



Andrew Soltau September 2012

# ABB Drives Lifecycle Preventative Maintenance

# Presenter: Andrew Soltau

## ABB Drives Services, NA

- BU – LV Drives Discrete Automation & Motion
- Division - Drives Services NA
- Experience – 26.5 years
- Title – Workshop Sales Manager

Repair

Refurbishment

Preventative Maintenance

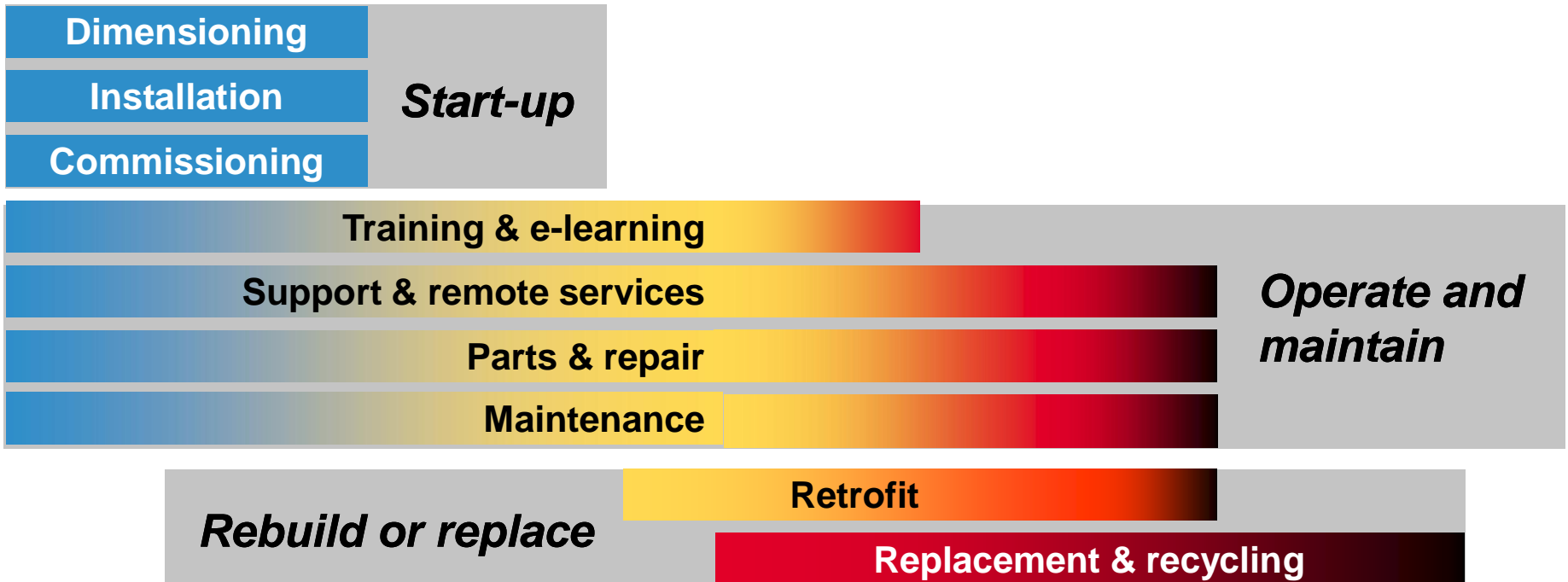
Upgrades

Retrofits

# Maintaining your assets

- ABB has developed a product lifecycle management model aimed to provide proactive services for maximizing availability and performance. During Active and Classic phase, ABB offers complete lifecycle services. This model provides not only optimum support but also a smooth transition to a new drive when the service life of the current drive ends.

# ABB Drives Life Cycle Model

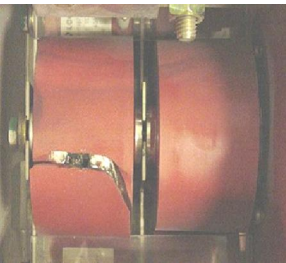


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# Aging components



- The failure probability increases after several years of operation
- Operational and ambient conditions affect the product lifetime.
- Based on experience of both component manufacturers and ABB it is possible to define average lifetime of all aging component:
  - Electrolytic Capacitors: 6-15 yr
  - Batteries: 2-5 yr
  - Fan Bearings: 3-7 yr
  - Capacitor Bank Unit: 8..12 yr

## Impact:

- Decreased operations performance/profitability
  - Increased downtime
  - Increased maintenance costs

# Preventive Maintenance Schedule

## ACS800 Drives

### Legend:

Replacement of component (At rated load and ambient conditions) R

Inspection (visual inspection, correction and replacement if needed) I

Replacement (if high ambient temperature or cyclic heavy duty) (R)

	Years from start-up																				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Start-up</b>	P																				
<b>Cooling</b>																					
➤ IGBT: Cooling fan		I	I	I	I	R	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
➤ GTO: Cooling fan		I	I	I	I	I	I	R	I	I	I	I	I	I	I	R	I	I	I	I	I
<b>Aging</b>																					
➤ IGBT:																					
➤ Relays (SNAT 604 IFS)								I			R							I			R
➤ Electrolytic capacitors (SNAT 7261 INT)											(R)		R								(R)
➤ Electrolytic capacitors (CBU)											(R)		R								(R)
➤ GTO:																					
➤ Relays (SNAT 607 MCI)								I			R							I			R
➤ Electrolytic capacitors (PAC, CHC)						I		R					I			R					I
➤ Electrolytic capacitors (CBU)											(R)		R								(R)
➤ Chopper and snubber capacitors						I					R					I					R
➤ Snubber diodes						I					R					I					R
<b>Connections &amp; Surroundings</b>																					
➤ Ribbon cables (connections)						I					R					I					R
➤ Fiber optic cables (connections)						I					I					I					I
➤ Tightening of crimping connections						I					I					I					I
➤ Dustiness, corrosion and temperature		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
➤ Quality of supply voltage		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

# Preventive Maintenance Kits

Designed to provide all necessary replacement parts during the course of scheduled maintenance updates:

- Pre-defined exact genuine service parts according to the maintenance schedule
- Cost less compared to individual spare parts price
- 5 weeks delivery time
- Coaching service available for self-maintainers





# PM Kit Installation



## On-Site Installation

- Kit installed in electrical room
- Estimated installation time is from 6 to 12 hours depending the size of inverter

## How to ensure a successful PM installation

- Reserve enough time to make update and test system
- Be prepared to use spare parts if additional replacement are required
- Recommend that ABB does PM kit installation

# ABB NAM Regional Service Hub- New Berlin, Wisconsin



- Only ABB Drives Services Workshop can provide complete, cost effective Refurbished, Preventative Maintenance and Drives Repair Services that extends equipment life, while enhancing its performance.
- 40,000 sq foot facility for Drive Repair, Refurbishment, Preventative Maintenance, Spare Parts inventory, and Failure Analysis
- Certified as the North American Drive Service Hub in 2008 and is the only ABB Certified Repair Workshop in North America
- Certified ISO 9001
- OSHA approved Star Voluntary Protection Program (VPP)
- Fully trained Drive Repair Technicians insure quick turn around and high quality repairs

# Products Serviced

- ACS800
- ACS850
- ACS/ACH550
- DCS800
- DCS500
- DCS400
- AAD
- PAD
- ACS600 SD
- ACS600 MD
- Sami Star
- ACV700

# Services offered at the North American Regional Service Hub



- Repairs
- Repair Exchange
- Preventative Maintenance Refurbishment
- ACS600 IGBT Upgrade
- Refurbished Drives
- Clean Test plus Capacitor Reforming
- 1-5 days Turnaround
- Load Testing up to 1000hp @600volts
- Expedites
- Spare Parts
- 1- Year Warranty
- Updates to the latest software version

# Retrofit or Replace

- Prior to the limited lifecycle of your ABB Drive equipment, you will need to consider:
- Do I Replace with new???
- Or
- Do I retrofit???
- ABB offers both options !!

# ACS800 retrofit solution for A-B/S 1352 / SAMI STAR and ACV700

- In many cases it is more economical and practical to extend the lifetime of the existing infrastructure, cabinets and cabling, electrical machinery and automation system by using retrofit solution. This means replacing the drive modules to the latest drives technology.
- ABB can offer you a reliable and easy to install retrofit solution designed just for your needs. In this retrofit solution, the existing drive units are replaced with the latest technology, ACS800 drives.
- In large line ups the retrofit installation can be accomplished in stages during planned maintenance shutdown period, thus enabling production to continue without any interruptions.
- ABB retrofit solution provides you with all the product features of the latest ACS800 drive technology. There is also an opportunity to improve the productivity of the production line by increasing the power rating of ACS800 inverter unit compared to the A-B/S / SAMI STAR drive.

# ACS800 Retrofit highlights

- High flexibility
- Programmability
- Wide range of configurations and options
- Application programs for different industrial segments

# ACS800 retrofit solution for A-B/S 1352 / SAMI STAR drive includes:

- ABB industrial drive module (ACS800-104)
- Fuse Switch
- Drive control unit (RDCU)
- Communication board and power supply
- Common mode filter
- EMC filters (du/dt)
- Operation panel installed in door
- New door for efficient cooling
- Assembly kits, wires and connectors
- Documentation
- Installation by ABB specialists



# ACS800 retrofit Solution

R7i Installation

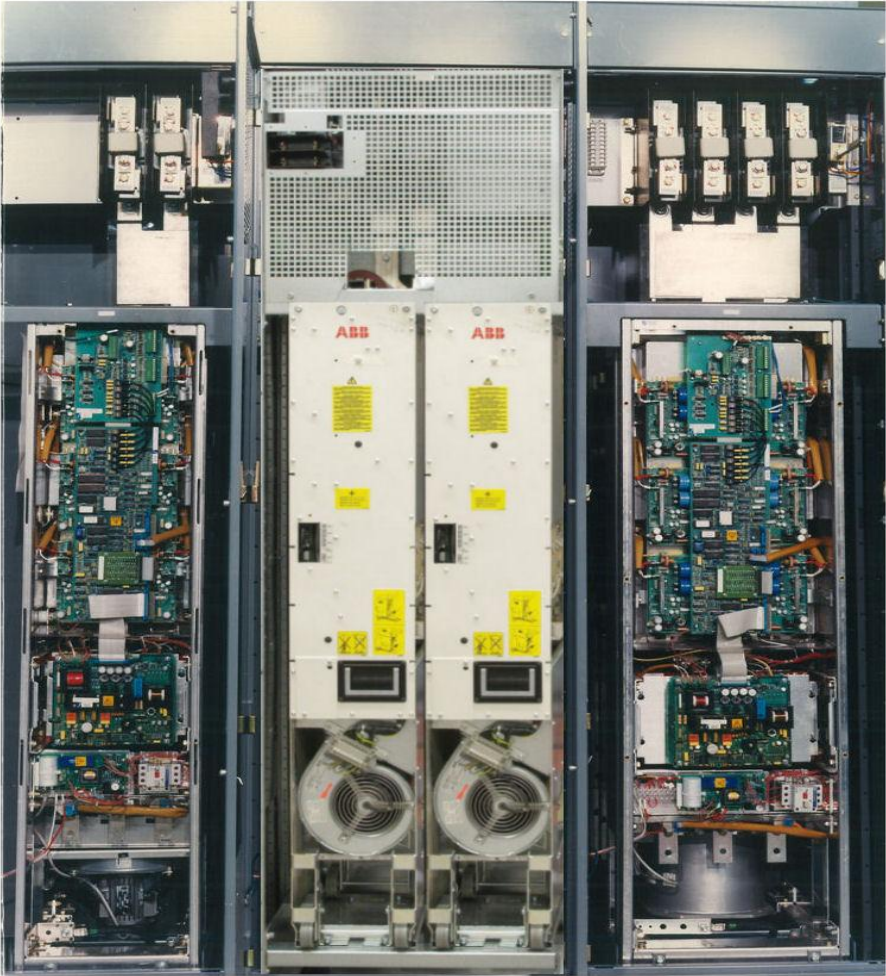


1X R8i Installation



# ACS800 retrofit Solution

2X R8i Installation



4X R8i Installation



# Summary



## ■ Customer Benefits

- Increased process uptime, and productivity
- Minimized maintenance costs
- Extended drives lifetime

## ■ Path forward

- Start with System Analysis and Diagnostics
  - performed site audit or site survey
- Plan and schedule PM with ABB
- Plan and discuss replacement plans with ABB

**Thank you for attending!!**

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