KKS Designation System

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1 Introduction

This document describes the designation system used by Siemens Industrial Turbomachinery AB (SIT) for turbine deliveries. The system is based on the Kraftwerk-Kennzeichen-System

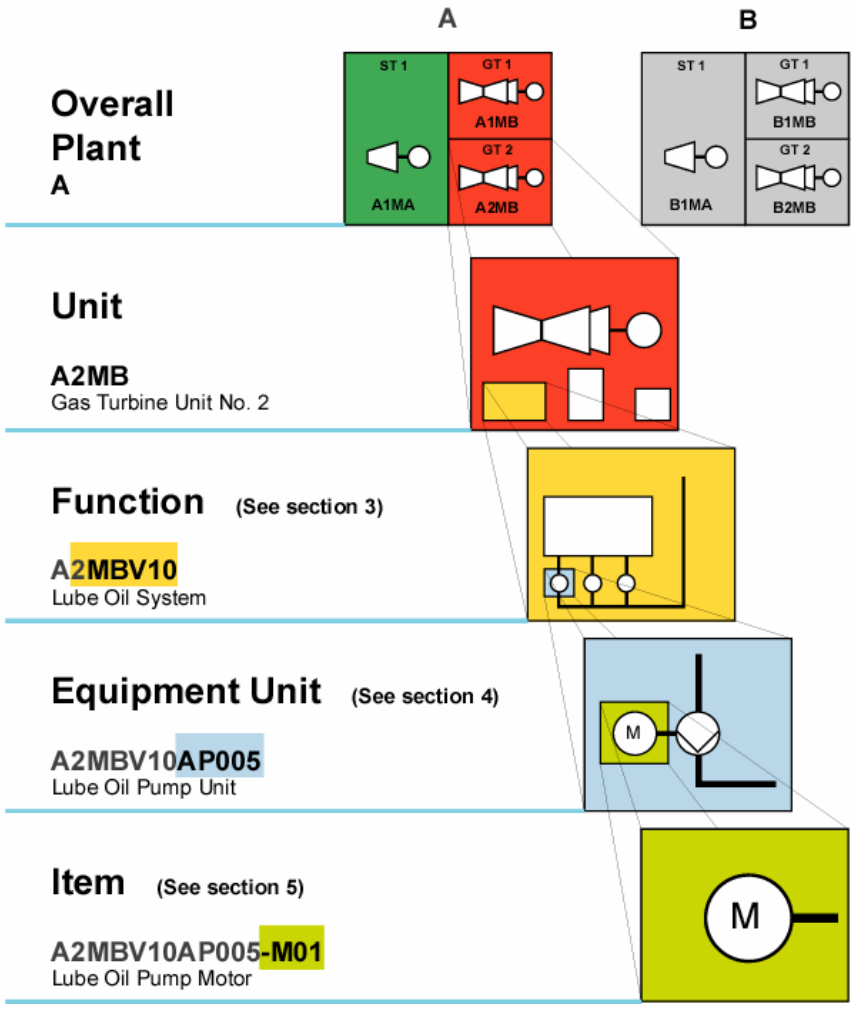
(KKS) and is used for identifying plants, sections of plant and equipment in a clear manner according to their function.

The KKS includes three identification types:

- Process related identification (function)
- Point of installation identification (normally not used by SIT)
- Location identification (normally not used by SIT)

2 Process related identification

Overall Plant	Function			Equipment Unit		Item	
A	2	MBV	10	AP	005	-M	01
	Unit	System	Section	Type	Serial No.	Type	Serial No.



Serial number of breakdown level	0	1	2	3
Name of breakdown level	Overall Plant	Function	Equipment Unit	Item
Type of data character	(A) or (N)	(N) A A A N N	A A N N N (A)	A A N N

( ) = These data characters may be omitted.

A = Alphanumeric symbols (letters, special symbols)

N = Numerical symbols (digits)

Example: A Serial number and name of breakdown level:	2	MBV10	AP005	M01
Overall Plant	Function		Equipment Unit	Item
A or N	N	AAANN	AANNN(A)	AANN
Overall Plant. It may be necessary to identify units, unit-free plants or expansion stages within a power station, such that a clear and unambiguous distinction exists between them. The level Overall Plant can be omitted when the designation used in the power plant is otherwise unambiguous.				
A or N	N	AAANN	AANNN(A)	AANN
Prefix number. If in the Overall Plant two or more identical subsystems are to be identified the prefix number is used to distinguish between them. E.g. two turbosets, two boiler plants.				
A or N	N	AAANN	AANNN(A)	AANN
Function. The alphabetical symbol of this breakdown level are used to classify and divide the Overall Plant into subsystems or systems. The digits are of no significance as far as classification is concerned; these simply count and subdivide the unit (e.g. line) coded in the last alphanumeric symbol. E.g. MBV51, MBV52, MBV53 represents three lines in the lube oil system. See Appendix A.				
A or N	N	AAANN	AANNN(A)	AANN
Equipment Unit. The first two alphabetical symbols are used to distinguish between the mechanical apparatus and equipment units, electrical and I&C equipment, and between the measuring and closed-loop control circuits. The digits are of no significance as far as classification is concerned, they are consecutive numbers in respectively system. If required, the last alphanumeric symbol can be used to designate pilot valves, dual-thermometers etc. See Appendix B.				
A or N	N	AAANN	AANNN(A)	AANN
Item. In case of electrical and I&C equipment this section serves for designation of equipment item - e.g. switches, push buttons, measuring instruments. For mechanical and process engineering this level can be used to designate mechanical equipment and items, such as pump couplings and gear units. At this breakdown level the digits are used for counting only. E.g. KA01 equals globe valve with consecutive number 1, -P05 equals electrical measuring instrument consecutive number 5. See Appendix C.				

3 Function Code Key

3.1 A Grid and distribution systems

AE	**110 kv systems**
AEA	Unit circuit breaker 60 kV
AK	**10 kv systems**
AKA	Unit circuit breaker 15 kV

3.2 B Power transmission and auxiliary power supply

BA	**Power transmission**
BAA	Generator leads
BAC	Generator circuit breaker
BAT	Generator transformers
BAW	Earthing and lighting protection systems
BAX	Fluid supply system for control and protection equipment
BB	**Medium-voltage distribution boards and transformers, normal system**
BBA	Medium voltage distribution boards, normal system
BF	**Low voltage main distribution boards and transformers, normal system**
BFA	Low voltage main distribution boards, normal system
BP	**Power installations for variable-speed drives**
BPA	Power installations for variable-speed drives
BR	**Low voltage distribution boards, uninterruptible (converter) power supply, UPS**
BRA	Low voltage distribution boards, uninterruptible (converter) power supply
BRU	Converter (static), inverter
BRV	Emergency power generating equipment

BT	**Battery systems**
BTA-BTK	Batteries (free for use according to voltage level)
BTL-BTV	Battery chargers (free for use according to voltage level)
BTW	Common equipment
BU	**Direct voltage distribution boards, normal system**
BUA-BUJ	Direct voltage distribution boards

3.3 C Instrumentation and control equipment

CA	**Protective interlocks**
CAA-CAB	Cabinets for protective interlocks
CB	**Functional group control, subloop control**
CBP	Cabinets for syncronization
CE	**Annunciation**
CEA	Cabinets for annunciation systems
CF	**Measurement, recording**
CFA-CFE	Cabinets for measurement
CH	**Protection**
CHA-CHB	Cabinets for generator and transformer protection
CHE	Turbine Protection
CJ	**Unit coordination level**
CJA	Unit control system (including cabinets)
CJF	Boiler control system (including cabinets)
CJJ	Instrumentation and control cabinets for steam turbine set
CJP-CJQ	Instrumentation and control cabinets for gas turbine set
CK	**Process computer system**
CKA	Online supervisory and diagnostic computer
CN	**Cubicles**
CNA	Control cubicle

CR	**Control equipment**
CRB	Control equipment
CW	**Control rooms**
CWA-CWB	Main control videos and consoles
CWF	Main control panels
CY	**Communication equipment**
CYA	Telephone system
CYB	Control console telephone system
CYC	Alarm system (acoustic)
CYD	Alarm system (optical)
CYE	Fire alarm system
CYF	Clock system
CYG	Remote control system
CYH	Telemetry system

3.4 E Conventional fuel supply and residues disposal

EG	**Supply of liquid fuels (External liquid fuel system)**
EGA	Receiving equipment incl. pipeline
EGB	Tank farm
EGC	Pump system
EGD	Piping system
EGR	Residues removal system
EGT	Heating medium system
EK	**Supply of gaseous fuel**
EKA	Receiving equipment incl. pipeline (External gas fuel system)
EKB	Moisture separation system
EGC	Heating system
EKD	Main reducing station, expansion turbine
EKF	Storage system
EKG	Piping system

3.5 G Water supply and disposal

GA	**Raw water supply**
GAA	Extraction, mechanical cleaning
GAC	Piping and channel system
GAD	Storage system
GC	**Treatment system**
GCB	Filtering, mechanical cleaning system
GCE	Acid proportioning system
GCF	Ion exchange, reverse osmosis system
GCJ	Preheating, cooling system
GCK	Piping system, temporary storage system, pump system for main fluid
GH	**Distribution system**
GHC	Distribution system after treatment (demineralization)
GK	**Drinking water supply**
GKB	Storage, forwarding, distribution system
GKC-GKE	Drinking water supply
GN	**Process drains treatment system**
GNB	Filtering, mechanical cleaning system

3.6 H Conventional heat generation

HA	**Pressure system**
HAC	Economizer system
HAD	Evaporator system
HAH	HP superheater system
HAN	Pressure system drainage and venting systems
HN	**Flue gas exhaust**
HNA	Ducting system
HNE	Smoke stack system (chimney)

3.7 L Steam, water, gas cycles

LA	**Feedwater system**
LAA	Storage, deaeration
LAB	Feedwater piping system
LAC	Feedwater pump system
LAE	HP desuperheating spray system
LAF	IP desuperheating spray system
LB	**Steam system**
LBA	Main steam piping system
LBB	Hot reheat piping system
LBC	Cold reheat piping system
LBD	Extraction piping system
LBE	Back-pressure piping system
LBH	Start-up steam system, shutdown steam system
LBQ	Extraction steam piping system for HP feedwater heating
LBS	Extraction steam piping system for LP feedwater heating
LC	**Condensate system**
LCA	Main condensate piping system
LCB	Main condensate pump system
LCE	Condensate superheating spray system
LF	**Common installations for steam, water, gas cycles**
LFN	Proportioning system for feedwater, condensate system, incl. proportioning in boiler and turbine area

3.8 M Main machine sets

MA	**Steam turbine plant**
MAA	HP-turbine system
MAB	MP-turbine system
MAC	LP-turbine system
MAG	Condensing system (Condenser system)
MAJ	Air removal system (Evacuation system)
MAK	Transmission gear between prime mover and driven machine (Gear system)
MAL	Drain and vent systems (Drain system)
MAM	Leak-off steam system
MAV	Lubricant supply system (Lube oil system)

MAW	Sealing, heating and cooling steam system (Sealing steam system)
MAX	Non-electric control and protection equipment including fluid supply system (Hydraulic system)
MAY	Electrical control and protection equipment (Turbine controller)

MB	**Gas turbine plant**
MBA	Turbine, compressor rotor with common casing (Gas turbine system)
MBB	Turbine casing and rotor (Power turbine system)
MBH	Cooling and sealing gas system
MBJ	Start-up unit (Starting system)
MBK	Transmission gear between prime mover and driven machine
MBL	Intake air, cold gas system
MBM	Combustion chamber
MBN	Fuel supply system (Liquid fuel system)
MBP	Fuel supply system (Gas fuel system)
MBQ	Ignition fuel supply system
MBR	Exhaust gas system
MBT	Motive gas generator unit, incl. combustion chamber (Gas generator system)
MBU	Additive system
MBV	Lubricant supply system
MBX	Non-electric control and protection equipment, incl. fluid supply

MK	**Generator plant**
MKA	Generator, complete
MKB	Generator exciter set, including set with electrical braking system

(uses only if *MKC* is not sufficient for identification)

MKC	Generator exciter set, including set with electrical braking system
MKD	Bearings
MKY	Control and protection equipment

MM	**Compressor plant**
MMA	Compressor incl. internal systems
MMC	Suction piping system
MMG	Gas cooling system
MMH	Discharge piping system
MMV	Lubricant supply system
MMW	Sealing fluid supply system
MMY	Control and protection equpiment

	MP	**Common installations for main machine sets**
	MPS	Drying and layup system

3.9 N Process energy supply for external users

	NA	**Process steam system**
	NAA	Piping system (steam)
	NAB	Piping system (condensate)

3.10 P Cooling water systems

	PA	**Circulating (main cooling) water system**
	PAC	Circulating (main cooling) water pump system
	PAH	Condenser cleaning system
	PG	**Closed cooling water treatment system for conventional area**
	PGA-PGU	Closed cooling water system for conventional area

3.11 Q Auxiliary systems

	QE	**General compressed air and carrier air supply**
	QEA	Central compressed air and carrier air generation system
	QEB	Central compressed air and carrier air distribution system
	QEC	General compressed air and carrier air supply
	QF	**General control air supply**
	QFA	Central control air generation system (Instrument air system)
	QFB	Central control air distribution system
	QFD	General control air supply
	QFE	General control air supply
	QL	**Feedwater, steam, condensate cycle of auxiliary steam generating and distribution system**
	QLA	Feedwater system
	QLB	Steam system
	QU	**Sampling systems for conventional areas**
	QUA-QUB	Sampling system for conventional area

3.12 S Ancillary systems

SA	**Heating, ventilation, air-conditioning (HVAC) systems for conventional area**
SAA-SAU	Heating, ventilation, air-conditioning (HVAC) systems for conventional area (building specific)
SAG	Ventilation system gas turbine
SD	**Stationary cleaning systems**
SDA-SDU	Stationary cleaning systems
SDB	Compressor washing system
SF	**Heating and fuel gas system**
SFY	Control and protection equipment (Gas detection system)
SG	**Stationary fire protection systems**
SGA	Fire water system, conventional area
SGC	Spray deluge system
SGE	Sprinkler system
SGF	Foam fire-fighting systems
SGJ	CO2 fire fighting system
SM	**Cranes, stationary hoists and conveying appliances**
SMA-SMU	Cranes, stationary hoists and conveying appliances

4 Equipment unit code key

4.1 A Mechanical equipment

AA	Valves, dampers etc.
AB	Isolating elements, air locks
AC	Heat exchangers, heat transfer surfaces
AE	Turning, driving, lifting and slewing gear
AF	Continuous conveyors, feeders
AG	Generator units
AH	Heating, cooling and air conditioning units
AM	Mixers, agitators
AN	Compressor units, fans
AP	Pump units
AT	Cleaning, drying, filtering and separating equipment
AU	Braking, gearbox, coupling equipment, non-electrical converters
AV	Combustion equipment

4.2 B Mechanical equipment

BB	Storage equipment (tanks)
BN	Jet pumps, ejectors, injectors
BP	Flow restrictors, limiters, orifices
BR	Piping, ductwork, chutes
BS	Silencers
BU	Insulation, sheathing

4.3 C Direct measuring circuits

CD	Density
CE	Electrical variables
CF	Flow, rate
CG	Distance, length, postition, direction of rotation
CH	Manual input as manually operated sensor
CK	Time
CL	Level

CM	Moisture, humidity
CP	Pressure
CS	Velocity, speed
CT	Temperature
CY	Vibration, expansion

4.4 D Closed loop control circuits

DD	Density
DE	Electrical variables
DF	Flow, rate
DG	Distance, length
DL	Level
DM	Moisture, humidity
DP	Pressure
DS	Velocity, speed
DT	Temperature
DV	Viscosity
DW	Weight, mass
DY	Vibration, expansion

4.5 E Analog and binary signal conditioning

EA-EE	Open loop control
EG-EK	Alarm, annuanciation
EM-EQ	Process computer
EU	Combined analogue and binary signal conditioning
EW-EZ	Protection

4.6 F Indirect measuring circuits

FD	Density
FE	Electrical variables
FF	Flow, rate
FG	Distance, length, position, direction of rotation
FL	Level
FM	Moisture, humidity

FS	Velocity, speed
FT	Temperature
FV	Viscosity
FW	Weight, mass
FY	Vibration, expansion

4.7 G Electrical equipment

GA-GE	Junction boxes and cable (bus bar penetrations)
GH	Electrical and instrumentation and control installation units as preprocess system
GK	Information display and operator control equipment for process computers and automation system
GM	Junction boxes for light-current systems of national telecommunication services
GP	Subdistribution/junction boxes for lighting
GQ	Subdistribution/junction boxes for power sockets
GR	DC generating equipment, batteries
GS	Switch gear equipment
GT	Transformer equipment
GU	Converter equipment
GV	Structure related earthing and lightning protection equipment, sure arrestors
GW	Cabinet power supply equipment
GX	Actuating equipment for electrical variables
GY	Junction boxes for light current systems
GZ	Hangers, supports and racks for electrical and instrumentation and control equipment

5 Item code key

5.1 K Mechanical items

KA	Gate valves, globe valves, dampers, cooks, rupture disks, orifices
KB	Gates, doors, dam boards
KC	Heat exchangers, coolers
KD	Vessels/tanks, pools, surge tanks
KE	Turning, driving, lifting and slewing gear
KN	Compressors, blowers, fans
KP	Pumps
KT	Cleaning machines, dryers, separators, filters
KV	Burners, grates

5.2 M Mechanical items

MB	Brakes
MF	Foundations
MG	Gear boxes
MK	Clutches, couplings
MM	Engines
MR	Piping components, ductwork components
MS	Positioner
MT	Turbines
MU	Transmission gear

5.3 Q Instrumentation and control items

QB	Sensors
QH	Signalling devices
QN	Controllers, flybolt governor
QP	Measuring instruments, testing equipment
QR	Insturment piping
QT	Thermowells and pockets for protection of sensors

5.4 X Signal origins

XA-XZ	Signal origins (free for use)

5.5 Y Signal applications

YA-YZ	Signal applications (free for use)

5.6 Z Gated signals

ZA	Gated signal for alarm
ZT	Gated signal for shut down

5.7 - Electrical items

-A	Assemblies and subassemblies
-B	Transducers for non-electrical to electrical variables and vice-versa
-C	Capacitors
-D	Binary elements
-E	Special components
-F	Protective devices
-G	Generators, power supplies
-H	Signalling devices
-K	Relays, contractors
-L	Inductors
-M	Motors
-N	Amplifiers, controllers
-P	Measuring instruments, testing equipment
-Q	Power switchgear
-R	Restistors
-S	Switches, selectors
-T	Transformers
-U	Modulators
-V	Tubes, semiconductors
-W	Transmission paths, waveguides, aerials
-X	Terminals, plugs, sockets
-Y	Electrical positioners
-Z	Terminations, balancing equipment, filters, limiters, cable terminations

REVISION

Rev. ind.	Page (P) Chapt. (C)	Description	Date Dept. / Init.
A	P 19	Adjustment, Revision page added	040202 AQI / LL
B	-	Company name has change to Siemens Industrial Turbomachinery AB (SIT)	050415 AQI/AR