CADENAS

PARTsolutions

6 Opportunities to Kick your Engineering into High Gear

Report for Industrial Companies, Engineers & Purchasers

We asked
128,000
Engineers &
Designers
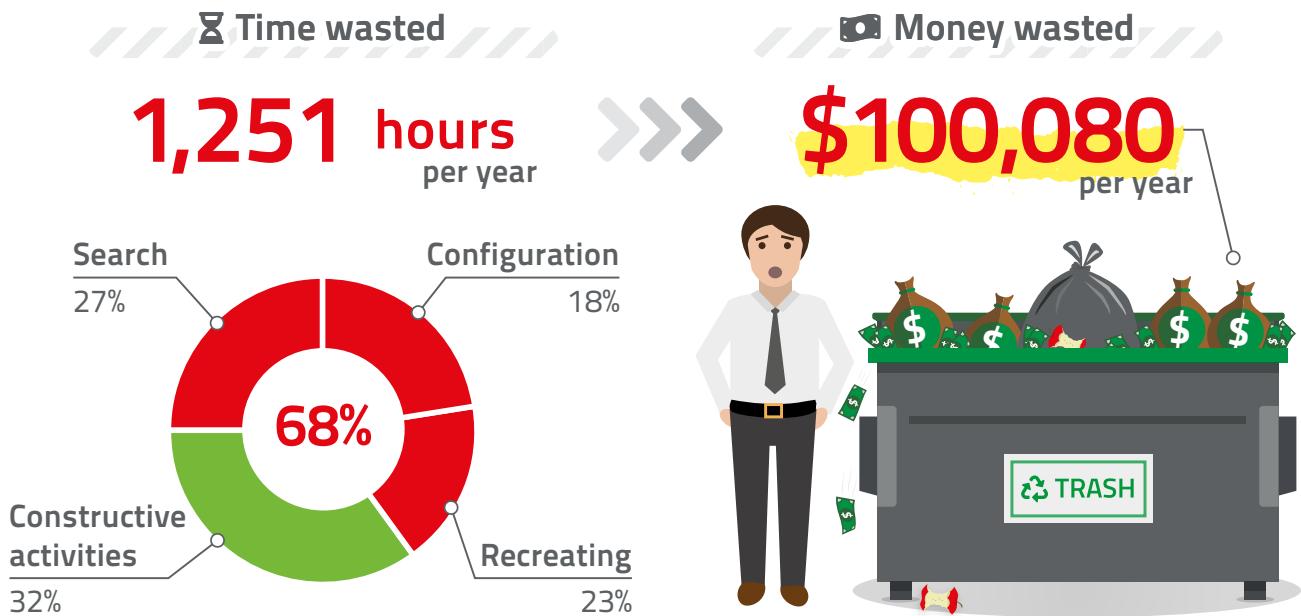
Want a well-oiled engineering machine, but **YOU'RE STUCK IN FIRST GEAR?**

Find the gap in your engineering process!

Engineers in today's environment are faced with countless challenges. Shorter production times coupled with an increasing demand for unique solutions multiply the workload for engineers. To exacerbate the situation, engineers are constantly under pressure to cut costs in the design process.

At the same time **engineers waste on average 68% of their time** searching, configuring and unnecessarily recreating new components. This adds up to thousands of work hours a year wasted on non-constructive activities that have no monetary value. On top of that, each newly created component carries an expense of its own.

⌛ Time wasted

1,251 hours
per year

Search
27%

Configuration
18%

68%

Constructive activities
32%

Recreating
23%

📷 Money wasted

$100,080
per year

♻ TRASH

Calculation based on: 8 hours/day | 230 days/year | $80 cost/hour

A Survey among 128,000 Engineers & Designers

Don't know where to start? We asked over 128,000 engineers & designers worldwide about their day-to-day work problems. Some of these challenges may sound familiar. **The following pages reveal** the challenges engineers face in today's environment and **recommendations for solving theses complex issues.**

48% of engineers spend at least one hour per day searching for standard or supplier parts

Searching for information becomes more and more difficult and time consuming for engineers and purchasers. Poor internal search tools and a lack of high-quality supplier catalogs lead to wasted engineering effort.

Reasons for high search effort

- Quality of the company's parts master data is insufficient and unclassified

- The company has to cope with numerous systems (multiple CAD, PLM, ERP etc.)

- Multiple company locations must work together

- Parts master data has been created in different languages

- Business processes are complicated and inconsistent

How much time per day do you spend on average searching for standard or supplier parts?

Time	Percentage
30 min	52.3 %
1 hour	31.9 %
2 hours	12 %
3 hours	3.8 %
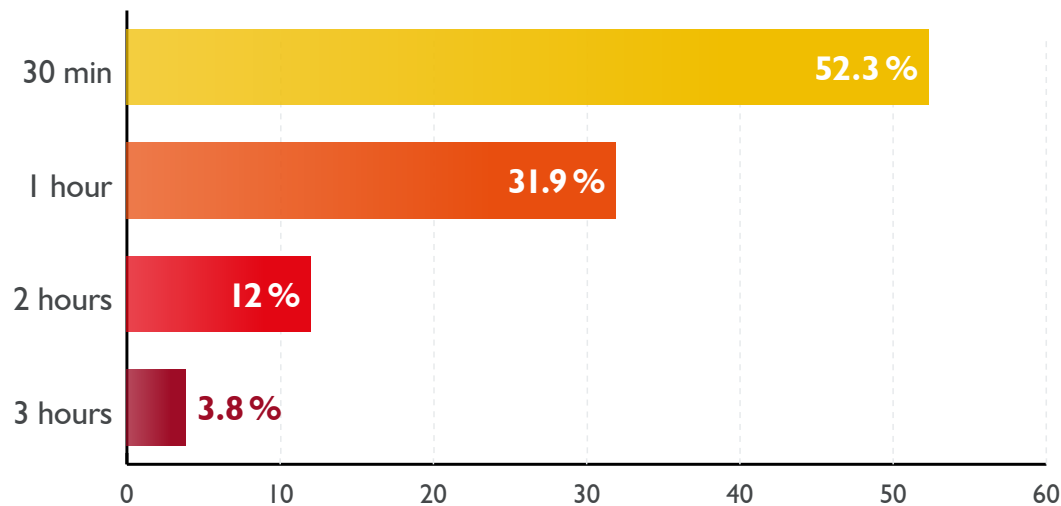
83%
of engineers spend time recreating parts that are readily available online

Shouldn't engineers spend time on innovation rather than reinventing the wheel?

By recreating CAD models of commercial off-the-shelf parts (COTS), engineers spend time manually recreating CAD representations which already exist. This adds little value to the end design while opening the door for costly errors and re-work.

When engineers need CAD models to test fit a COTS part within their design, they should be sourced directly from the manufacturer to ensure accuracy. A parts management system with manufacturer verified CAD catalogs embedded into the CAD & PLM environment reduces work for all involved parties and ensures accurate parts master data.

Do you ever manually recreate supplier parts in your CAD application?

16.9 %

83.1 %

16.9% No

83.1% Yes
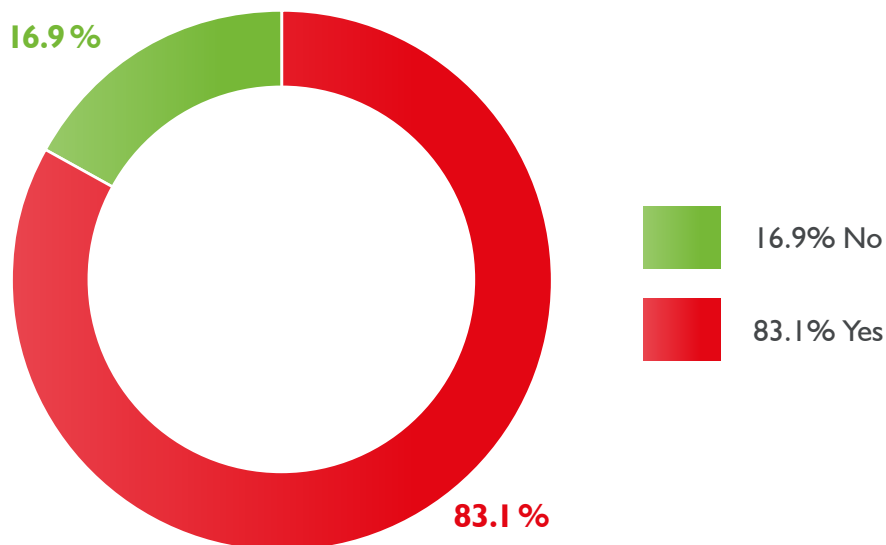
40% of engineers spend at least one hour per day recreating standard or supplier parts

Most supplier part models are readily available, but they sometimes are difficult to find, or lack the data engineers require. Choosing to create a new CAD model of a supplier part instead of searching for an existing one often feels like a shortcut to engineers. However, it increases work downstream and adds significant costs throughout the product life-cycle.

By painstakingly recreating a 3D representation of a purchased component for their design, an engineer is adding layers of inefficiency into the engineering process. Instead of concentrating on the development of innovative products, engineers are often spending valuable time entering part master data.

But why do so many engineers skip the search?

Engineers often have insufficient search tools and capabilities, which makes the process very time consuming. Extensive search functions integrated into existing CAD, PLM and ERP systems help engineers find supplier parts, standard parts, and company parts in their internal and external part databases. Engineers and purchasers need search tools unique to their challenges that help them find needed components in an intelligent way, saving engineering time and reducing costs throughout the product life-cycle.

How much time do you spend, on average per day, recreating standard or supplier parts?

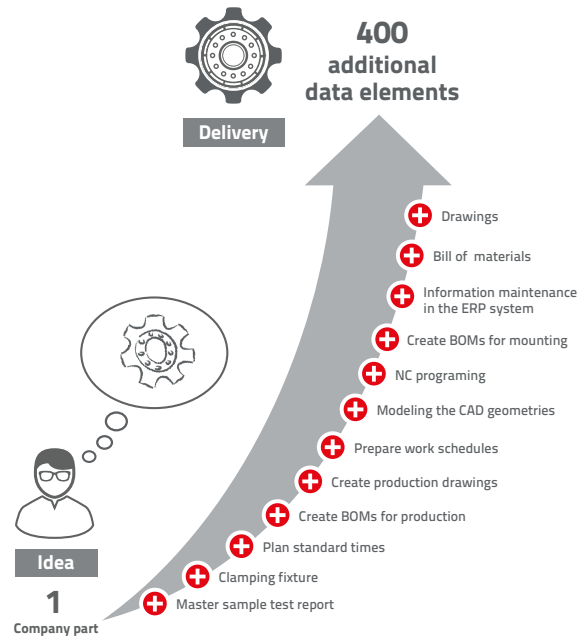|	
30 min	59.9 %
1 hour	23.7 %
2 hours	9.7 %
3 hours	6.7 %
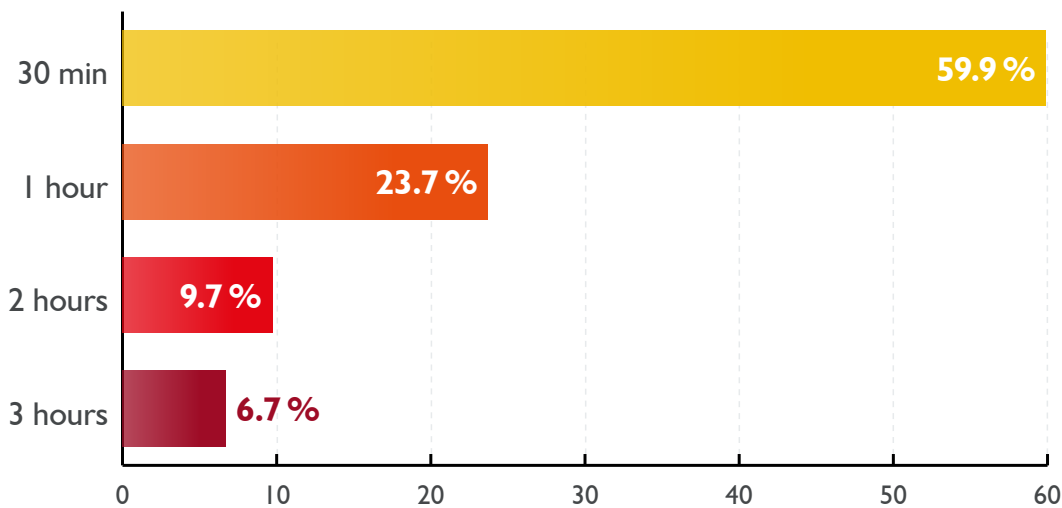
DID YOU KNOW?

Why is a newly created self-designed part so expensive?

A survey conducted by Rolls-Royce shows that every additional self-designed part requires 400 additional data elements, processes and parts. The expenses for every new component are accordingly high.
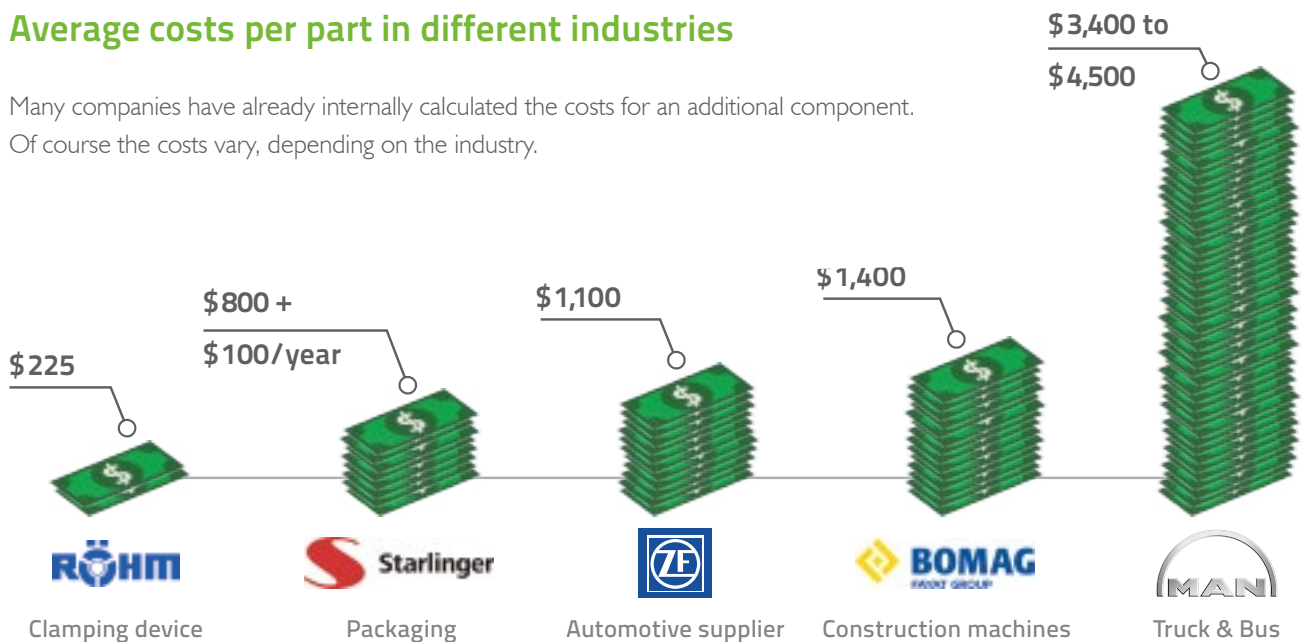
Consequences of unnecessary re-designs

- 2D production drawings are not available and have to be created

- CAM programing has to be created for later production

- Master data files and work plans have to be created in ERP & PLM which is very time consuming and expensive

Delivery

400 additional data elements

- Drawings
- Bill of materials
- Information maintenance in the ERP system
- Create BOMs for mounting
- NC programing
- Modeling the CAD geometries
- Prepare work schedules
- Create production drawings
- Create BOMs for production
- Plan standard times
- Clamping fixture
- Master sample test report

Idea

1 Company part

Average costs per part in different industries

Many companies have already internally calculated the costs for an additional component. Of course the costs vary, depending on the industry.

$225 — RÖHM — Clamping device

$800 + $100/year — Starlinger — Packaging

$1,100 — ZF — Automotive supplier

$1,400 — BOMAG FAYAT GROUP — Construction machines

$3,400 to $4,500 — MAN — Truck & Bus

48% engineering departments work in a Multi CAD environment

Most engineering teams build their strategy upon the CAD tools which work best for their products and their audience. When teams grow plans often change and all of the sudden, a team has two or more CAD systems in use.

## Reasons for Multi CAD environment

- Due to mergers and acquisitions with other companies, further CAD systems are introduced into the organization

- Conscious decision to support different processes in the best possible way (e.g.: mechanical design, electronic design …)

- Customer specifications make the use of certain CAD systems mandatory

Difficulties due to Multi CAD in the daily design work routine

Most designers have long ago accepted a productivity loss due to lacking CAD interoperability. This increases the likelihood for recreating existing CAD models in different CAD formats, causing multiple problems for the user as and the company:

- Every CAD system has its own separate data pool, causing unnecessary additional maintenance effort

- Several autonomous CAD data pools result in redundant parts creation and parts being procured
  several times in different ways, which leads to higher procurement and storage costs

Does your company work within a single CAD system or multiple systems?

47.8 %

52.2 %

- 52.2% Single CAD
- 47.8% Multi CAD
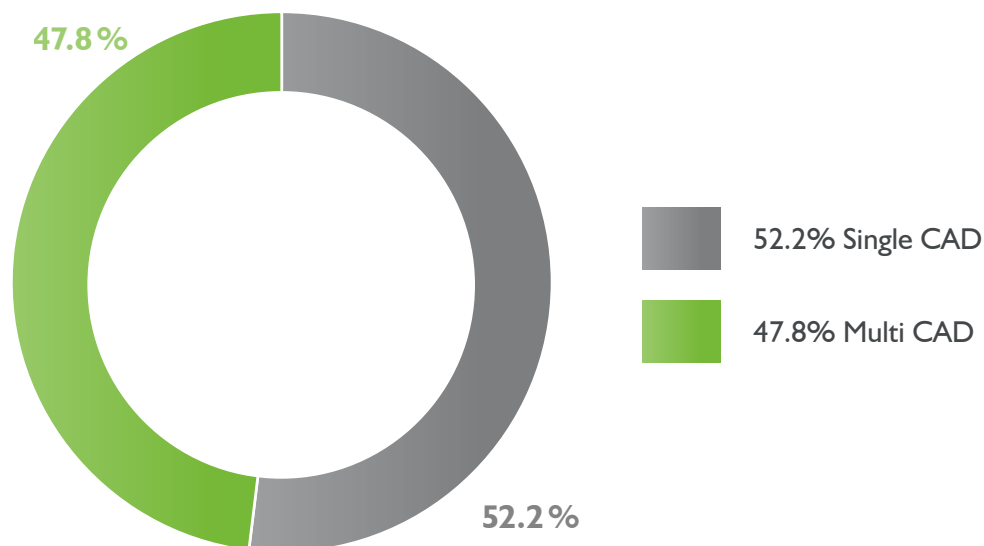
DID YOU KNOW?

STEP data is not enough when using multiple CAD systems

Because CAD systems read and write in different formats, data transfer both internally as well as with external partners and customers is necessary. The exchange process primarily targets the geometric information of the CAD data, but also other aspects such as meta data, knowledge, manufacturing information, tolerances, and assembly structure. If engineers are not using native formats for design work, some design functions and essential data are lost. This loss of data creates non-value-added work and can cause costly downstream errors.
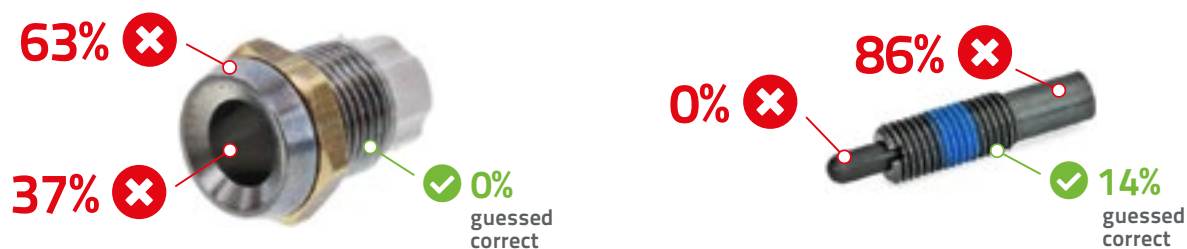
Threads are left up to guess work with STEP files

We showed engineers a simple STEP file and asked them to locate the thread. Very few of them were able to get it right.

We asked engineers: Can you guess where the thread is?

The result: Most engineers guessed wrong!

63% ✖
37% ✖
✔ **0%** guessed correct

86% ✖
0% ✖
✔ **14%** guessed correct

Why STEP does not support Multi CAD environments

- Carries problems for interdisciplinary teams. STEP is good for easy exchange but information missing e.g. threads

- Frustration when importing STEP files due to incompatibility

- The generated BOM does not include purchase information such as order number or supplier

- Costly errors can occur due to missing engineering data

- Center of mass cannot be determined correctly

72% of companies work with part libraries that contain duplicates or obsolete parts

Engineering libraries are not only a repository for approved, current components for engineers to find and deploy into their designs. These internal libraries also serve as an archive where outdated and obsolete components accumulate. Correct, current, consistent, complete and redundancy-free data are the key to success. The sad reality is few companies have clean master data.

As engineers source parts for their designs, they often add various CAD formats to their CAD library with little master data, and on-standard naming conventions. This activity causes the part count to grow exponentially with each engineer added to the team, they add components and rarely review or remove duplicate or obsolete parts.

The consequences of chaotic master data are:

■ Already existing parts can't be found and will be created once more, which increases an engineer's administrative tasks

■ Procurement places several separate orders, instead of bundling orders to get lower purchase prices

■ Engineers develop new products with outdated parts that can no longer be purchased or will become obsolete

■ Duplicates not only cause clutter, but also confusion and delays when an incorrect version is selected

Eliminating the introduction of duplicate parts is an excellent way to reduce costs across the product life cycle. When you truly have to create new components, parts management system puts you in the drivers seat by enabling your team to transfer the correct part information in the right CAD format from your PLM system, your ERP system and from hundreds of manufacturer verified catalogs.

Does your internal part library contain duplicate or obsolete parts?

27.7 %

72.3 %

27.7% No

72.3% Yes
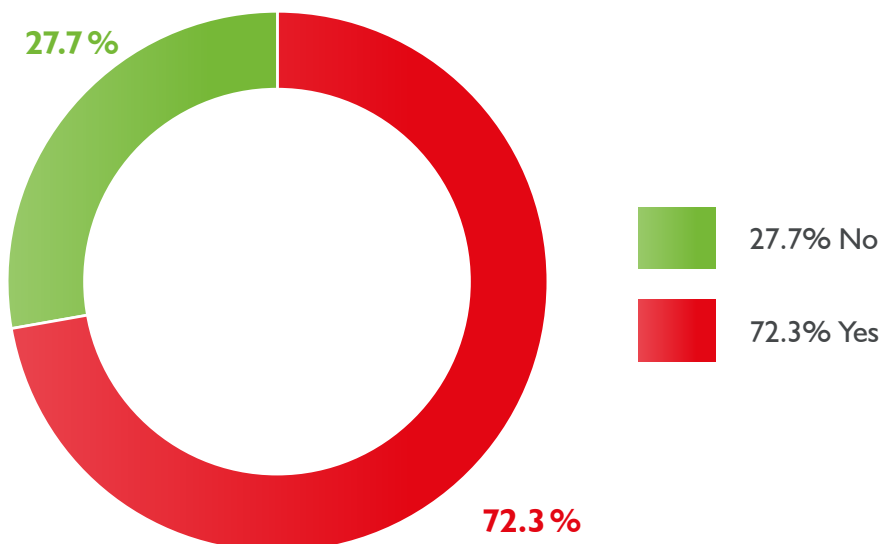
84% engineers believe having a centralized location for supplier parts would save time

Eighty-four percent of engineers surveyed believe having a centralized location for supplier parts would save time, and only one percent disagree or strongly disagree. With multi-CAD and varying data storage ecosystems, it's hard for engineers to find what they need quickly.

Giving engineers an easy way to locate CAD data from suppliers in one location saves time, cuts costs, and reduces redundant work downstream from engineering.

With a Strategic Parts Management system, all relevant information from different systems can be merged onto one platform.

Having my supplier parts organized at one central location would save time.

Strongly agree	46.6 %
Agree	38 %
Neutral	14.4 %
Disagree	0.7 %
Strongly Disagree	0.4 %
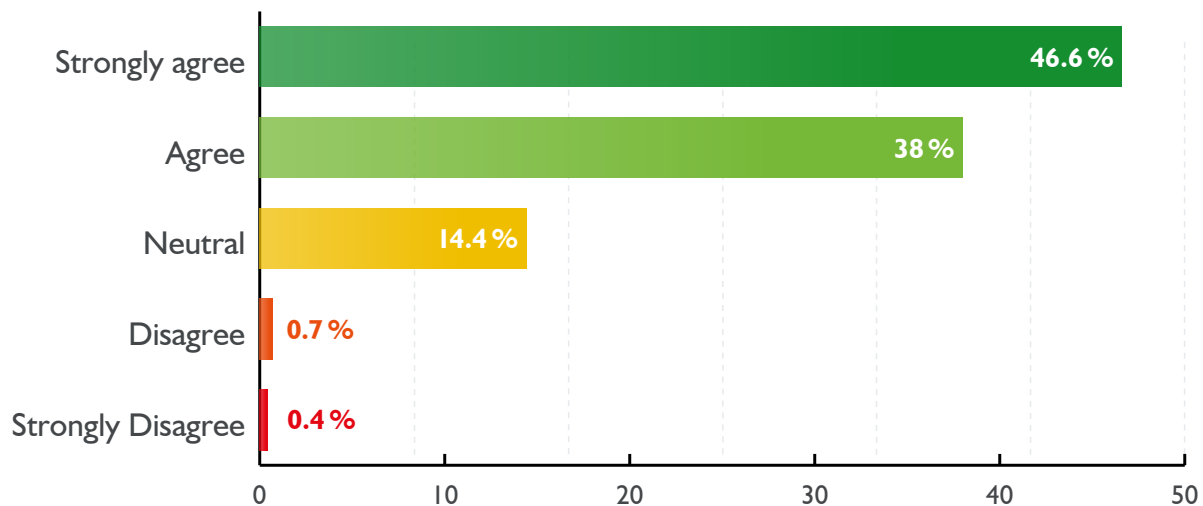
Take Control of Your Digital Parts Master Data & Speed up Your Design

How to turn your engineering department into a well oiled machine

PARTsolutions Strategic Parts Management software makes it easy for engineers to find and reuse CAD models and data from your internal databases and from suppliers in one place. Gain access to trillions of parts from hundreds of manufacturers directly in your CAD and PLM system.

Reuse CAD Data by enabling engineers to find and deploy approved parts instead of searching or recreating them.

Eliminate the use of duplicates, erroneous and obsolete parts that are slowing your engineers down.

Give access to **manufacturer verified catalogs** & CAD content.

Enable your purchasing department to **identify duplicates & consolidate purchasing** using pricing data from ERP.

Give engineers the **ability to search & find parts** their way, using shape, topology, a sketch, full-text or dimensions

Unify and link **CAD, PLM, and ERP systems** to create an ecosystem powered by rich data.

Need support to kick your engineering machine into high gear? Get a demo!

CADENAS helps engineers, designers and purchasers to manage and find company parts, supplier parts, and standard parts by implementing a strategic parts management system. Learn how you can benefit from centralized parts management.

Rank
#1

CADENAS unites

manufacturers & suppliers
of components
with the industry!

eCATALOGsolutions

CADENAS solutions for
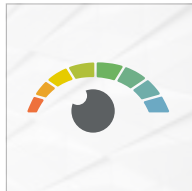**manufacturers & suppliers** of components

Electronic Product Catalog

The software solution to create
and promote Electronic CAD
Product Catalogs.

BIMcatalogs.net

Technologies and Know-hows of the
Electronic Product Catalog for the
architectural sector.

3DfindIT.com

Next Dimension Visual Search Engine
for 3D manufacturer components

PARTsolutions

CADENAS solutions for
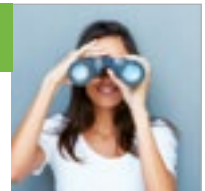**industrial buyers** of components

Strategic Parts Management

Sustainable cost reduction of
standard, supplier and company
parts for engineers and purchasers.

Geometric Similarity Search

Find available CAD geometries
in a smart way and classify
them semi-automatically.

CADENAS
Setting Standards

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