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Session 3H

Life After the OEM

A Case Study of What Can Happen When You Lose OEM Support, and What You Can Do About It

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Introduction

Reference: "Governor Decision Factors" Hydrovision 2002

"Throughout most of the 20th century, governor upgrades were low on most owners' priority list. The original equipment governors worked well and were extremely reliable; maintenance crews understood how they worked and knew how to service them; spare parts were either on-hand or readily available; and the major Original Equipment Manufacturers (OEMs) continued to provide good support. There was no reason to upgrade.

All that changed by the end of the 20th century. All of the governor-only OEMs had either gone out of business or been acquired by other firms. Parts were increasingly expensive and lead times were long. Powerplant crews found creative ways to get parts: they bought them locally, borrowed from other plants, or simply made the parts themselves. With little to be gained in terms of unit efficiency, and concerns about computer technology, digital upgrades remained a low priority.

Yet, governor technology had long since evolved into digital control, and governor OEMs made a business decision to cut off support for their legacy governors. When customers requested parts, they heard that their governors were obsolete and, although some parts were still available, support would eventually end. They were encouraged to begin planning for digital upgrades. This sent a shock wave through the hydro industry."

Hydro Governor OEMs: Then

Allis-Chalmers	Neyrpic	Pelton	Voith	Woodward
Asea	Leffel	S M Smith	Sulzer	Vevey
IP Morris	Lombard	LMZ	Others	

Hydro Governor OEMs: Now

Andritz	General Electric	Voith

(Third-Party Governor Design-Build Mfrs)

(Large SCADA / Plant Automation OEMs)

ESB Story: "Our OEM Says We Must Upgrade"

Name:	River:	Units:	Year:	Governor:
Poulaphuca	Liffey	2 x 15MW	1937-49	English Electric Mechanical
Golden Falls	Liffey	2 x 4MW	1937-49	English Electric Mechanical
Leixlip	Liffey	2 x 4MW	1937-49	ASEA Analog Electric
Cliff	Erne	2 x 10MW	1955	WGC 517 Digital
Cathleen's Falls	Erne	2 x 22.5MW	1952	ASEA Analog Electric
Carrigadroid	Lee	1 x 8MW	1952-57	Voith Mechanical
Inniscarra	Lee	1 x 15, 1 x 4MW	1952-57	Voith Mechanical
Clady	Clady	1 x 4.2MW	1950	Riva Mechanical
Ardnacrusha	Shannon	4 units; 86MW	1929-34	Alstom Digital
Turlough Hill	(Pump/Gen)	4 x 73MW	1974	Voith Digital (2009)

ESB Explores a Different Route:
Condition Assessment of Existing Fleet

Voith (Mechanical)

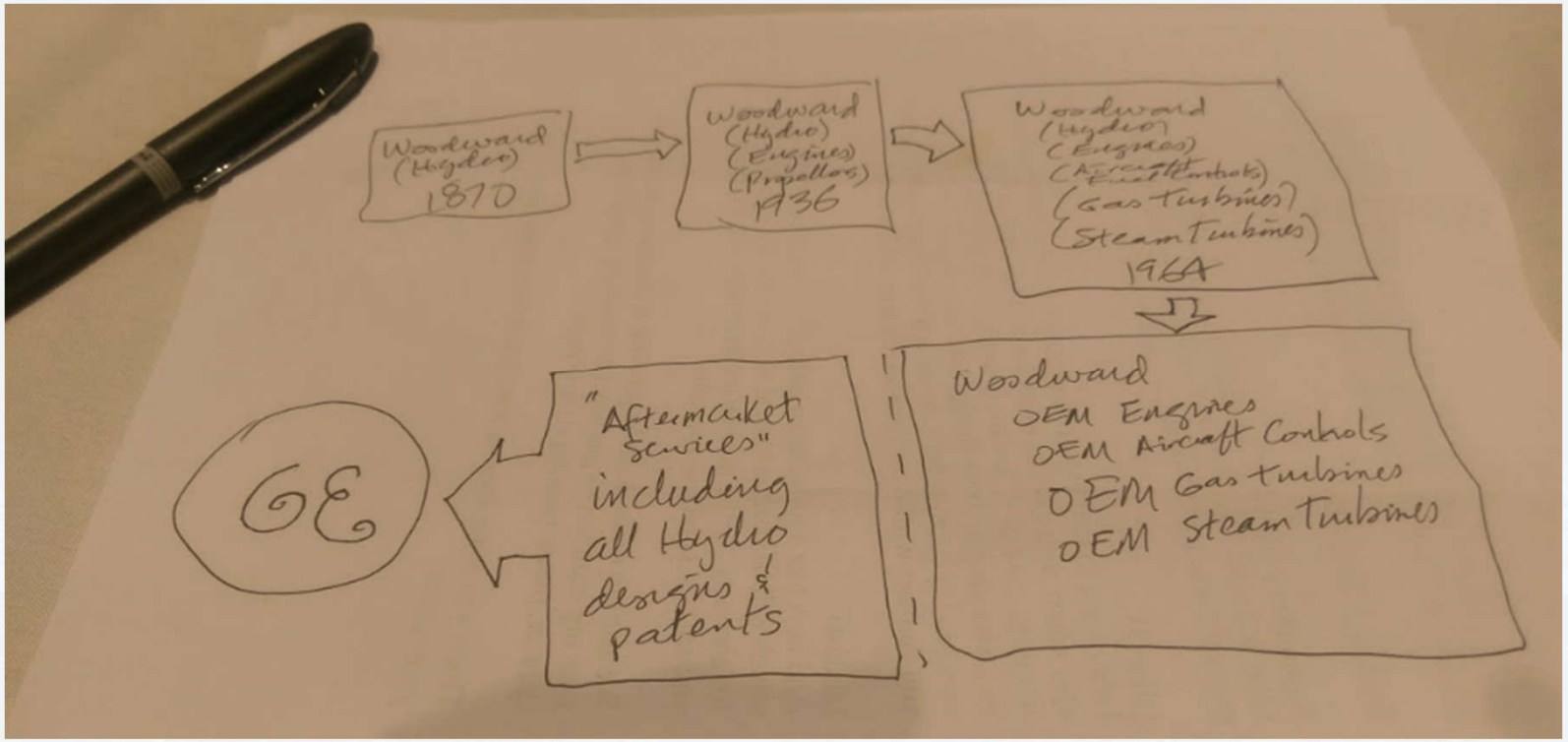
English Electric (Mechanical)

Asea (Analog)

What Happened to….Asea?

ABB

What Happened to….Woodward?



More than 170 years of experience and knowledge in the field of hydropower generation

Charmilles
Pelton Water Wheel
VOEST
Baldwin-Lima-Hamilton
Hydro Vevey
VOEST MCE
VA TECH HYDRO
J.P. Morris
Bouvier
Precision Machines
Waplans
Ateliers de Constructions Mécaniques de Vevey (ACMV)
Andritz VA TECH HYDRO
SAT
Hemi Controls
Andritz
GE HYDRO inepar
ELIN
Bell
GE HYDRO
Pichlerwerke
Sulzer Hydro
Møller
Escher Wyss
C.E.G.B.
KVAERNER
English Electric
Boving
Tampella
KMW
KAMEWA
NOHAB
Dominion Engineering
Finnshyttan

ANDRITZ Hydro

What To Do? **Assess** Each of Your OEMs

ASK THEM about their **short-term** and **long-term** plans for:

- Spare Parts
- Factory Repairs
- Field Service
- Training
- Tech Support
- Maintenance Contracts
- Support of newly acquired equipment lines

What To Do? Develop a Fleet Management Plan

If OEM is willing and able, use them to develop a short/long term plan for managing your equipment

If OEM is unavailable or unable, find a Subject Matter Expert inside or outside your company who has expertise

- -Can help you prioritize your work. Good units vs bad unit
- -Lifecycle analysis
- -Short/Mid/Long-term plans
-
- Goals
- -increase availability
- -reduce # of forced outages
- -MTBF / MTTR
- -preventative & predictive maint.
- -reduce costs

ASK THEM about the long-term (or short-term) availability of:

- Spare Parts
- Factory Repairs
- Field Service
- Training
- Tech Support
- Maintenance Contracts
- Fleet management / Support of other's equipment

What Are Others Saying?

"If you own a mechanical governor, KEEP IT!"

- Direct quote from a Maintenance Foreman at a large SE utility

"We get more callouts on this digital governor than we ever had before"

- Direct quote from a Plant Support Specialist in Canada

"Our new digital governor system has run flawlessly for 12 years, and there's hardly any maintenance!"

- A satisfied Digital Governor Customer in California

If you go Digital, buy as many electronic spare parts as you can afford, then seal them and put them in long-term storage."

- General AGC recommendation

Hybrid Solution = Best of Both Worlds

- Legacy governor support for as long as customers want it:
  - Parts and Service
  - Training and Overhauls
- Digital governor solutions when customers make the jump:
  - *Customer-preferred platform*
  - Governors and Unit Controls
  - HPUs and Pressure Tanks
  - Turnkey Commissioning