



HEP Proizvodnja d.o.o.



HEP Proizvodnja d.o.o. HEP Generation d.o.o.

Presenter: Dubravko Lukačević, assistant managing director

June, 05 2008

HEP GROUP MEMBER



HEP Proizvodnja d.o.o.



HEP Proizvodnja d.o.o.

1. HEP Proizvodnja d.o.o. introduction
2. Introduction of HPP SENJ & SKLOPE
3. Visting the HPP and dam Sklope

June, 05 2008

HEP GROUP MEMBER

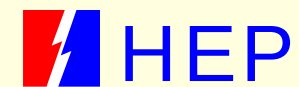


HEP Proizvodnja d.o.o. introduction

- HEP Proizvodnja d.o.o. is member of HEP group responsible for production both electric and heating power for HEP customers,
- HEP Proizvodnja d.o.o. has an O&M contract for managing all activities necessary for operation and maintenance HPP and TPP in Croatia 100% owned by HEP including the TPP Plomin B 50% owned by HEP and 50 % by RWE.
- HEP Proizvodnja d.o.o. has sorts of experts skilled for organizing, supervising and other activities required for construction new thermal and hydro PP.



HEP Proizvodnja d.o.o.

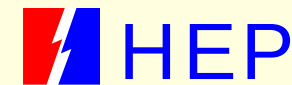


June, 05 2008

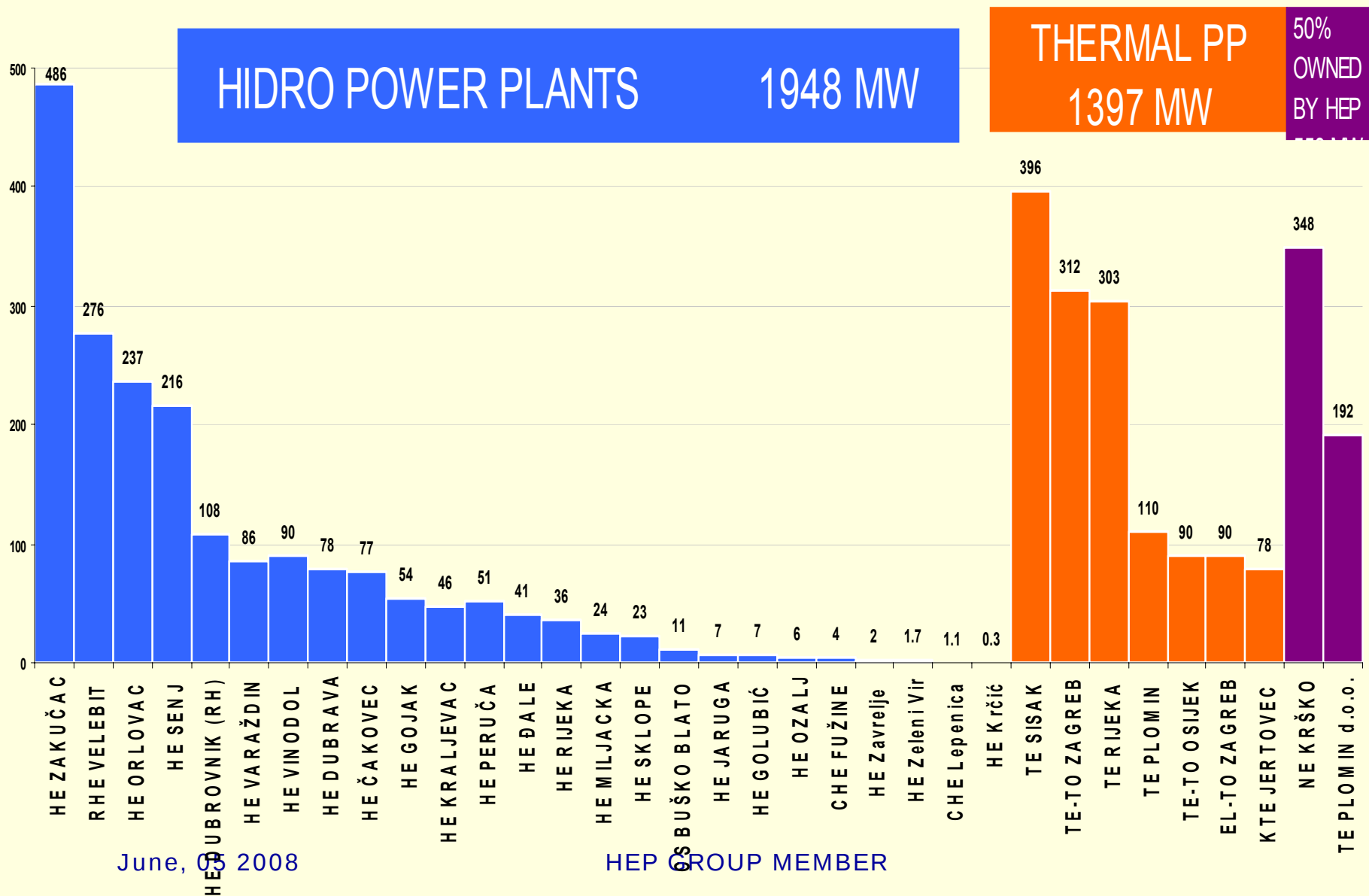
HEP GROUP MEMBER



HEP Proizvodnja d.o.o.



Nett Generation Capacity (December 31, 2007) **TOTAL – 3.995 MW**



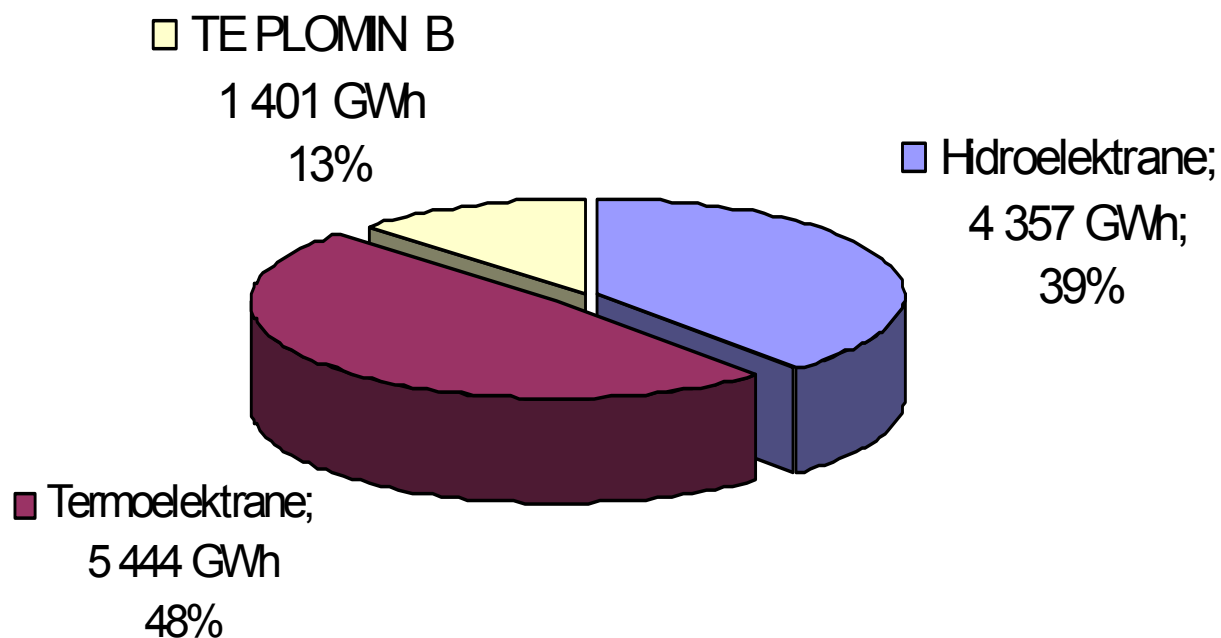
June, 05 2008

HEP GROUP MEMBER



Generation in 2007.

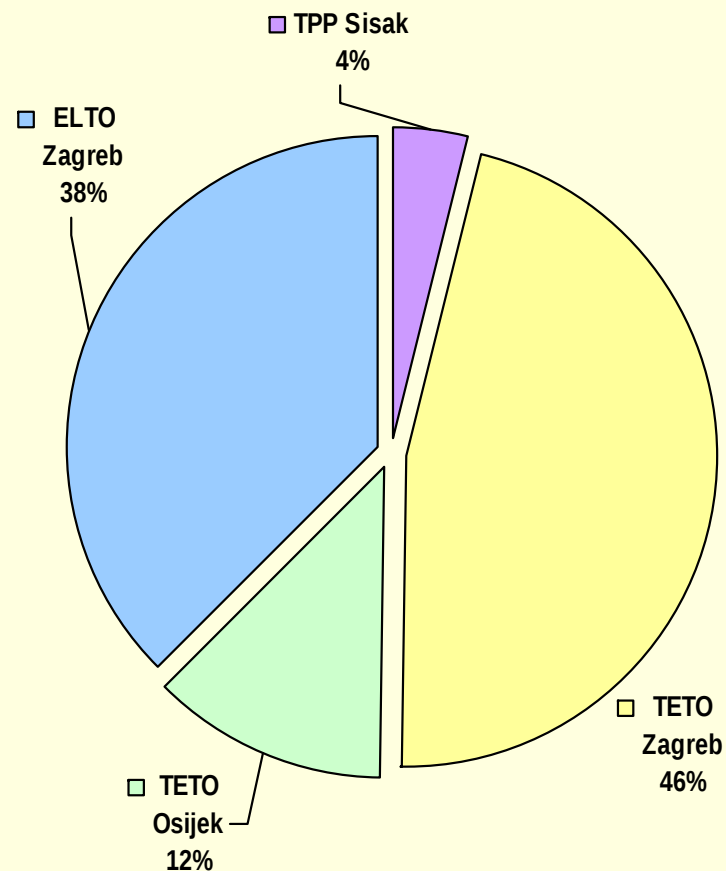
Electric power generation

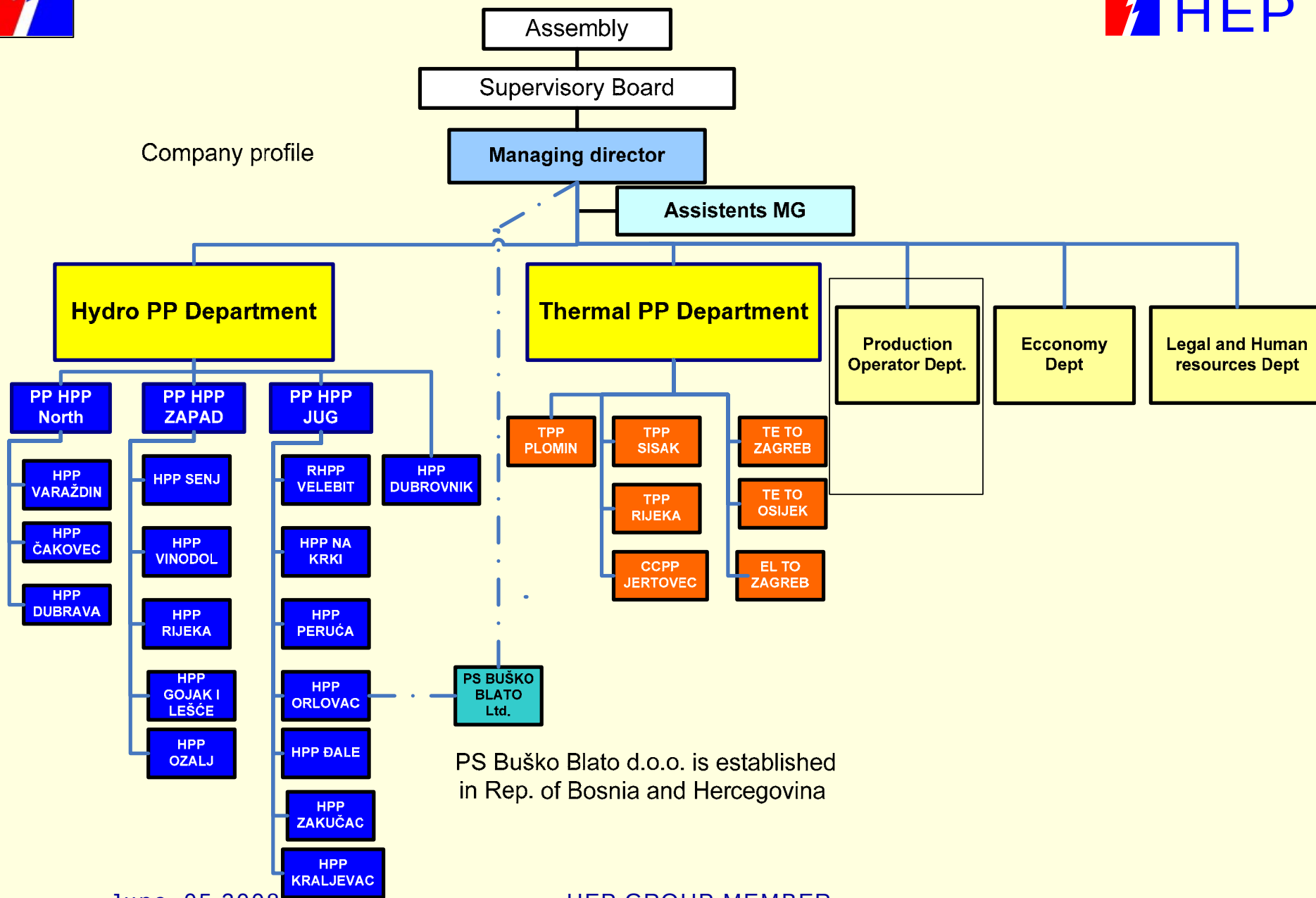




Heating energy Production 2007

	Production 2007. (MWh)	Part
TPP Sisak	86.850	3,85%
TETO Zagreb	1.049.418	46,53%
TETO Osijek	270.497	11,99%
ELTO Zagreb	848.398	37,62%
TOTAL HEATING	2.255.163	100,00%





June, 05 2008

HEP GROUP MEMBER



Department	Dr.	Mr	VSS	VŠS	SSS	VK	KV	NS	PK	NK	TOTAL
Managing director			1								1
Secretariat		1	5		4		1				11
Hydro PP Department	3	11	170	84	434	202	97	18	9	57	1085
Thermal PP Department	1	6	126	77	606	229	98	3	20	50	1216
Production Operator Dept.											0
Economy Department			9	1	18						28
Legal and human resources department			2								2
Total	4	18	314	162	1062	431	196	21	29	107	2344

Legend:

Dr. - D.Sc.; Mr. - M.Sc.; VSS - B.Sc.; VŠS - associate degree; SSS - secondary school;
 NS - elementary school; VK - highly skilled; KV - skilled; PK - semi-skilled;
 NK - unskilled



2. Introduction with HPP Senj / Sklope

Dubravko Lukačević,

Sklope

June 05th June 2008.



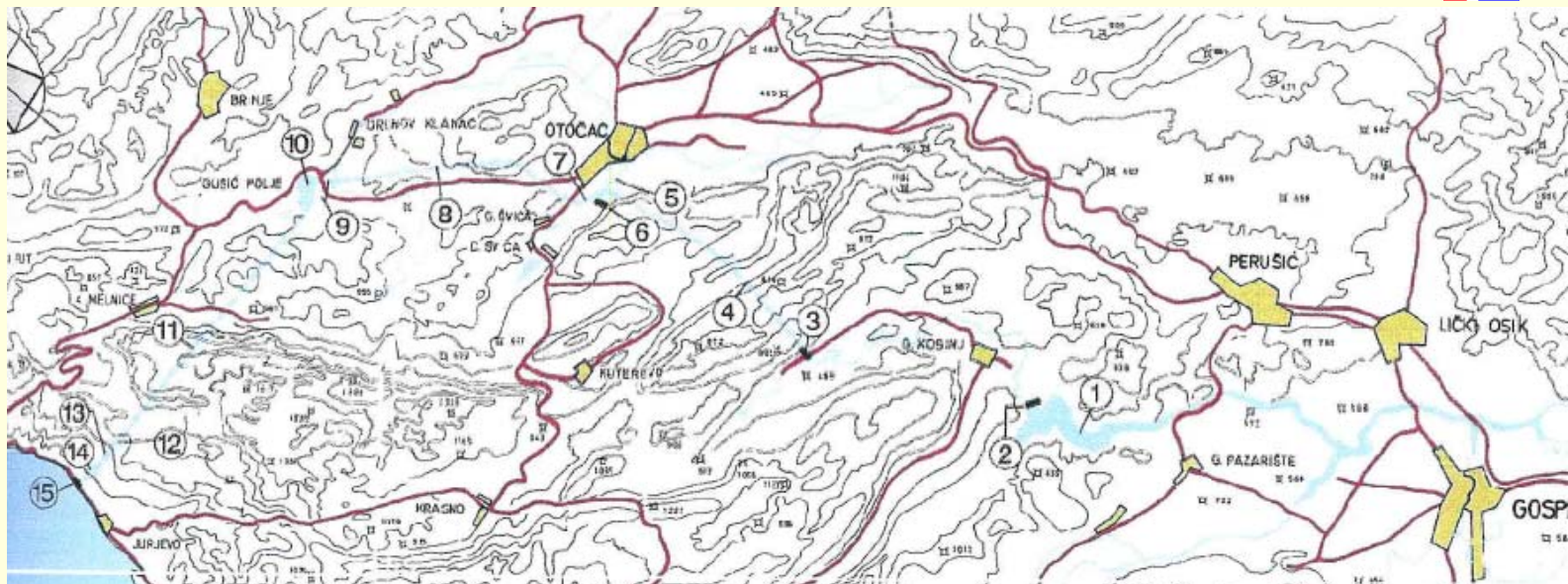
HEP Proizvodnja d.o.o.



Here
we are
today

June, 05 2008

HEP GROUP MEMBER

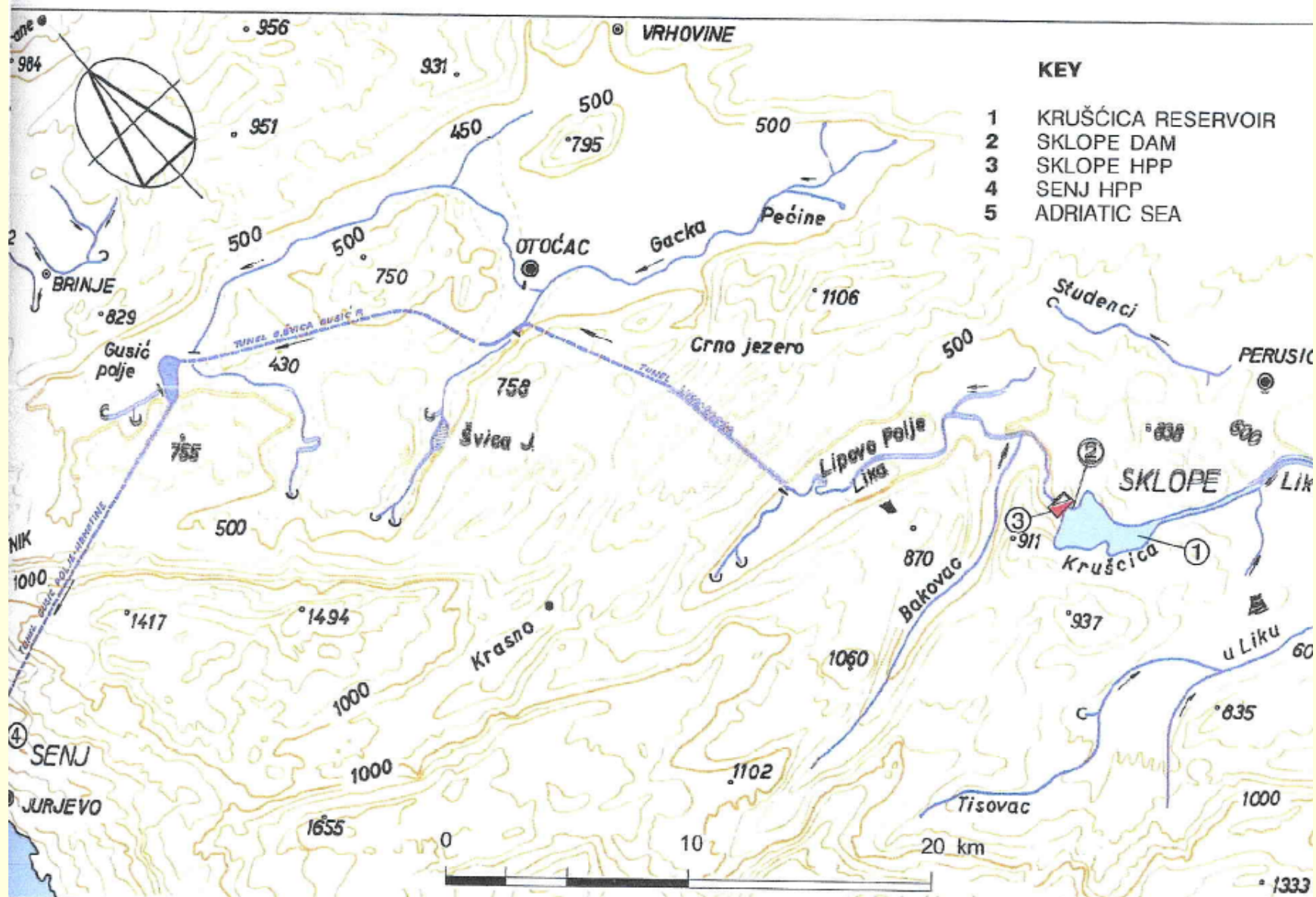


- HPP Senj Sklope is a complex hydro-technical system used for power generation
- The system is using waters from two rivers Lika and Gacka and producing the power in two HPP Sklope - 22.5 MW and HPP Senj - 216 MW in 3 units (72 each).
- Total Annual energy production is about 1.1 GWh (1GWh in Senj and 0.1 in Sklope)



HEP Proizvodnja d.o.o.

HPP Senj Sklope

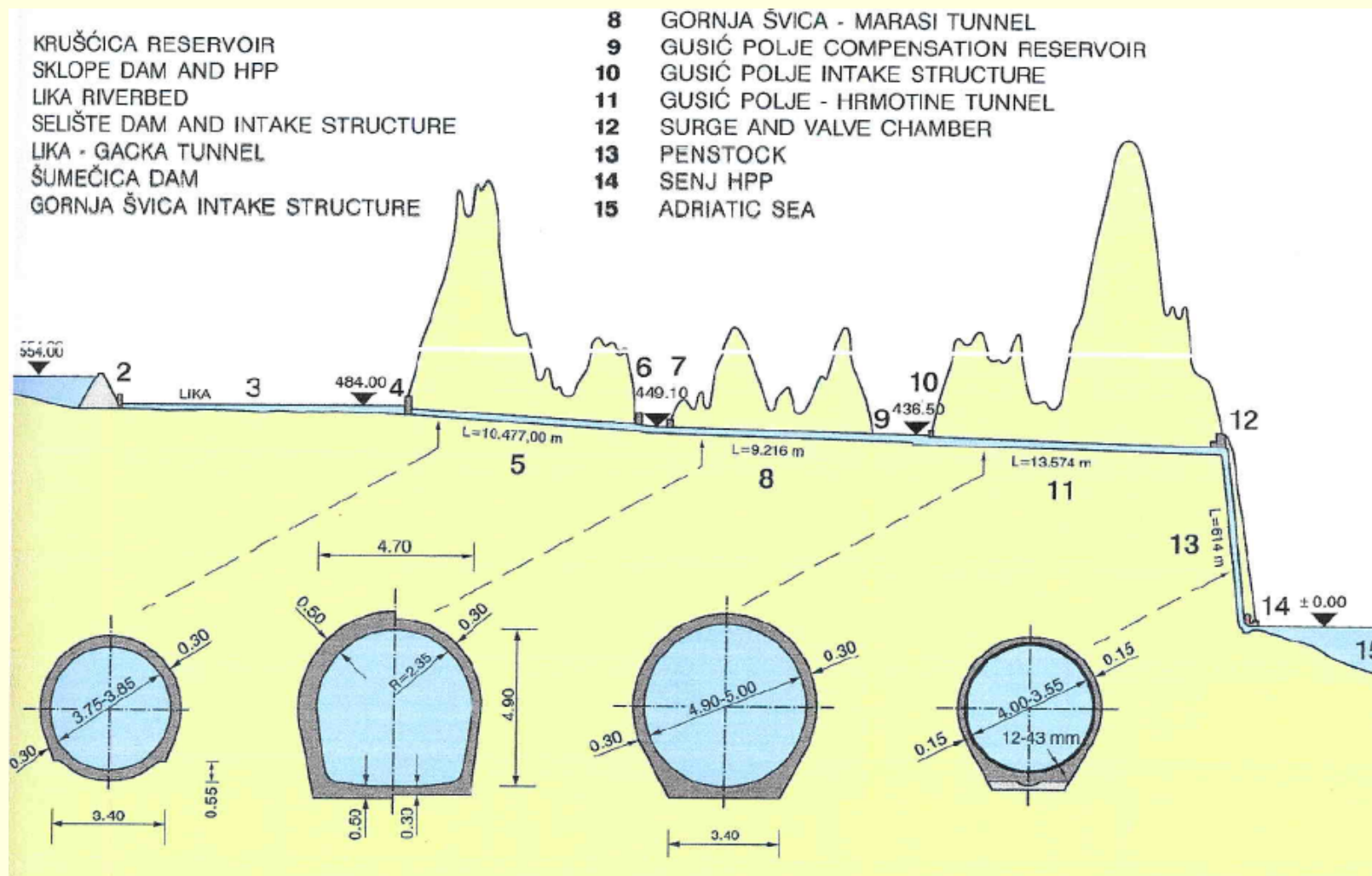


June, 05 2008

HEP GROUP MEMBER



HPP Senj - Sklope system

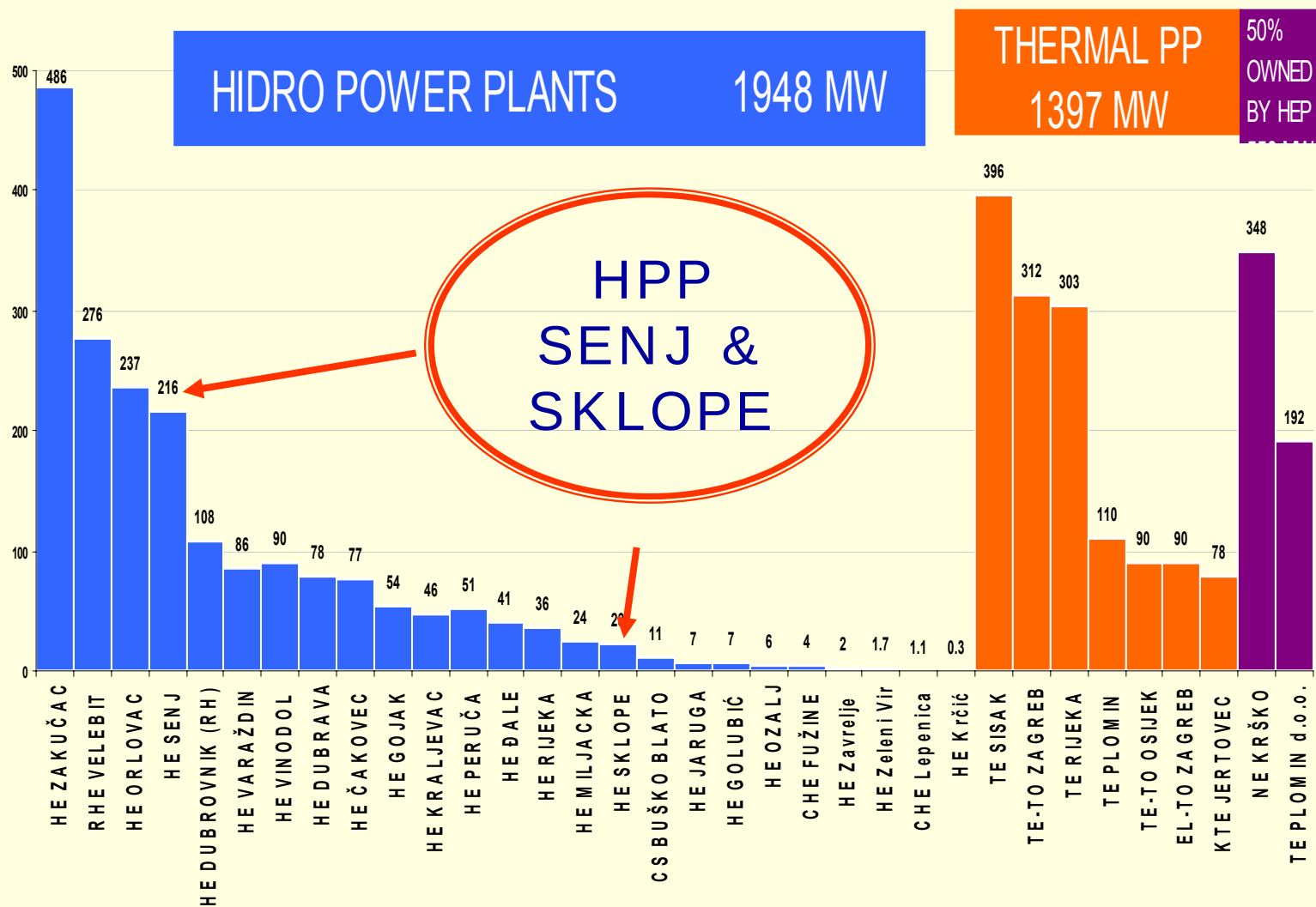


June, 05 2008

HEP GROUP MEMBER



HPP Senj & Sklope system



June, 05 2008

HEP GROUP MEMBER



HEP Proizvodnja d.o.o.



HPP Sklope



June, 05 2008

HEP GROUP MEMBER



HPP Sklope

BASIC TECHNICAL CHARACTERISTICS

HYDROLOGICAL DATA

<i>mean annual rainfall</i>	1,630 mm
<i>mean annual flow rate</i>	28.80 m ³ /s

RESERVOIR DATA

Kruščica Reservoir

<i>pool level</i>	- max. operating	554.00 m a.s.l.
	- min. operating	516.00 m a.s.l.
<i>capacity</i>	- at max. pool level	142.0 x 10 ⁶ m ³
	- max. active at 554.00 m a.s.l.	128.0 x 10 ⁶ m ³

POWER GENERATION DATA

<i>gross head</i>	69.5 m
<i>turbine design head</i>	60 m
<i>mean equivalent energy</i>	0.11 kWh/m ³
<i>installed discharge</i>	45 m ³ /s
<i>installed capacity</i>	22.5 MW
<i>average annual output</i>	85 GWh

EQUIPMENT DATA

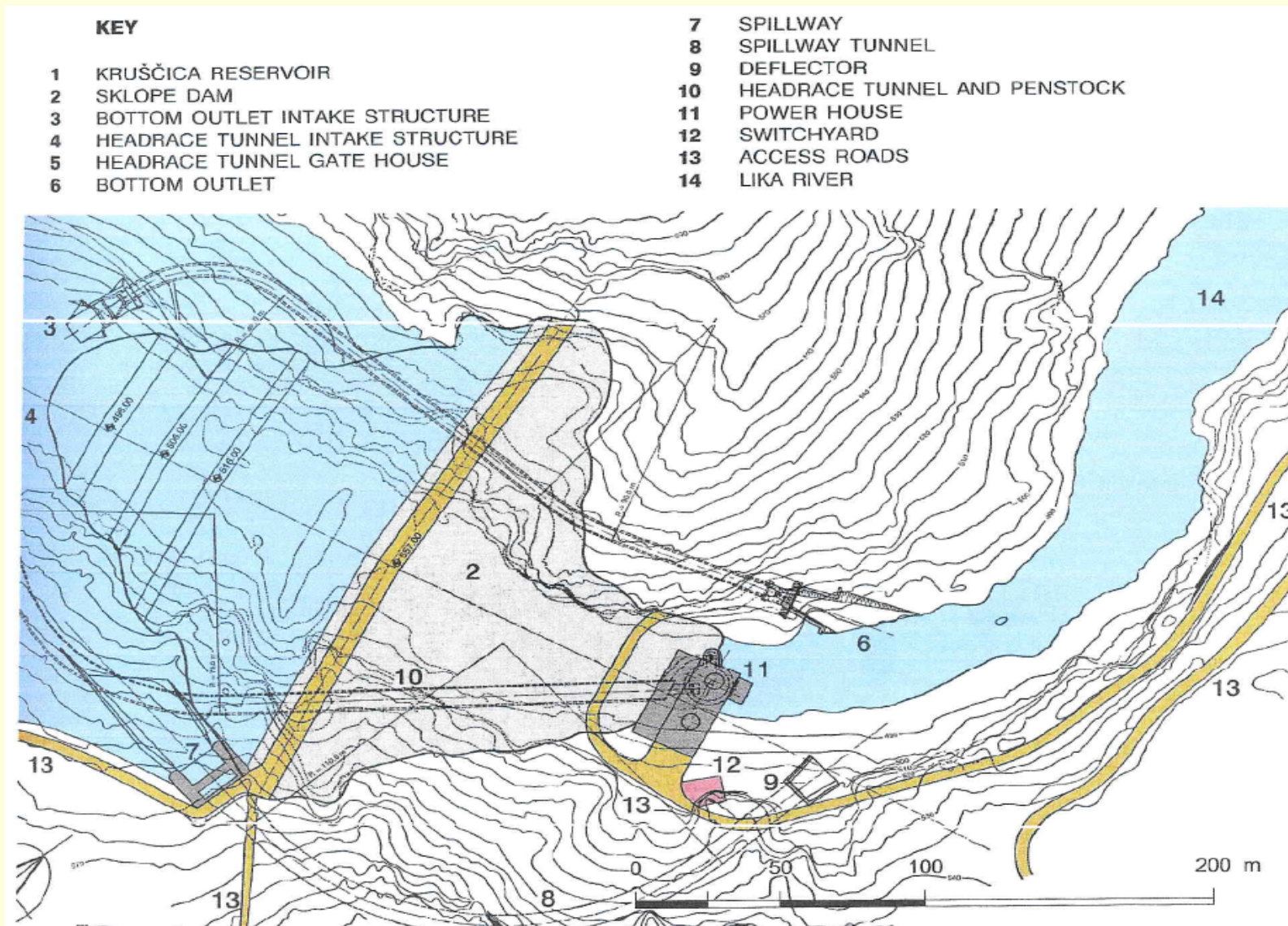
turbines

<i>type</i>	Francis, spiral-case, vertical
<i>units</i>	one
<i>rated discharge</i>	45 m ³ /s
<i>design head</i>	60 m
<i>rating</i>	23.5 MW
<i>speed</i>	250 min ⁻¹
<i>units</i>	one
<i>rating</i>	25 MVA
<i>rated voltage</i>	10.5 kV
<i>power factor</i>	cos φ = 0.9
<i>speed</i>	250 min ⁻¹

generator



HPP Sklope



June, 05 2008

HEP GROUP MEMBER



If you have any question we would be
glad to try to answer it.

Thank you for your attention.