RDS-PP – Transition from the KKS to an international standard

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Abstract:

New and withdrawn standards and the revised EU Directives relating to reference designation and plant documentation also have a significant impact also on the KKS power plants reference designation system run by VGB PowerTech.

To gain acceptance on the international markets, to ensure compliance with valid standards in conjunction with conformity declarations and to satisfy safety provisions in plants, both manufacturers and operators needed to adopt the KKS to current rules and regulations.

The work was carried out in the VGB "Reference Designation and Plant Documentation" Working Panel and resulted in a technical standard for reference designation in power plants and a key for power plant systems - the "system key". Experience and known potentials for improvement in the use of KKS complete the adoption and creation of the KKS replacement system. The new standardized reference designation system is called

Reference Designation System for Power Plants RDS-PP

The technical standard is based on the basic principles of international standards and takes into account nearly all the KKS structures. Around 90% of the code letters in the KKS function key were transferred to the new system key. KKS aggregate and equipment key will be replaced in the new reference designation system by a standard in which the code letters are standardised globally for specialist areas and sectors. These code letters do not unfortunately always match the KKS-specifications.

There are tools available for comparing RDS-PP to KKS and for performing the required conversion from KKS to RDS-PP. These tools support the transfer of the KKS function key to the RDS-PP system key and from the aggregate and equipment key to the code letters in the international standard.

The article depicts the development of the new reference designation system from the point of view of standardisation, describes the main features, mentions offers of support by the VGB “Reference designation and plant documentation” working panel and provides recommendations for future use.

1. General

The KKS Identification System for Power Stations has been successfully used worldwide since the early nineteen seventies for the designation of plants, technical equipment and components in power plants.

The issuing of international basic standards on reference designation in the year 1996 and the quoting of such standards in European directives and harmonized standards called for an adjustment of the KKS to such specifications.

The main motivation for this was for the manufacturers to assert themselves in the European and worldwide markets by ensuring conformity with the standards and for the power plant operators to avail themselves of a standardized equipment designation basis for their work.

The basic principles necessary for such adjustment and certain amendments of the KKS were developed in the VGB Working Panel "Reference Designation and Plant Documentation" jointly by manufacturers and operators and contributed to the national and international standardizing activities. The main objective was to arrive at a sector-specific standard for power plants. The result is now available:

In April 2007, the Joint Committee for Reference Designation Systems (GAKS) at the DIN published the national standard DIN 6779-10 "Structuring principles for technical products and technical product documentation – Part 10: Power plants".
The reference to the basic standard IEC 61346-1 bearing the subtitle "Structuring principles and Reference designation" then gave the name for the KKS successor system:

Reference Designation for Power Plants – RDS-PP.

2. History

In March 1969, three manufacturing companies published in the technical journal "*Elektrizitätswirtschaft*", an article entitled "*System zur Kennzeichnung von Geräten und Anlagen in Wärmekraftwerken*" (System for the designation of components and plant equipment in thermal power plants). The designation system referred to in this article was designed for the needs of planning, constructing and operating mechanical and electrical systems and in application became known by the name of "*Anlagenkennzeichnungssystem*" (Plant Designation System), in short "AKS" or "AKZ System". The system used various code letters from other standards, e.g. the "device identifier" for electrical components from DIN 40719, supplementary sheet 1.

In the early nineteen seventies, the experience gained in the application of the AKZ System resulted in the further development of the system by the VGB Working Panel "Technical Classification Systems", in which operators, experts, authorities and manufacturers were equally represented.

The result, the "KKS Identification System for Power Stations" was published by VGB as Guideline B105. The guideline was complemented by so-called "Key Parts" (function, equipment unit and component keys) and "Application Explanations". Apart from electrical components, also equipment items of mechanical systems could be identified according to the KKS specifications. Furthermore, the KKS was used as a basis for the designation of signals, connections and documents.

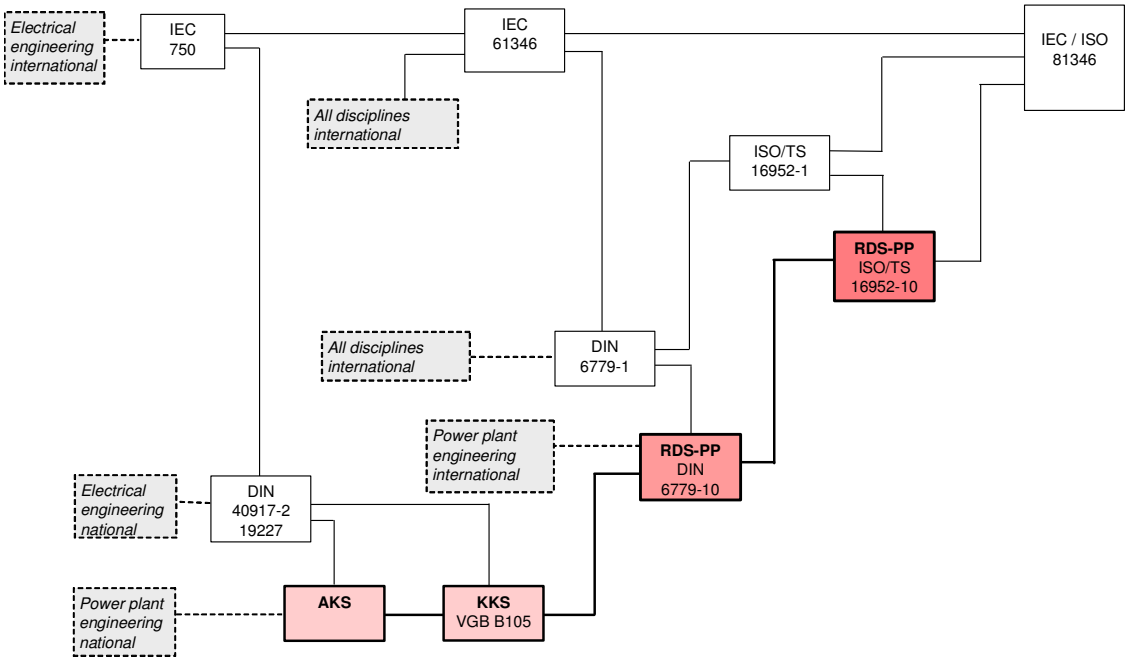


Fig. 1 – Development of the sector-specific standard for power plants

The publication of IEC 61346-2 and DIN EN 61346-2 for the classification of technical objects across all technical disciplines and the associated withdrawal of DIN 40719-2 in the year 2000 resulted in a situation where KKS code letters are used that are not covered by a valid standard. International specifications and requirements were thus no longer reflected in the KKS.
This was an urgent reason to revise the KKS and adjust it to the new requirements resulting from the international codes. Taking into account DIN 6779-1, members of the VGB Working Panel "Reference Designation and Plant Documentation" (successor panel of the Working Panel "Technical Classification Systems") were instrumental in developing the sector-specific standard for power plants DIN 6779-10 entitled " Structuring principles for technical products and technical product documentation – Part 10: Power plants".

This national standard was submitted as a proposal to the ISO and accepted. It is currently undergoing the consultation process and is expected to be published in early 2008 as an international standard under the number ISO TS 16952-10. IEC and ISO have agreed to publish the various standards relating to reference designation resulting from the ongoing revision work under a common series of standards with the number 81346.

3. Characteristic features

The Reference Designation System for Power Plants – in short RDS-PP – results from the consistent further development of the successful KKS Identification System for Power Plants. It has thus the characteristic features of a proven identification system:

- applicability to all power plant types,
- consistency throughout the entire life cycle,
- identity in sense for all technical disciplines,
- language independence.

The RDS-PP expands the KKS by the designation blocks

- "Conjoint designation" for the designation of plant sites and plant complexes, and
- "Functional allocation" for the designation of dynamic processes.

The RDS-PP is based on structuring principles, designation rules and letter codes specified in international standards published by IEC and ISO and fulfils the prerequisites for

- finding worldwide acceptance, and
- application of the same, standardized code letters.

The RDS fulfils the requirements of European Directives in terms of

- operational safety,
- ergonomics,
- procurement, and
- declaration of conformity.

The RDS-PP is in full agreement with the national/international sector-specific standards for power plants DIN 6779-10:2007-04 and ISO/TS 16952-10 and thus complies with the mentioned international standard for reference designation systems.

The RDS-PP can thus be considered to be a standard-conforming designation system.

4. Codes of practice

The Reference Designation System for Power Plants RDS-PP consists of the following standards, guidelines and application explanations:

- Sector-specific standards DIN 6779-10 and ISO TS 16952-10,
- Guideline VGB B101d and B101e for power plant systems (System key)
- Basic standards DIN 6779-2 and IEC PAS 62400
- Discipline-specific and power plant-specific application explanations.

Figure 2 gives an overview of the codes of practice, including the basic standards

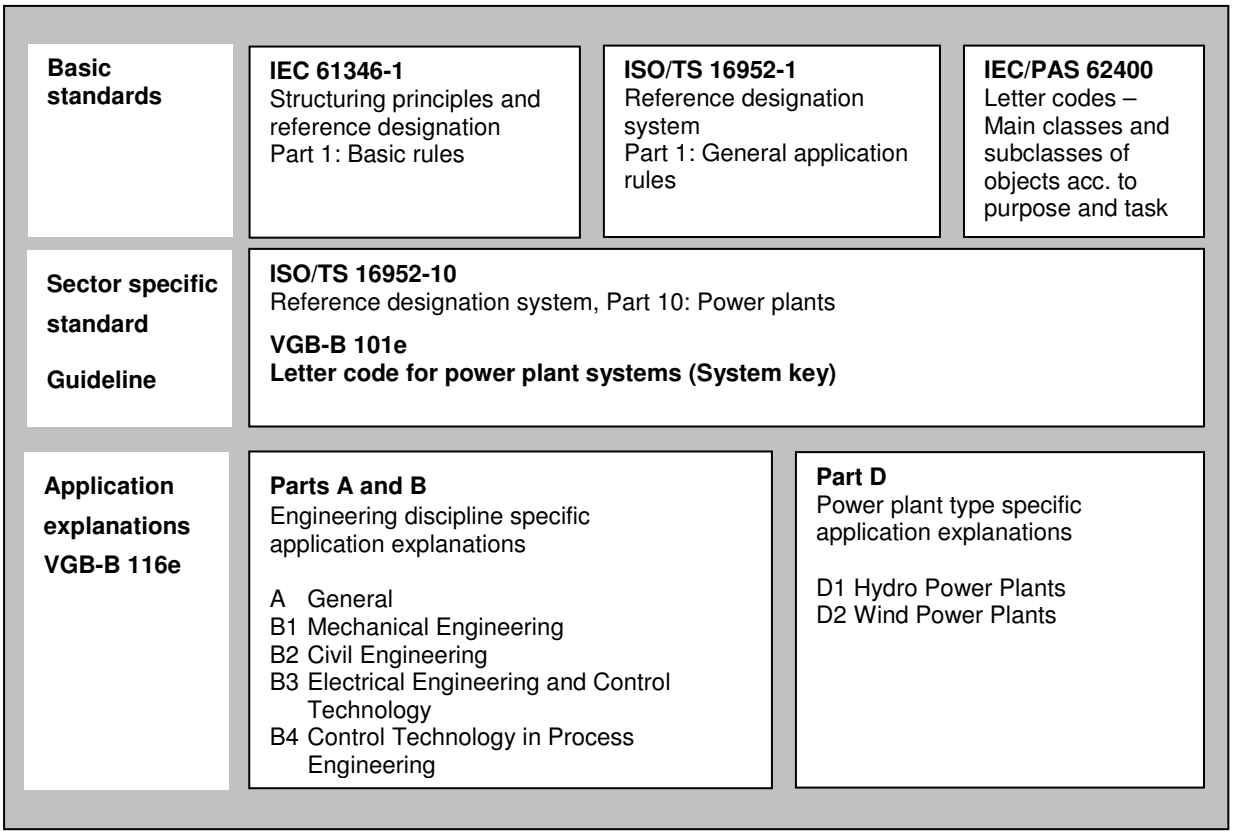


Fig. 2 – Overview of codes of practice for RDS-PP, including basic standards

4.1 Sector-specific standard

The sector-specific standard DIN 6779-10 is based on the general basic standards (see Fig. 2) and contains sector-specific specifications and rules relating to designation tasks, code structure and code representation as well as examples of use. The appendix (informative) offers a check list for the definitions between the project-taken part as well as application examples.

The sector-specific standard is comparable with VGB guidelines B105 for the KKS.

Hereinafter, the main focuses of the sector-specific standard are described, pointing out differences from the KKS.

The general code structure consists of a maximum of three parts that can be combined according to defined rules:

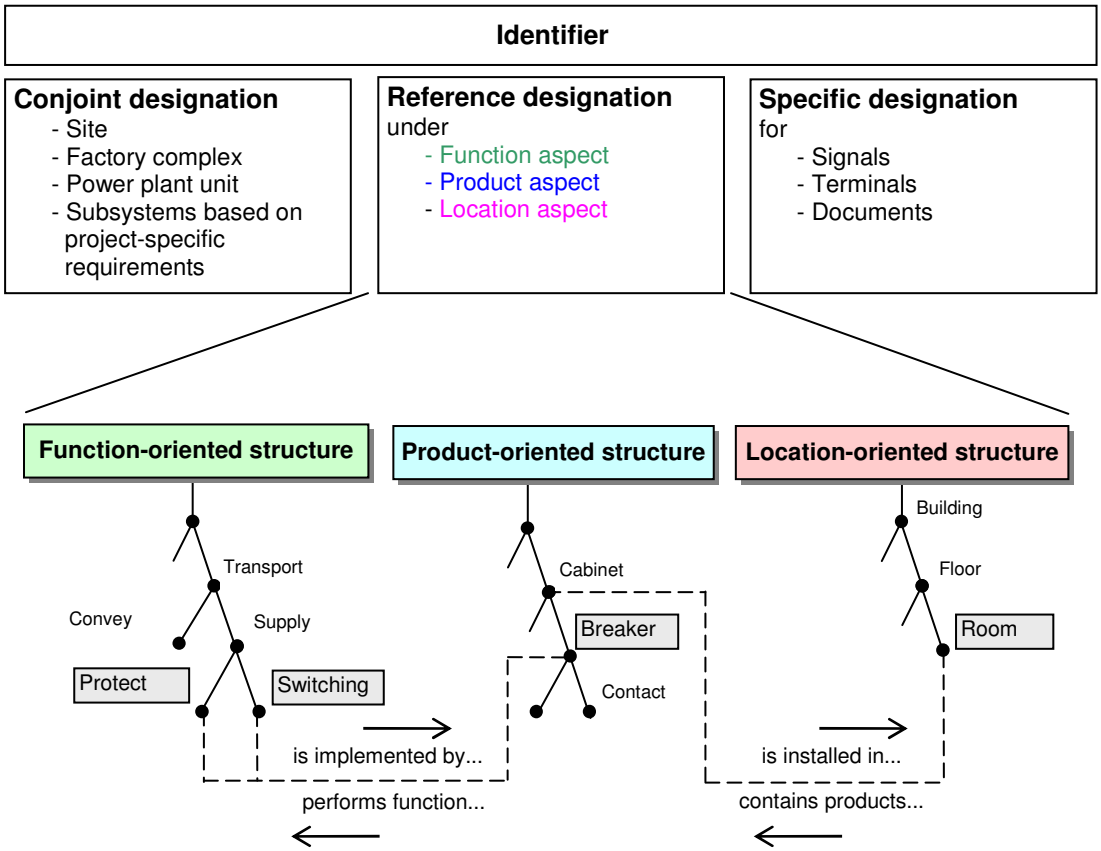


Fig. 3 – Maximum scope of the designation code, aspects, structure and relations

The sector-specific standard fully satisfies the basic principles of structuring which can be done under various aspects. The power plant is broken down according to the aspects "Function", "Product" and "Location". The Function aspect views an object by its functionality, the Product aspect by its physical composition. The Location aspect describes which locations are made available by the same object for other objects. For each view/aspect, a tree structure can be developed in which the rules of partitive relation prevail ("consists of"/"is part of"), the relations between the trees are so-called role relations (dashed lines in Fig. 3).

The designation for various aspects or tasks is done in designation blocks with a fixed structure. The general structure consists of a prefix followed by a designation code consisting of letters and numbers. Letters are used for the classification of technical objects, using code letters from the VGB System Key and DIN 6779-2 and IEC PAS 62400, respectively; numbers are used to distinguish between objects designated by the same code letter.

The following figure shows the prefixes and their meanings.

Prefix		Designation	Designation tasks/aspect	Prefix origin, basic principles specified in
1	2			
	#	Number	Conjoint designation	ISO/TS 16952-1
	=	Equals	Function-oriented designation	IEC 61346-1
=	=	Equals-Equals	Functional allocation	ISO/TS 16952-1
	+	Plus	Point of installation	IEC 61346-1
+	+	Plus-Plus	Location	ISO/TS 16952-1
	-	Minus	Product-oriented designation	IEC 61346-1
	:	Colon	terminal designation	IEC 61666
	;	Semicolon	Signal designation	IEC 61175
	&	Ampersand	Document designation	IEC 61355

Fig. 4 – Prefixes for designation tasks

Hereinafter, the designation blocks according to RDS-PP are described.

Designation block "C o n j o i n t d e s i g n a t i o n"

This designation block can be used for identifying sites, plants, power plant units and has to be agreed between the parties involved in the project. It represents none of the three basic aspects, application of this designation block is optional.

This designation block is a new feature. It includes the structural level GS0 of the KKS.

The following figure shows several sites, hydroelectric power plants and control stations in the upper Danube area.

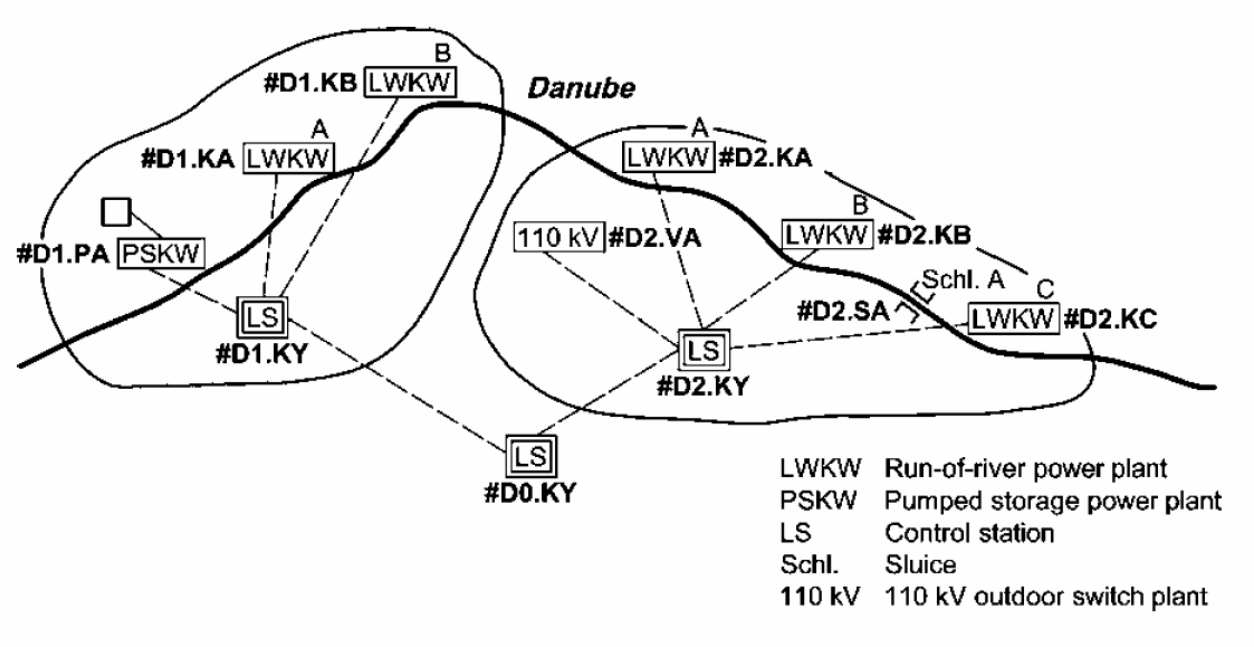


Fig. 5 – Example for the "Conjoint designation"

Designation Block "F u n c t i o n"

This designation block is used for function-oriented designation, from the view of task and purpose of the technical object. It corresponds to the breakdown levels 1 and 2 of the KKS process-oriented identification code, but without the prefix number of the system code and the additional equipment unit code (see also 4.2.3).

A novelty compared to the KKS is the change of breakdown level 0. If necessary, several systems can be combined here.

The following figure illustrates this option, using the example of a gas and steam turbine combined cycle plant.

It is not possible to define universally valid coding letters for the breakdown level 0. For the specific application case, the coding letters have to be agreed between the parties involved in the project. The letters used in the following figure were chosen arbitrarily.

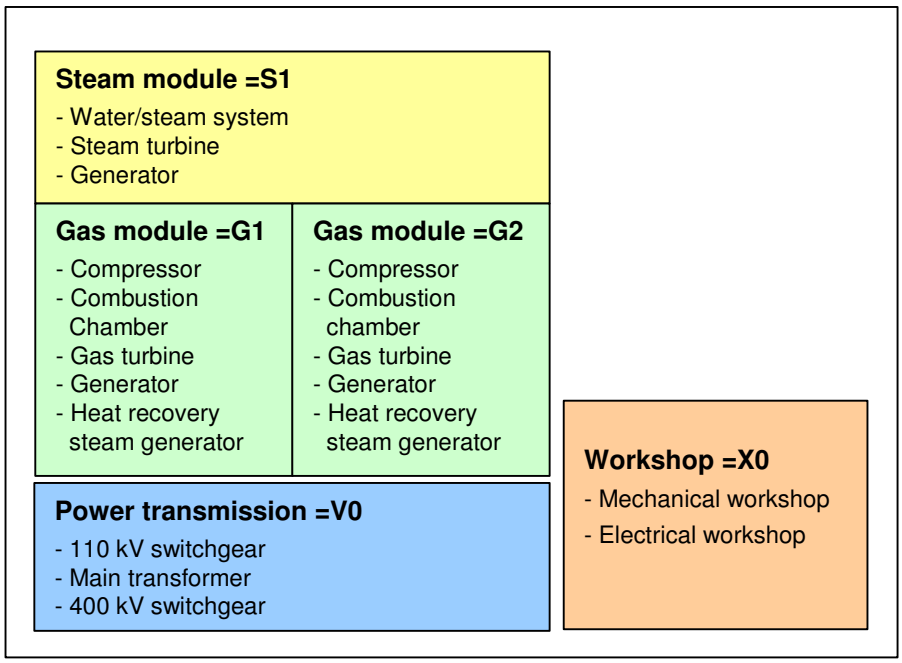


Fig. 6 – Example for breakdown level 0 in the designation block "Function"

Designation block "F u n c t i o n a l a l l o c a t i o n"

This designation block is used for function-oriented designation under the aspect of interaction of technical objects. It differentiates between group level and individual level.

This designation block is new. It governs the uniform designation of processes and the allocation of control tasks, which used to be done differently in the KKS.

The basic flow diagram in Fig. 7 shows the process of a thermal power plant, identifying the uppermost structural levels, the functional areas.

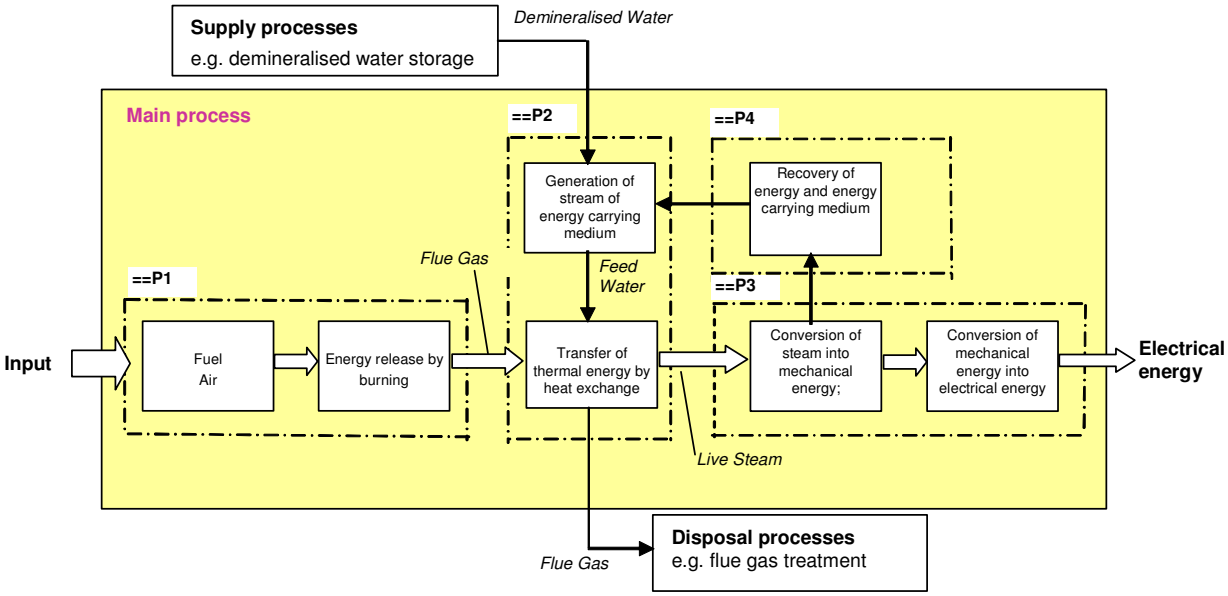


Fig. 7 – Example of "Functional allocation"

Designation block "P r o d u c t"

This designation block is used for product-oriented designation of electrical and mechanical objects and together with the designation block "Function" forms the unambiguous component designation code.

Designation block "E q u i p m e n t"

This designation block is used for unambiguous identification of technical objects. It makes use of the possibility to consider objects following in succession according to different aspects and allocate different prefixes to them. For power plants, the transition from function to product aspect is used.

This designation block corresponds to the "process-oriented identification" used in the KKS.

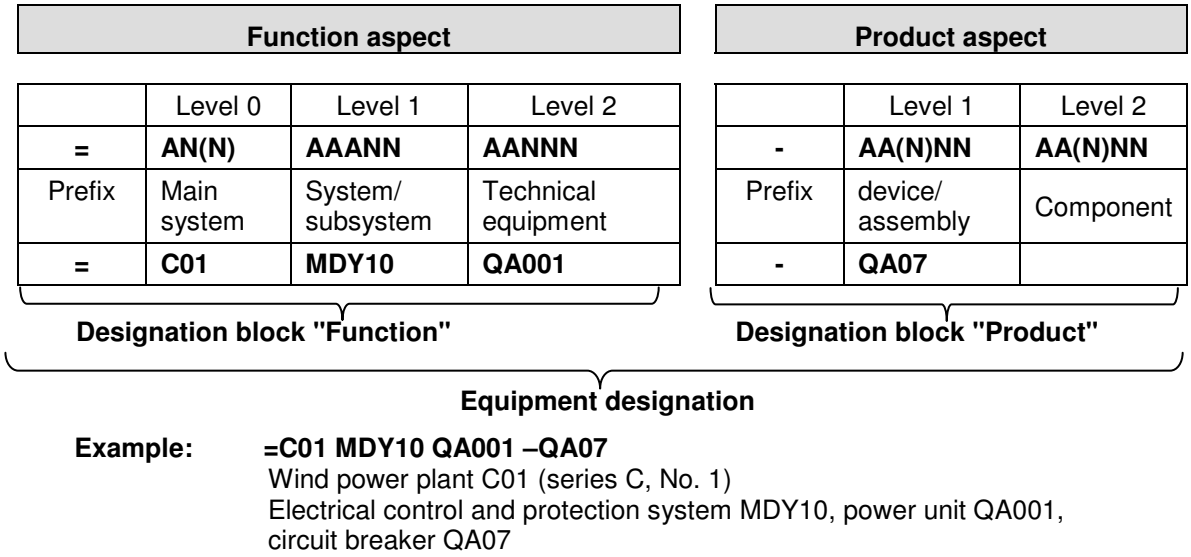


Fig. 8 – Designation block "equipment", with an example

Among other things, the equipment unit code is used as an identifier for plant data management systems and can be related to equipment items and/or product types and their data. The following figure shows the basic principle.

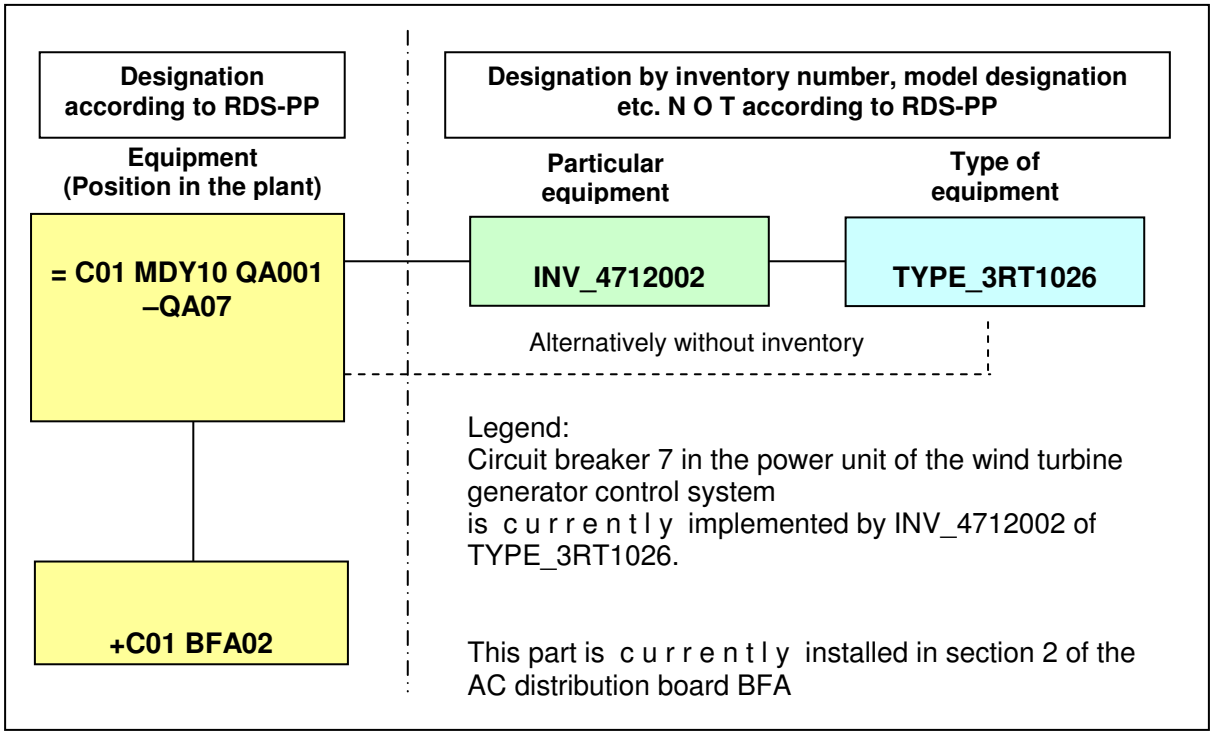


Fig. 9 – Example for use of the equipment designation in a maintenance tool

Designation block "P o i n t o f i n s t a l l a t i o n"

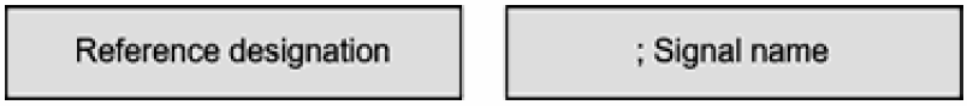
This designation block is used for designating the points of installation of technical objects. In addition to the hitherto existing possibility to identify electrical and I&C installation units, designation masks were created for the location-oriented designation of mechanical equipment. This permits, for instance, accurately locating the sampling point for a measured value on a pump set by using the component code under the location aspect.

Designation block "L o c a t i o n"

This designation block is used for designating locations, such as structures, areas etc.

S i g n a l d e s i g n a t i o n

The unambiguous designation of signals is achieved by combining the reference designations and the signal name according to the following structure:



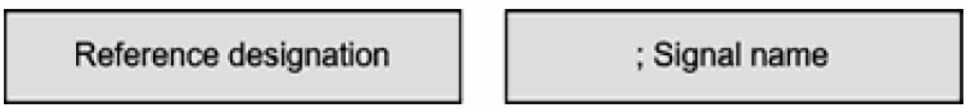
For power plants, the general provisions in IEC 61175 / DIN EN 61175 were specified for the signal name. Structure and code letters of the signal name were transferred from the KKS to the standard without any change.

Prefix	Signal name	
;	**AA**	**(N)NN**

Ranges of numbers were defined for the signal sections (2nd letter of the signal name) "B = single control", "G = binary process signals" and "H = limit signals", e.g. XB01 for check-back signal ON/OPEN, XB02 for check-back signal OFF/CLOSED.

T e r m i n a l d e s i g n a t i o n

The unambiguous designation of terminals on electrical or mechanical equipments is accomplished by combining reference designations and terminal designations according to the following structure.



For power plants, DIN EN 61666 is applicable without any reservations.

D o c u m e n t d e s i g n a t i o n

Non-manufacturer-specific, object-related designation of documents is achieved by combining the object designation with the document type class key according to the following structure:

Object designation	&	Document type classification code, counting number	/	Sheet number

As object designation, primarily the reference designation should be used, but other classification systems may also be used depending on the application case, e.g. type designation for the dimension drawing of a series product.

The structure of the document type classification code DCC with counting number and the code letters are fully in accordance with DIN EN 61355.

4.2. Guideline and standard for letter codes

The sector-specific standard allocates tables from two different codes of practice to alpha digits of the individual designation blocks.

Designation block	**Function**						**Product**		
Breakdown level		0	1		2			1	
Section		0	1	2	3	4		1	2
Data digit / type	=	AN(N)	**AAA**	NN	**AA**	NNN	-	**AA**	(N)NN

Designation of systems according to **VGB B101**

Classification of technical equipment according to **DIN 6779-2**

Fig 10 – Allocation of code letter sections to codes of practice

4.2.1 VGB Guideline B101 "Letter code for power plant systems (system key)"

For breakdown level 1 of the designation block "Function" and the designation blocks based thereupon for "Point of installation" and "Location" as well as "Functional allocation", VGB Guideline B101, "Letter code for power plant systems (system key)" is applicable.

Guideline VGB B101 was developed by the VGB Working Panel "Reference Designation and Plant Documentation" and is the binding letter code for power plant systems. Due to the reference contained in the sector-specific standard, this guideline gets normative significance.

B101 is based on the basic standard DIN EN 61346-2 which in table 2 provides a framework for a classification model for so-called infrastructure objects. In this table, the letters A, V to Z are generally specified, whereas the letter range from B to U is available for sector-specific specifications.

This free range from B to U was used to incorporate - almost without changes – the function key of the KKS. However, the following changes were unavoidable:

KKS		**RDS-PP**
S Ancillary systems	was broken up and distributed to	**V** Systems for storage **W** Staff amenities **X** Supplementary systems
W Regenerative energies	became	**R** Regenerative sources of energy
R Gas treatment	was deleted	---
CY Communication systems	became	**Y** Communication
X Heavy machinery	was broken up and distributed to	**B** Electrical auxiliary power supply **LAC** drive turbine **11**

The system key replaces the KKS function key.

As in the KKS, the system key uses a three-digit letter code and defines the limits for certain systems. With regards the designations, some adjustments were made to reflect the terminology currently used, e.g. in VDE 0100-200.

3.14.2 Data characters 1 (S_1), 2 (S_2) and 3 (S_3)

M	**Systems for generation and distribution of electrical energy**		
MA	**Steam turbine system**		
MAA	HP turbine		
	Limits:	*from*	*steam inlet valve, emergency stop valve or combined emergency stop/control valve*
		to	*extraction, bleed and exhaust flange and*
		to	*inlet/outlet of other turbine-internal systems*
MAB	IP turbine		
	Limits:	*from*	*cross-over pipe including final controlling element or*
		from	*intercept valve*
		to	*extraction, bleed and exhaust flange and*
		to	*inlet/outlet of other turbine-internal systems*
MAC	LP turbine		
	Limits:	*from*	*cross-over pipe including final controlling element or*
		from	*intercept valve or steam inlet flange (for reheat installation without intercept valves)*
		to	*extraction, bleed and exhaust flange and*
		to	*inlet/outlet of other turbine/internal systems*
MAD	Bearings		
MAE	-reserved for later standardization-		

Fig. 11 – Excerpt from the "VGB System Key" B101

The system key is constantly updated by the VGB Working Panel "Reference Designation and Plant Documentation".

4.2.2 Basic standard DIN 6779-2 and IEC PAS 62400

For breakdown level 2 of the designation block "Function" and the designation blocks based thereupon for "Point of installation" and "location" as well as "Functional allocation", and for the breakdown levels of the designation block "Product", DIN 6779-2 is applicable on the national level and its English version IEC PAS 62400 on the international level.

The basic standard DIN EN 61346-2 classifies technical objects according to their purpose or task and in table 1 specifies code letters for the main classes.

DIN 6779-2 and IEC PAS 62400, respectively, expand these main classes with subclasses with a second code letter.

These specifications are generally applicable to all disciplines, such as civil, process, mechanical and electrical engineering, across all industries.

This basic standard replaces the KKS equipment unit key and the KKS component key and is thus a significant deviation from past designation practice.

The following table shows some examples to illustrate the differences in code letters and designations.

KKS		**RDS-PP**
AA Valves, dampers etc.	Can become	**FL** safety valve **FM** fire protection damper **QM** isolating valve **QN** control valve **RM** non-return valve
BB Storage equipment (vessels, tanks)	becomes	**CM** Storage of materials; containers, tanks, boilers, silos
CT Direct measuring circuit temperature	becomes	**BT** Conversion of an input variable temperature

The following figure shows an excerpt from Table 3 of IEC PAS 62400, including the subdivision by technical disciplines:

CA – CE	Storage of **electric** energy
CF – CK	Storage of **information**
CL – CY	Storage of **materials, thermal** and **mechanic** energy

Table 3 (continued) C

C	Purpose or task of object: storage of energy, information or material	
Class and subclass	Task related to subclass	Examples of components
CA	Capacitive storage of electric energy	Capacitor
CB	Inductive storage of electric energy	Superconductor, coil
CC	Chemical storage of electric energy	Buffer battery, battery
CD		
CE		
CF	Storage of information	RAM, EPROM, CD-ROM, event recorder, hard disc, magnetic tape recorder, voltage recorder
CG		
CH		
CJ		
CK		
CL	Storage, collection and housing of materials (fixed location, open)	Pits, pools, bunkers, cisterns
CM	Storage, collection and housing of materials (fixed location, closed)	Containers, tanks, boilers, silos, gas holders, accumulators, buffers, flash tanks
CN	Storage, collection and housing of materials (mobile)	Containers, shipping containers, gas cylinder, drum

Fig 12 – Excerpt from the basic standard IEC PAS 62400

4.2.3 Comparison of designating letters as per KKS and RDS-PP

The following figure is to clarify the codes of practice applicable to code letters by way of comparison of KKS vs. RDS-PP.

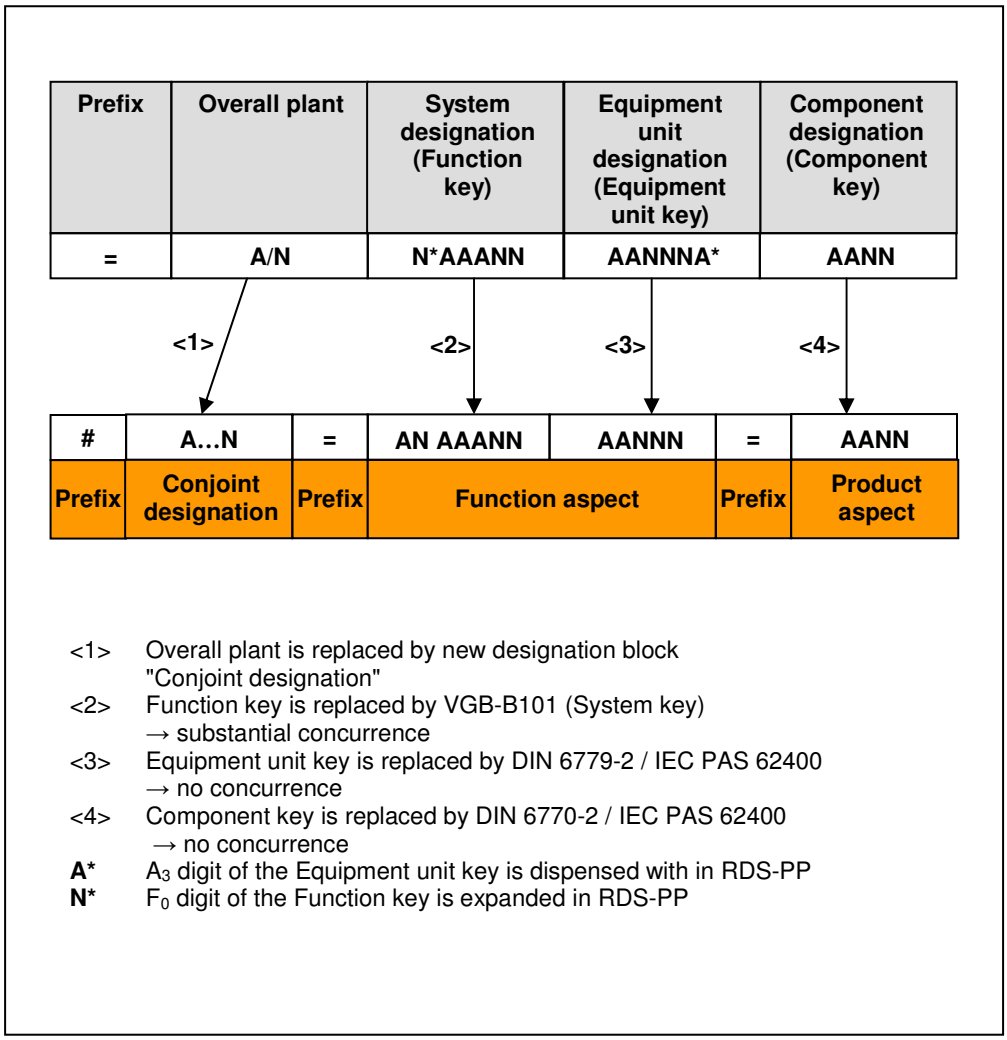


Fig. 13 – Comparison of letter codes KKS vs. RDS-PP

4.3 Application explanations

Standards provide general rules and specifications. In order to facilitate efficient implementation in practice, application explanations have been developed by the VGB Working Panel "Reference Designation and Plant Documentation". They provide detailed guidance, starting with a cross-discipline Part A and then addressing the specific engineering disciplines of mechanical engineering, civil engineering, electrical and I&C engineering, and I&C functions in process systems (Parts B1 to B4).

The application explanations contain examples from practice and have also been conceived for training measures.

5. Consequences

Frequently asked questions in connection with the introduction of the RDS-PP include:

- What does this now mean for
  - my existing plant,
  - my plant which is currently in the pipeline, or
  - a new plant I will set up in future?
- From when on do I have to use the RDS-PP?
- Will the KKS then be no longer valid?
- …..

Unfortunately no simple "Yes/No" answers or binding deadlines can be given to answer these very important and specific questions.

In general it has to be said that standards are not binding laws, their application has to be agreed between the parties to the contract. An obligation to apply a standard can result from legal or administrative regulations or from contracts or other legal grounds.

Furthermore, if assessing an order of priority among various requirements, an international standard will have priority over a VGB guideline, even though the latter via the VGB's status as an international trade organization enjoys international recognition.

Standards always become a matter of particular interest if no amicable solution between contracting parties is found or if man or equipment suffers damage. In these cases, the basic principle is applicable that the requirements can be deemed fulfilled if the state of the art (which is normally reflected in standards) has been adhered to. That may be the requirements of a specification in the bidding process, but that may also be the requirements for the safety of man and equipment. If no valid standards are used, the party concerned will have to prove – if necessary with the assistance of third parties – that the solution chosen by such party likewise meets the requirements.

These explanations do certainly not provide a concrete answer to the questions asked above and do not nearly fully cover the complex of tendering procedures, product safety, industrial safety etc.; they are merely meant to outline the complexity of the issue.

Nevertheless the following facts can be summed up and should be considered in making a decision on the designation system to be used:

- The KKS is an (international) "house standard" of VGB, which in absence of normative standards reflected the state of the art until international standards were published.

- The KKS partly refers to withdrawn standards. The problem can not be solved with the structure and the known KKS keys.

- To date little or no experience has been gained in the application of RDS-PP; on the basis of past experience, initial pilot applications can be expected to be somewhat rocky and need special care and assistance.

- Possible problems or additional expenses may result for the operator if different designation systems are used at the same site; these problems may concern the safety of plant and persons but also the operation and maintenance management systems.

- The RDS-PP is (after official publication of the ISO/TS 16952-10) a designation which is supported by international standards.

- The RDS-PP integrates systematic structures and letter codes which are applicable to all industries, which in the medium term will result in an easier integration of "standard components" into the power plant process.

- Suppliers of "standard components" can not decline the request for designation according to RDS by just alluding to standards that are applicable in other industries or to their house standards. This makes it easier to make also such suppliers adhere to the RDS-PP; this will relieve planners and operators of time consuming and costly reworking.
- Once RDS-PP has gained the acceptance of planners and manufacturers, the tools will also be changed correspondingly. Designation according to KKS will then be available only at extra cost, e.g. for CCS (carbon dioxide capture and storage) retrofit projects.

- Successful implementation of the RDS-PP within a limited time frame will be possible if the operators require designation according to RDS-PP in their specifications; this will trigger the swift development/adjustment of tools at planners and suppliers.

- Due to the international set-up of many planners and manufacturers, the economic interest for a system will prevail which goes beyond the "VGB scope".

- KKS and RDS-PP will coexist for many years and will also have to be cared for. The know-how for servicing the KKS will diminish step by step.

- Plant operators, too, must develop in-house know-how for RDS-PP; the VGB training centre for power plant operating staff will support this process with suitable training courses.

However, the authors do not want to get around concrete recommendations:

Existing plants:
➔ currently, there is no need for action,
decisions should be made in the individual instance, on occasion of substantial plant modifications or retrofit projects

Plant retrofit or modernization projects:
➔ existing projects or projects that are in the pipeline should be continued as planned;
decisions should be made in the individual instance, on occasion of substantial plant modifications or retrofit projects

New plants

➔ for completely new plants which are not yet in the pipeline, RDS-PP should be used from 2008 on; the only arguments against such a decision could be safety-specific aspects at a common plant site with "KKS power plants" (Note: there are also various sites where KKS and the predecessor system AKZ coexist)

➔ for plants already in the pipeline, the efforts necessary to change the plans need to be considered (see also section 8)

6 Documentation

As already explained in the chapters above, the RDS-PP consists of several components which are summed up again below, along with information on their status and the respective reference documents:

DIN 6779-10	Structuring principles for technical products and technical product documentation - Part 10: Power plants - most important national standard, replaces KKS guideline (Beuth-Verlag) ISO/TS 16952-10 Technical product documentation – Reference designation system – Part 10: Power Plants - most important international standard, replaces KKS guideline, to be published in Q1/2008 (Beuth-Verlag)
DIN ISO/TS 16952-10	Kennzeichnungssystematik für technische Produkte und technische Produktdokumentation – Teil 10: Kraftwerke - German version of ISO/TS 16952-10 to be published in Q1/2008, replaces DIN 6779-10 (Beuth-Verlag)
DIN 6779-2	Structuring principles for technical products and technical product documentation - Part 2: Letter codes - Main classes and subclasses of objects according to their purpose or task (Beuth-Verlag)
IEC/PAS 62400:	Structuring principles for technical products and technical product documentation - Letter codes - Main classes and subclasses of objects according to their purpose and task (Beuth-Verlag)
VGB-B 101	RDS-PP Reference Designation System for Power Plants -(system key), English version to be published in November 2007 (VGB PowerTech Service GmbH)
VGB-B 116	RDS-PP Reference Designation System for Power Plants, Application explanations, to be published in December 2007 (German version) and April 2008 (English version) (VGB PowerTech Service GmbH)
Software-Tool	Supplementary information and an efficient way of experiencing the RDS-PP and the interrelations in designation and documentation by selected examples, to be published in April 2008 (VGB PowerTech Service GmbH)

7 Maintenance of the RDS-PP and application support

The Working Panel "Reference Designation and Plant Documentation" as a collaborator in standardization and author of the VGB guidelines relating to RDS-PP is well aware that suitable assistance will be needed to support the introduction of the RDS-PP.

Questions should be addressed directly to the VGB office (barbara.bochynski@vgb.org). The persons interested in RDS-PP will be registered and supplied with information about current developments. Current information will also be provided on the VGB website (www.vgb.org/db_rds.html).

For specific technical questions, issue-specific teams will be formed within the Working Panel which to a certain depth will address the issues raised free of cost. In addition, the teams will be pleased to provide proposals for engineering services to be rendered against a fee or to facilitate contacts with service providers.

The VGB training centre for power plant operating staff, which is likewise a member of the Working Panel "Reference Designation and Plant Documentation", will provide training courses and seminars on RDS-PP if need arises.

Literature

EU Directives

DIRECTIVE 2004/17/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 31 March 2004
coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors

DIRECTIVE 2004/18/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 31 March 2004
on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 17 May 2006
on machinery, and amending Directive 95/16/EC (recast)

DIRECTIVE 2001/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 3 December2001
on general product safety

National laws/ordinances

BetrSichV
"Operational Safety Ordinance" of 27 September 2002 (Federal Law Gazette I p. 3777), last amended by Article 5 of the ordinance of 6 March 2007 (Federal Law Gazette I p. 261)" Ordinance on safety and health protection in the provision of equipment and its use at the workplace, on safety during the operation of plant subject to inspection and on the organisation of occupational health and safety (Betriebssicherheitsverordnung – BetrSichV)

GPSG
"Equipment and Product Safety Act" of 6 January 2004 (Federal Law Gazette I p. 2 (219)), last amended by Article 3 Para 33 of the law of 7 July 2005 (Federal Law Gazette I p. 1970) Act on Technical Work Equipment and Consumer Products (Geräte- und Produktsicherheitsgesetz - GPSG)

Standards

DIN EN 60204-1
Safety of machinery - Electrical equipment of machines - Part 1: General requirements

DIN 6779-2
Structuring principles for technical products and technical product documentation – Part 2: Letter codes – Main classes and subclasses of objects according to their purpose or task

IEC PAS 62400
Structuring principles for technical products and technical product documentation – Letter codes – Main classes and subclasses of objects according to their purpose and task

DIN EN 61355
Classification and designation of documents for plants, systems and equipment

DIN EN 61175
Industrial systems, installations and equipment and industrial products – Designation of signals

DIN EN 61666
Industrial systems, installations and equipment and industrial products - Identification of terminals within a system

DIN EN 61346-1
Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 1: Basic rules

DIN EN 61346-2
Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 2: Classification of objects and codes for classes

DIN ISO/TS 16952-1
Technical product documentation – Reference designation system – Part 1: General application rules

Technical articles

Horst Anders, Philipp Freymeyer, Helmut Hotes
System zur Kennzeichnung von Geräten und Anlagen in Wärmekraftwerken
"Elektrizitätswirtschaft" Vol. 68, issue 6, 17 March 1969, pp. 181 - 192

Horst Anders, Philipp Freymeyer, Helmut Hotes
Kennzeichnung der elektrotechnischen, mess- und regeltechnischen Anlagen, Anlagenteile und Geräte in Wärmekraftwerken
"Elektrizitätswirtschaft" Vol. 68, issue 6, 17 March 1969, pp. 193 - 197

Hugo Popp
Die neue Vornorm DIN V 6779-1
VGB Kraftwerkstechnik 72 (1992), issue 7

Hugo Popp
Der Norm-Entwurf DIN 6779-10/Mai 1998
VGB Kraftwerkstechnik 3/99

Heinz Müller, Rainer Ahleff
Referenzkennzeichnung nach ISO/TS 16952-1 and DIN ISO/TS 16952-1
DIN Mitteilungen, 3/2007

Rainer Ahleff, Zbynek Cihlar
ISO/IEC structuring and designation standards – A framework for industry
ISO Focus May 2007