# روش‌های نوین کدینگ دارایی‌ها

## RDS و OTD



حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

# ISO / IEC 81346

The world's leading coding technique

***Industrial systems, installations and equipment and industrial products – structuring principles and reference designations.***

**Part 1 - Basic rules**

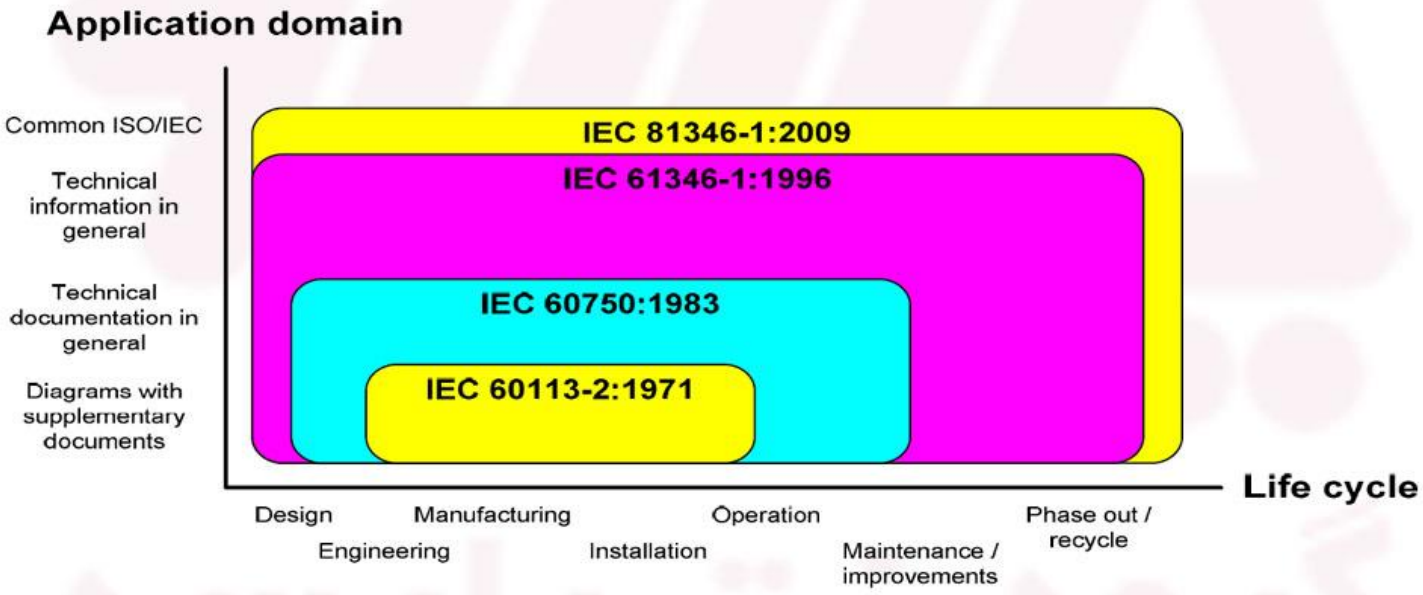
**Part 2 - Classification of objects and codes for classes**

## RDS

Reference Designation System



حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲


Application domain
Common ISO/IEC
Technical information in general
Technical documentation in general
Diagrams with supplementary documents
IEC 81346-1:2009
IEC 61346-1:1996
IEC 60750:1983
IEC 60113-2:1971
Life cycle
Design
Engineering
Manufacturing
Installation
Operation
Maintenance / improvements
Phase out / recycle

# ISO IEC 81346

The ISO/IEC 81346 standard series provides principles and rules for a **Reference Designation System** that can unambiguously identify systems and system elements.

- International principles
- Not stakeholder specific
- IT compatible
- Scalable for small and large projects
- Life-cycle stable code
- Easy to understand and implement



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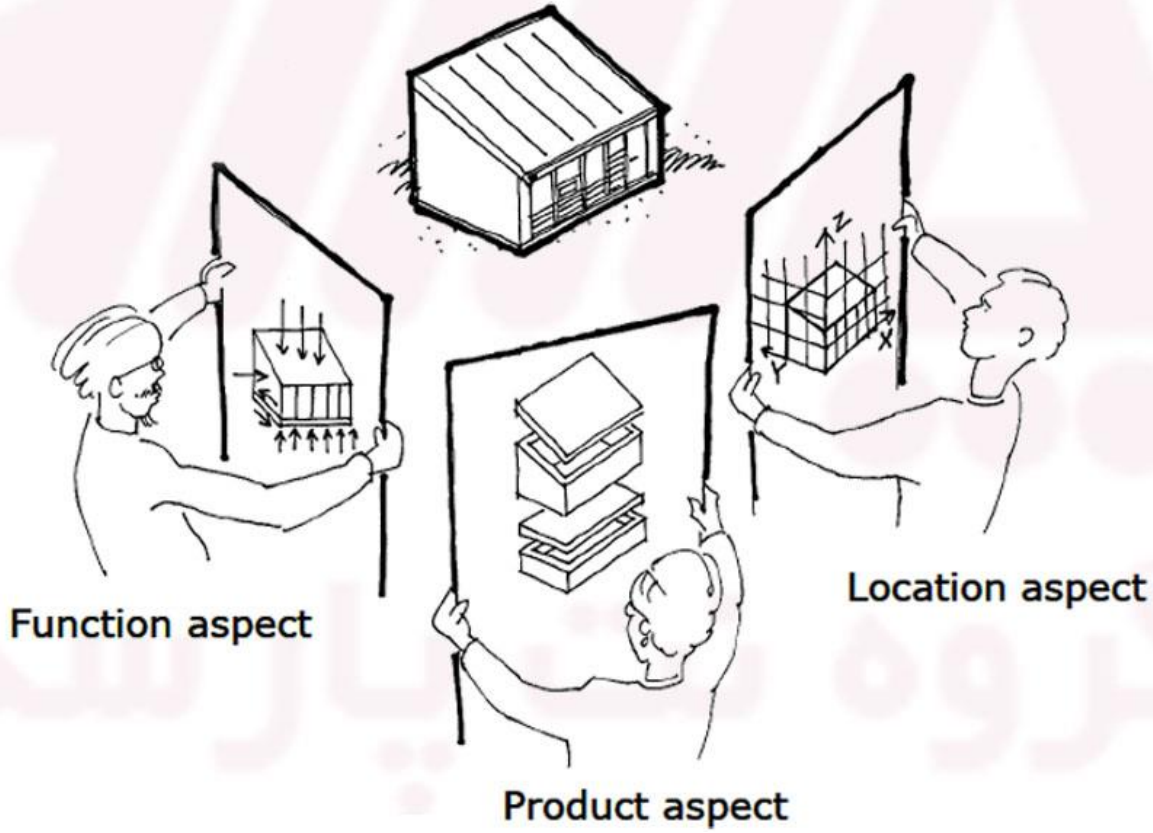
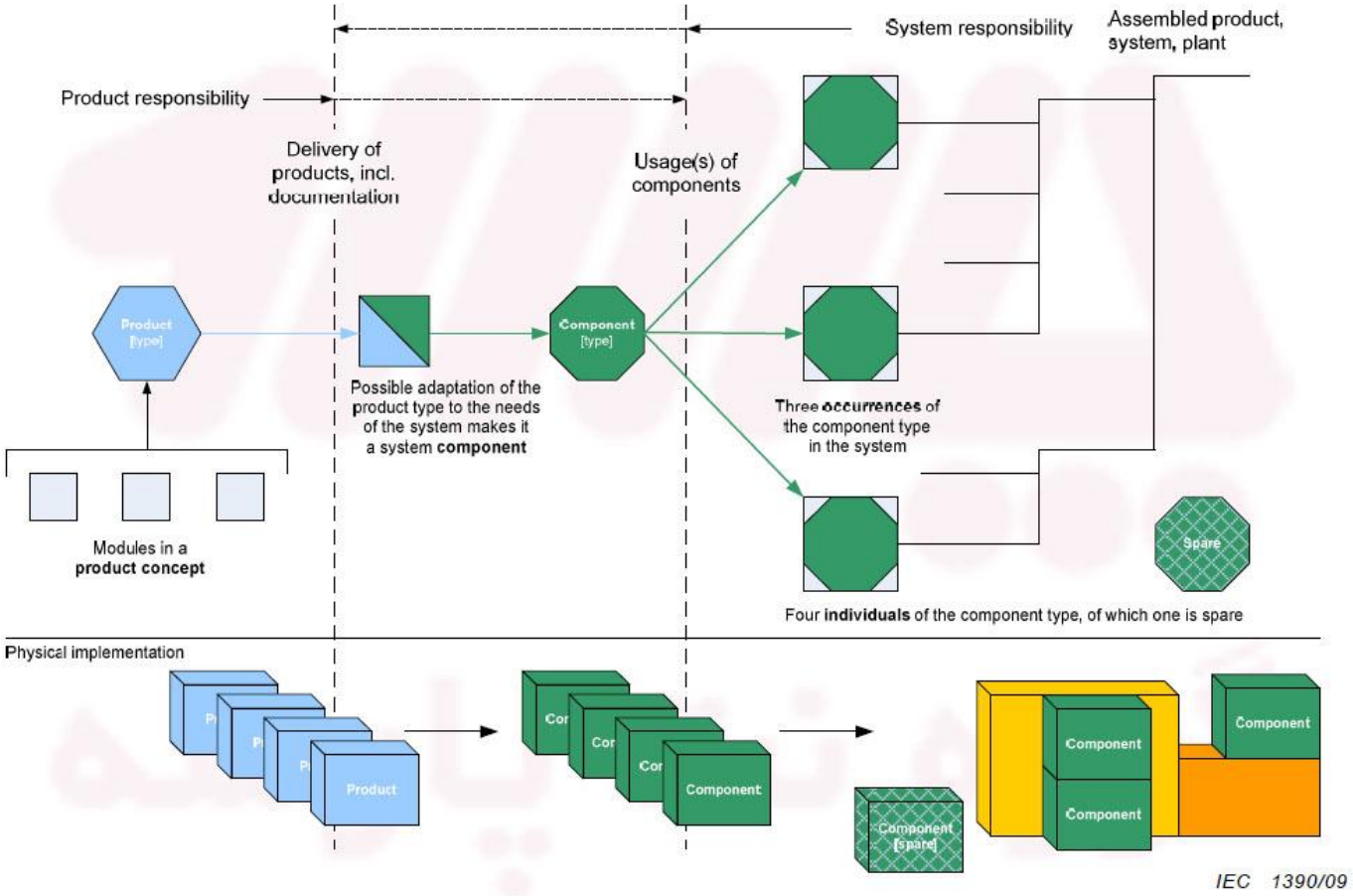
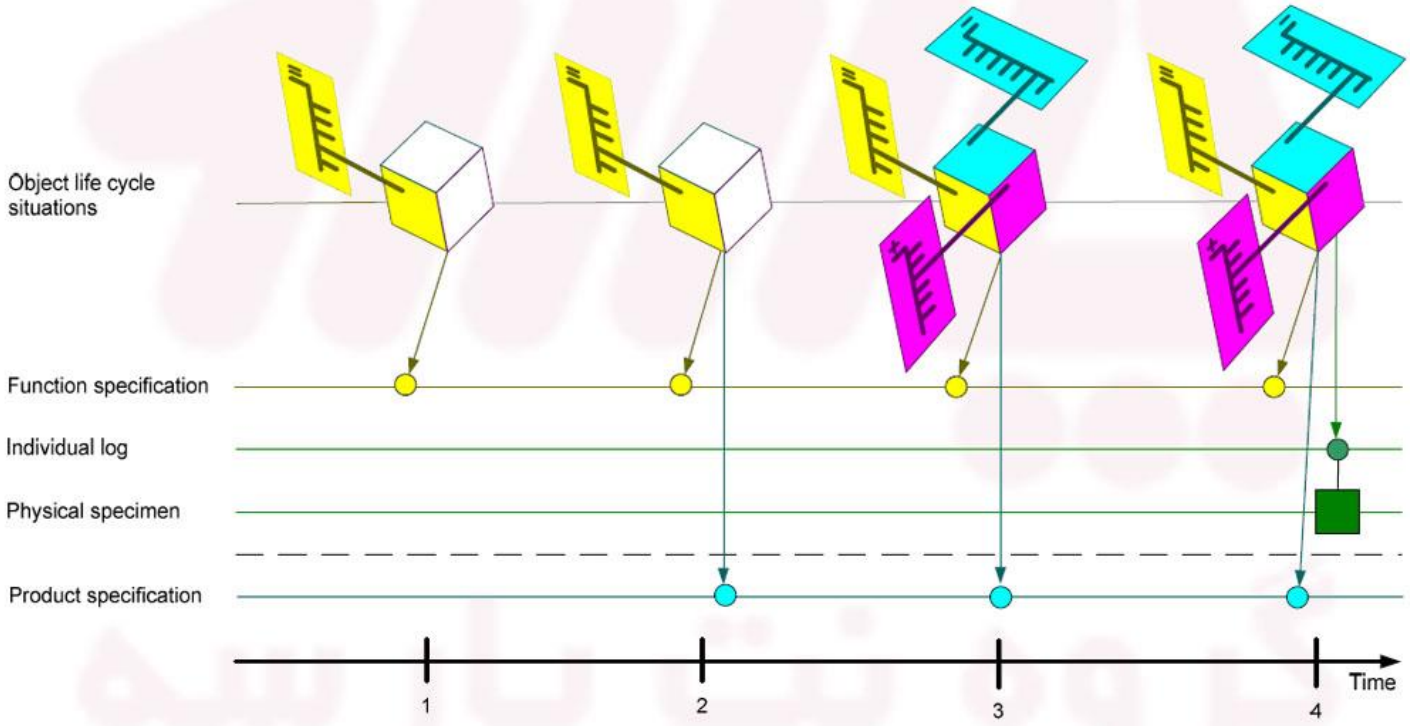
# RDS filters - Aspects

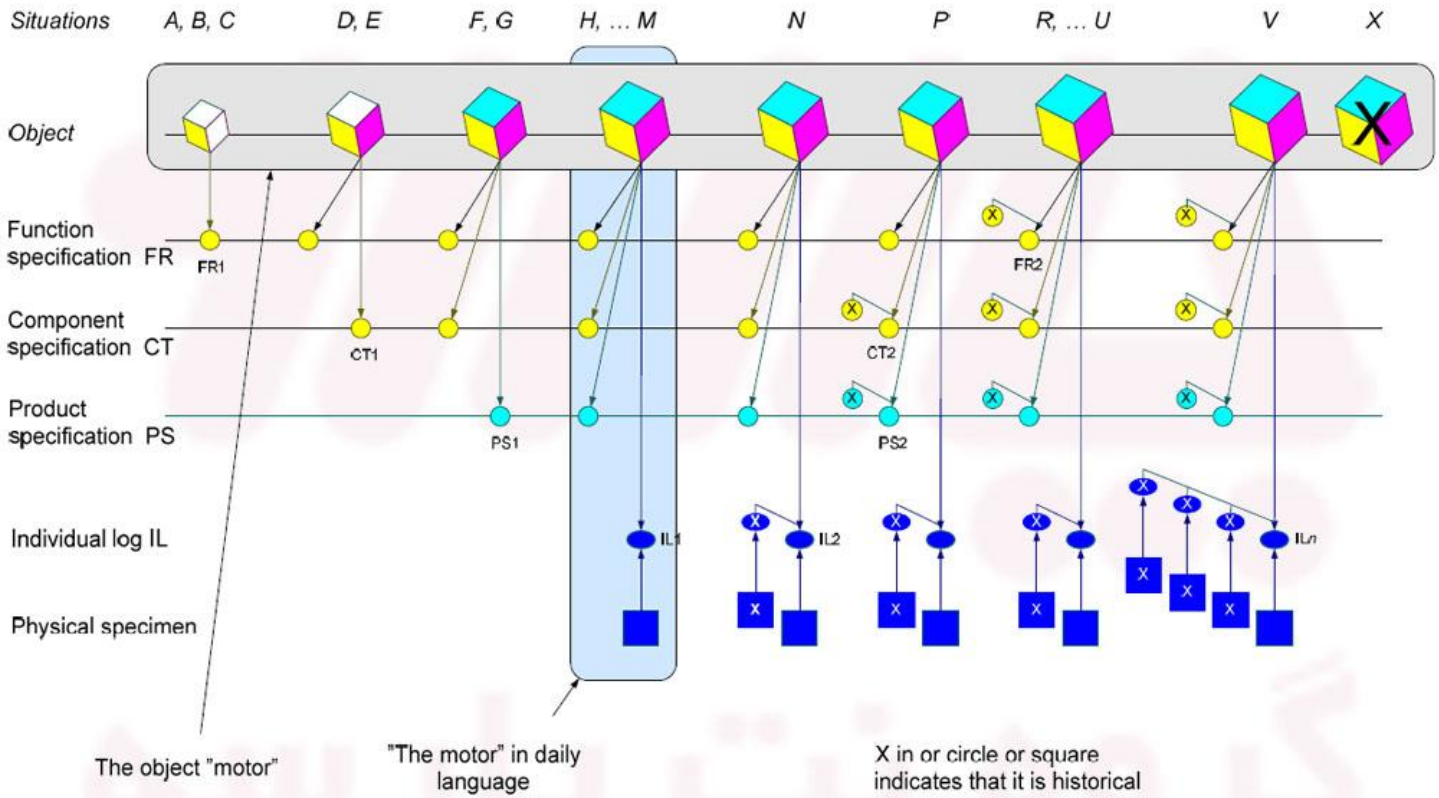






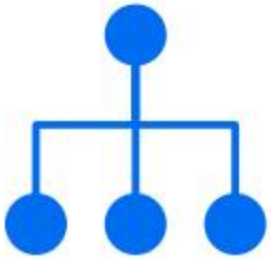

حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲


Object life cycle situations
Function specification
Individual log
Physical specimen
Product specification
1
2
3
4
Time






حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲



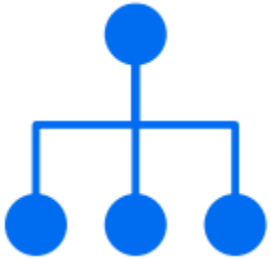
**part-of relations**
(partitive relations)

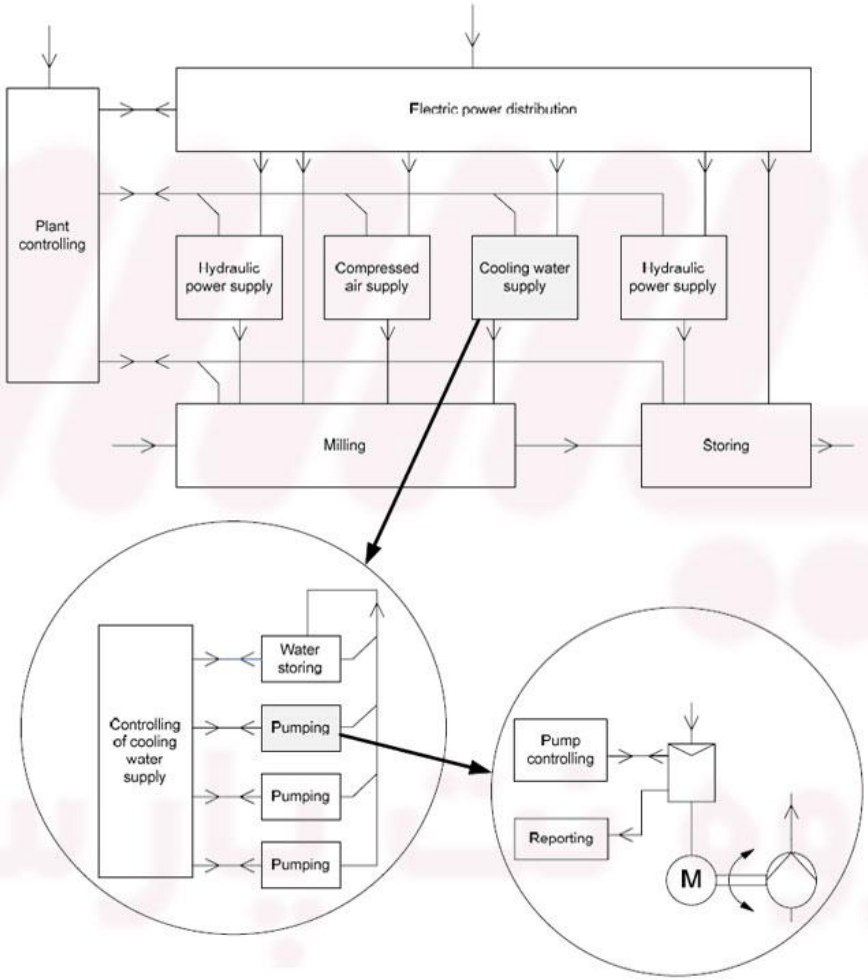
used for structuring of objects determining system and elements in 81346-1

and

**type-of relations**
(generic relations)

used for classification of systems and components in 81346-2 (the letter codes)




Electric power distribution
Plant controlling
Hydraulic power supply
Compressed air supply
Cooling water supply
Hydraulic power supply
Milling
Storing
Controlling of cooling water supply
Water storing
Pumping
Pumping
Pumping
Pump controlling
Reporting
M

| Class name (preferred term): | Class definition: | |
|---|---|---|
| sensing object<br>B _ _ | object intended to pick up and provide a representation of information | First level<br>Entry class |
| flow sensing object<br>B F _ | *sensing object* for flow | Second level<br>Sub-class by facet 1 |
| discrete gas flow sensing object<br>B F B | *flow sensing object* of gas providing a discrete signal | Third level<br>Sub-sub-class by facet 2 |

inheritance



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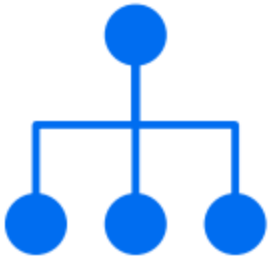
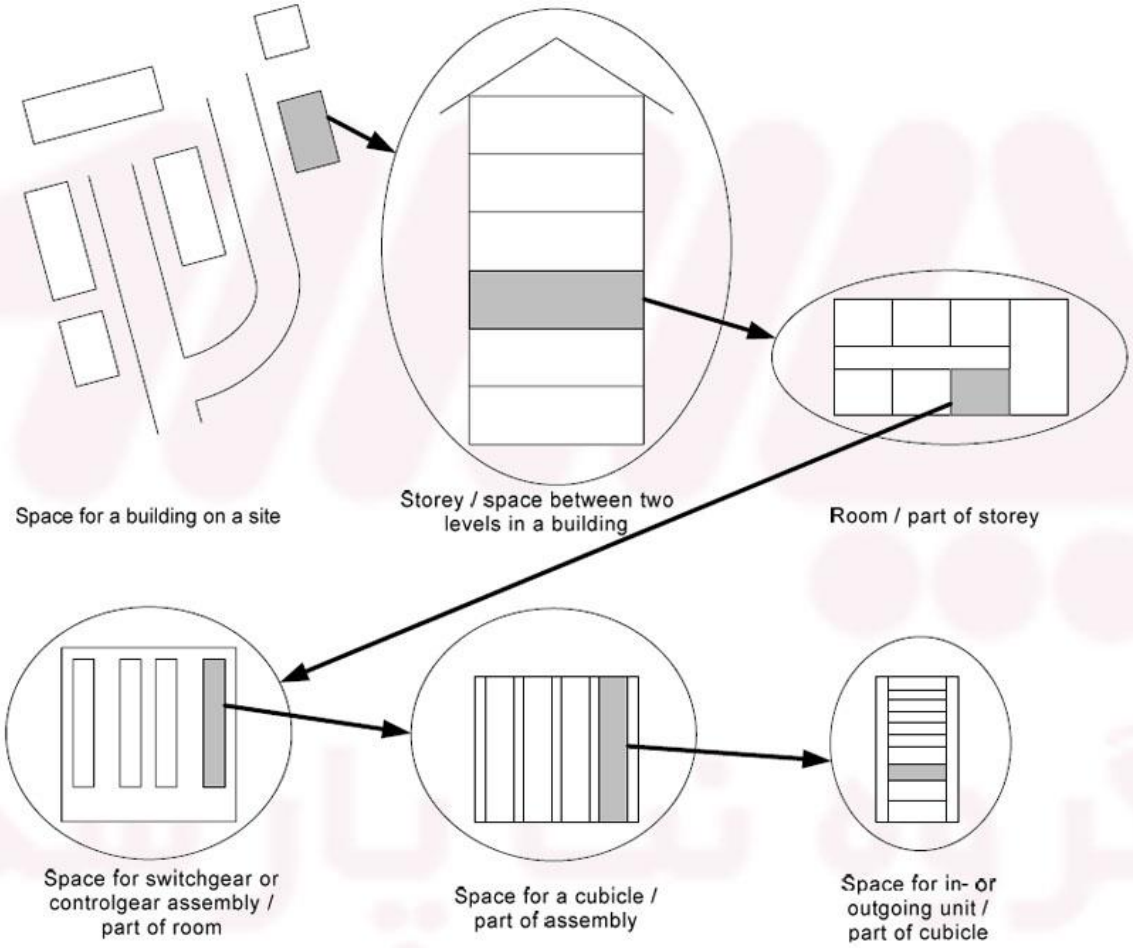
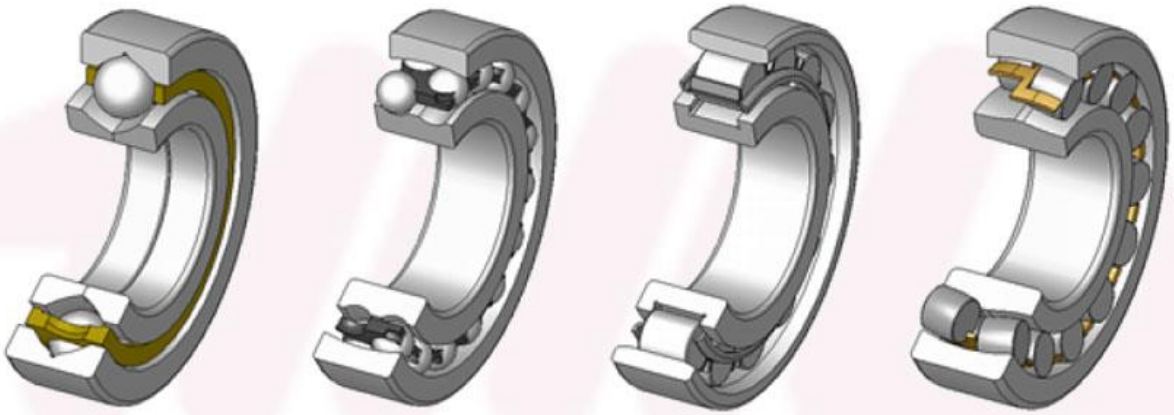



Space for a building on a site
Storey / space between two levels in a building
Room / part of storey
Space for switchgear or controlgear assembly / part of room
Space for a cubicle / part of assembly
Space for in- or outgoing unit / part of cubicle

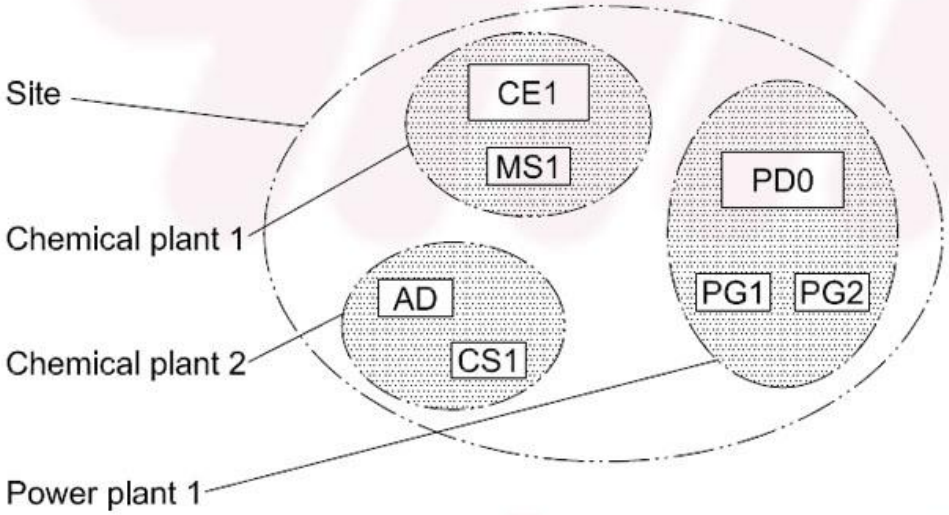
| Class code | | | Class name (preferred term) | Class definition | Examples |
|---|---|---|---|---|---|
| 1 | 2 | 3 | | | |
| A | | | space for human needs | space designed to fulfil the basic needs of human beings | |
| | AA | | occupiable room | space for human needs for rest, relaxation, recreation or waiting | |
| | | AAA | room | occupiable room for personal use | bedroom, childs room, hotel room, suite. |
| | | AAB | living room | occupiable room for shared use | sitting room, ward, coffe room, smoking room, break room, dormitory, terrace, balcony, dining room. |
| | | AAC | wating room | occupiable room for waiting | reception room, gate lounge, asylium room |
| | | AAD | courtyard | occupiable room outdoors entirely or partly surrounded by buildings | atrium, patio |
| | AB | | washroom | space for human needs for personal hygiene | |
| | | ABA | bathroom | washroom enabling persons to wash and possibly relieve themselves | |
| | | ABB | toilet | washroom enabling persons to relieve themselves | bath, washroom |
| | | ABC | baby changing room | washroom of young children | wc, restroom, ladies room, men's room, lavatory, disabled lavatory, urinal, loo |
| | | ABD | changing room | washroom for cloth changing | nappy change |
| | | ABE | shower | washroom enabling persons to wash themselves | locker room |
| | | ABF | sauna | washroom enabling persons to take a sweat-inducing bath | bathing room |

| Equipment unit | Pumps | | | | |
|---|---|---|---|---|---|
| **Subunit** | **Power transmission** | **Pump unit** | **Control and monitoring** | **Lubrication system** | **Miscellaneous** |
| Maintainable items | Gearbox/ variable drive<br>Bearing<br>Seals<br>Coupling to driver<br>Coupling to driven unit | Support<br>Casing<br>Impeller<br>Shaft<br>Radial bearing<br>Thrust bearing<br>Seals<br>Valves<br>Piping<br>Cylinder liner<br>Piston<br>Diaphragm | Actuating device<br>Control unit<br>Internal power supply<br>Monitoring<br>Sensors [a]<br>Valves<br>Wiring<br>Piping<br>Seals | Reservoir<br>Pump<br>Motor<br>Filter<br>Cooler<br>Valves<br>Piping<br>Oil<br>Seals | Purge air<br>Cooling/heating system<br>Cyclone separator<br>Pulsation damper<br>Flange joints |

[a] Specify type of sensor, e.g. pressure, temperature, level, etc.

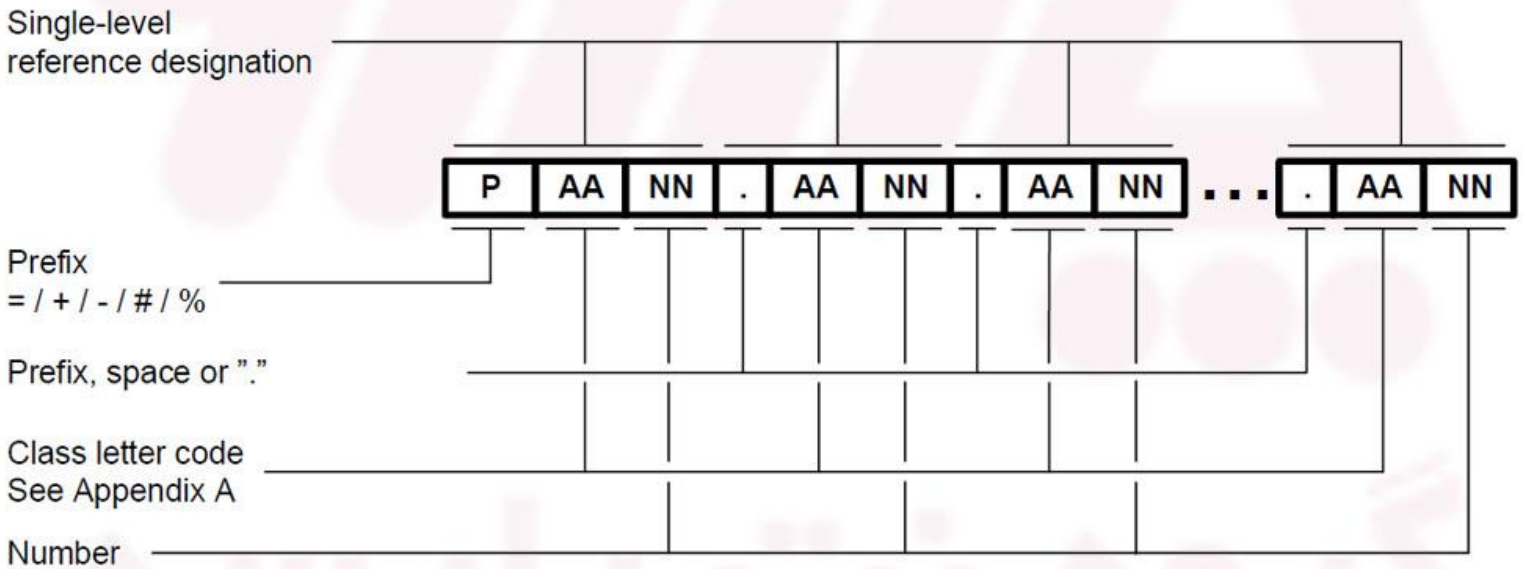


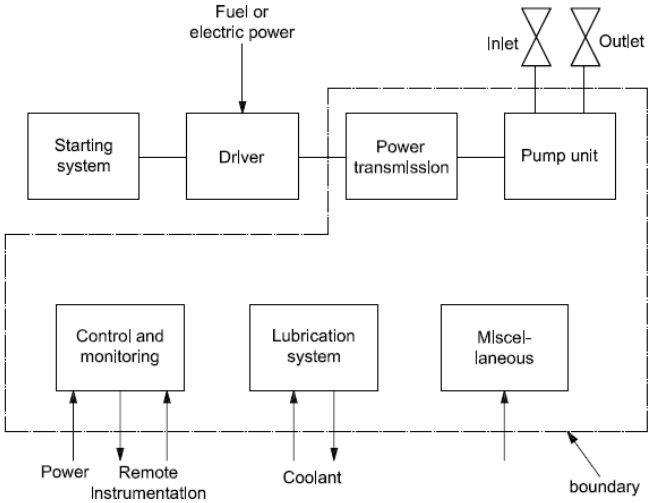
| %UPA1 | %UPA2 | %UPA3 | %UPA4 |
|---|---|---|---|
| Bearing type no.1 | Bearing type no. 2 | Bearing type no. 3 | Bearing type no. 4 |
| Four point contact bearings | Spherical ball bearings (double row) | Cylindrical roller bearings | Spherical roller bearings (double row) |




| Designation | Description |
|---|---|
| #CP1 | Chemical plant 1 |
| #CP1CE1 | CP1, electrolysis 1 |
| #CP1MS1 | CP1, material storage 1 |
| #CP2 | Chemical plant 2 |
| #CP2AD1 | CP2, administration |
| #CP2CS1 | CP2, central storage 1 |
| #PP1 | Power plant 1 |
| #PP1PD0 | PP1, distribution |
| #PP1PG1 | PP1, generation 1 |
| #PP1PG2 | PP1, generation 2 |

# Syntax of RDS






## 1 Structures

The system and its elements are structured in composition hierarchies based on different aspects of the system design. There are four basic aspects: Function (=), Product (-), Location (+) and Type (%).

= Fuel system
- = Pump
- = Hose
- = Fuel tank

– Pump module
- – Pump
- – Motor
- – Valve

## 2 Classification

All sub-systems and system elements in the structures are classified using a simple functional classification scheme represented by letter codes.

=G Fuel system
- =GPA Pump
- =WPC Hose
- =CMA Fuel tank

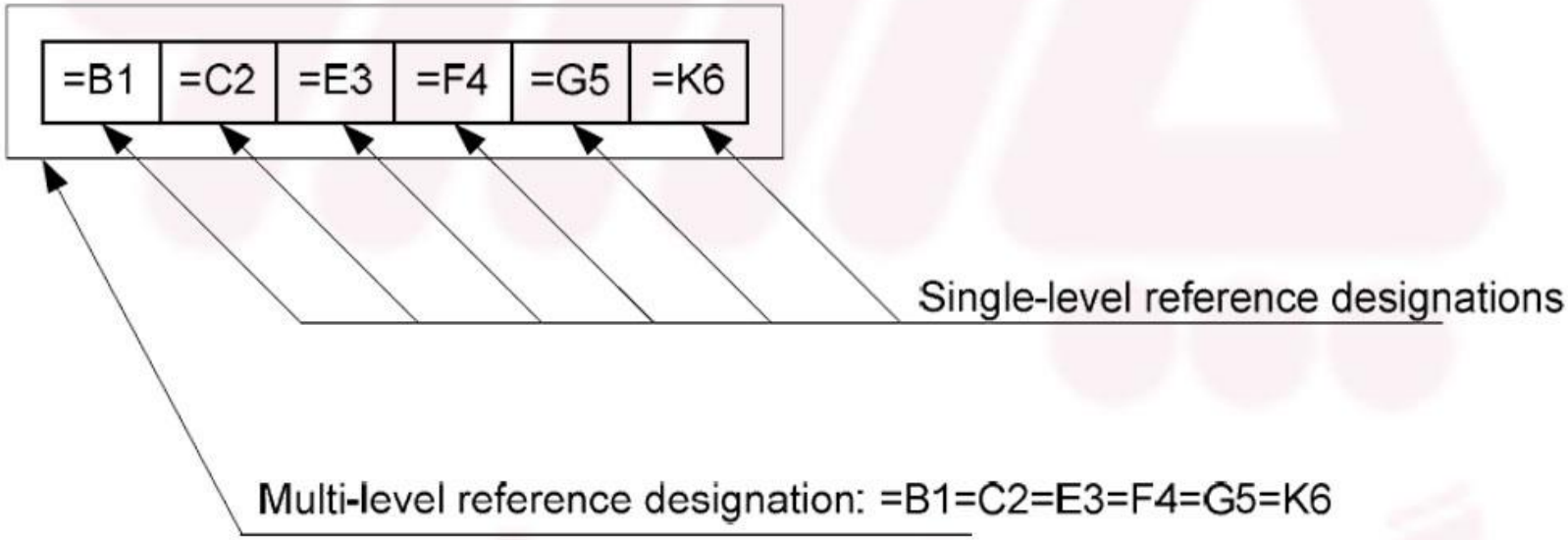
–G Pump module
- –GPA Pump
- –MAA Motor
- –QMA Valve

## 3 Numbering

All sub-systems and system elements are numbered.

=G1 Fuel system
- =GPA1 Pump
- =WPC1 Hose
- =CMA1 Fuel tank

–G1 Pump module
- –GPA1 Pump
- –MAA1 Motor
- –QMA1 Valve

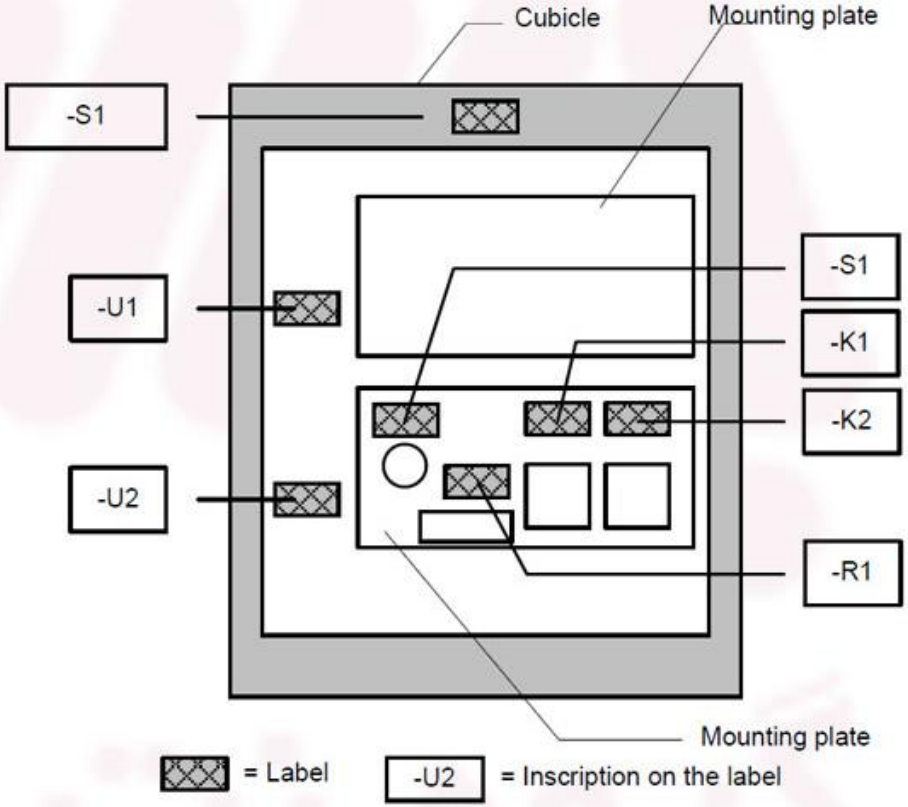

=B1
=C2
=E3
=F4
=G5
=K6
Single-level reference designations
Multi-level reference designation: =B1=C2=E3=F4=G5=K6

| Reference designations | Possible presentations | |
|---|---|---|
| | All presented on the same line | Each presented on one line |
| =A1<br>-B2<br>+C3 | =A1/-B2/+C3 Object | =A1<br>-B2<br>+C3 Object |
| =D4-E5+F6 | =D4-E5+F6 Object | =D4-E5+F6 Object |
| =G7-H8<br>+J9 | =G7-H8/+J9 Object | =G7-H8<br>+J9 Object |

| Line type | Small spacing | Large spacing |
|---|---|---|
| Single line | ANN AAANN AANNN AANNN | A NN AAA NN AA NNN AA NNN |
| Multiple line | ANN<br>AAANN<br>AANNN<br>AANNN | A NN<br>AAA NN<br>AA NNN<br>AA NNN |

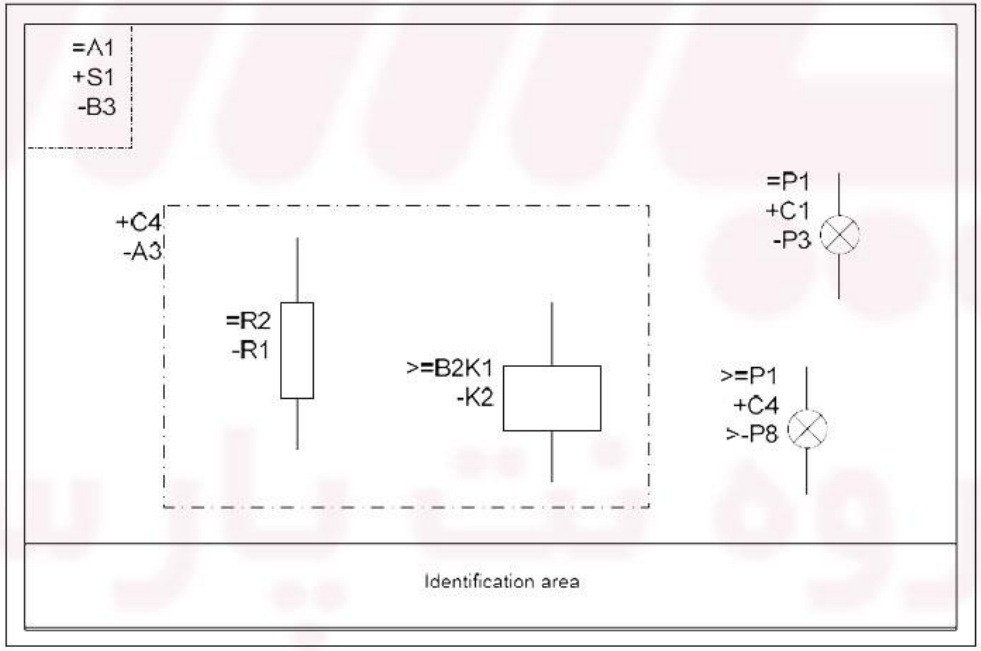
| Object | Reference designation |
|---|---|
| Operator panel | -S1 |
| Mounting plate 1 | -S1-U1 |
| Mounting plate 2 | -S1-U2 |
| Resistor | -S1-U2-R1 |
| Control switch | -S1-U2-S1 |
| Relay 1 | -S1-U2-K1 |
| Relay 2 | -S1-U2-K2 |

a) The reference designations of the objects

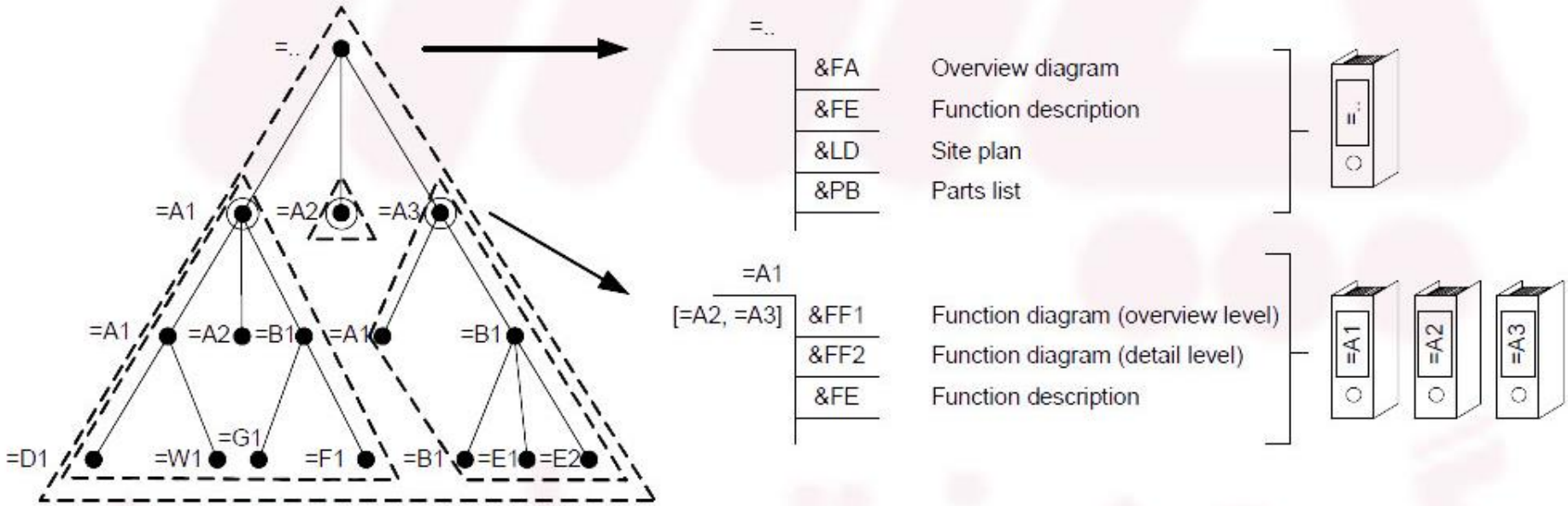


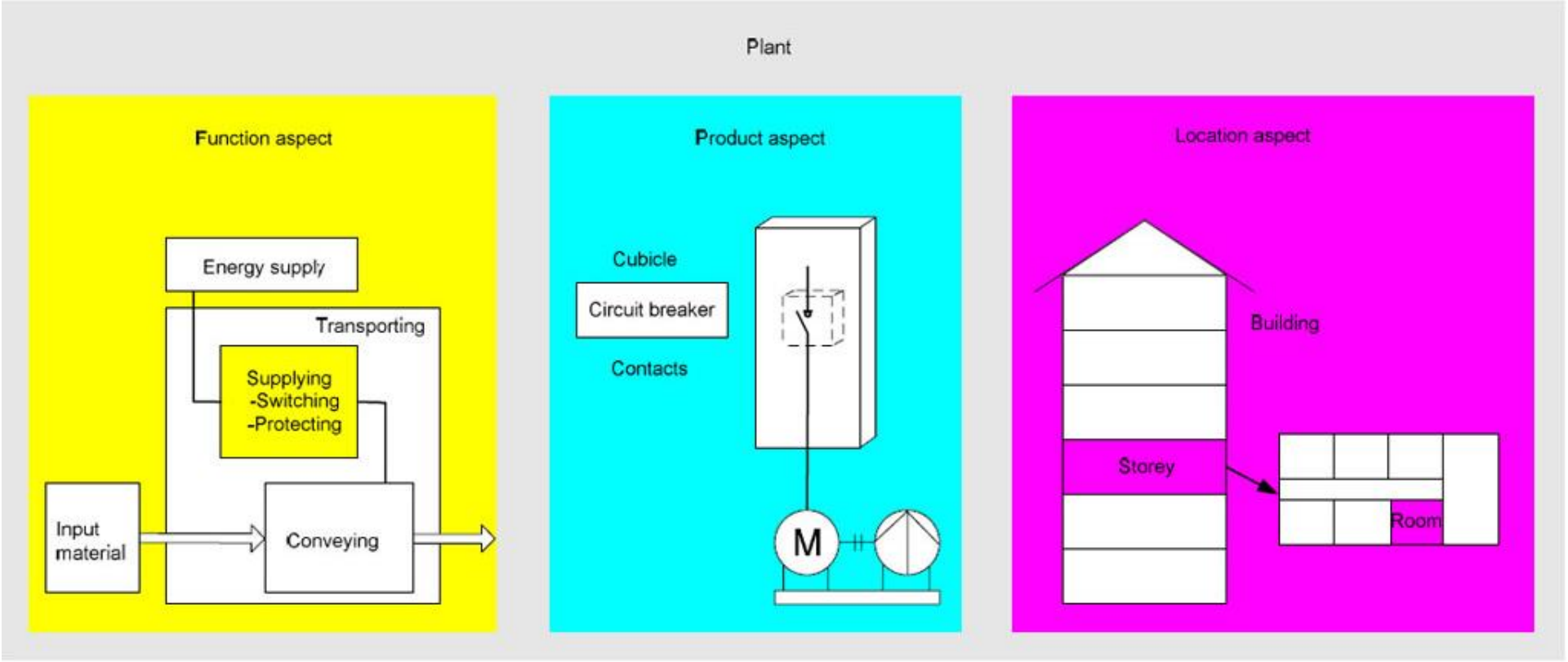

b) The labelling of the objects

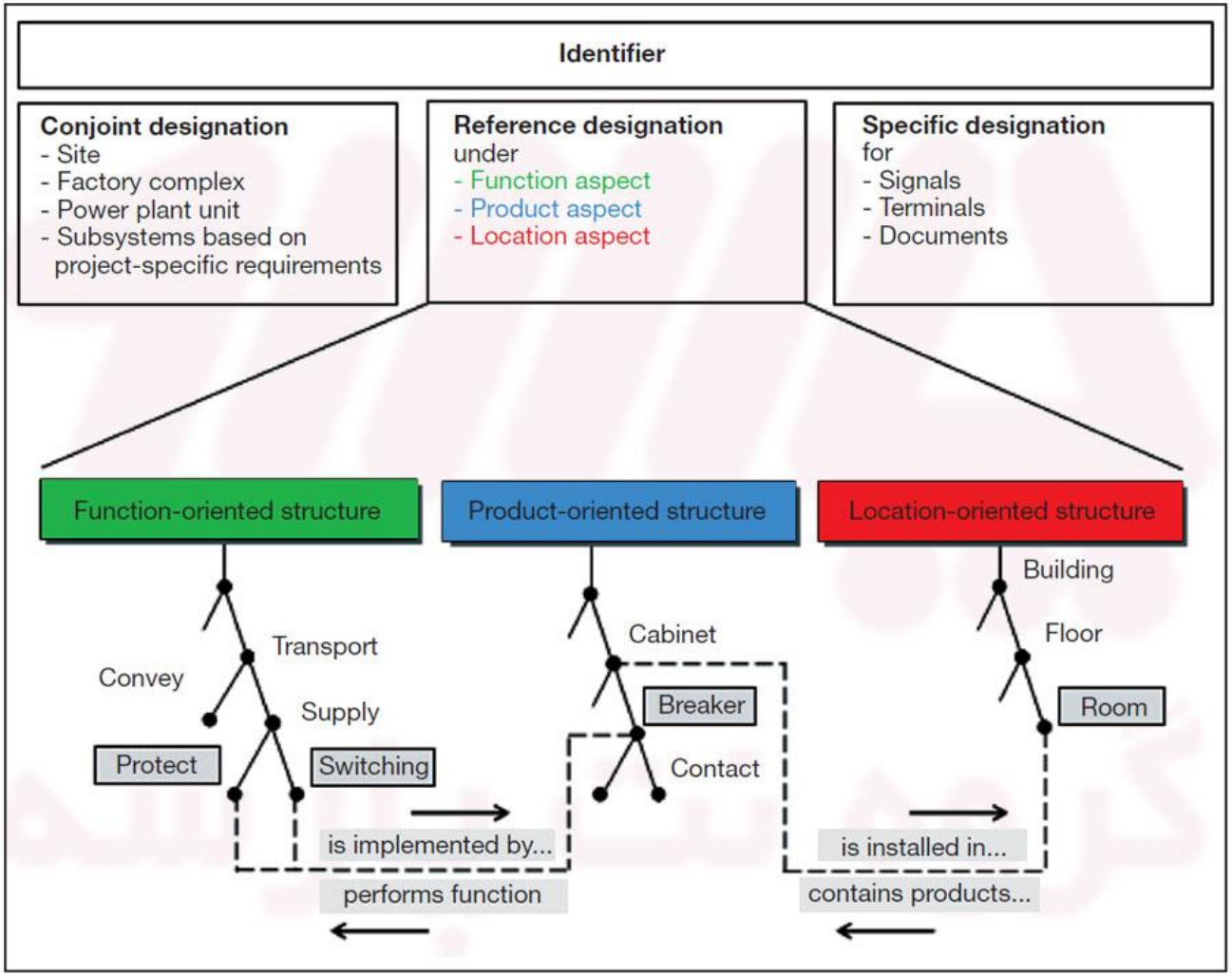
| Object | Reference designations |
|---|---|
| Resistor | +S1+C4 / =A1=R2 / -B3-A3-R1 |
| Operating device | +S1+C4 / =B2=K1 / -B3-A3-K2 |
| Lamp 1 | +S1+C1 / =A1=P1 / -B3-P3 |
| Lamp 2 | +S1+C4 / =P1 / -P8 |
| Page content area | +S1 / =A1 / -B3 |

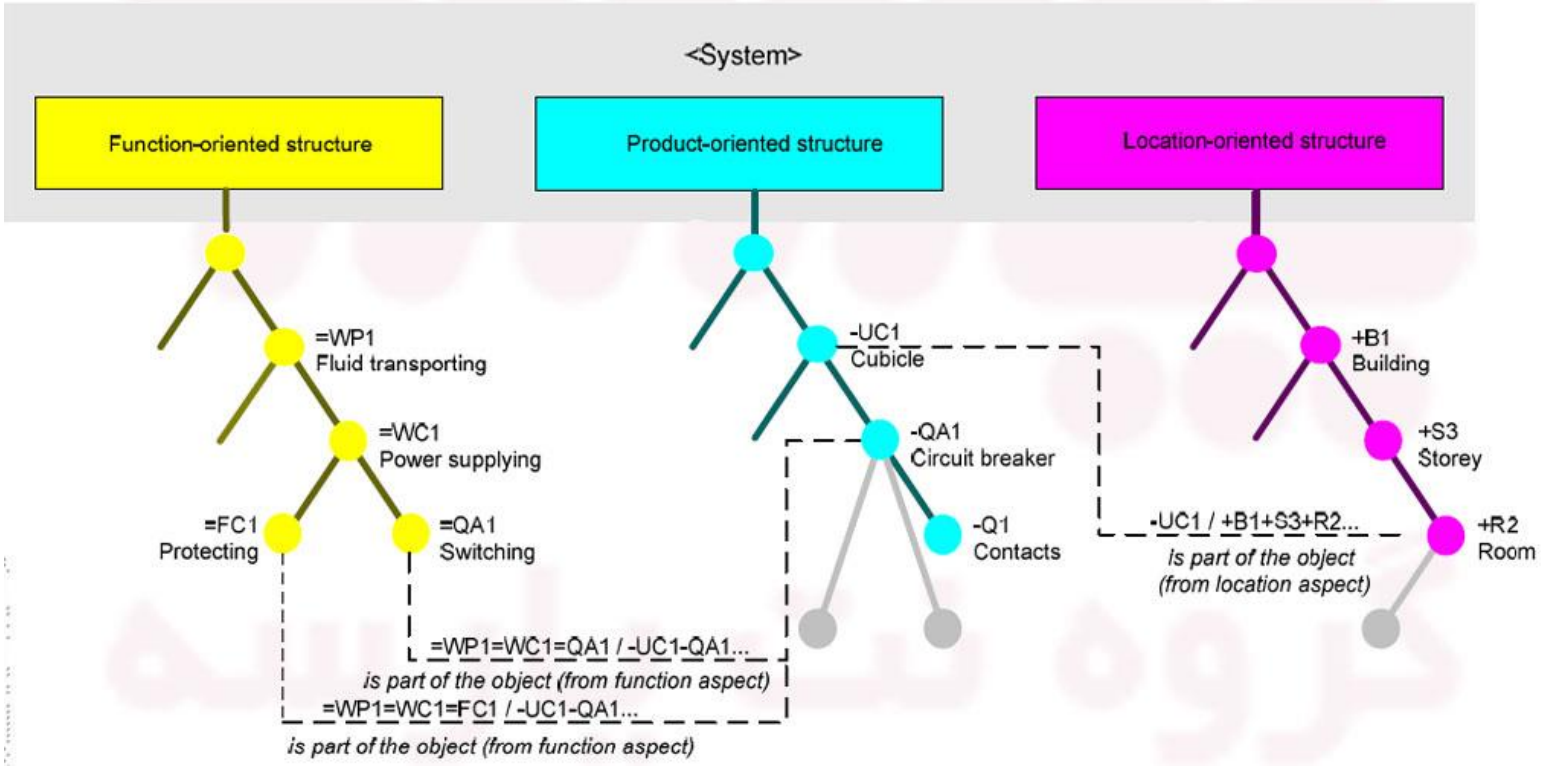


## Function-oriented structure of a system




Plant
Function aspect
Energy supply
Transporting
Supplying
-Switching
-Protecting
Input material
Conveying
Product aspect
Cubicle
Circuit breaker
Contacts
M
Location aspect
Building
Storey
Room

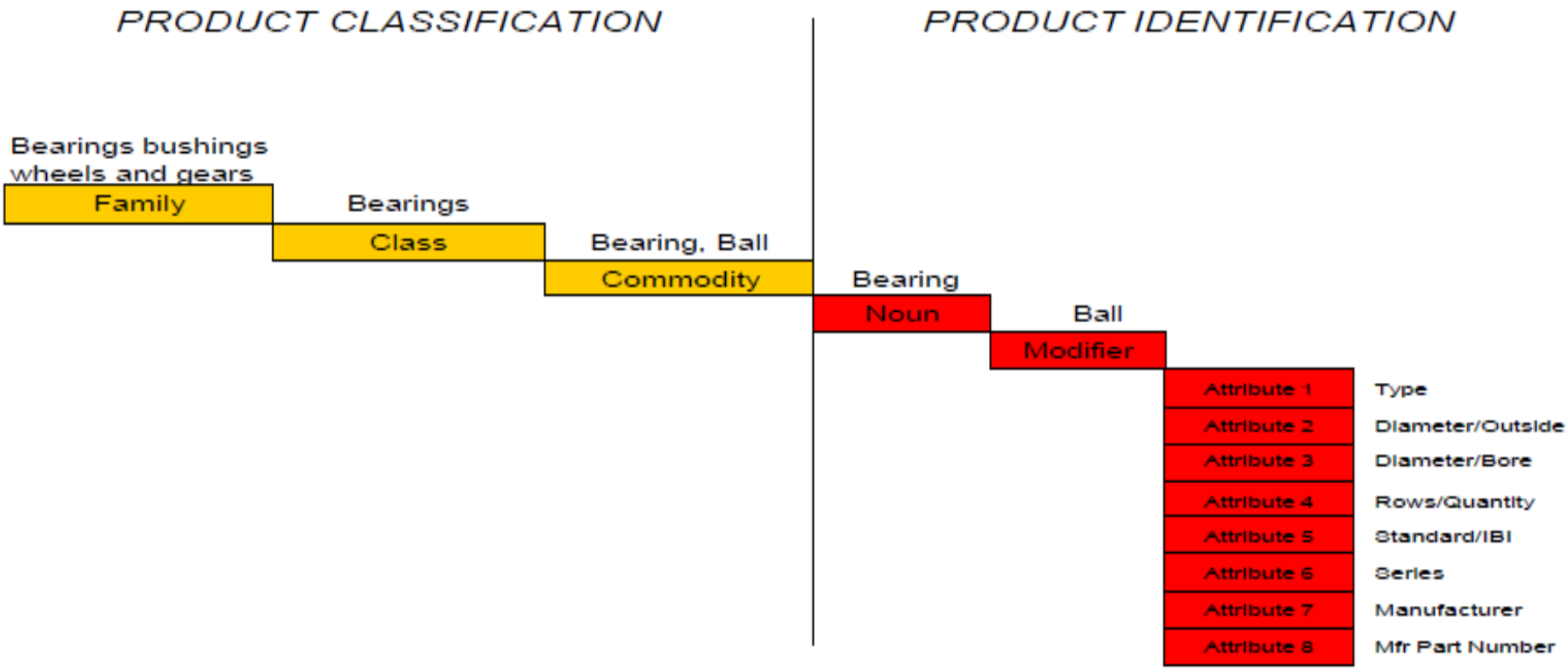

Identifier
Conjoint designation
- Site
- Factory complex
- Power plant unit
- Subsystems based on project-specific requirements
Reference designation
under
- Function aspect
- Product aspect
- Location aspect
Specific designation
for
- Signals
- Terminals
- Documents
Function-oriented structure
Product-oriented structure
Location-oriented structure
Convey
Transport
Supply
Protect
Switching
Cabinet
Breaker
Contact
Building
Floor
Room
is implemented by...
performs function
is installed in...
contains products...






حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

# اکثر روش‌های کدگذاری، طبقه‌های کالاها را کد می‌کنند نه خود کالاها!



## کدینگ قطعات باید فرایند شناسایی قطعات را تسهیل کند نه پیچیده!

حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

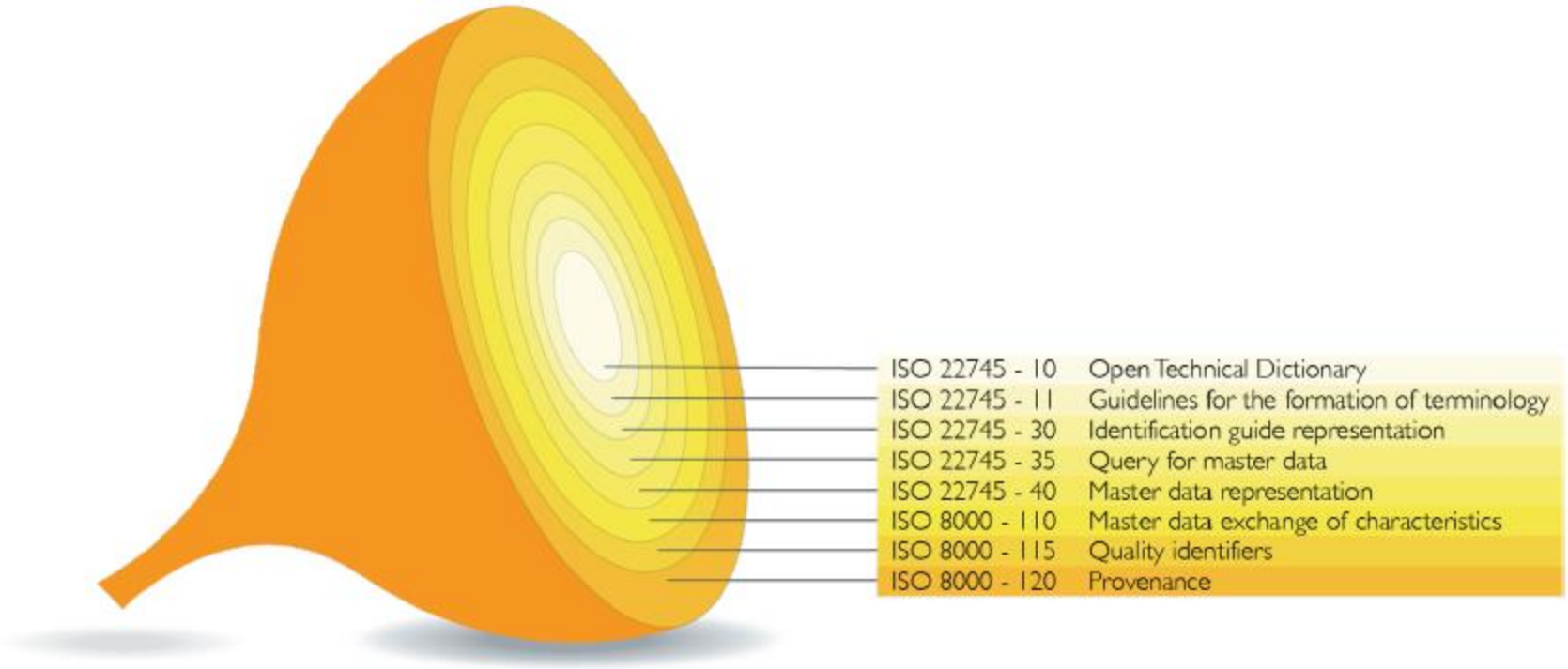
| | |
|---|---|
| Noun | Wheel |
| Modifier | Grinding |
| Type | Toolroom |
| Diameter | 7 Inch |
| Thickness | 1/2 Inch |
| Shape | Straight |
| Arbor Size | 1-1/4 Inch |
| Bond Type | Vitrified |
| Grit Type | Coarse |
| Grit Size | 46 |
| Grade | H |
| Abrasive Material | Aluminum Oxide |
| Speed Rating | 3600 RPM |
| Color | Purple |



حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

# ISO 22745

## *Open technical dictionaries and their application to master data*



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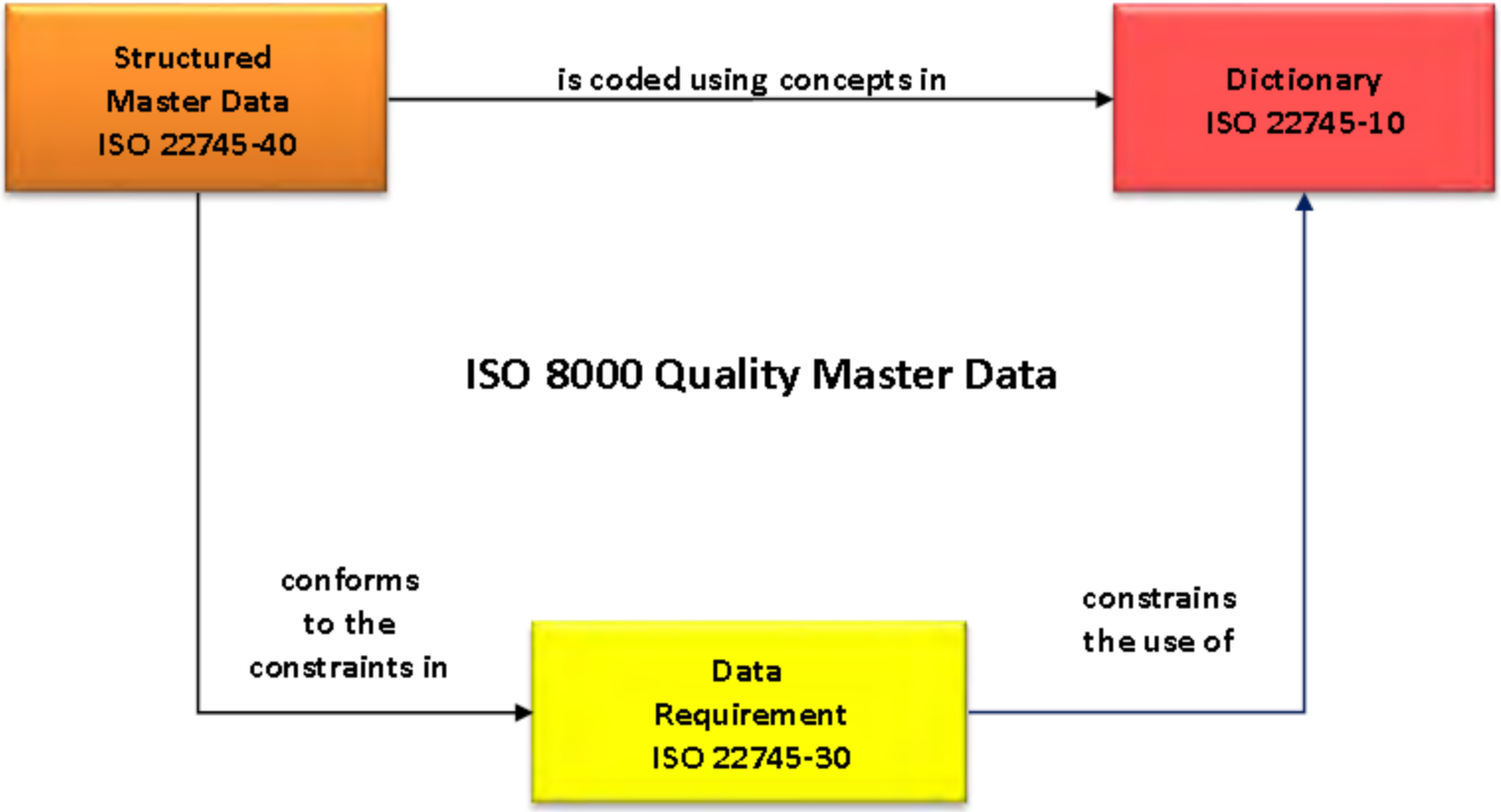
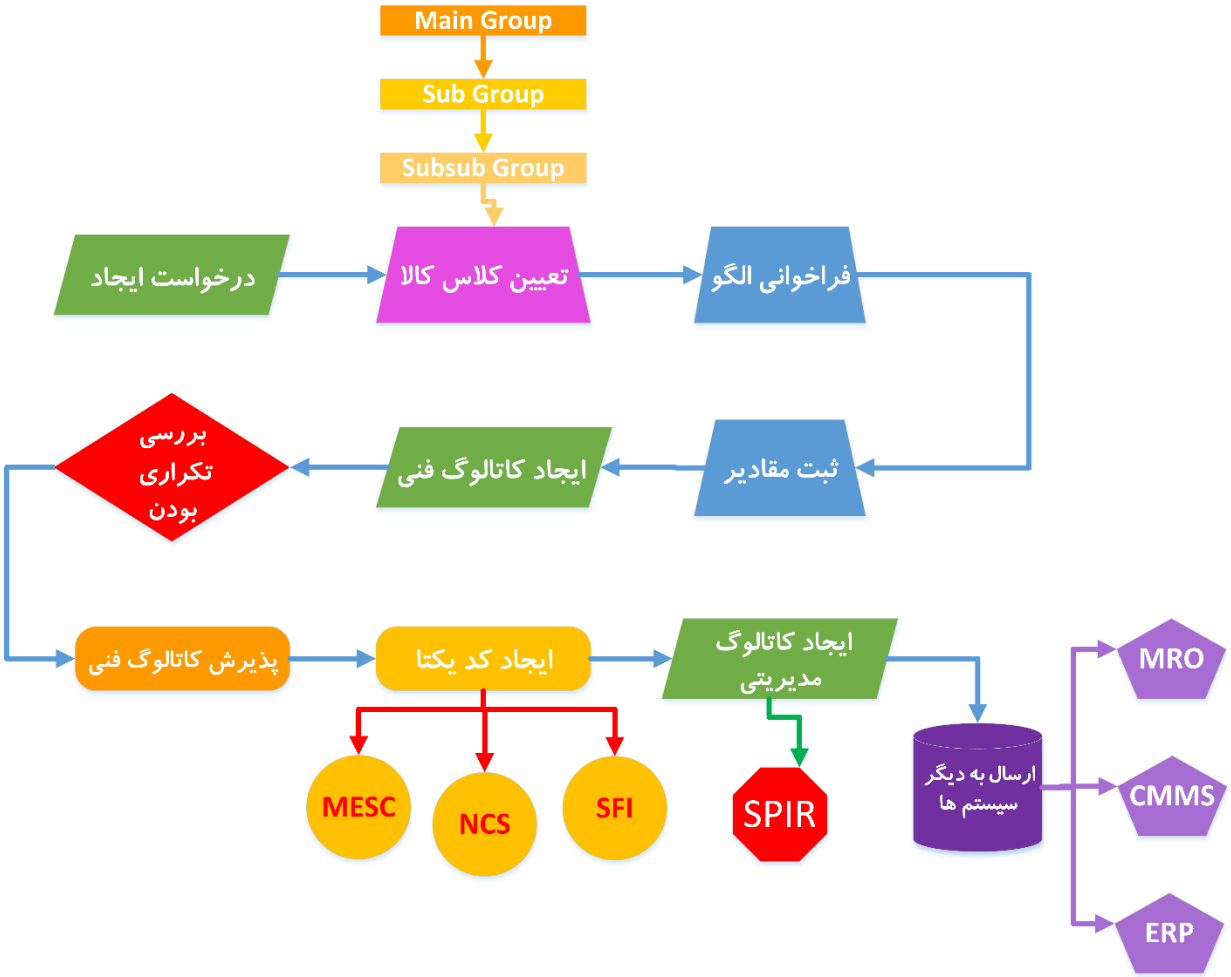





حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲



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# ISO/TS 8000-150:2011

## Data quality — Part 150: Master data: Quality management framework

| | Data Operations | Data Quality Monitoring | Data Quality Improvement |
|---|---|---|---|
| Data Manager | Data Architecture Managment | Data Quality Planning | Data Stewardship/ Flow Management |
| Data Administrator | Data Design | Data Quality Criteria Setup | Data Error Causes Analysis |
| Data Technician | Data Processing | Data Quality Measurement | Data Error Correction |



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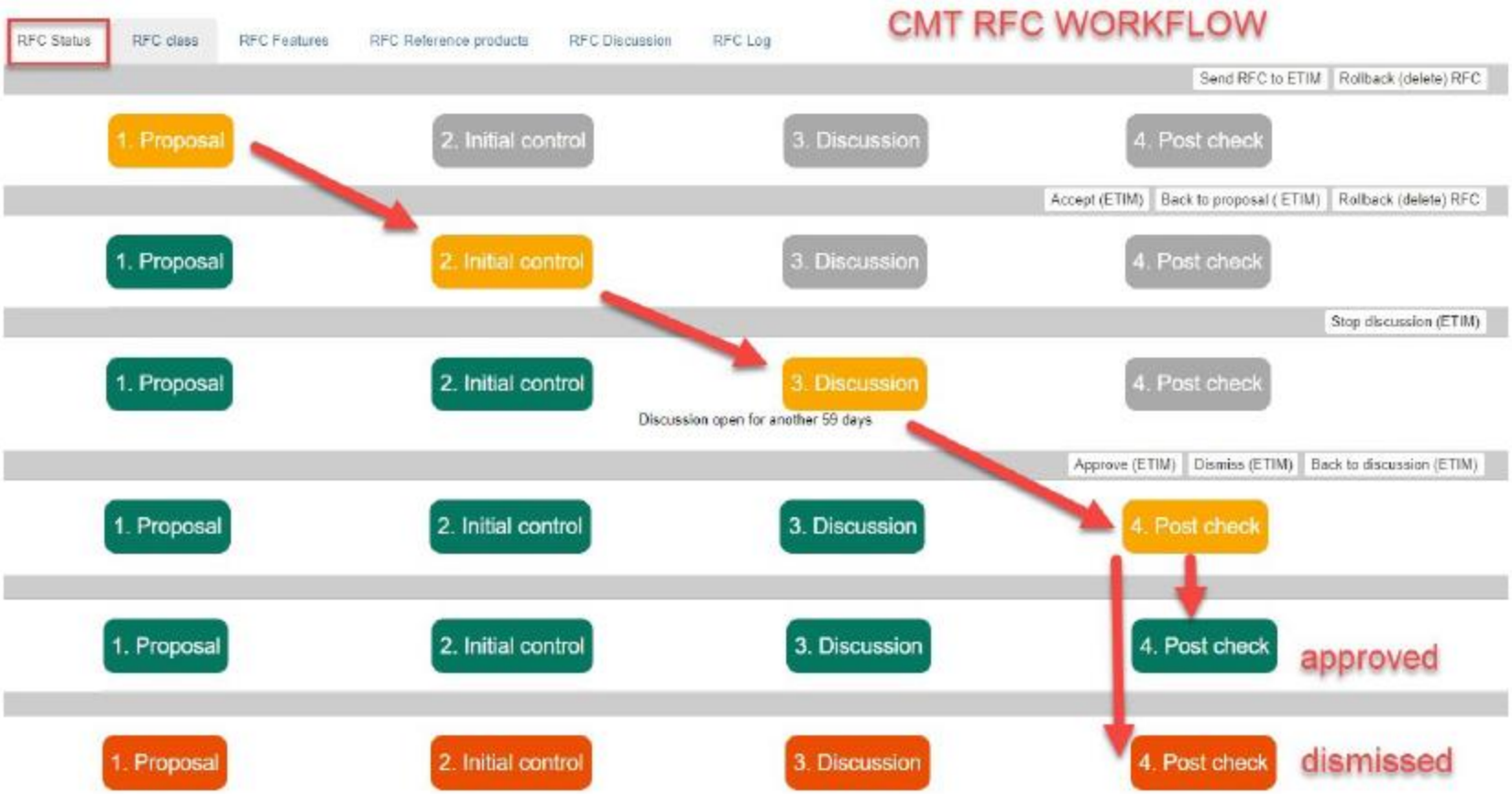





حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

# کیفیت در OTD به چه معناست؟

0.یکتایی (Uniqueness): اطمینان از یکتا بودن کدها و کاتالوگ‌های ایجاد شده

۱.باورپذیری (Provenance): اعتماد به کاتالوگ‌ها وکدهای ایجاد شده به‌واسطه‌ی شفاف بودن منبع و رویه‌های استفاده شده در ایجاد آن

۲.صحت (Accuracy): انعکاس درست از کلا در کد و شرح کالای ایجادشده

۳.کامل‌بودن (Completeness): کامل بودن اطلاعات جهت خرید، تأمین کالا و استفاده از کالا



حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲

## خروجی OTD یک کد کاملاً یکتا، یک شرح کالای استاندارد و شفاف و یک کاتالوگ باکیفیت است.

| | |
|---|---|
| کد کالا | 0395/0001 |
| عنوان فارسی | شیر، شیر دروازه ای(گیت ولو): بدون اکچواتور، کربن استیل، CF8، مکانیزم=فلکه ای، استاندارد طراحی و ساخت=DIN 3352-B16.34، کاربرد=عمومی، نحوه اتصال=فلنجی، سایز اتصال شیر=2in، سایز شیر=39x29Cm؛ شماره قطعه والد=12345، لوازم یدکی کالا با کد (0023/0001) |
| عنوان انگلیسی | Valve, Gate: without actuator, Carbon Steel, CF8, Mechanism=square, Design and construction standard=DIN 3352-B16.34, Application=General Use, Connection type=Flanged, Connection size=2in, Valve size=39x29Cm; Parent Part No.=12345, Spare Part of (0023/0001) |
| نام کوتاه | GT VLV without actuator CF8 39x29Cm |
| قسمت | پایپینگ صنعتی |
| گروه اصلی | اتصالات فلزی و پلاستیکی |
| گروه فرعی | شیر دروازه ای |

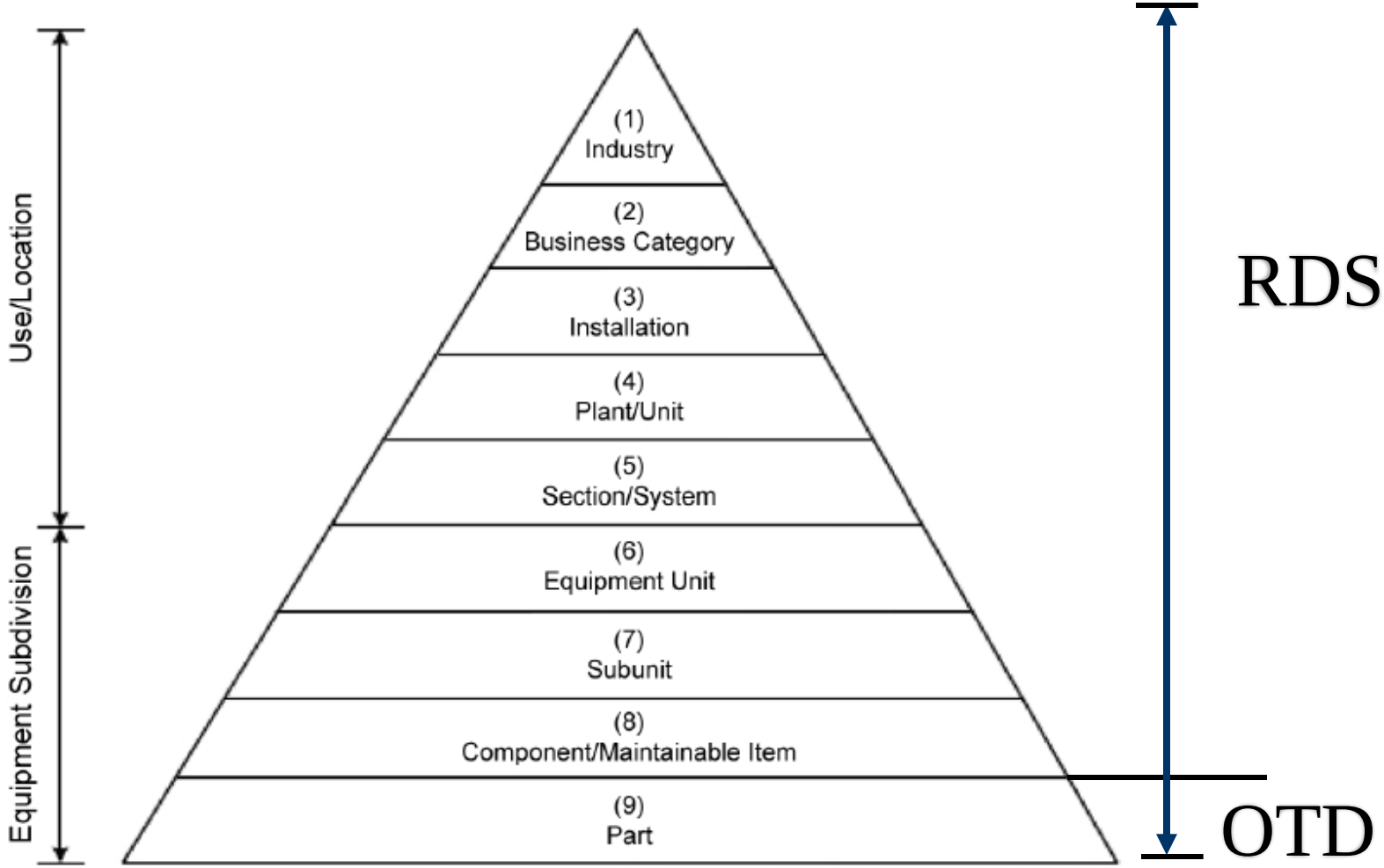
### مشخصات فنی

| | | |
|---|---|---|
| نوع | بدون اکچواتور | |
| مکانیزم | فلکه ای | |
| استاندارد طراحی و ساخت | DIN 3352-B16.34 | |
| کاربرد | عمومی | |
| جنس | کربن استیل | |
| گرید | CF8 | |
| نحوه اتصال | فلنجی | |
| سایز اتصال شیر | 2 | in |
| سایز شیر | 39x29 | Cm |

0395/0001

شیر، شیر دروازه ای(گیت ولو): بدون اکچواتور، کربن استیل، 8CF، مکانیزم=فلکه ای، استاندارد طراحی و ساخت=16.34DIN 3352-B، کاربرد=عمومی، نحوه اتصال=فلنجی، سایز اتصال شیر=in2، سایز شیر=x29Cm39؛ شماره قطعه والد=12345، لوازم یدکی کالا با کد (0023/0001)

حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲






حمید درخشان، متخصص اطلاعات دارایی‌ها، ۰۹۰۲۲۰۹۹۲۰۲