

Customer's
success is our
passion

Company Overview

Agenda

History

Location

5 business pillars for success

Services around electrical machines

Industries and Customers

Organization

Capabilities

References



BM from a service factory back to a supplier for special motors

BBC moves factory to BIRR

1963 BBC ramps up the new MV Motor production in BIRR.

1988 merged Swedish ASEA with Swiss BBC to form the ABB Group

Move from BIRR to Kleindöttingen

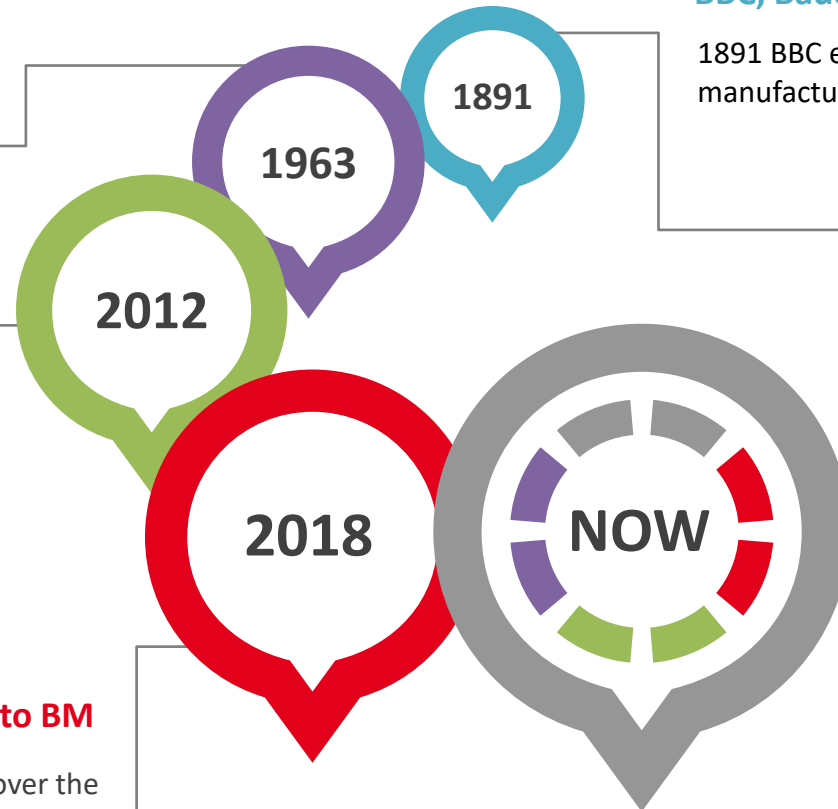
New factory built in Kleindöttingen. Strategic decisions of the portfolio by the management. Focus more on classical service business with restrictions

Transfer from ABB to BM

Birr Machines AG is taking over the factory from ABB CH in Kleindöttingen with the licenses for the Swiss built machines .

BBC, Baden

1891 BBC establishes early motor manufacturing in Baden, CH.



BM – Birr Machines

Additional focus on niche / special motor market.
Strong pull by key COG customers
3 times increased resources in design & engineering with special know-how.

Location



2012 – ABB Birr production moves the motor manufacturing and service workshop from Birr, Switzerland to Kleindöttingen enlarging manufacturing, repair and service capabilities.



Full equipped factory with a size of about 5000 square meters.

Employees: around 50+



5 pillars for the customer's success

Services

- Life Cycle Service
- Design & Engineering
- Motor Reconditioning
- Motor Upgrades
- Testing
- Field Service

Spare Parts

- Standard Spare Part deliveries
- Project Specific Spare Parts
- Capital Spares (stators, rotors, windings etc.)

Replica Motors

- Manufacturing of drop-in replacements with lowest risk and shortest down time.

Birr Machine Motors

- Manufacturing of special motors and machines (high power, high speed, brushless exciters, etc.)

ABB Standard Motors

- Supply of high quality standard motors
- Full services for ABB motors

Consulting

Our competences and services all around electrical machines

Solutions around
Motors



Life Cycle Service



Component
Manufacturing



Coil Production



VPI Impregnation



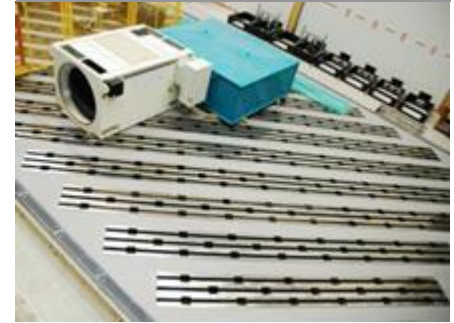
Balancing



Assembly /
Disassembly



Testing
Field Service



Our Industries all around electrical machines

Machines	Machine Type	Applications
3-phase AC motors	Induction squirrel cage Induction wound rotor Synchronous motors	Pumps, compressors, fans, mixers, extruders, pelletizers, conveyers, mills, mine hoists, crushers, propulsion etc. for all industries
3-phase AC generators	Generators and AC excitation machines	Power and Renewables
DC- motors	DC Excitations DC motors	Power, Metal, Cement, Mining & Minerals
AC- commutator machines	Single phase, 3-phase	Locomotives
Special Motors	Induction & Synchronous	High power / High speed



Chemical, Oil & Gas



Marine



Metals



Cement, Mining & Minerals



Traction



Water



Special applications, e.g. wind tunnels



Power

Birr Machine Portfolio for new and replica projects



Extract of the motor portfolio

Synchronous machine type WMT

Approx. 21MW @ 5'400 rpm (WMT63)

Approx. 15MW @ 6'400 rpm (WMT56)

AC Exciter

Special bearing arrangement to meet critical speed requirements

Former ABB / BBC Machines

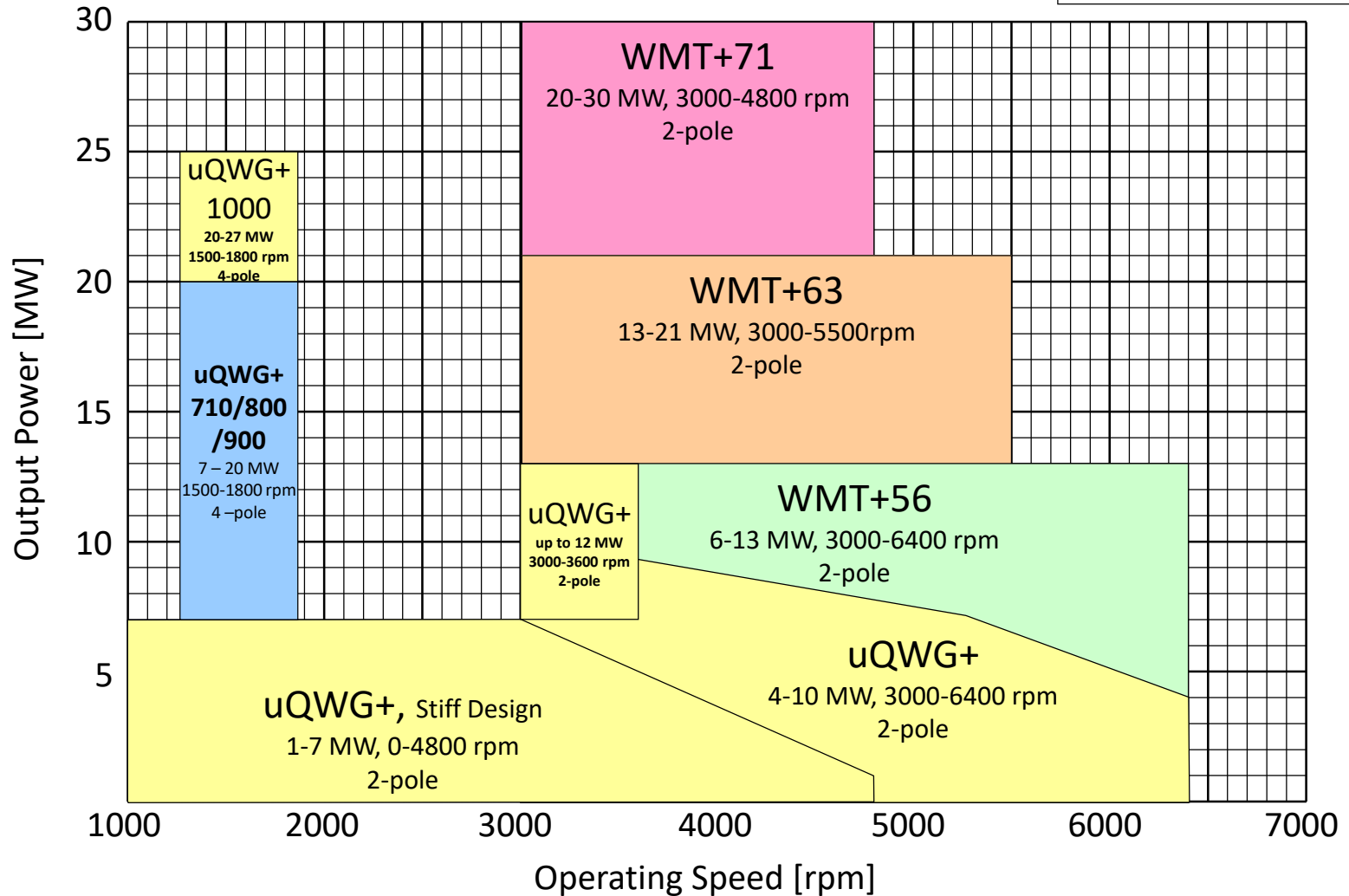
UQWG (2-pole Induction machine)

DMBy DC-Machines (Special armature winding)

QR/ SR-Type (Pipe ventilated)

Motor Portfolio

WMT+ = Synchronous Machine
uQWG+ = Asynchronous Machine

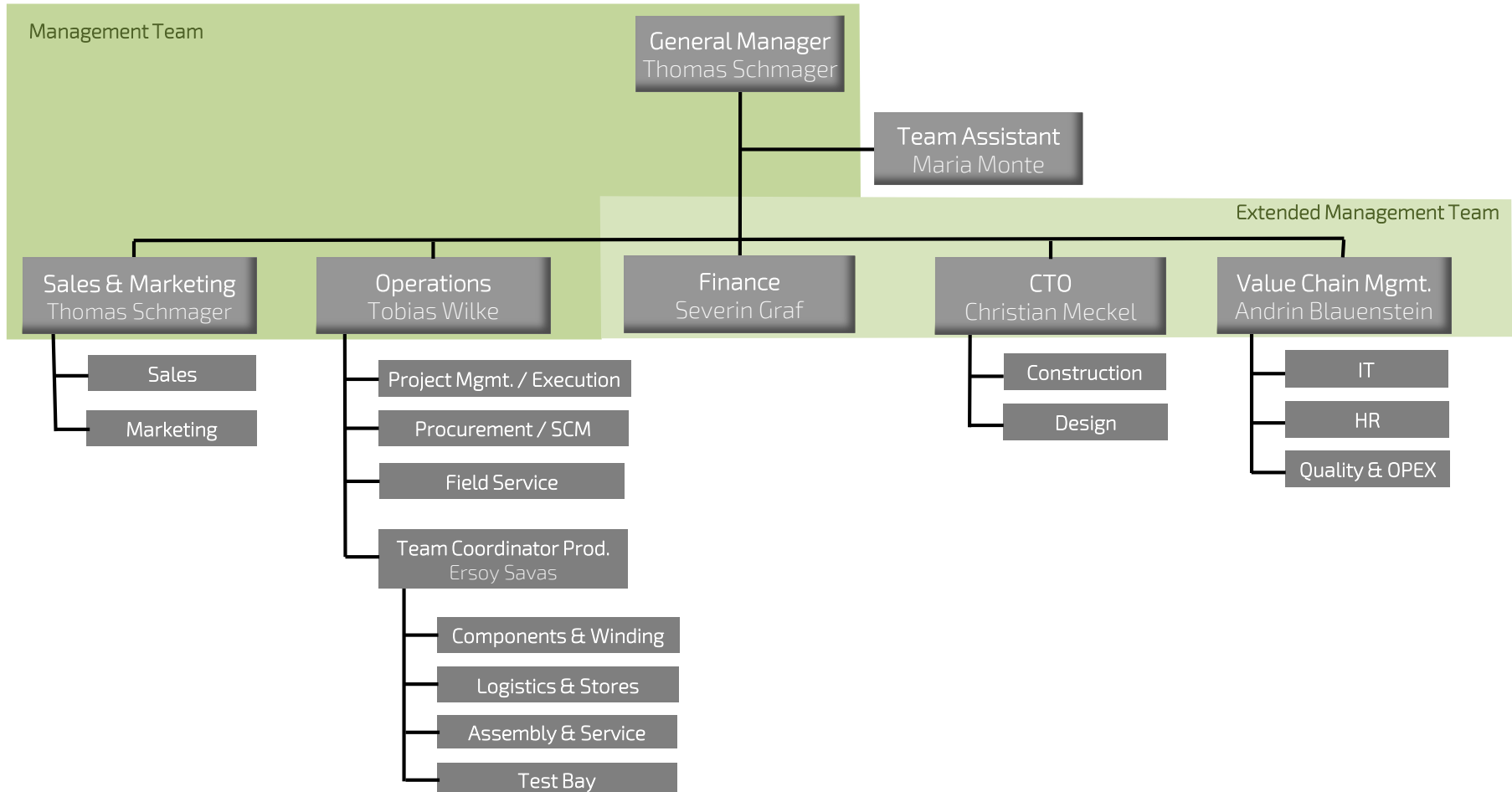


AMx+ Motor Portfolio

Portfolio Induction Motors (example 50Hz)

50 Hz		AMB+	AMB+		AMC+	AMC+		AML+	AML+
IM1001		560-710	560-710		800-1120	800-1120		560-710	560-710
IC81W	Speed	Power kW	Power kW		Power kW	Power kW		Power kW	Power kW
	n	min	max		min	max		min	max
2	3000	1800	6300		-	-		-	-
4	1500	2260	9600		7100	20000		1800	8000
6	1000	1600	7400		5600	16000		1250	6300
8	750	1250	5680		5000	14000		1000	5000
10	600	1000	5000		3550	14000		710	4000
12	500	760	4000		2500	14000		560	3150
14	429	560	2500		2500	12500		-	-
16	375	560	2240		2240	10000		-	-
18	333	450	2000		1600	10000		-	-
20	300	630	1600		1400	7100		-	-
22	273	-	-		1250	6300		-	-
24	250	-	-		1000	5600		-	-

Org Chart



Life Cycle Service



Full reconditioning of motors and gears

Lifting capacity of 80 tons

Electrical and mechanical reconditioning and repair of AC / DC Medium Voltage Machines and gears.

Disassembly / General Inspection / Washing / Drying / Rotor machining / Balancing and assembly / Repainting / Testing

Environmental friendly wet cleaning in special washing machine or dry cleaning with CO2 technology.

Vacuum drying oven (after wet cleaning)

Life Cycle Service



Revisions and repair

Life Expectancy Analysis Program (LEAP)

Stator winding diagnostic

TE, Tan δ , AC/DC testing up to 33 kV

DLI real time vibration analysis

Upgrade with latest sensor technology (MACHsense)

Loop test (iron core magnetization)

Interturn tests on single coils and complete windings.

Motor Solutions



Design and Engineering for new and old motors

Electrical design and engineering

- System studies
- Upgrade and modifications
- System optimizations of electromagnetic and thermal performance

Mechanical design and engineering

- Torsional and lateral analysis of shaft trains
- Calculation of the rotor dynamics
- Structural mechanics and model analysis (FEM- Finite Element Method)
- Vibration measurements and assessments

Engineering and Design

- Design for high speed applications (>3600 rpm)
- Customization according to customer requirements



Component Manufacturing

Electric sheet metal Commutator, Slip Rings, Windings etc.

Sheet stacking

pressure up to 100t
Stator lamination diameter up to 2,1m
Manufacturing of double cage motors
Stacking of rotor lamination in hot and shrink technology on the shaft

Commutator Production

up to a diameter of 1m
pressure up to 160t

Winding / Coil Manufacturing

AC / DC / Traction / rotor windings
LV and MV up to 18kV
Winding length up to 3m
VPI / Resin Rich / Dry type windings and coils
Temperature controlled insulation room



Windings

Assembly and binding

Winding assembly stators and rotors

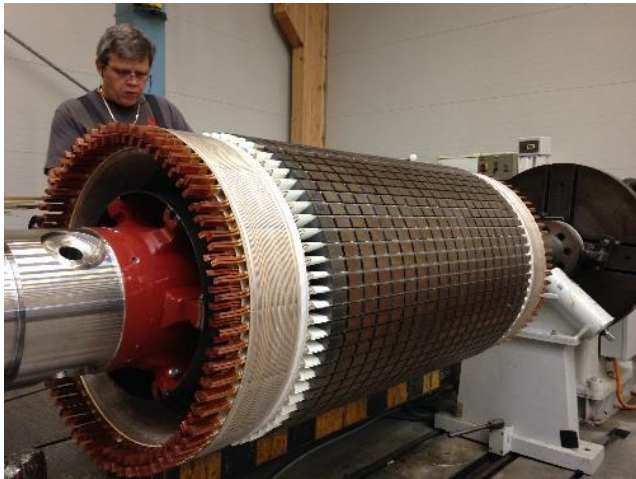
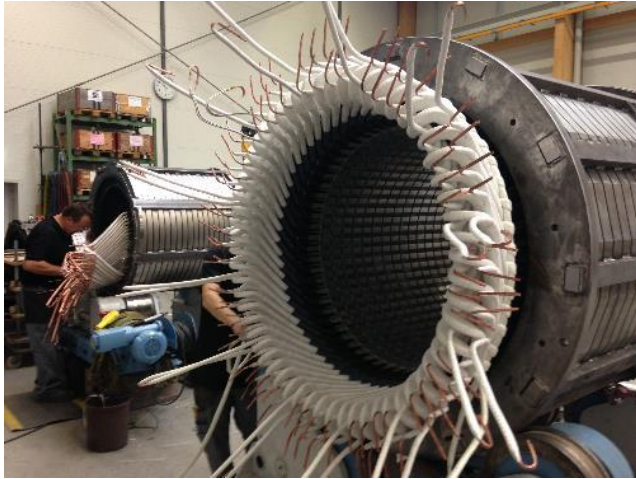
Form and round copper coils
Full copper coils for slip ring motors
AC/DC brushless exciter
Traction

Binding

Glass sheet and steel band binding
Progressive binding
Rotors up to a length of 7m

Static testings

AC up to 33kV
Tension and conductor testings
TE, Tan δ
Shock interturn tests up to 40kVpp



VPI Impregnation



Micadur Compact[®] / Veridur[®] / Gemodur[®] / Dry coils

Micadur[®] Compact Epoxy category F (155°C)

Max. pressure container: 3,3 m diameter
6 m length

Fully automated process run

Veridur[®] Silicon category C (200°C)

Max. 2 m major diameter

Application on Traction Segment Products

Fully automated process run with data collection

Gemodur[®] category H (180°C)

System parameters see Micadur Compact[®]



VPI Impregnation

Micadur Compact[®] / Veridur[®] / Gemodur[®] / Dry coils

Pyrolysis oven:

Modern control for exact processes

Oven up to 6 x 6 m object size

Burning of the impregnation resin and the insulation materials to extract the failed winding from the existing and re-usable lamination (iron core of rotor or stator)

Hall technology

Ventilation air exchange safety

10/15-times per hour change of the air (volume of the complete hall)



Balancing



Balancing & Overspeed balancing test

Rotor length up to 6 m

Rotor diameter up to 2 m

Rotor weight up to 20 tons

Speed max. 4320 min⁻¹ (depending on weight)



Primer and final painting

Painting

Closed spray room
B x L x H: 3 x 4 x 3 m

Loading:

front and from above

Drying temperature up to 70°C

Integrated paint mixing room



Testing



Test Bay

AC / DC routine tests

AC / DC type test, load test

Static and hot spot test

Test bay dimension: 14 x 8 m

Max. irregularity (of the entire field): 0.17 mm

Tests according to the valid standards
(IEC, NEMA, IEEE, BS, etc.)

4 MW converter set AC/DC

1MW converter set AC/DC

125kW converter set AC/DC

160Hz supply generator

3-phases-regulation transformer 0-800V / 200kW

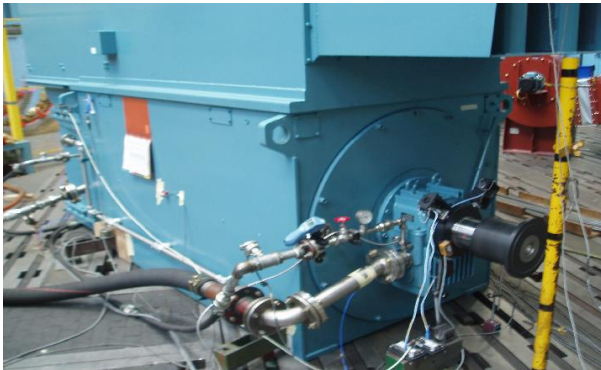




Thappline , Thailand

Repeat order for new production line

Thappline experienced high satisfaction in term of reliability and performance of the 1992 and 2007 delivered units and decided for additional two complete new pumping units with high speed motors manufactured in Kleindöttingen, CH.



Drive: ACS1000-W3
Motor type : eUQLG 630 ka 2

Power 4000kW
Speed 4600 RPM

Delivery Q4/2018

BIRRR machines

Customer`s success is our passion