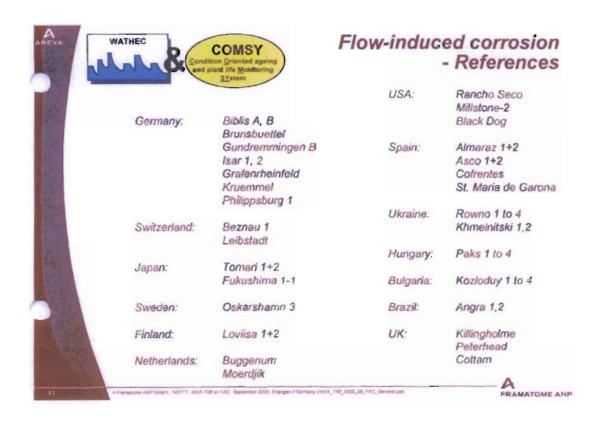
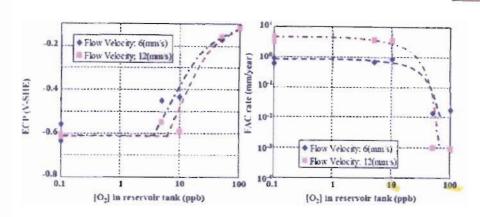
### 表一:COMSY 使用者





## UNB FAC loop - test results



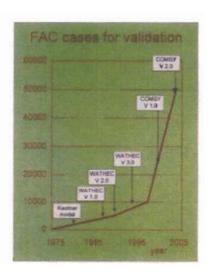
The test results provide a correlation between ECP (electrochemical corrosion potential) and oxygen concentrations for two different flow velocities (pH = neutral, temperature = 142°C).

### 圖 2:驗證 COMSY 軟體累積的數據

# AREVA

# Flow-accelerated corrosion - Model validation / verification / optimization

- > Continuation of studies on FAC
- Collection of FAC cases for validation / optimization of the prediction model in a database
- > Application of the model to BWRs (GE, ABB, KWU), PWRs (Westinghouse, KWU), VVERs and fossil-fired power plants (CCPP, coal-fired) worldwide



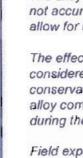
Franchise ANP Section 165777, ASIA 198 on FAC, September 2006, Siftenper / Germany SASA\_TIM\_2006\_08, FAC, General pdf

RAMATOME AND

### 圖 3:管件材質合金含量對管路薄化率之影響

# AREVA

# Effect of material composition on FAC (2) - alloy content of Cr, Mo and Cu



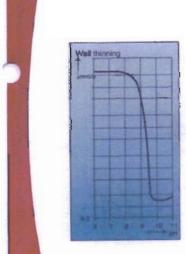
Alloy factor = f(Cr, Mo, Cu)

The alloy composition of ferritic steels is usually not accurately known, as material standards allow for major allowances.

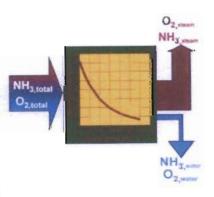
The effect of material composition is considered by the COMSY FAC-model in a conservative manner. In addition, tolerances on alloy composition are automatically considered during the analysis.

Field experience from numerous power plant service applications confirms, that the material composition influence by the COMSY FACmodel is sufficiently conservative.

圖 4: pH 值對 FAC 的影響



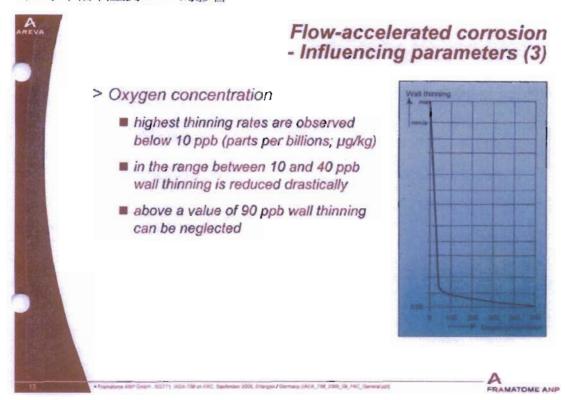
### Effect of the pH value on FAC (2)



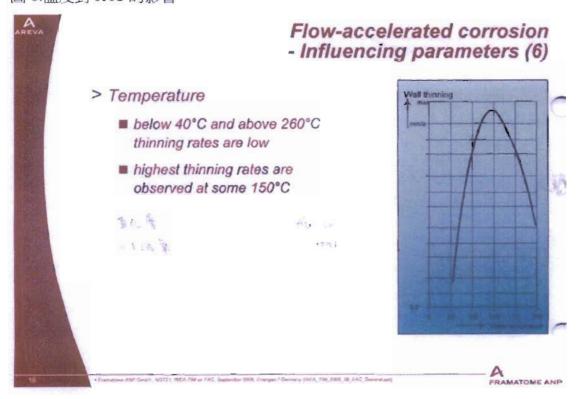
COMSY utilizes a complex dissolution algorithm to model the pH effect of different alkalizing agents. For two phase flow condition, a distribution model computes the relevant pH in water phase of the fluid.

The key influencing factor is the pH at temperature, which depends on alkalizing concentration, alkalizing type and temperature. Using this key value as a reference, the effect of different alkalizing agents and the combination thereof can be considered.

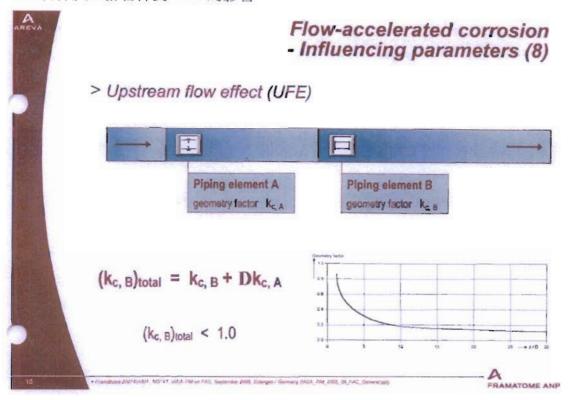
### 圖 5:水中溶氧量對 FAC 的影響



### 圖 6:溫度對 FAC 的影響



### 圖 7:管件及上游管件對 FAC 的影響



### 圖 8:管路中雙向流之流譜圖

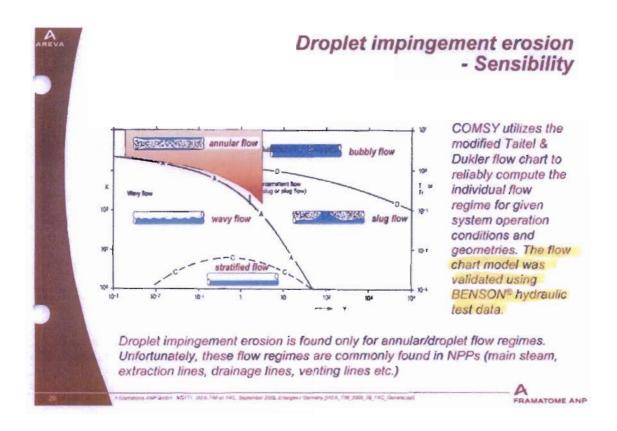


圖 9:COMSY 計算電廠水化學分佈與管路溶氧量之能力驗證

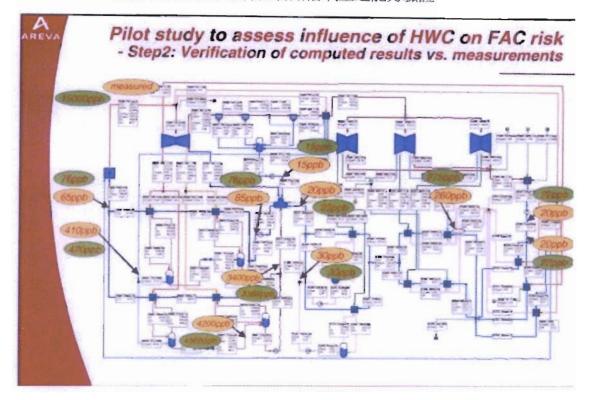
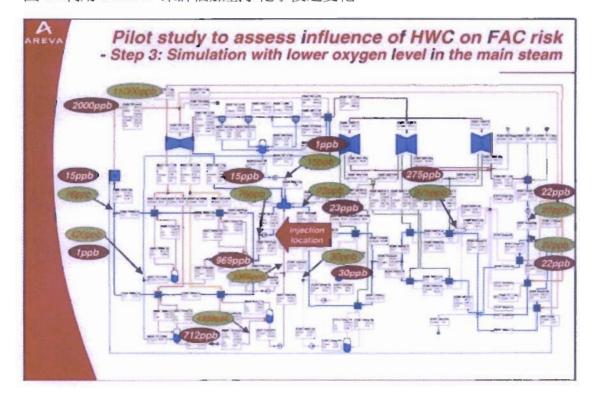
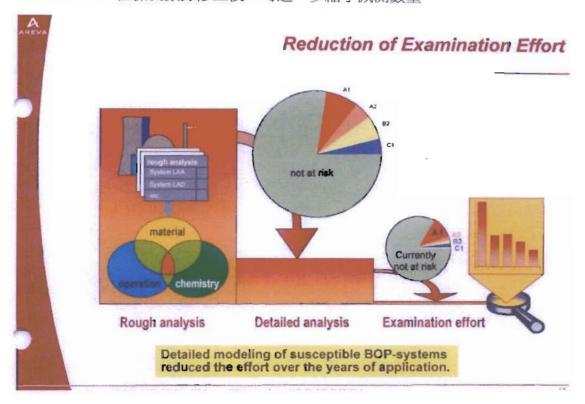


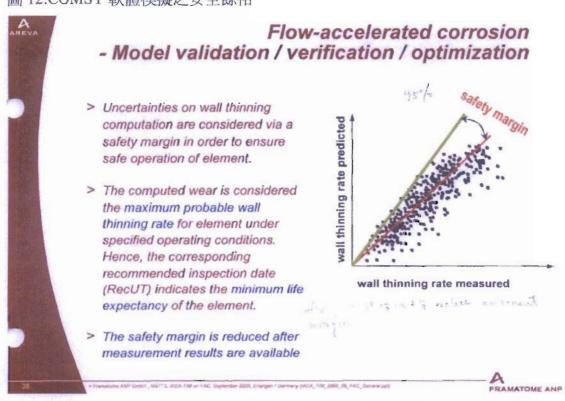
圖 10:利用 COMSY 來評估加氫水化學後之變化



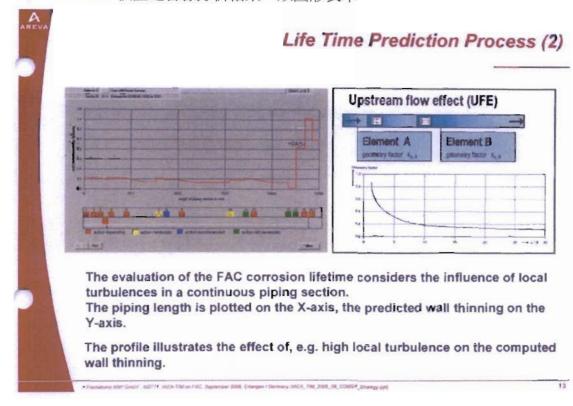
### 圖 11:COMSY 經檢測數據修正後,可進一步縮小減測數量



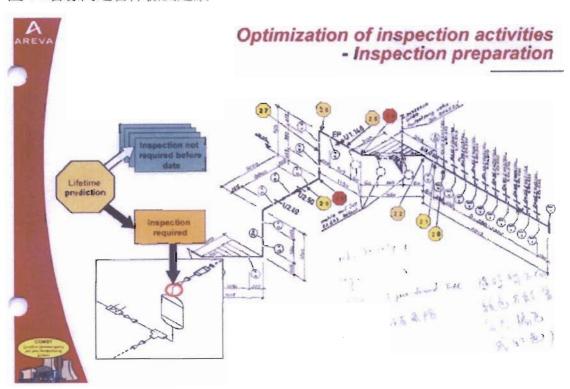
### 圖 12:COMSY 軟體模擬之安全餘裕



### 圖 13:COMSY 軟體之管線分析結果,以圖形表示



### 圖 14:管線內之管件檢測建議



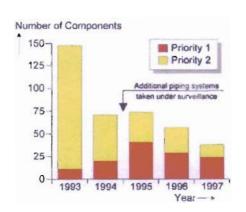
### 圖 15:KKL 電廠使用 COMSY 後,管件檢測數量有效減少之實例



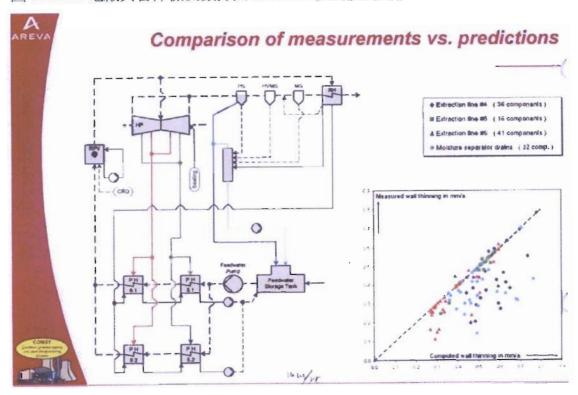
# Pinpointing of examination effort after systematic weak point analyses over the years

Assessment of the result of optimization of the inspection program

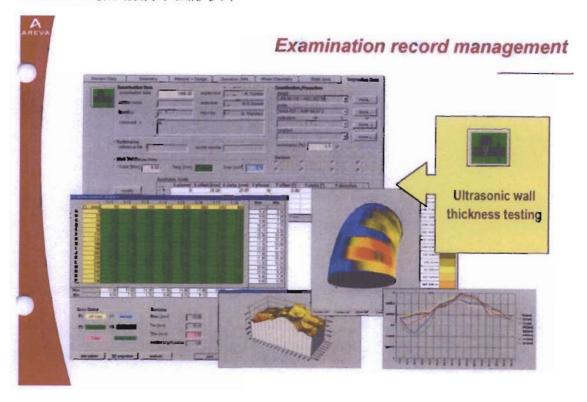
- The inspections have been focused to susceptible piping elements during the first years
- Now some 35% of the number of components originally examined in 1993 are inspected based on prediction results.
- > The radiation exposure of personnel was reduced
- The safety and reliability level was increased simultaneously



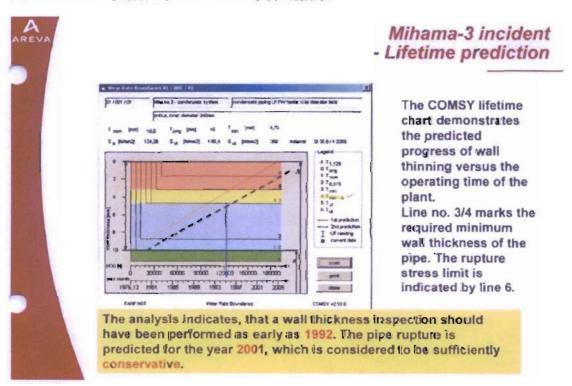
### 圖 16:KKL 電廠其管件檢測數據與 COMSY 預測値之比較



### 圖 17:NDE 檢測數據以圖形表示



### 圖 18:COMSY 模擬日本 Mihama-3 事件之結果



Letter dated 25. August 2005 to all Participants of the TIM on FAC Our reference NGTT1/Roe



### FAC Technical Information Meeting - Agenda

Monday, 05.09.2005	9:30 - 10:30	Welcome, introduction, overview
	10:30 - 11:30	FAC - History & Current status of knowledge
	11:30 - 11:45	Break
	11:45 - 13:00	FAC - Background & Definitions
	13:00 - 14:00	Lunch
	14:00 - 14:45	Lab tour
	14:45 - 15:00	Break
	15:00 - 16:30	Approaches for FAC assessment
Tuesday, 06.09.2005	9:00 - 10:30	Assessment and discussion of failures reported (Part 1)
	10:30 - 10:45	Break
	10:45 - 12:00	Assessment and discussion of failures reported (Part 2)
	12:00 - 13:00	
	13:00 - 16:30	Effects of different water chemistry treatments; break included
	19:30	Dinner at a typical Frankonian restaurant
Wednesday, 07.09.2005	9:00 - 10:30	Water chemistry (application example)
	10:30 - 10:45	Break
	10:45 - 12:30	Screening the plant for sensitive system areas (rough analysis)
	12:30 - 13:30	Lunch
	13:30 - 15:00	Lab tour (materials engineering department)
	15:00 - 15:15	Break
	15:15 - 16:30	Detailed analysis of sensitive system areas (Part 1)
Thursday, 08.09.2005	9:00 - 10:00	Detailed analysis of sensitive system areas (Part 2)
	10:00 - 10:15	Break
	10:15 - 12:00	Detailed analysis of sensitive system areas (application example)
	12:00 - 13:00	Lunch
	13:00 - 15:00	Consideration of examinations
	15:00 - 15:15	Break
	15:15 - 16:30	Consideration of examinations (application example)
Friday, 09.09.2005	9:00 - 10:00	Inspection management
	10:00 - 11:00	PLIM & PLEX methodology
	11:00 - 11:15	Break
	11:15 - 12:15	RI-ISI methodology
	12:15 - 13:00	As-is documentation
	13:00 - 14:15	Lunch at the company restaurant "Bierlachstuben"
	14:15 - 15:30	Summary, feedback