

## Services note

# Cut SAMI STAR drive operating costs with preventive maintenance



**ABB recommends its preventive maintenance and reconditioning services to help control and cut operating costs associated with its drives. On-site preventive maintenance is designed around drive maintenance schedules and significantly reduces the risk of failure while increasing the lifetime of a drive. Reconditioning in an authorized ABB drive service workshop should be considered when major components need replacing according to the maintenance schedule. Both services contribute to higher reliability of the installed plant which in turn helps maintain high productivity.**

### **The importance of maintenance**

The failure probability of industrial products equipped with electronic components, such as drives, increases over time. The main reason for failure is aging of components, but it is also greatly affected by the operational conditions. A demanding environment, such as high ambient temperature, humidity, dirt, dust and cyclic heavy loads, can shorten component lifetime as well as maintenance and component replacement intervals.

A component failure may cause consequential damage to other parts of the drive, including power semiconductors.

A maintenance schedule provides a systematic and functional means of maintaining a specific drive type and is based on ABB's extensive experience and know-how of manufacturing and maintaining electric drives.

### **Preventive maintenance – the lifeblood of a drive**

Drive preventive maintenance consists of annual drive inspections and component replacements according to the product specific maintenance schedule. Specifications of component suppliers are carefully observed, while the environmental and operational conditions of the drive are also considered.

Preventive maintenance is carried out during planned production shutdowns. It should be planned well in advance and the required resources and service parts reserved. Parts and materials used in preventive maintenance are bundled into preventive maintenance kits which are delivered to a lead-time, unlike normal spare parts.

The success of preventive maintenance depends on the information recorded in the service reports provided by the end-user. The more thorough the information provided, the greater the benefit.

**All labor and service parts included**

The preventive maintenance service includes labor, if not agreed otherwise, and the service parts to perform the work according to the maintenance schedule.

Included are inspections of the:

- electric drive and its environmental conditions
- connections
- ribbon and fiber optic cables
- fan and cooling system
- emergency stop circuit
- circuit to prevent unexpected startup
- fault logger
- parameters

Tests include:

- functional testing of the drive under normal conditions
- basic measurements with supply voltage

In addition, the following can be purchased as options:

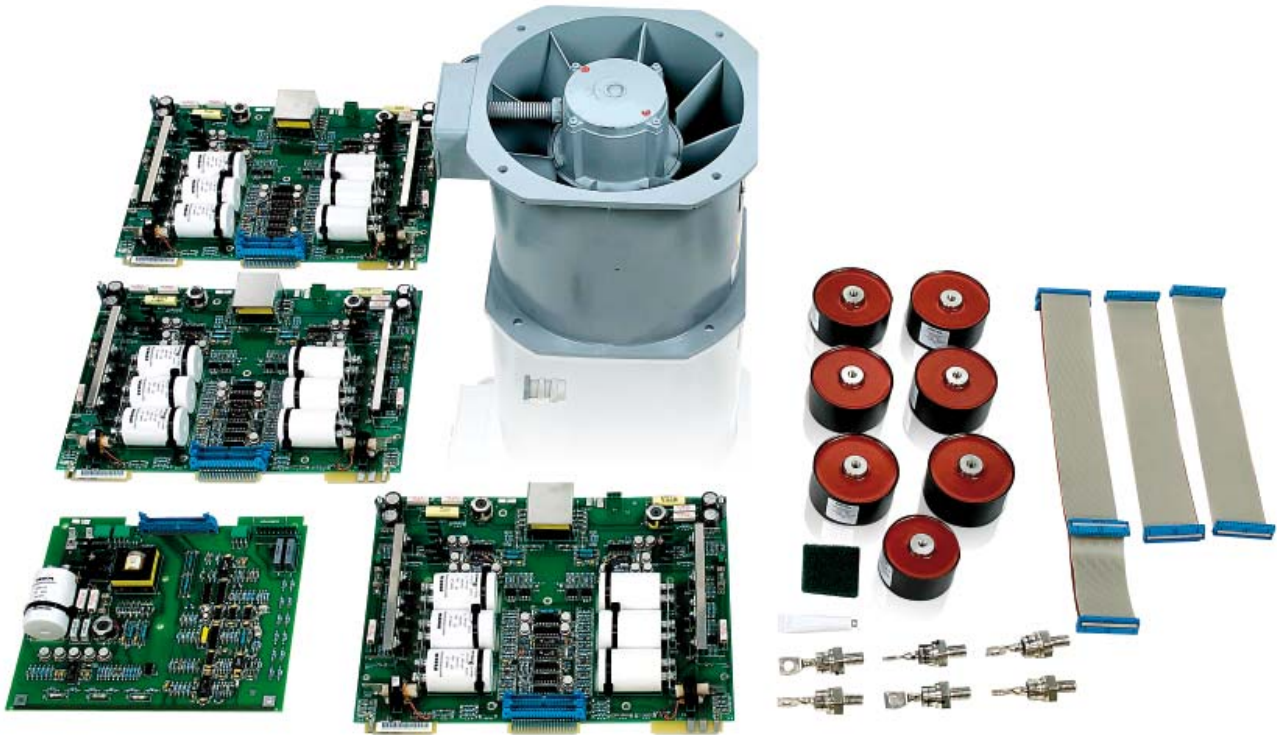
- ESD protected cleaning of the drive
- reforming of the spare module capacitors
- drive spare part inventory

A detailed service report, including recommendations for future actions, is provided once the maintenance work is completed and the inspection data fully analyzed.

	Years from startup																				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<b>Startup</b>	P																				
<b>Cooling</b>																					
Cooling fan (airflow < 120 dm³/s)		I	I	R	I	I	R	I	I	R	I	I	R	I	I	R	I	I	R	I	I
Cooling fan (airflow > 120 dm³/s)		I	I	I	I	I	I	R	I	I	I	I	I	I	R	I	I	I	I	I	I
<b>Aging</b>																					
<b>GTR:</b>																					
Battery			I	R		I	R		I	R		I	R		I	R		I	R		I
Electrolytic capacitors (PAC)											(R)		R								(R)
Electrolytic capacitors (CBU)											(R)		R								(R)
<b>GTO:</b>																					
Battery			I	R		I	R		I	R		I	R		I	R		I	R		I
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 and environment</b>																					
Ribbon cables (connections)											R					I					R
Fiber optic cables (connections)											I					I					I
Tightening of crimping connections											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
<b>Improvements</b>																					
SW / HW upgrade		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Input thyristor bridge (upgrade)		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Based on product notes		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
<b>Measurements</b>																					
Basic measurements with supply voltage		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
<b>Spare Parts</b>																					
Spare Parts		I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P

Note! Recommended maintenance intervals and component replacements are based on specified operational and environmental conditions. ABB recommends annual drive inspections to ensure the highest reliability and optimum performance. More detailed maintenance information can be found in maintenance instructions, product manuals and on the Internet.

- Legend:
- I = Inspection (visual inspection and maintenance action if needed)
  - P = Performance of on/off-site work (commissioning, tests, measurements or other work)
  - R = Replacement of component
  - (R) = Replacement if high ambient temperature or cyclic heavy load



A preventive maintenance kit is a selected package of parts needed for preventive maintenance of ABB drives. 7- and 10-year preventive maintenance kits for SAMI STAR are shown above.

### Preventive maintenance kits

Preventive maintenance kits contain all the necessary replacement parts for a scheduled maintenance. The content of each kit is carefully selected to match the maintenance schedule and the size and other characteristics of a specific drive.

Preventive maintenance kits can be selected and ordered according to the number of drives in use and their age, ensuring that all the required parts are available for maintenance.

The parts contained within a preventive maintenance kit cost less than parts sourced individually. Therefore, engaging in a proactive preventive maintenance plan will prove more cost effective than sourcing spares as a result of an emergency or general repair job. Preventive maintenance kits are available from [www.abb.com/partsonline](http://www.abb.com/partsonline) for component replacements marked “R” in the maintenance schedule. The local ABB representative can define, select and deliver the correct parts and help plan preventive maintenance. Visit [www.abb.com/drives](http://www.abb.com/drives) to find your nearest ABB representative.

Preventive maintenance kits for	Every 3 <sup>rd</sup> year	Every 7 <sup>th</sup> year	Every 10 <sup>th</sup> year	Every 12 <sup>th</sup> year
<b>GTR:</b>				
Cooling fan	X			
Battery	X			
Ribbon cables			X	
Electrolytic capacitors (CBU)				X
<b>GTO:</b>				
Battery	X			
Cooling fan		X		
Electrolytic capacitors (PAC)		X		
Electrolytic capacitors (CHC)		X		
Ribbon cables			X	
Snubber diodes			X	
Chopper capacitors			X	
Snubber capacitors			X	
Electrolytic capacitors (CBU)				X

For more information contact your local ABB representative  
or visit:

**[www.abb.com/drives](http://www.abb.com/drives)**

**[www.abb.com/drivespartners](http://www.abb.com/drivespartners)**

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