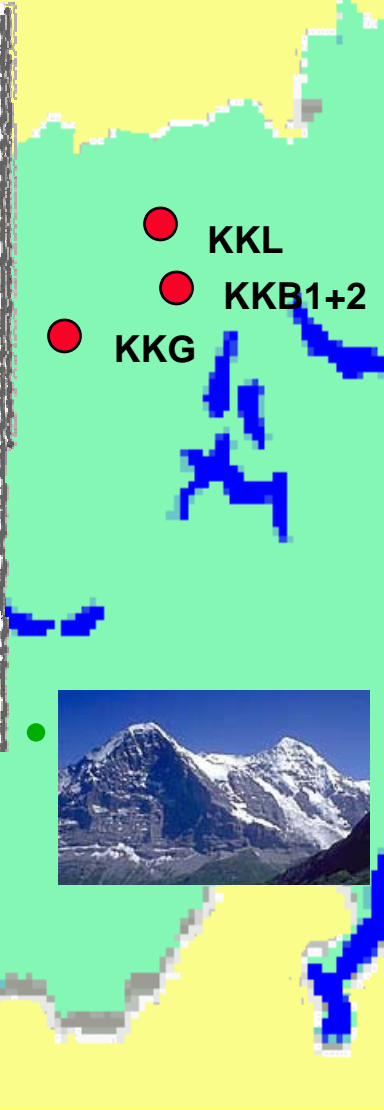
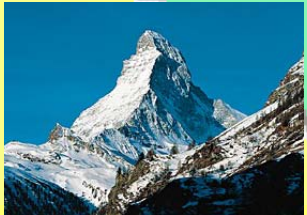


**KKL 1145 MW**

**KKM 355 MW**

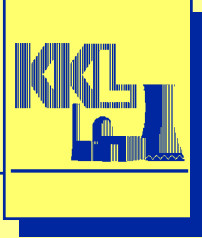


- **KKL**
- **KKB1+2**
- **KKG**



**KKB 365 + 357 MW**





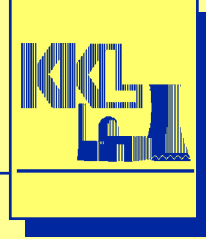
# **POWER UPRATE PROGRAM**

- **Introduction**
- **Low Pressure Turbine Mod. 1994**
- **High Pressure Turbine Mod. 1996**
- **Other Modifications 1996**
- **Decontamination Project 1997/98**
- **Power Uprate Test Program**



Power Level	MW <sub>t</sub>	MW <sub>e</sub>		Date
		(brutto)	(netto)	
<b>100 %</b>	<b>3138</b>	<b>1045</b>	<b>990</b>	bis 1993
<b>100 % Replace LPT</b>	<b>3138</b>	<b>1085</b>	<b>1030</b>	1994
<b>100 % Replace HPT</b>	<b>3138</b>	<b>1060</b>	<b>1005</b>	1996
<b>LS1 = 106 %</b>	<b>3327</b>	<b>1135</b>	<b>1080</b>	31.10.98
<b>Testoperation 109%</b>	<b>3420</b>	<b>1180</b>	<b>~1120</b>	1.-14.02.99
<b>Test at 109%</b>	<b>3420</b>	<b>1180</b>	<b>~1120</b>	Sep. 99
<b>LS2 = 109%</b>	<b>3420</b>	<b>1180</b>	<b>~1120</b>	Sep. 99
<b>Testoperation 112%</b>	<b>3515</b>	<b>min. 1205</b>	<b>min. 1145</b>	Nov. 99
<b>LS3 = 112 %</b>	<b>3515</b>	<b>min. 1205</b>	<b>min. 1145</b>	März 2000
<b>LS4 = 114.7 %</b>	<b>3600</b>	<b>1230</b>	<b>1170</b>	Sep. 2002

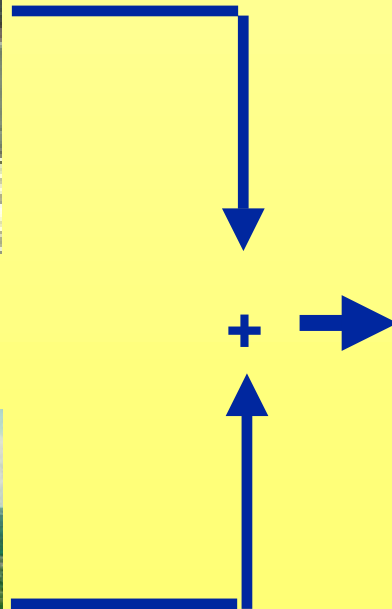
# Comparison of KKL-Power Uprate



**KWL 77 MW \* 1.5**



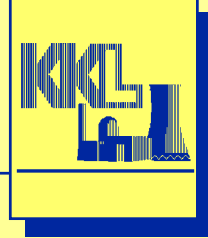
**KKL 1085 MW**



**Power Uprate KKL**



**KKL 1200 MW**



# Low Pressure Turbine Modification

- **year of modification** **1994**
- **guaranteed power from ABB** **23 MWe**
- **definitive power after measurement** **46 MWe**
- **Cost** **58 Mio. CHF**

# Replacement Low Pressure Turbine

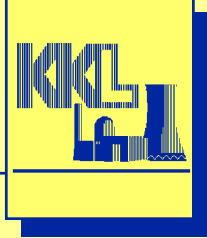




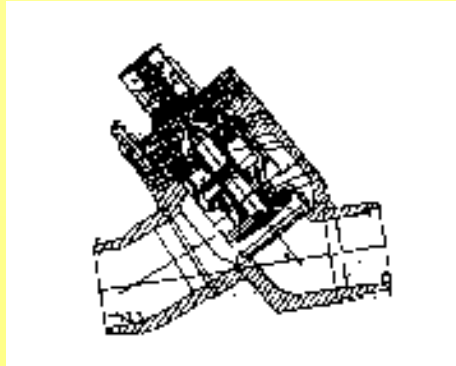
# Replacement Low Pressure Turbine



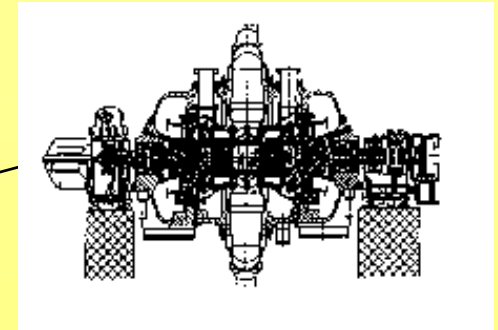
# Project Power Uprate



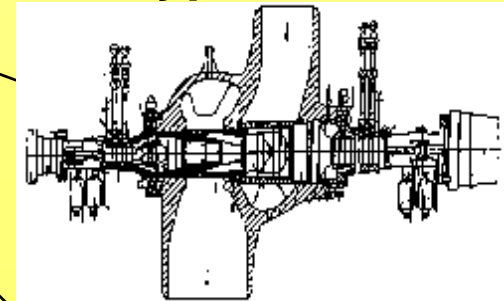
**6 Feedwater Valves**



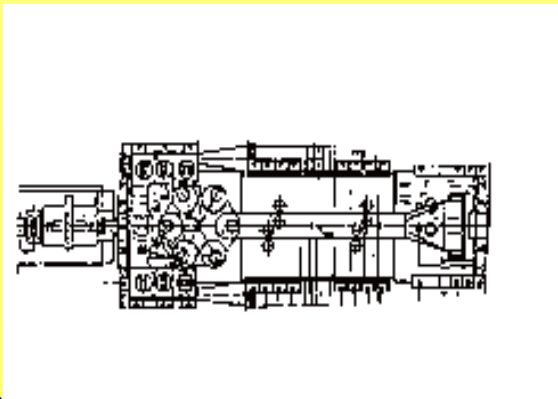
**HP-Turbine**



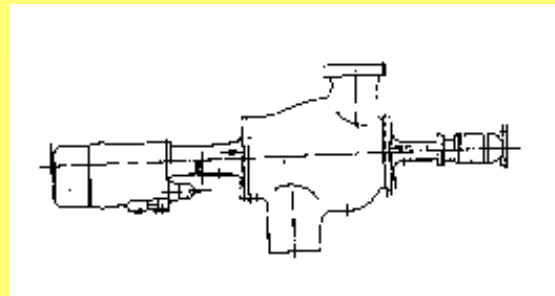
**4 Bypass-Valves**



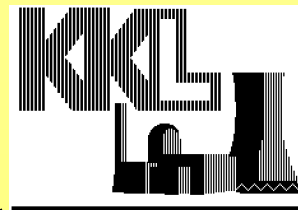
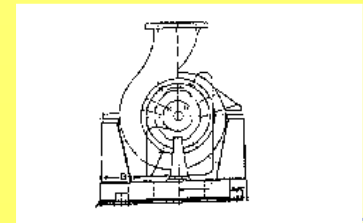
**Generatormod.**



**4 Inletvalves EVK450**

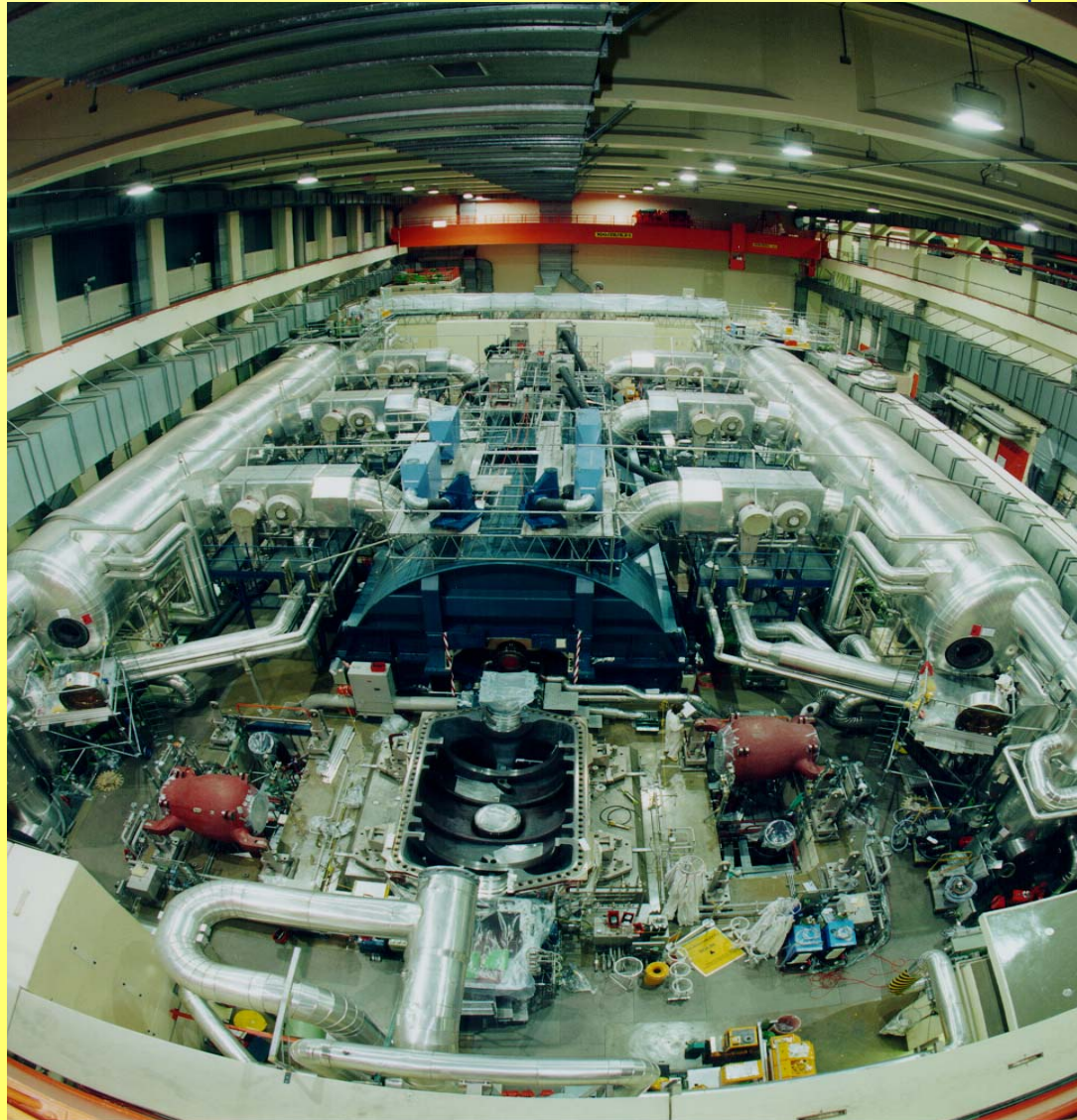


**Several Pumps**

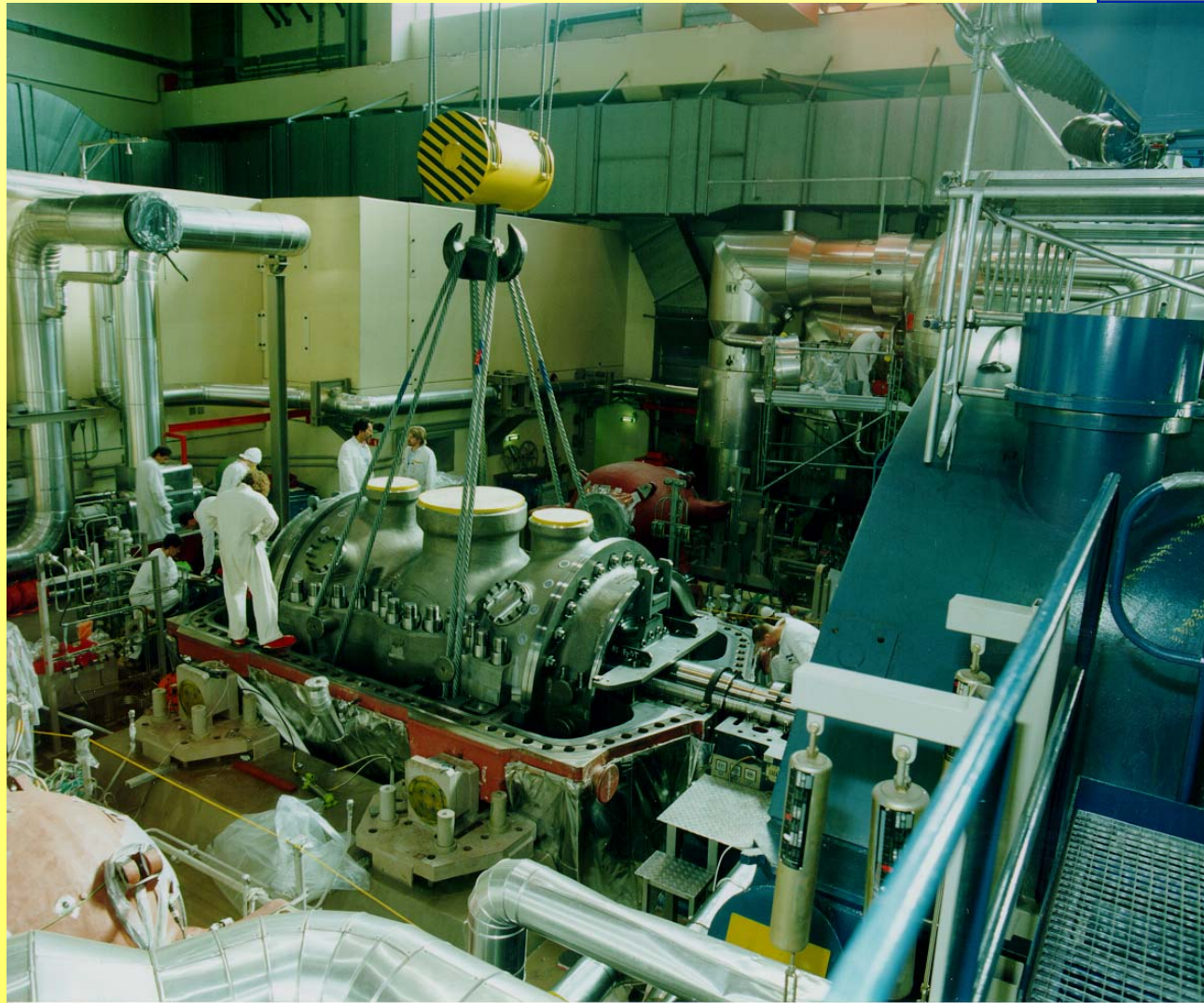




# Overview Turbine Building



# Replacement High Pressure Turbine

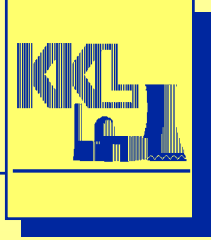


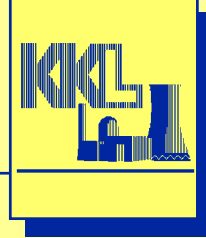


# Replacement Bypassvalves



# Replacement Bypass Valves



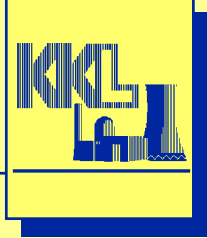


# Decontamination Project

•	<b>2 Preheaters</b>	<b>100t</b>
•	<b>3 Low Pressure Turbines</b>	<b>450t</b>
•	<b>Bypass Valves</b>	<b>40t</b>
•	<b>Inlet Valves</b>	<b>82t</b>
•	<b>Feedwater Valves</b>	<b>15t</b>
•	<b>Condenser tubes</b>	<b>20t</b>
•	<b>others</b>	<b><u>30t</u></b>
•	<b>total</b>	<b>737t</b>



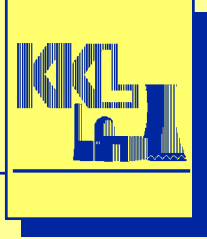
# Internal Transport of Preheater



# Dismantling of a Preheater

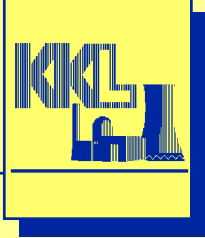


# Cutting of Preheatertubes

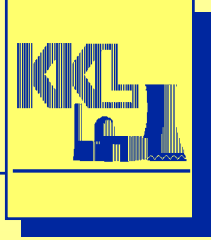




# Preheater Tubes



# Decontamination Worker

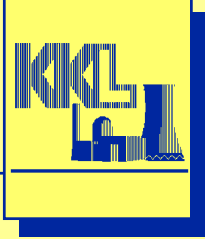




# Stop Valve after decontamination



# Stop Valve: Transport to conventional scrap yard



# Stopvalves at a conventional scrap yard



# Temporary Storage of Low-Pressure Turbine



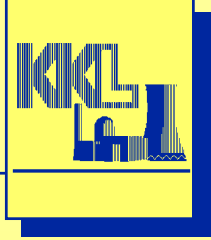


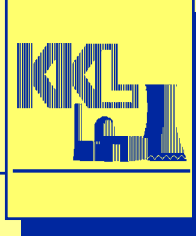
# Internal Transport of Low-Pressure Turbine (70t)



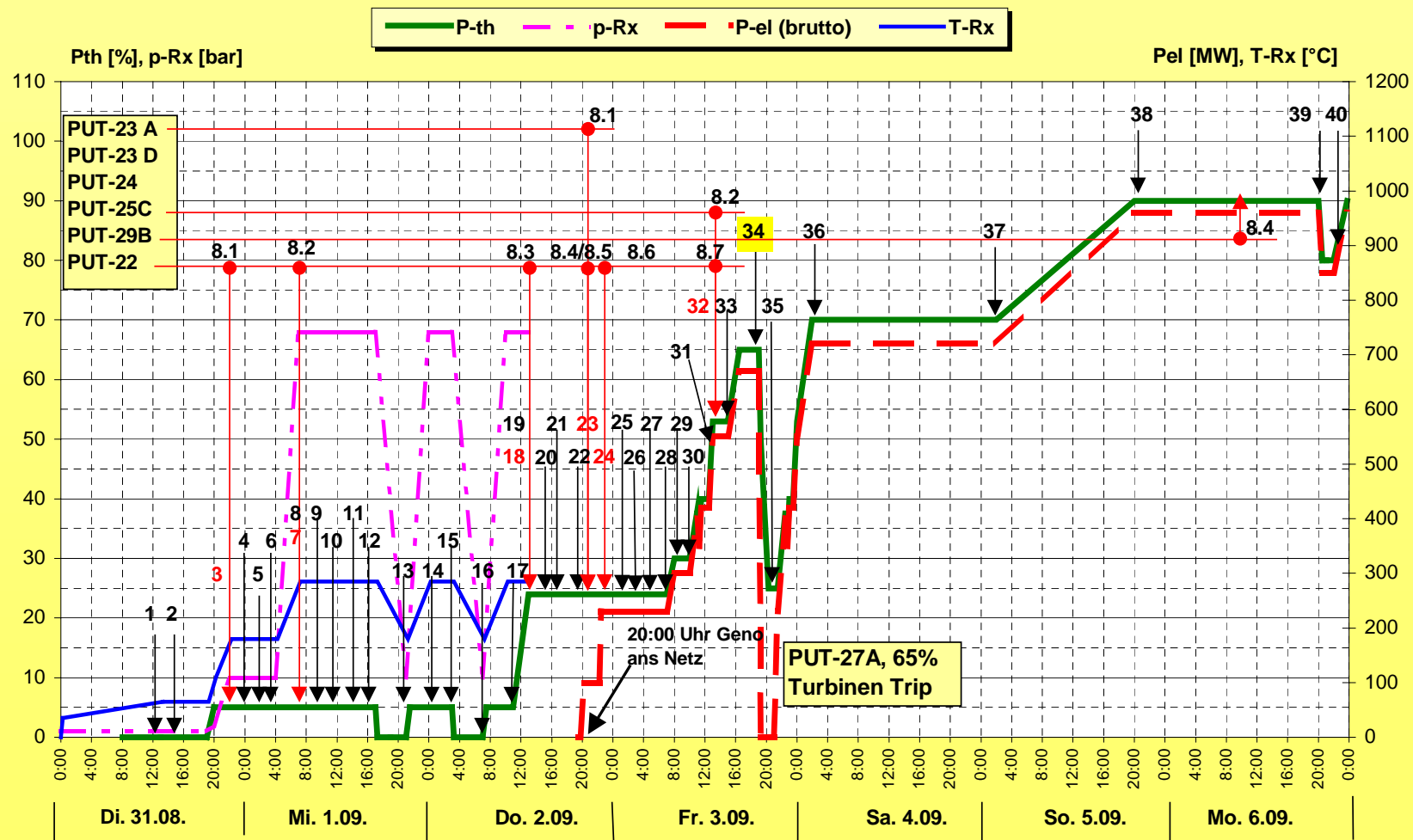


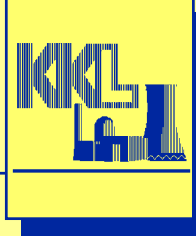
# KKL Exhibit Low-Pressure Turbine





# Anfahrtdiagramm nach Jahresrevision 1999





# Anfahrtdiagramm nach Jahresrevision 1999

