



LIST OF MODULES IN THE UMBERTO-LIBRARY EDUC AND TRIAL VERSIONS

(for legend see last page)

VALUATION SYSTEMS

- Valuation System by UBA/ifeu

PROCESSES

1 Chemicals

1.1 Inorganic chemicals

- ammonia (D)
- ammonia (EU)
- chlorine
- sulphuric acid (D)

1.2 Organic chemicals

- acetone
- acetone as subnet
- benzene
- benzene as subnet
- ethylene
- formic acid

2 Energy generation

2.1 Compressed air

- compressor unit (2 - 12 bar)

2.2 Engines

- engine diesel (D, 1.0 MW)
- engine diesel (USA, 1.0 MW)

2.3 Heating

- heating fuel oil (rock, 0.01 MW)
- oven brown coal briquette (w-elb, 0.01 MW)
- stove natural gas

2.2 Long distance heating

- Long distance heating

2.5 Power stations excluding prechain

- PS brown coal (D)
- PS natural gas (D)
- PS nuclear D

2.6 Refrigeration plants

- Refrigeration plant (400 kWth, 6/12°C)

2.7 Steam generator

- steam (natural gas, D)
- steam - on site (APME)

3 Energy prechains

- Biogas
- ref. rapeseed oil methyl ester

3.1 Brown coal

- Brown coal (D-Mix)

3.2 Crude oil & crude oil products

- crude oil (EU)
- crude oil (D mix)
- diesel
- kerosene
- gasoline

3.3 Hard coal

- hard coal (D)
- hard coal (USA)

3.4 Natural gas

- natural gas (import mix D)
- natural gas (CIS)
- natural gas (North Sea)

3.5 Natural gas processings

- Natural gas conditioning (D)

4 Fibres, textiles

- Cotton – PES (50/50) blend

5 Fine Chemicals

5.1 Fertilizers

- ammonium nitrate phosphate (D)
- lime fertilizer (D)
- nitrogen fertilizer (D)
- urea (D)

- urea (EU)

5.2 Tensides

- Fatty alkyl sulphonates, sec.

6 Metals

6.1 Fe-Metals

- Crude Steel
- converter steel (ETH)
- crude iron electric steel (ETH)Ores
- iron ore

6.2 Semimanufactured Good

- pipes, galvanised
- thin sheet metal
- tin can 0,5 L
- tinplate

6.3 Steel production processes

- blast furnace
- continuous casting
- sintering plant

6.4 Aluminium

- aluminium
- recycled aluminium melting
- PGM
- PGM (USA) as subnet

7 Minerals / Glass

- lime stone
- mixed glass (56% refuse glass)

8 Natural Material

- coconut oil
- palm kernel oil

9 Paper / Cardboard

9.1 Cardboard

- board, offset printing
- liquid packaging board, 1 L

9.2 Corrugated Board

- CB packaging (virgin fibre)
- corrugated board production

9.3 Paper

- copying paper (sec. Fibre)
- copying paper (virgin fibre)
- newsprint paper

10 Plastics

10.1 Semimanufactured goods

- bottle (PET, APME)
- film (PE)

- moulding (PS)
- moulding (PVC)
- pouch (PET/PE)
- tube (PE/Alu)

11 Transport

11.1 Aircraft

- aircraft incl. prechain

11.2 Motor Vehicles

- car diesel excl. Prechain
- lorry outwd/home excl. prechain
- van diesel excl. prechain

11.3 Passenger Transport

- DB passenger transport
- aircraft passenger transport
- passenger transport (car)

11.4 Rail

- rail excl. prechain

11.5 Vessels

- inland vessel excl. prechain
- sea ship excl. prechain

12 Waste Treatment

12.1 Land Fill

- Landfill domestic waste, modern as subnet

12.2 Organic Waste

- organic waste composting plant, high-tech
- organic waste composting plant, low-tech

12.3 Sewage Treatment Plants

- sewage treatment, bio (excl. prechain)
- sewage treatment, bio (incl. prechain)

12.4 Waste Incineration

- waste incin. (newspaper)
- waste incin., average standard

12.5 Waste Processing

- sorting plant

13 Wood and Pulp

13.1 Wood

- wood (beech/poplar)
- wood (pine)

13.2 Pulp

- sulfate pulp, bleached
- sulfate pulp, unbleached

As of January, 1st 2006

TECHNICAL LEGEND

ab	absorption heat pump	HH	household
ABS	acrylonitrile-butadiene-styrene	HIPS	high impact polystyrene
adv	advanced	IN	industrial plant
bio	biological	K	kraftliner
BHS	block-type thermal power station	KWth	kWatt, thermal
BOF	basic oxygen furnace	LDPE	low density polyethylene
BT	beef tallow	lean	lean mix
C	corrugating material	LLDPE	linear low density polyethylene
cal.v.	blower-calorific value boiler	LP	light packaging
cat	3-way catalytic converter	mech	mechanical
CNO	coconut oil	MDI	diphenyl methane diisocyanate
CO	coconut oil alcohol	mot	engine driven
CP	cogeneration plant	OPA	oriented polyamide
CPR	counter pressure	PE	polyethylene
EAf	electric arc furnace	PET	polyethylene terephthalate
EC	extraction-condensation	PGM	platinum group metals
ECF	elementar chlorine free	PKO	palm kernel oil
ECP	cogeneration plant incl. engine	PMMA	polymethylmethacrylat
EL	light (fuel)	PO	palm oil
EPS	expandable polystyrene	PP	polypropylene
fan	fan burner	PS	polystyrene
FB	fluidised bed	PS	power station
FBF	fluidised bed firing	PVC	polyvinyl chloride
G+S	gas-and-steam turbine	rock	rocket burner
GC	grate combustion	S	schrenz
GD	gas desulphurisation	ST	steam turbine
GPPS	general purpose polystyrene	T	testliner
GT	gas turbine	TCF	total chlorine free
h	heavy (fuel)	wc	water content
HDPE	high densitiy polyethylene		

ORGANIZATIONS AND MANUFACTURERS

APME	Association of Plastics Manufacturers in Europe	IISI	International Iron and Steel Institute
ETH	Eidgenössische Technische Hochschule, Zürich, Schweiz	INCO	INCO, Canadian manufacturer
FaBr	Falconbridge, Canadian manufacturer	OPEC	Organisation of Petroleum Exporting Countries
ifeu	Institut für Energie- und Umweltforschung, Heidelberg	UBA	Umweltbundesamt, Germany
		UCPTE	Union pour la coordination de la production et du transport de l'électricité

COUNTRY CODES AND AREAS

A	Austria	GR	Greece
ALG	Algeria	I	Italy
AUS	Australia	Lux	Luxembourg
B	Belgium	NL	Netherlands
BRA	Brasilia	NOR	Norway
CAN	Canada	P	Portugal
CH	Switzerland	PL	Poland
CIS	CIS	RSA	South Africa
D	Germany	Scand.	Scandinavia
E	Spain	USA	USA
EU	European Union	e-elb	East Elbe
Ex-Y	Ex-Yugoslavia	Rh	Rhine
F	France	w-elb	West Elbe