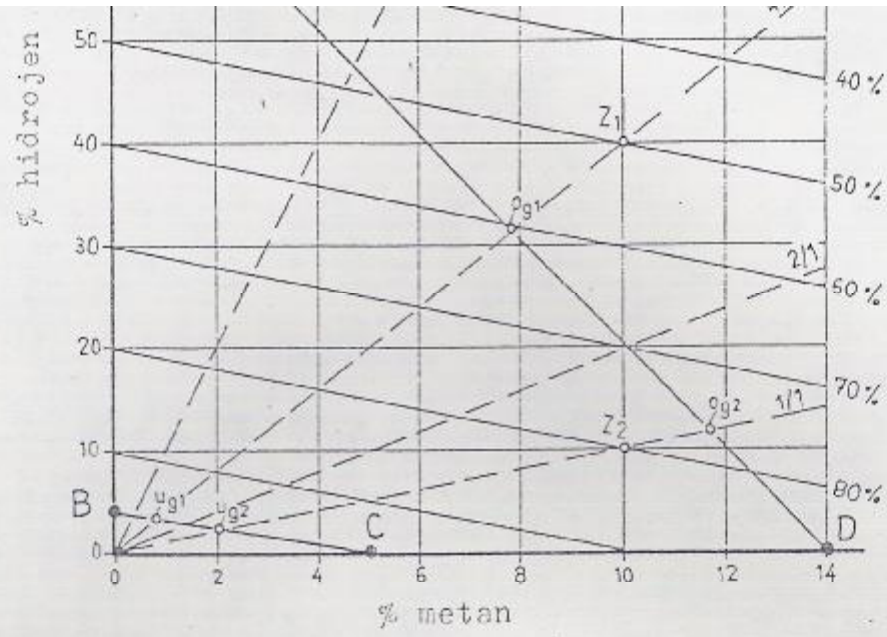
O2=0

N2=0.0735375

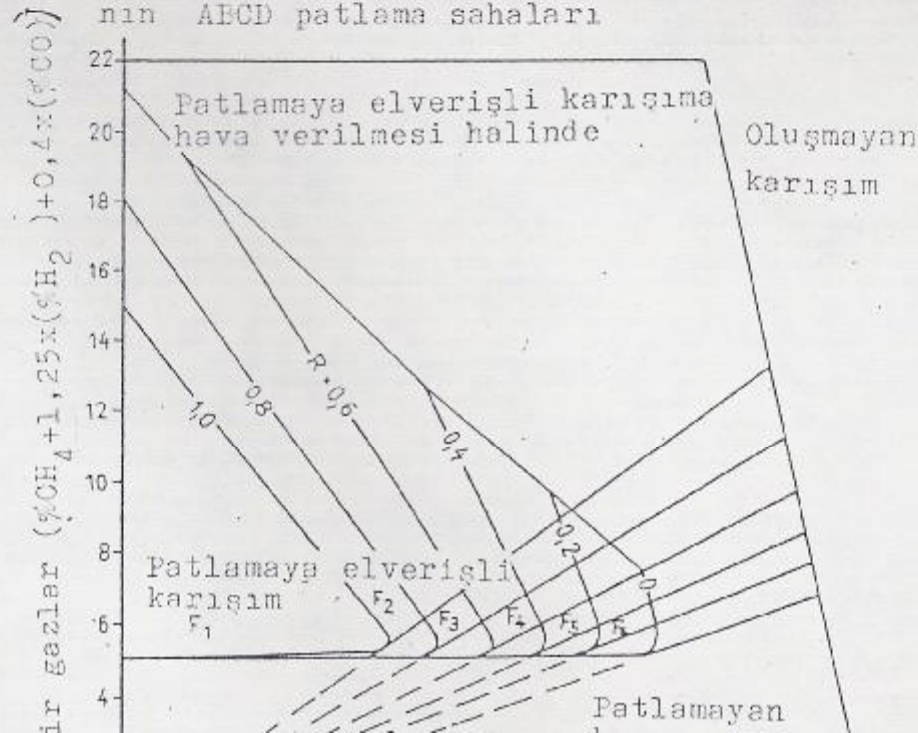
CH4=59.3604

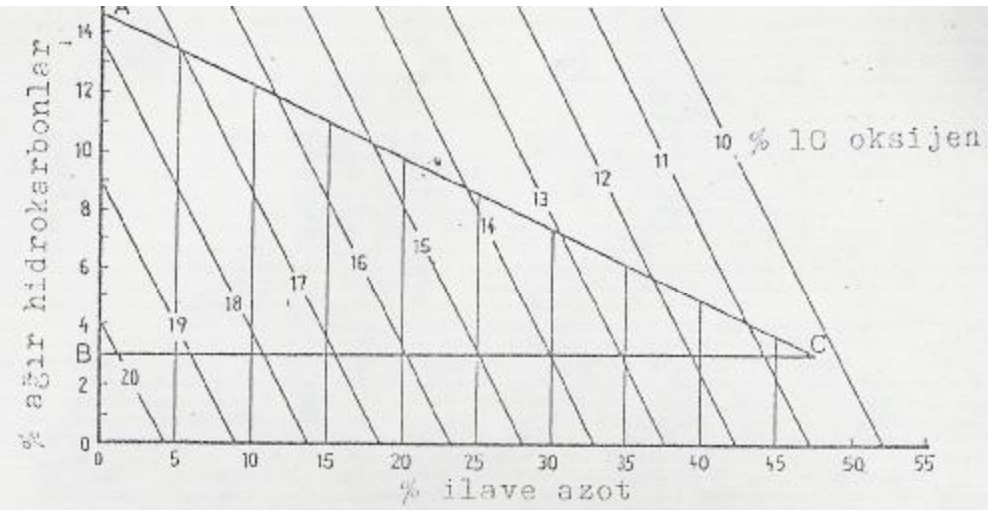
CO2=40.5661

Şekil 1 : Hamburg-Georgwerder deponisinde Meşale girişindeki gaz örneğinin

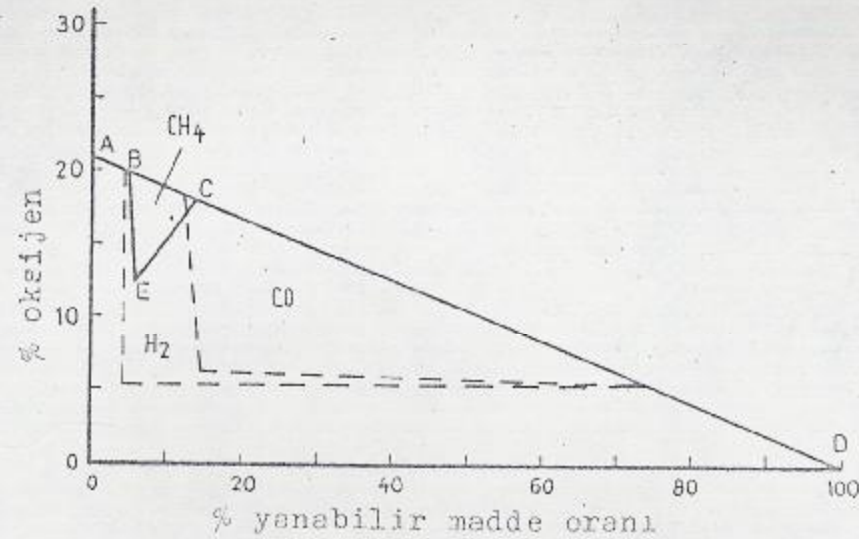


Şekil : Yanabilir iki gazın (CH_4 ve H_2) ve havanın karışımının ABCD patlama sahaları

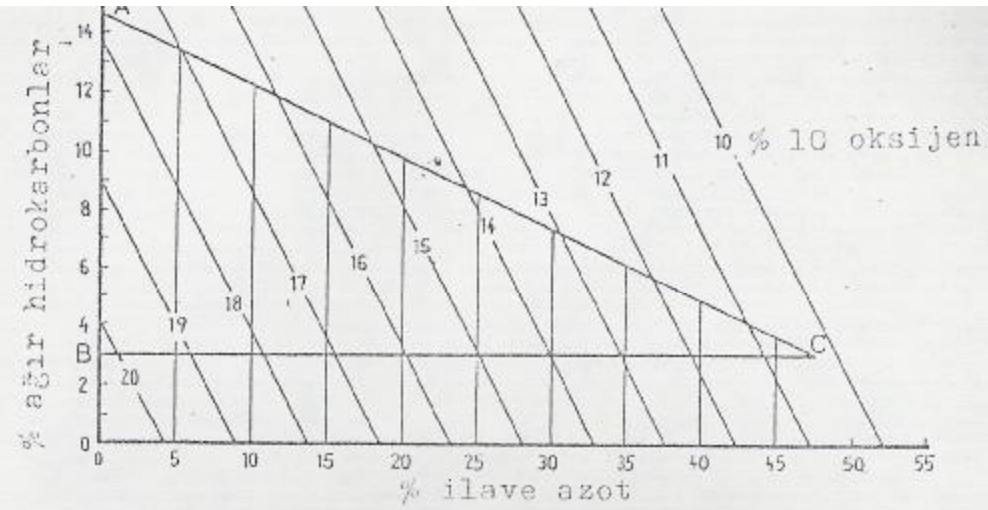




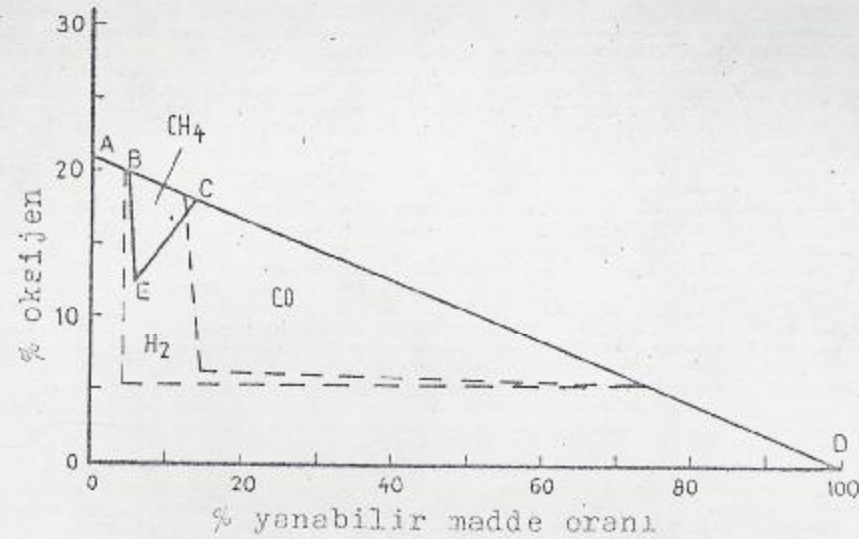
Şekil : Ağır hidrokarbonların , hava ve ilave azotun ABC patlama sahaları



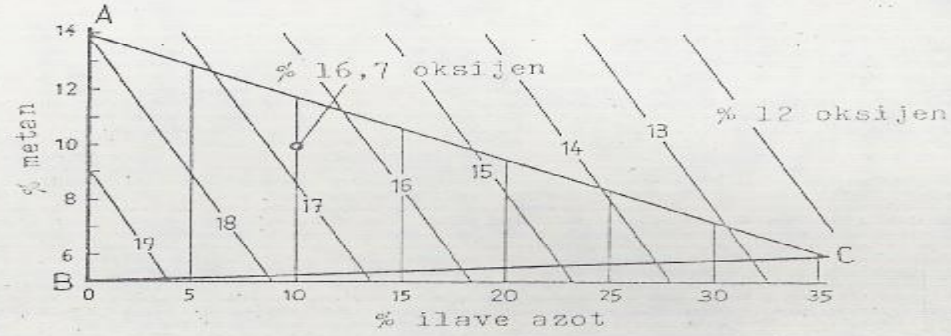
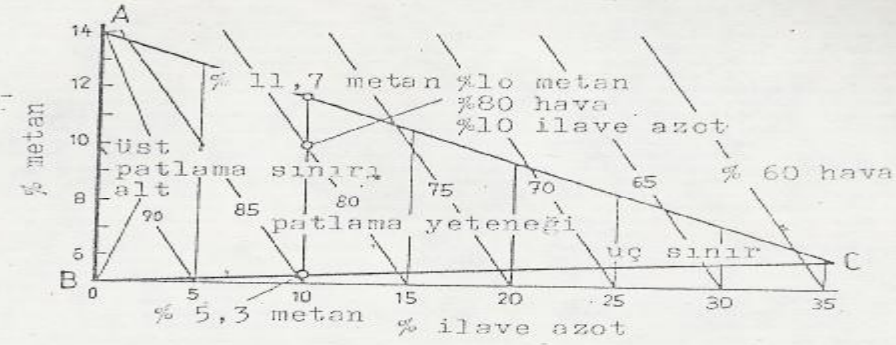
Şekil :Metan , karbonmonoksit ve hidrojen için patlama sahaları



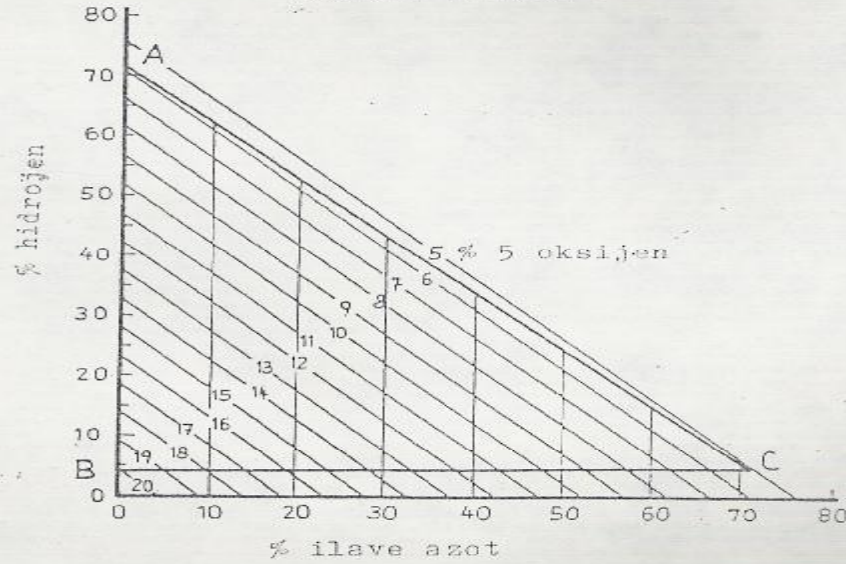
Şekil : Ağır hidrokarbonların , hava ve ilave azotun ABC patlama sahaları



Şekil :Metan , karbonmonoksit ve hidrojen için patlama sahaları



Şekil : Metan , hava ve ilave azot karışımının ABC patlama sahaları



Şekil : Hidrojen , hava ve ilave azot karışımı için ABC patlama sahaları

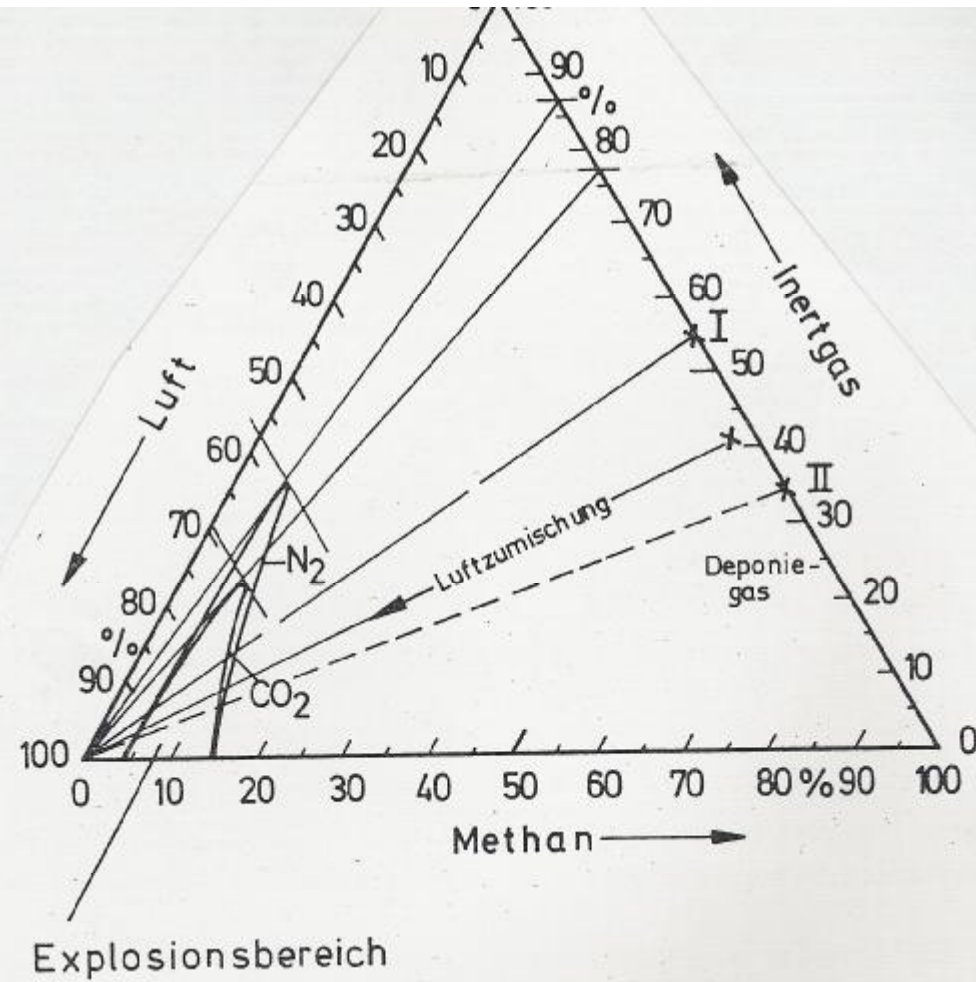
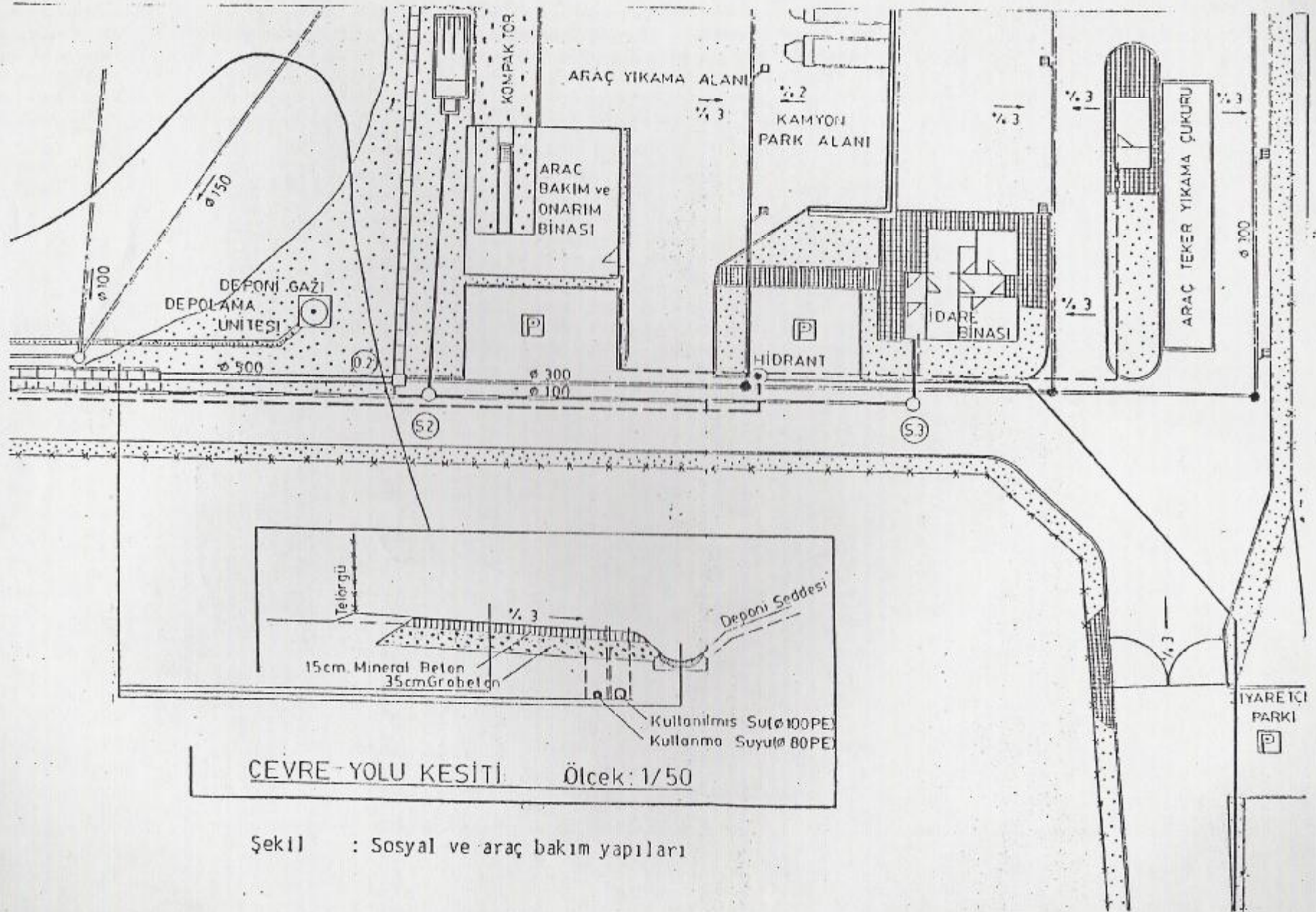
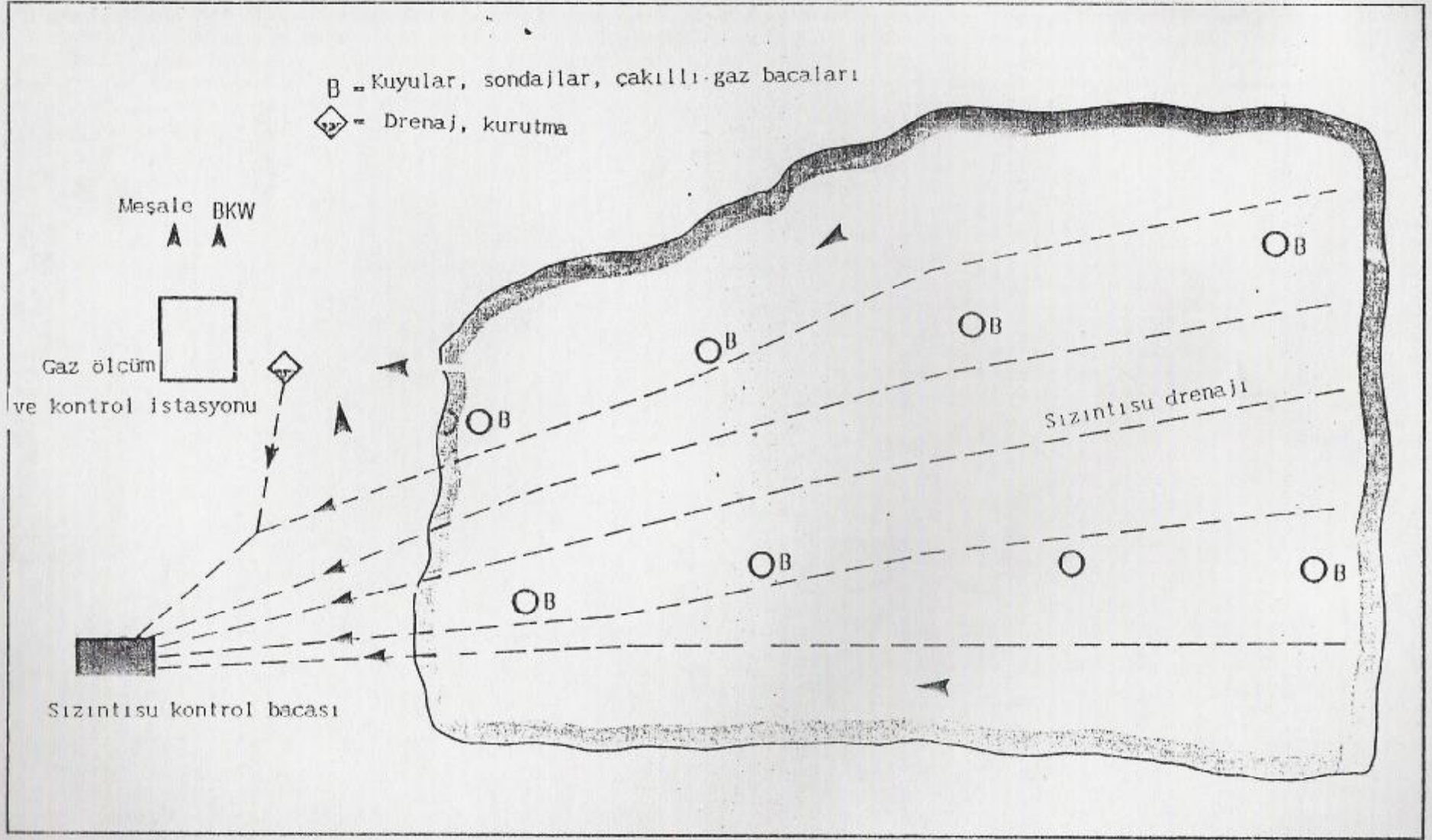


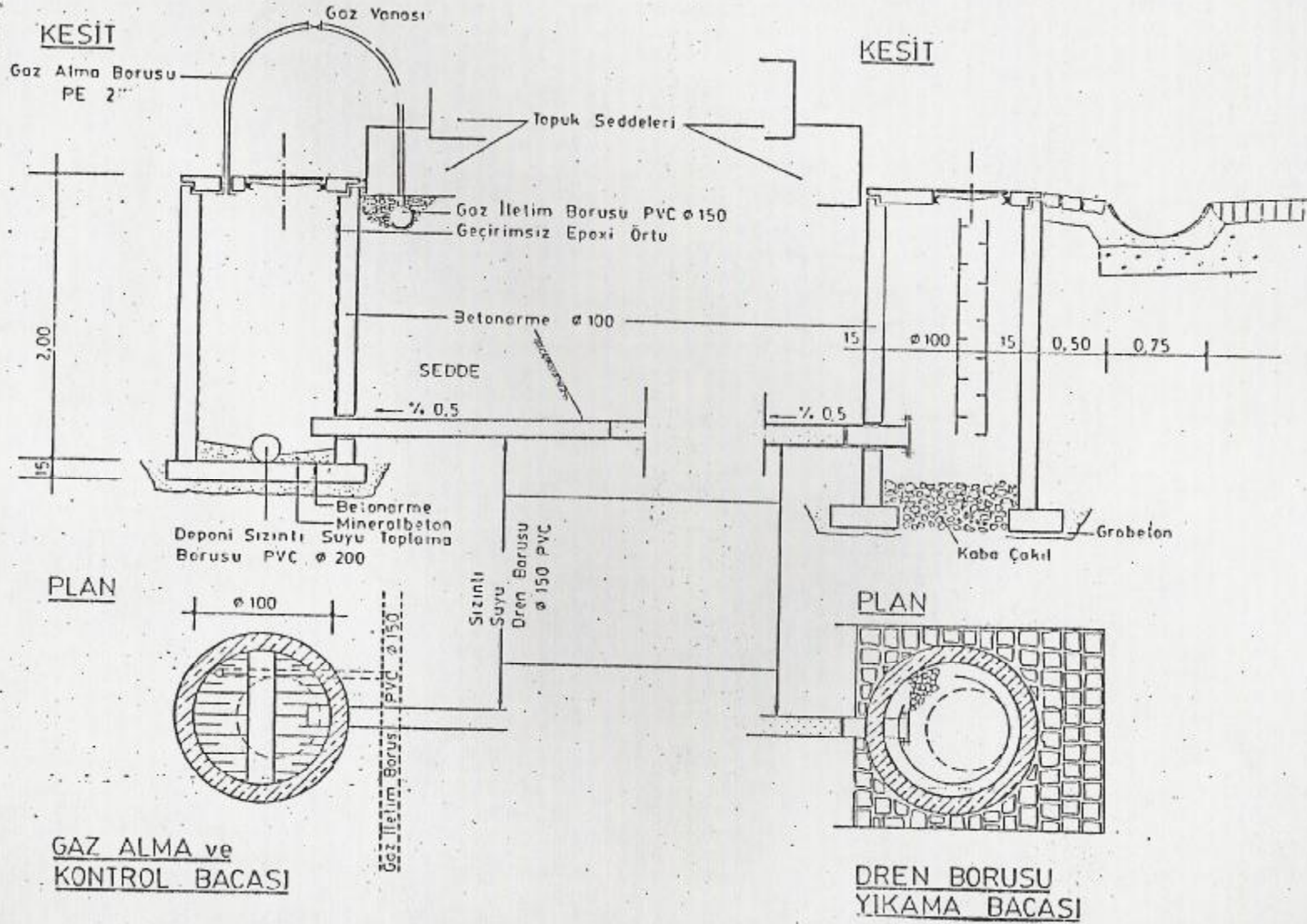
Abbildung 4: Dreistoffdiagramm für den Explosionsbereich von Methan/Luft/CO₂-Gemischen und von Methan/Luft/N₂-Gemischen angegeben in Volumenanteilen der Gemischkonzentration bezogen auf das Gesamtgemisch, Quelle /33/



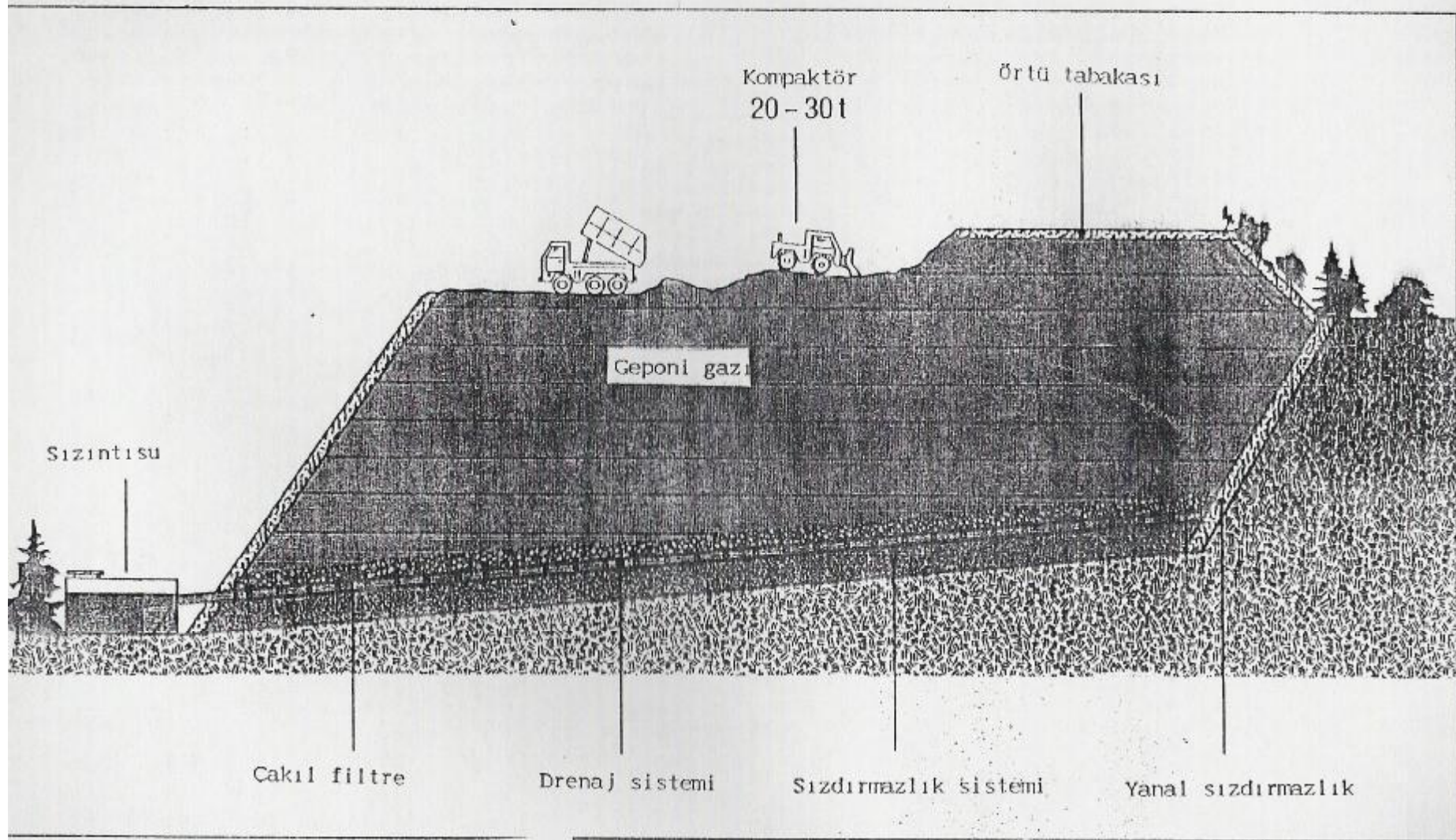
Şekil : Sosyal ve araç bakım yapıları



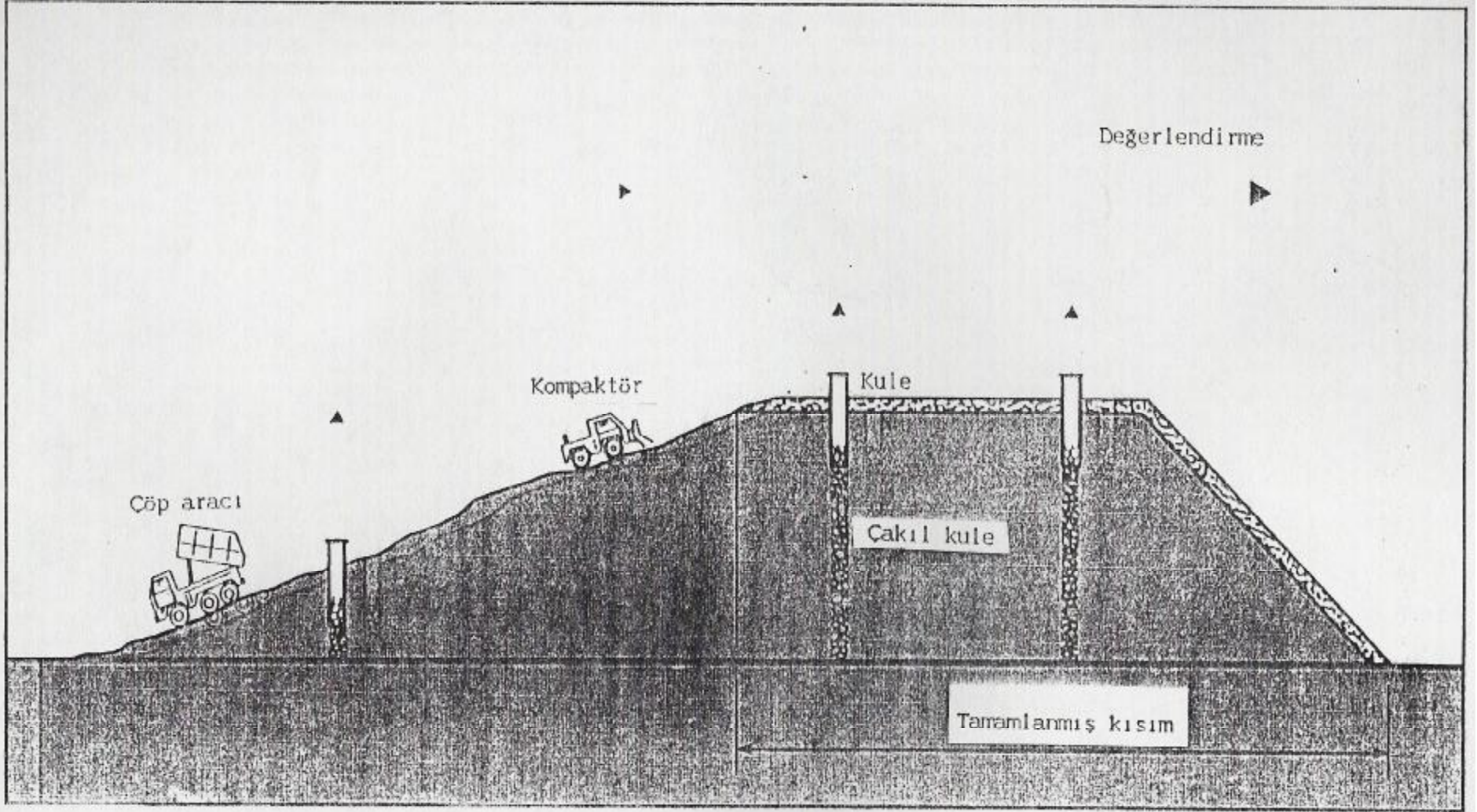
Sekil : Gaz toplama sistemi



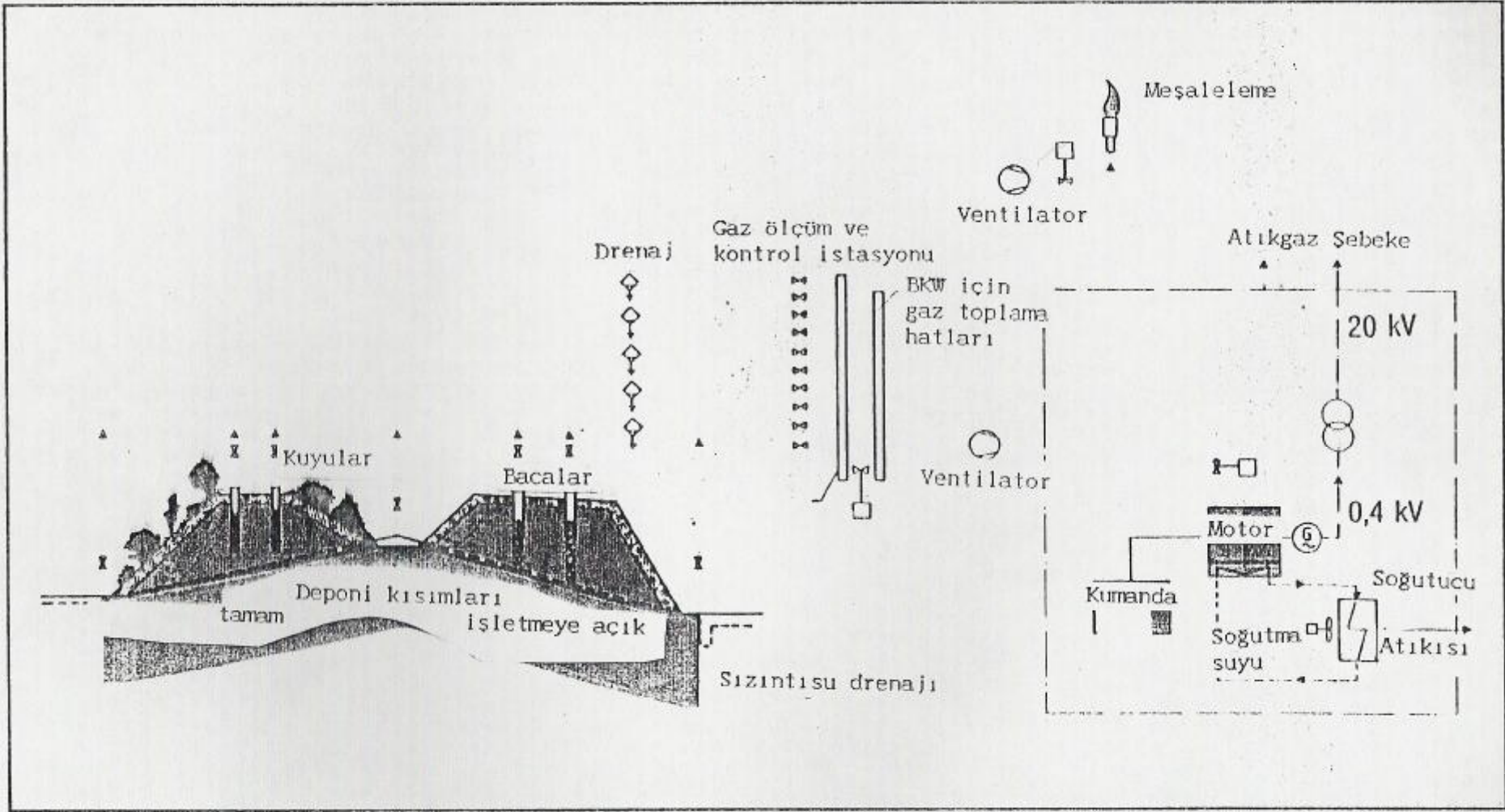
Şekil : Gaz alma ve kontrol bacası yapıları detayı



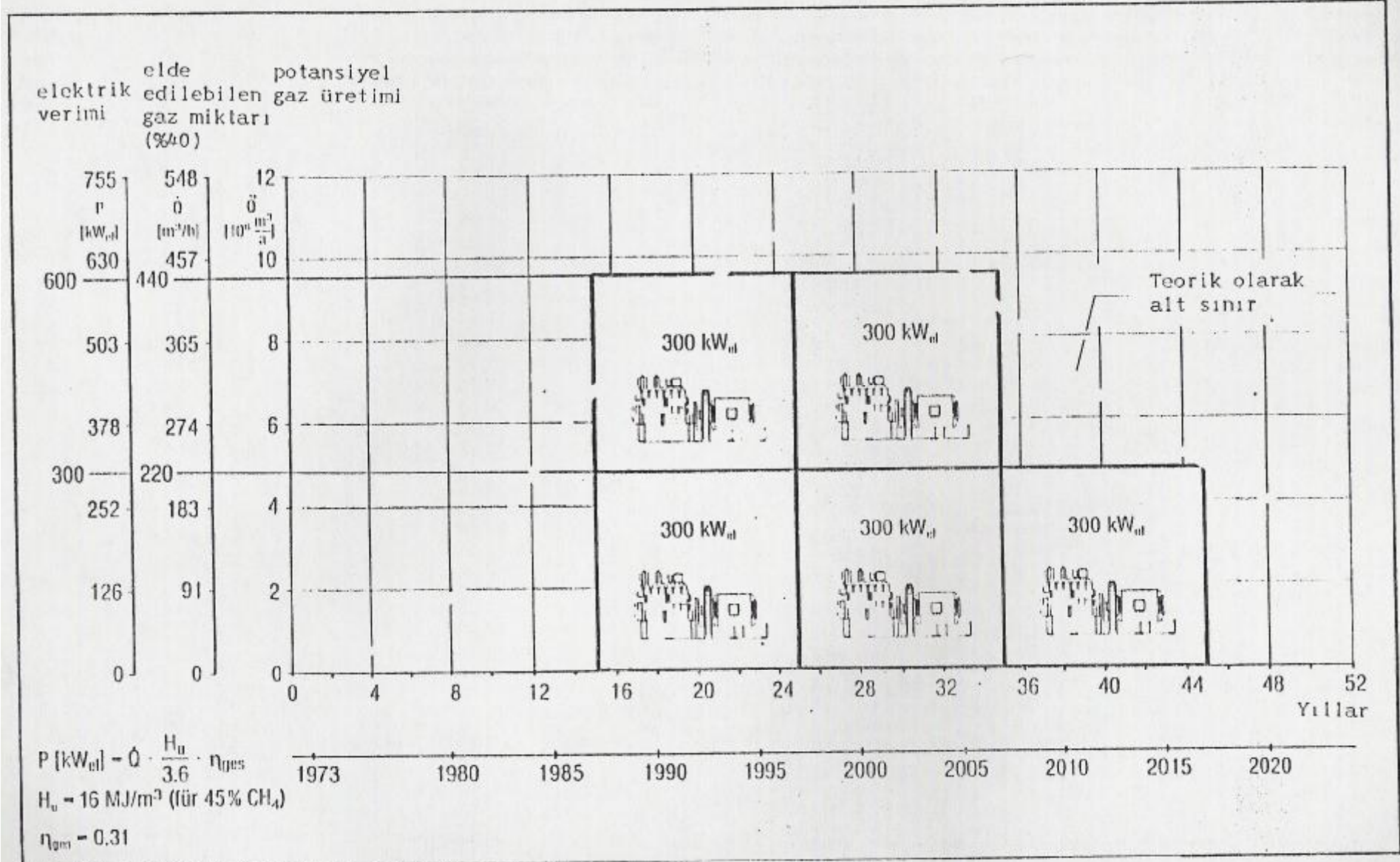
ekil : Sıkıştırılmış deponi



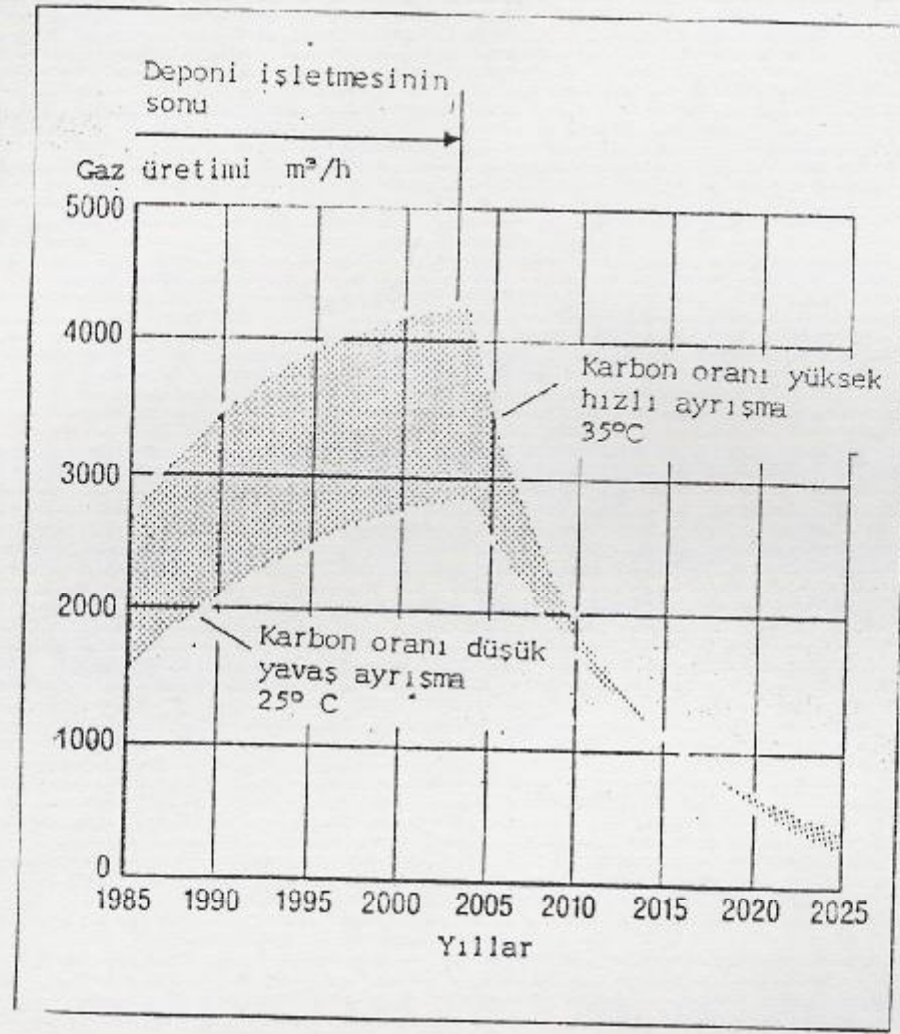
Şekil : Deponi işletimi sırasında ve tamamlandıktan sonra gaz eldesi



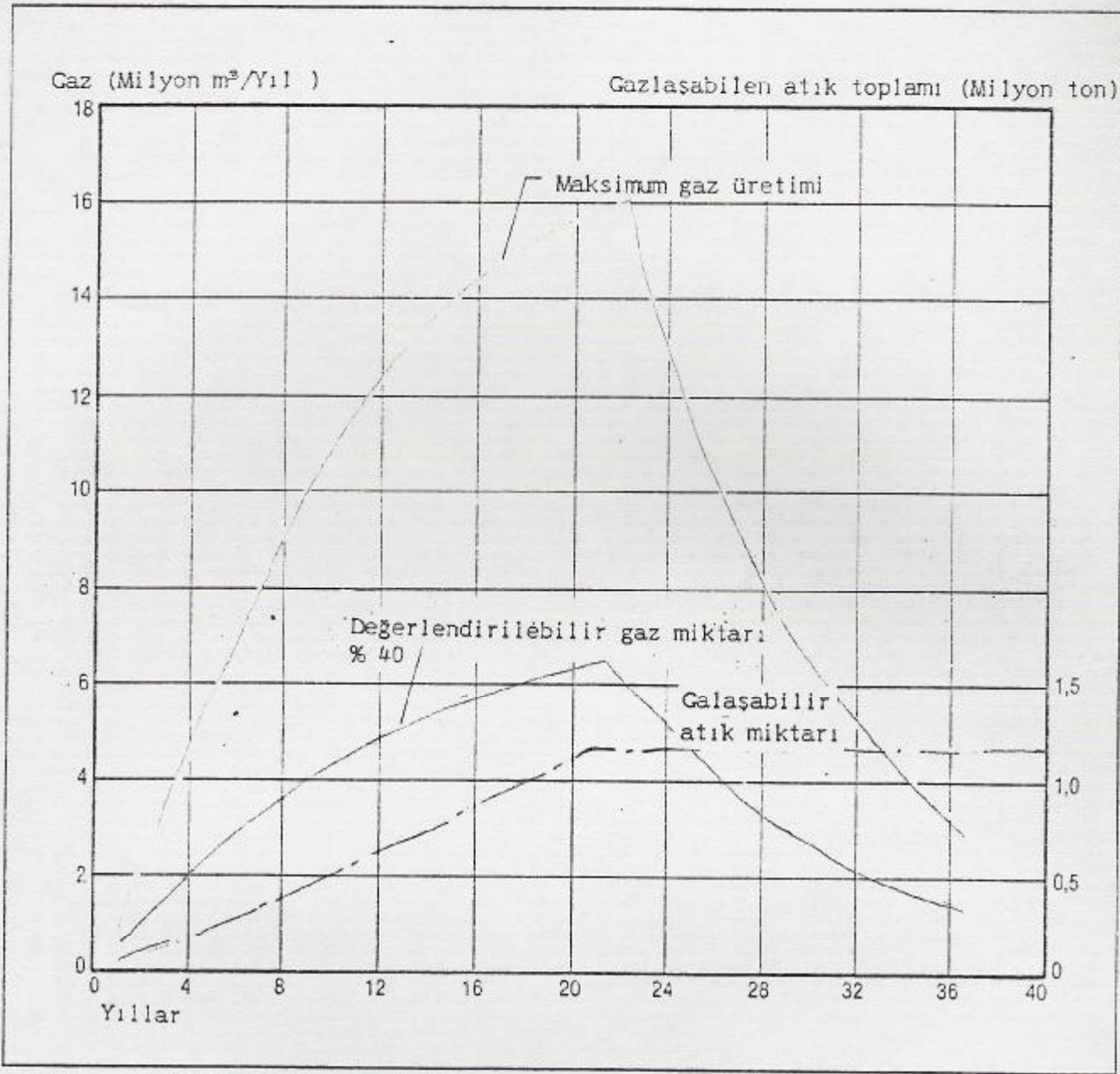
Sekil : Elektrik üretmek amacı ile bir deponigazından yararlanma



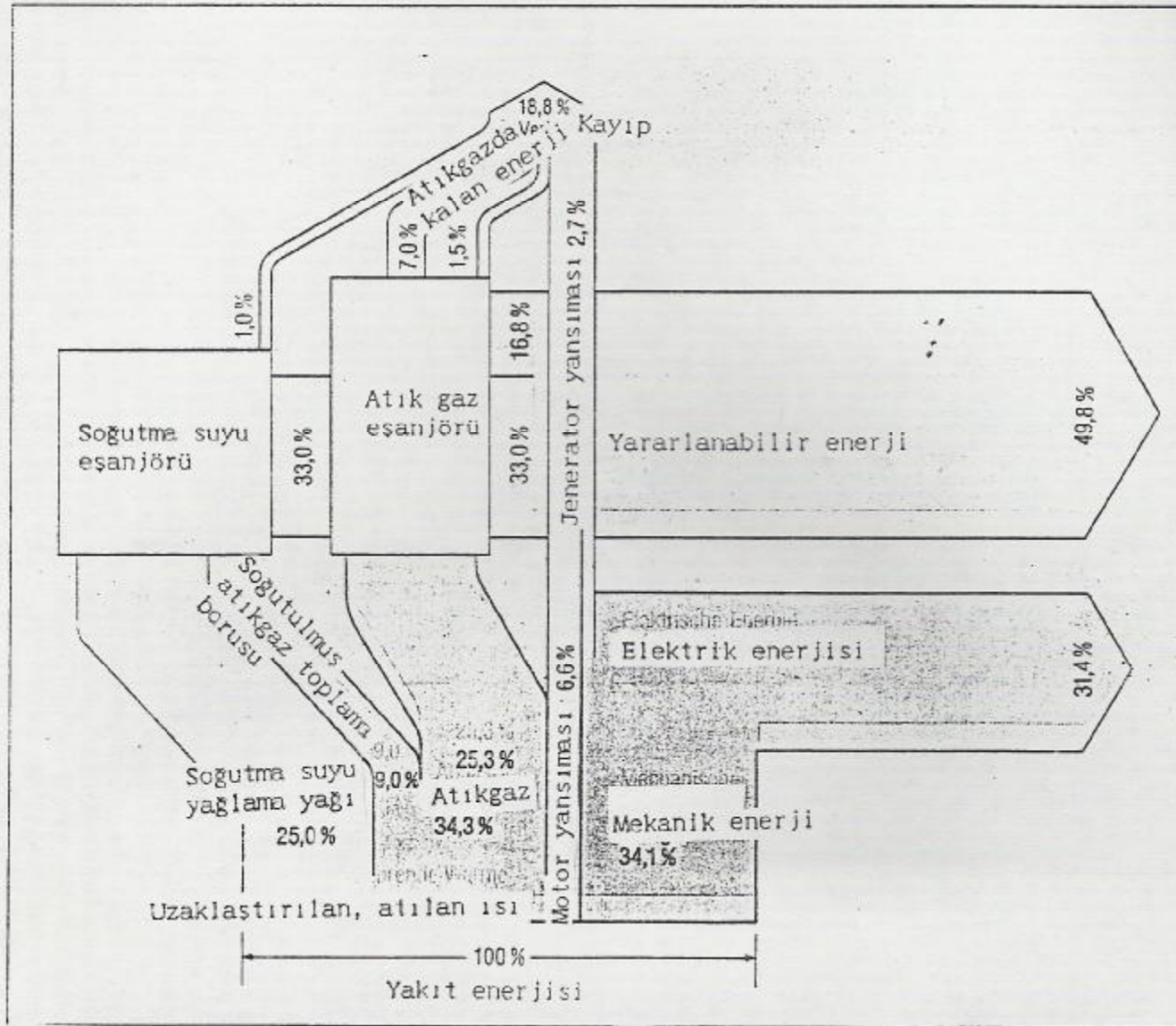
Şekil : 300 kW BKW Modulüne uyumlu olarak deponiden elde edilebilir gaz miktarı



Sekil : Deponi işletimi sırasında ve tamamlandıktan sonra oluşan gaz miktarı

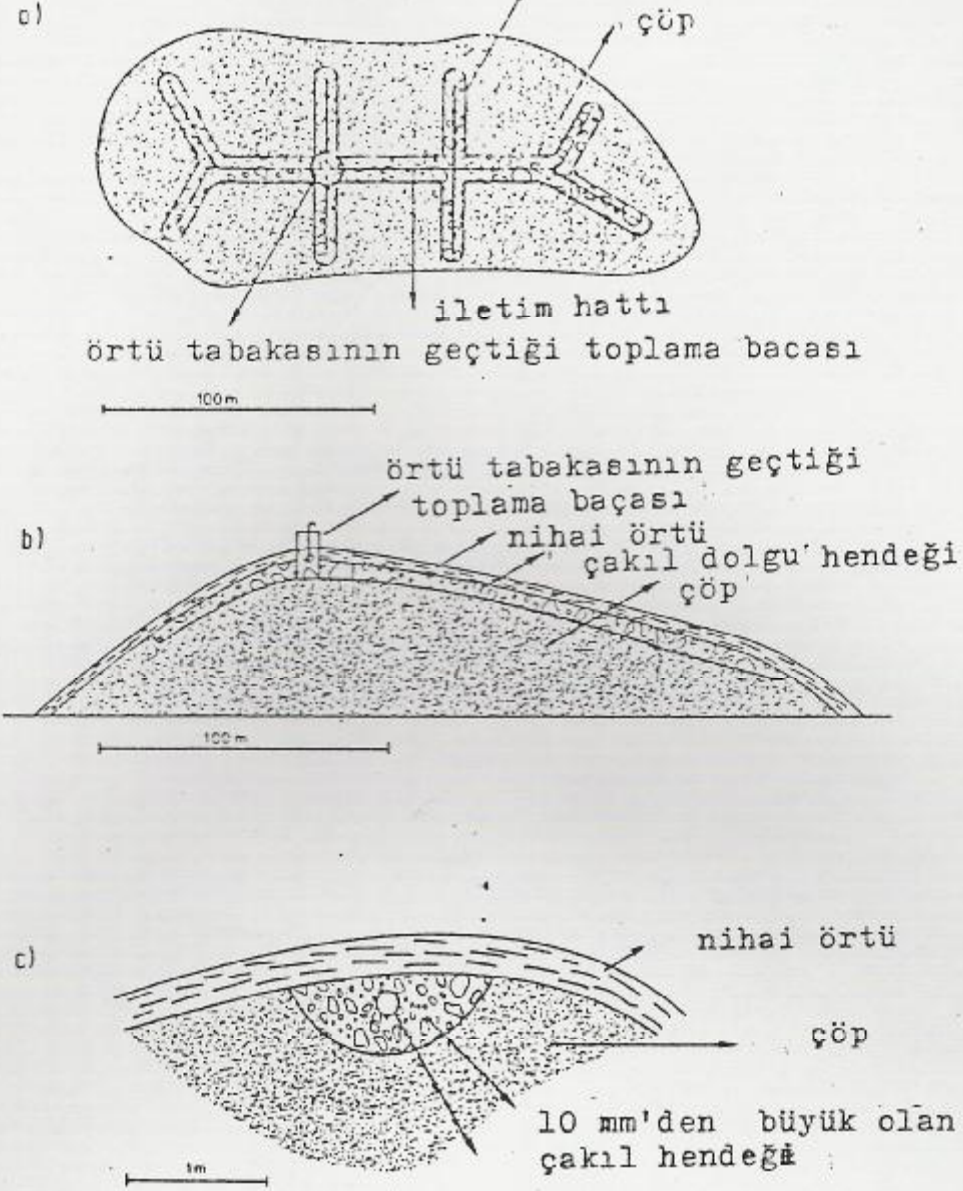


Sekil : Zamana bağlı olarak bir deponide üretilebilen ve değerlendirilebilen gaz miktarı



Şekil : Bir gaz motorunun enerji akış diyagramı (MWM)

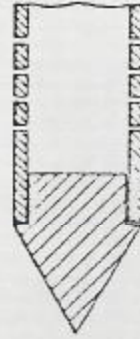
dane boyu 10 mm den büyük çakılı hendeğ



Şekil :Gaz drenajı

a)

emiş borusu



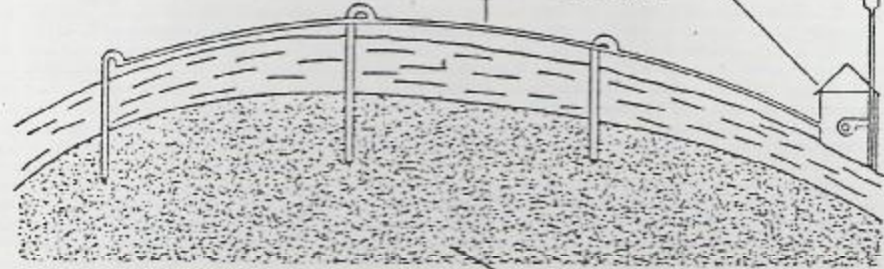
b)

gaz sondası

meşale borusu

pompa istasyonu

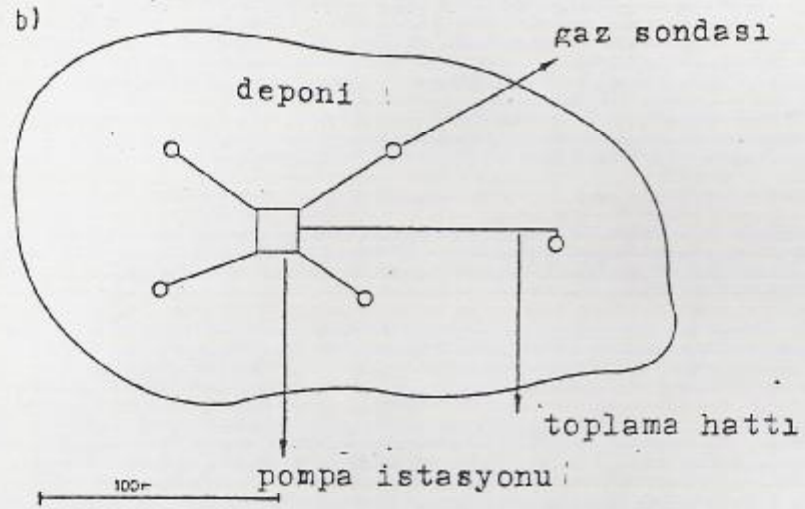
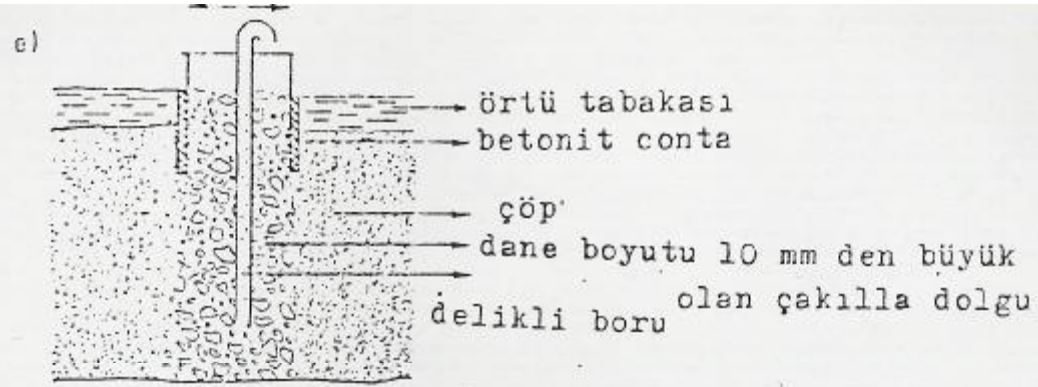
iletim borusu



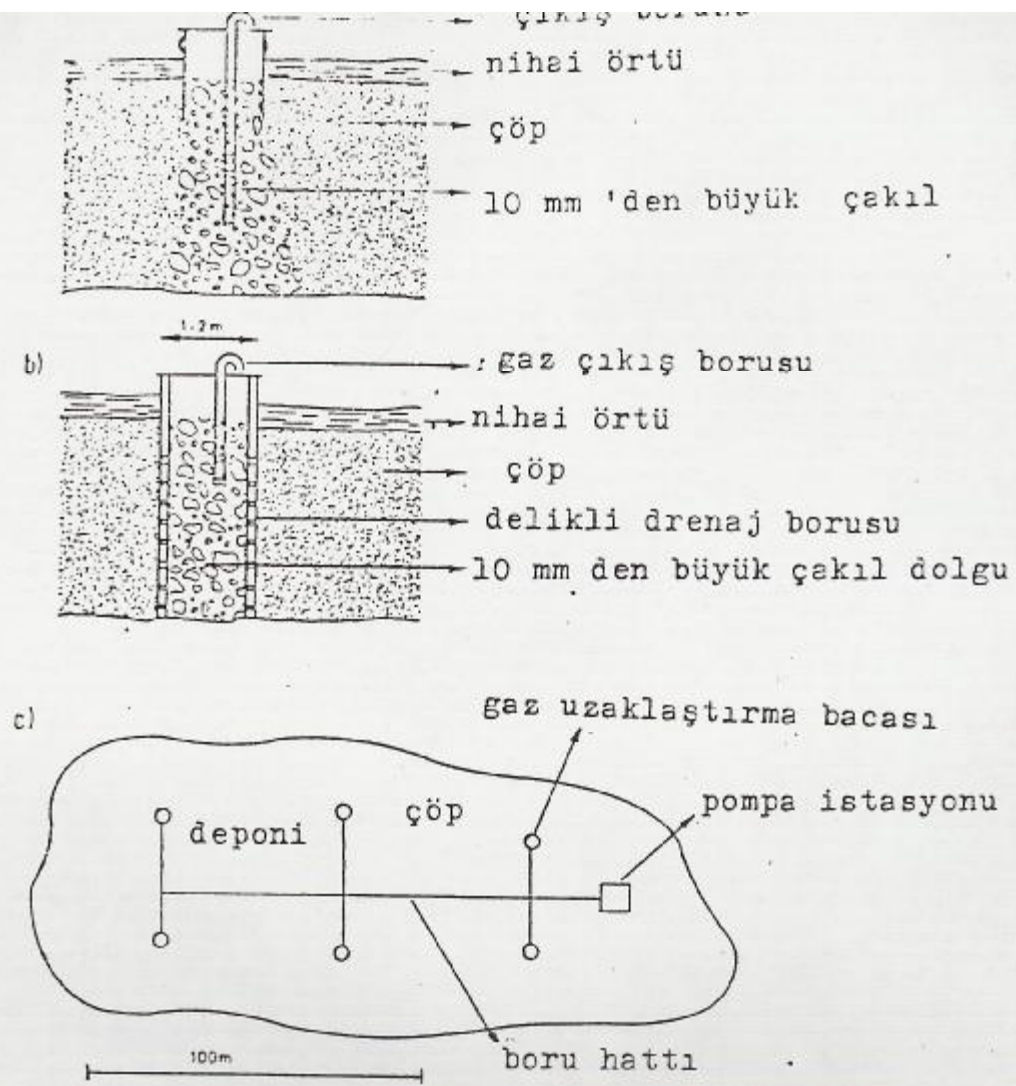
50m

çöp

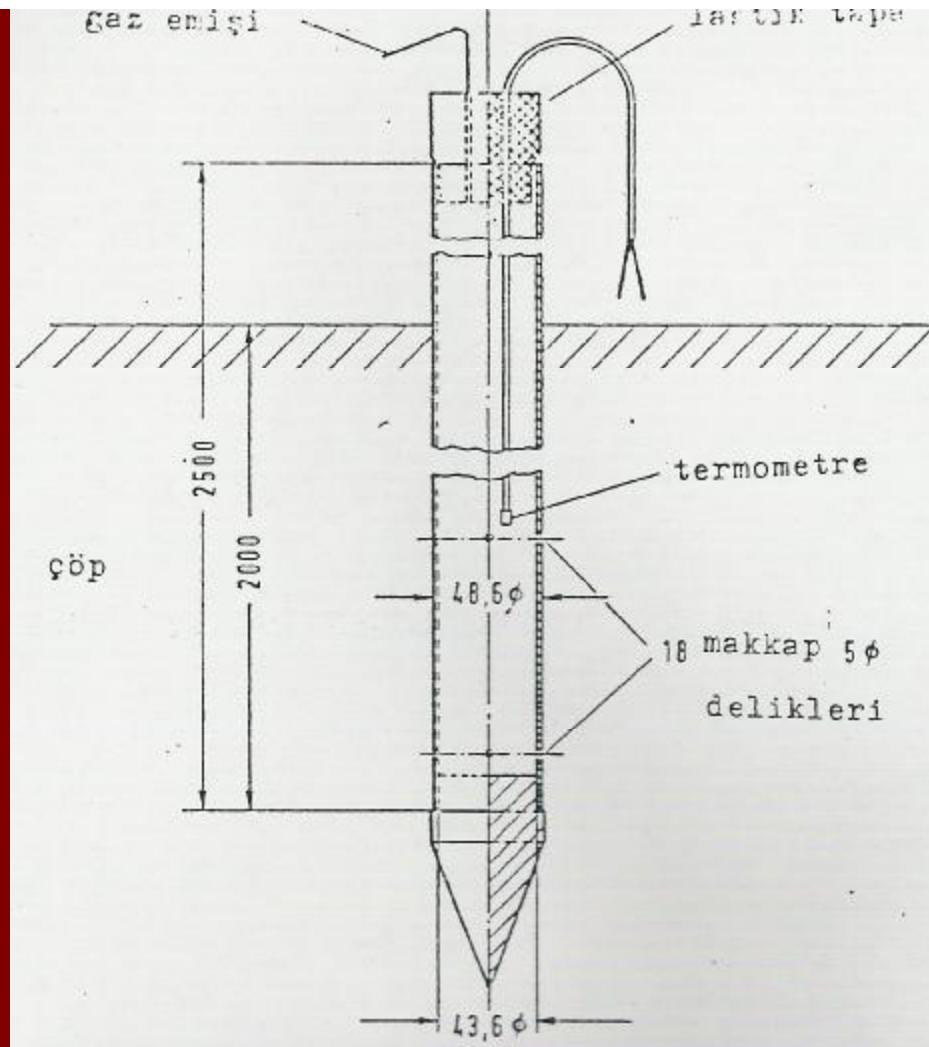
Şekil 1 : Gaz sondajı



Şekil 1 : Gaz drenajı için sondajlama

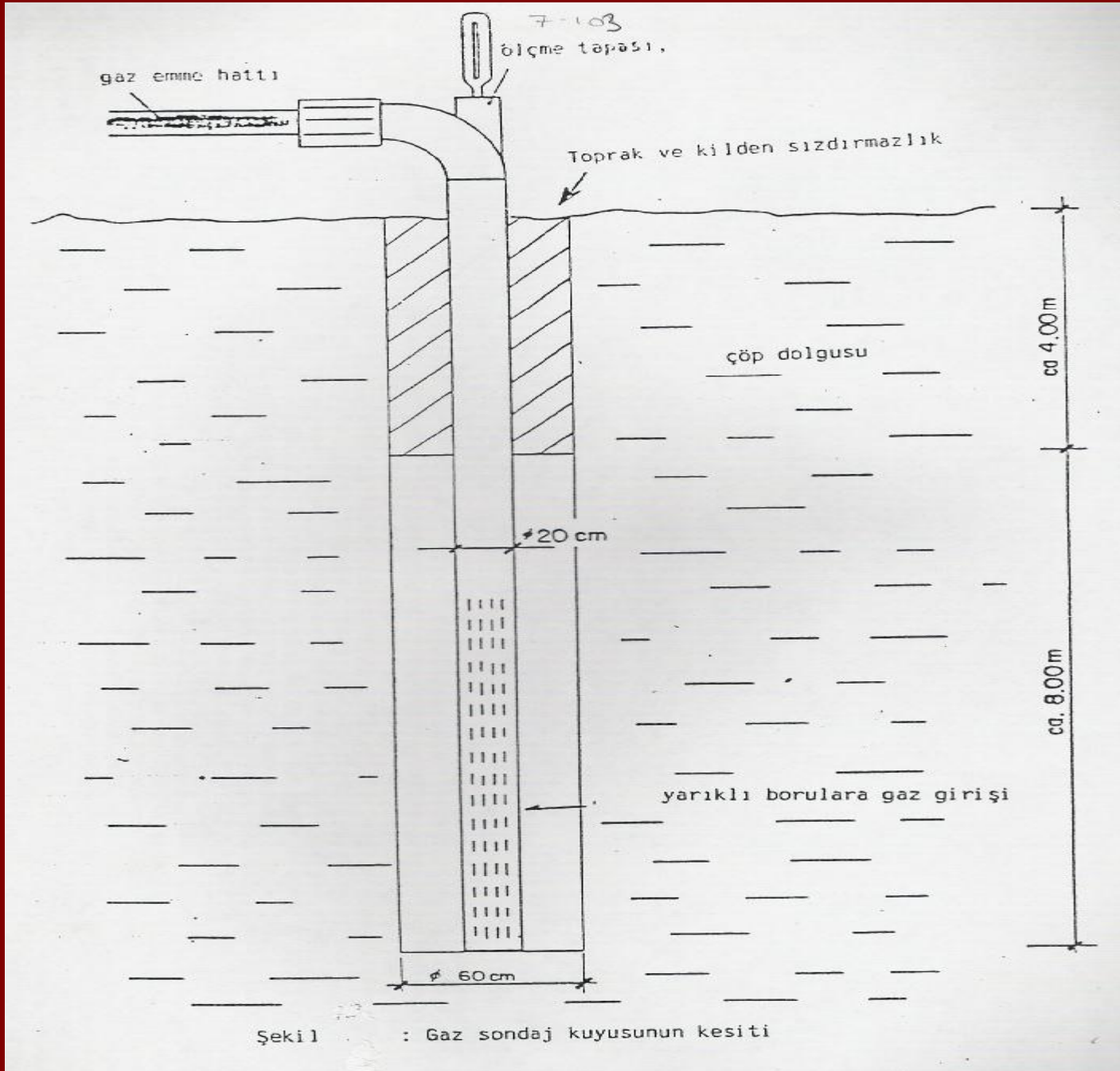


Şekil 10: Gaz toplama bacaları

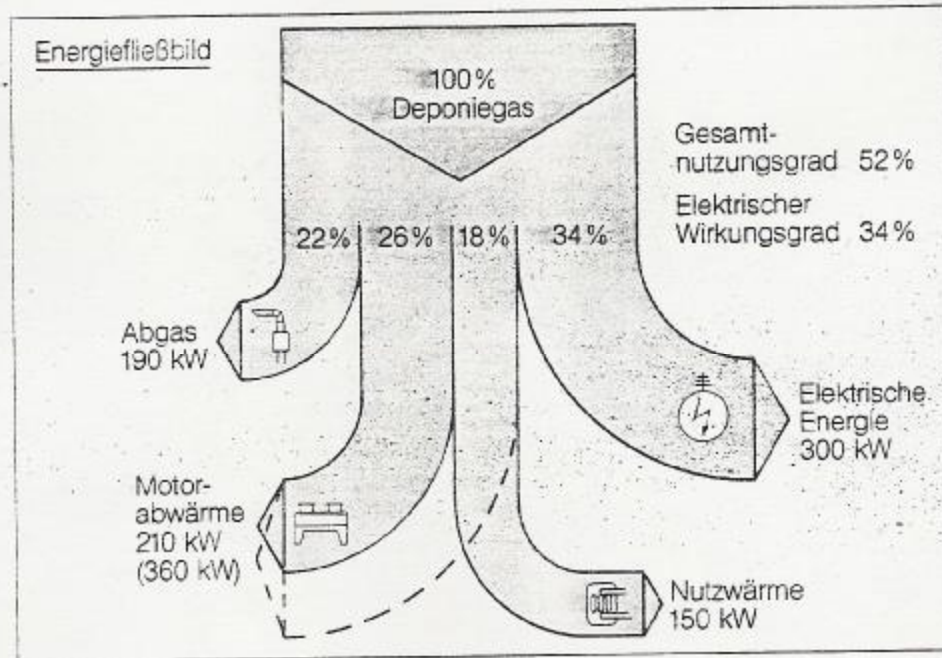


1:25

Şekil 1: Deney anındaki gaz sondası



Şekil : Gaz sondaj kuyusunun kesiti



②

Technische Daten des Deponiegas-Kraftwerks

Hersteller:	Jenbacher Werke AG
Baujahr:	1986
Inbetriebnahme:	4 / 87
Motorotyp:	JW 240 Sg Go „Leanox“ Gas-Ottc-Motor mit Asynchron-Gen.
Zylinderzahl:	12
Elektrische Leistung:	ca. 300 kW
Nutzwärme:	150 kW
Deponiegas-Bedarf:	ca. 240 m ³ /h
Voraussichtliche Betriebsstunden pro Jahr:	7000 – 8000 bh