

MOBILITIES, TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT

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Today's topics

- **Mobilities (German Experience)**

Macro-Environment of Mobility



The Meaning of Digital Transformation

Experts identify four types of digital transformation:

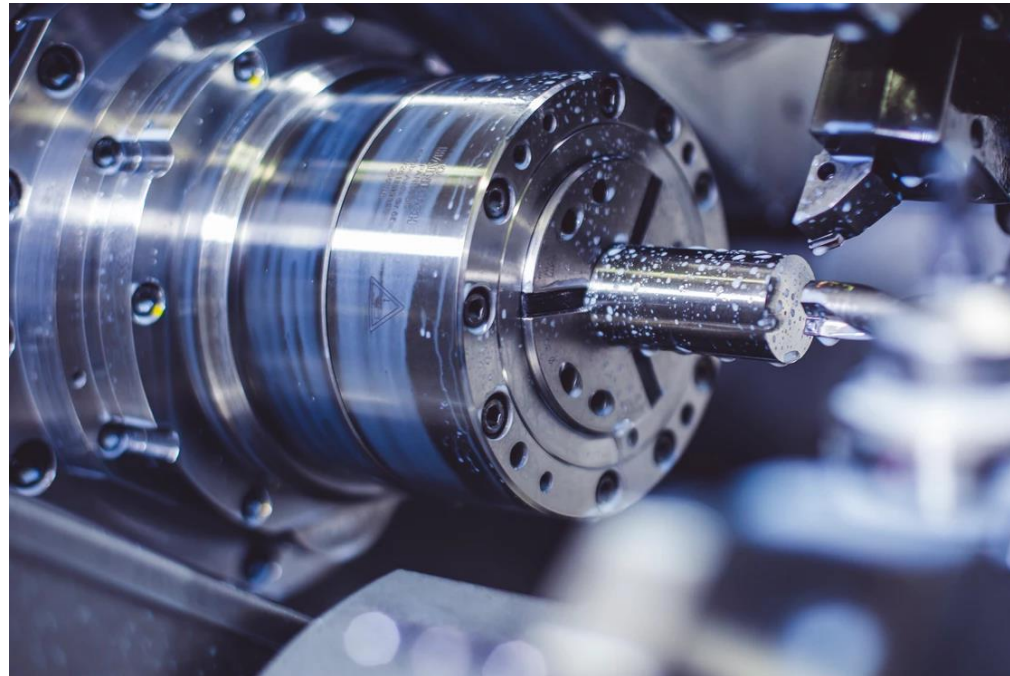
- business process,
- business model,
- domain,
- cultural/organizational.



- The collaboration follows the global OEM wave of abandoning the internal combustion engine for savvier alternatives that combine technology and electric options.

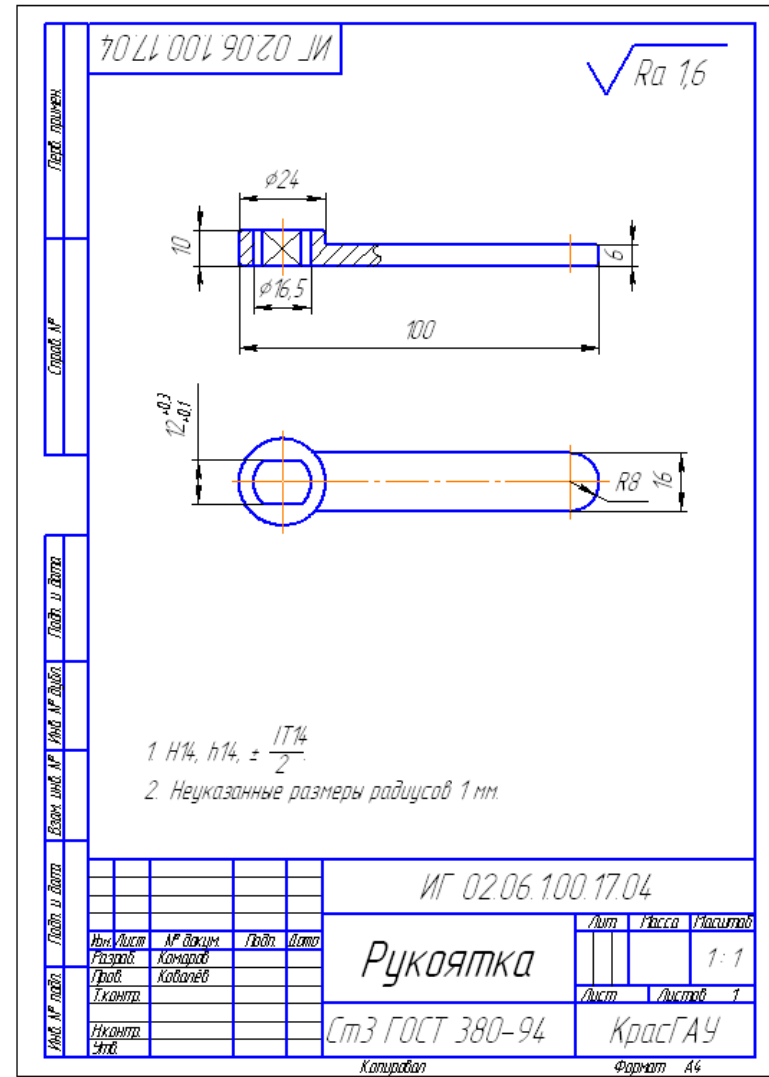
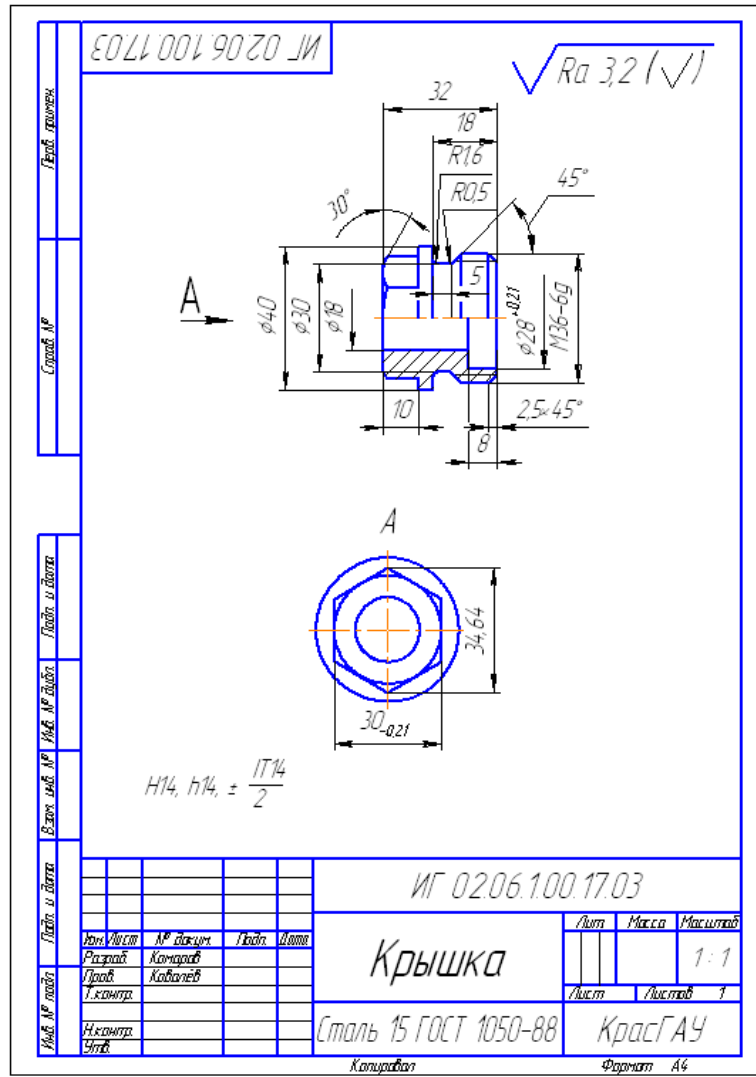
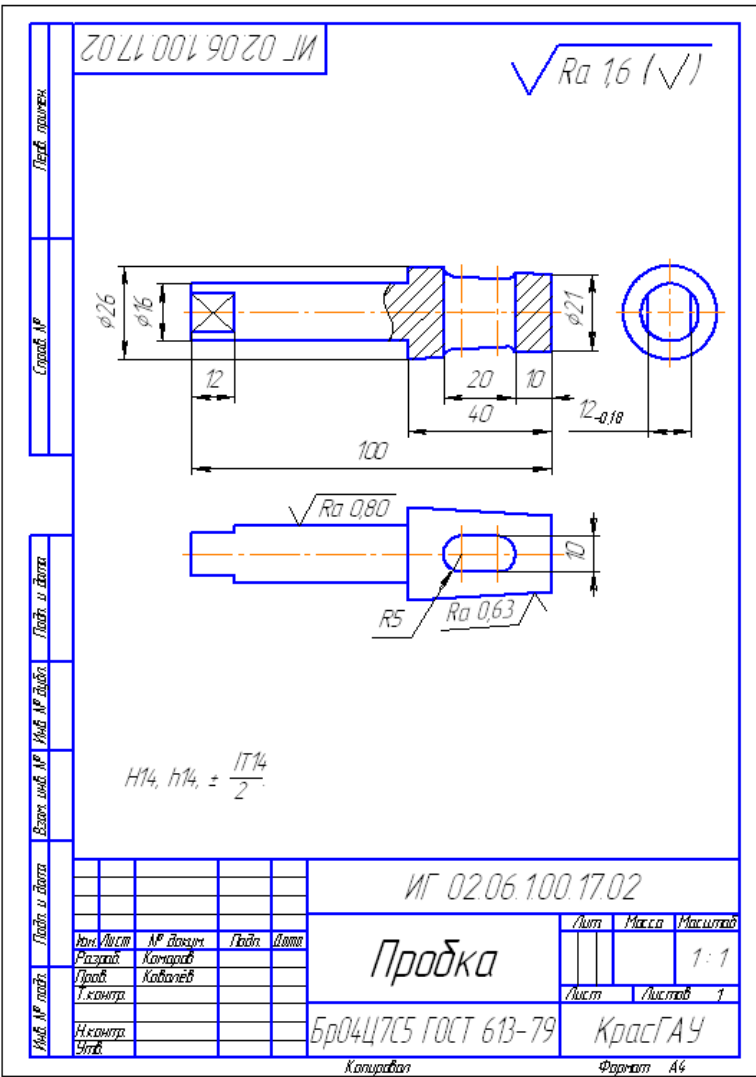
CAD-CAE-CAM

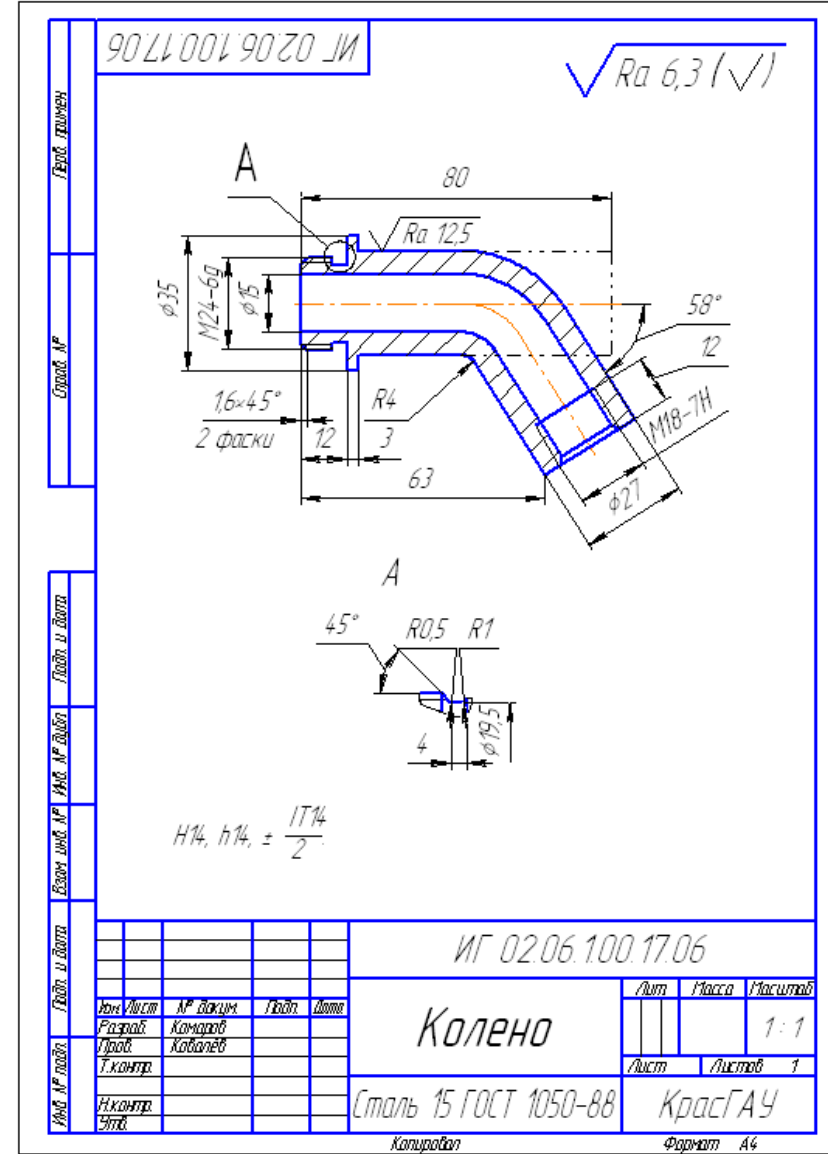
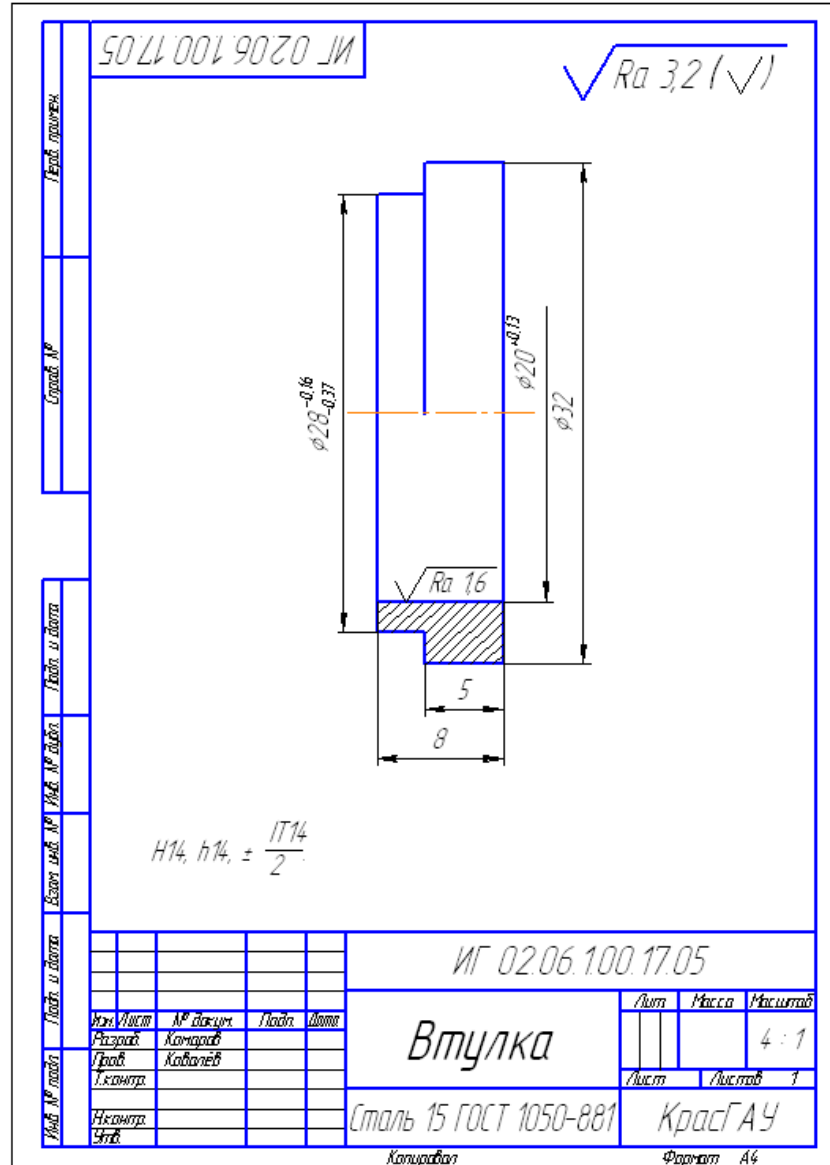
In Germany, globalization in combination with technological development has led to new competition for the established original equipment manufacturers (OEMs).



Drawing board (Кульман)







CAD (Computer Aided Design)

The image displays the SolidWorks CAD interface. On the left, the software's ribbon and feature tree are visible. The feature tree lists the following features: Part2 (Default <<Default>_Displa), History, Sensors, Annotations, Material <not specified>, Front Plane, Top Plane, Right Plane, Origin, Sweep-Thin1, Boss-Extrude1, Fillet1, Boss-Extrude2, Cut-Extrude1, Cut-Extrude2, CirPattern1, Cut-Extrude3, Cut-Extrude4, CirPattern4, and Chamfer1. The main workspace shows a 3D perspective view of a pipe elbow with two flange ends. To the right, technical drawings are shown, including a front view, a section view labeled 'SECTION A-A', and a top view. The front view shows a square flange with a central hole and four corner holes, with dimensions 360, 260, 50, and 4-R20. The section view shows the pipe elbow with dimensions 150, 50, R260, C10, Ø210, and Ø290. The top view shows the flange with dimensions 360, 260, 50, and 4-R20. The section view also shows dimensions 10, 4x2-Ø60, 4x2-Ø30, and R10. The bottom status bar indicates 'Model 3D Views' and 'SOLIDWORKS Premium 2016 x64 Edition'.

SOLIDWORKS File Edit View Insert Tools Window Help

ASAP0001.sldasm * (Read-only) Search Knowledge Base

Open Save CheckOut Clone Cancel User Refresh About
CheckOut Settings

Assembly Layout Sketch Evaluate SOLIDWORKS Add-Ins SOLIDWORKS MED Cx360Works Teamcenter

Teamcenter Integration for SolidWorks

TEAMCENTER

SIEMENS

plm (plm project) - Engineering Designer Latest Working

090208/A;1-ASM0001

Owner: plm (plm) Date Modified: 08 Mar 2018 11:46 Release Status: Type: Item Focused

090208/A;1-ASM0001 > 090208/A;1-BATTERY_PACK_NE ARRANGEMENT ARRANGE >

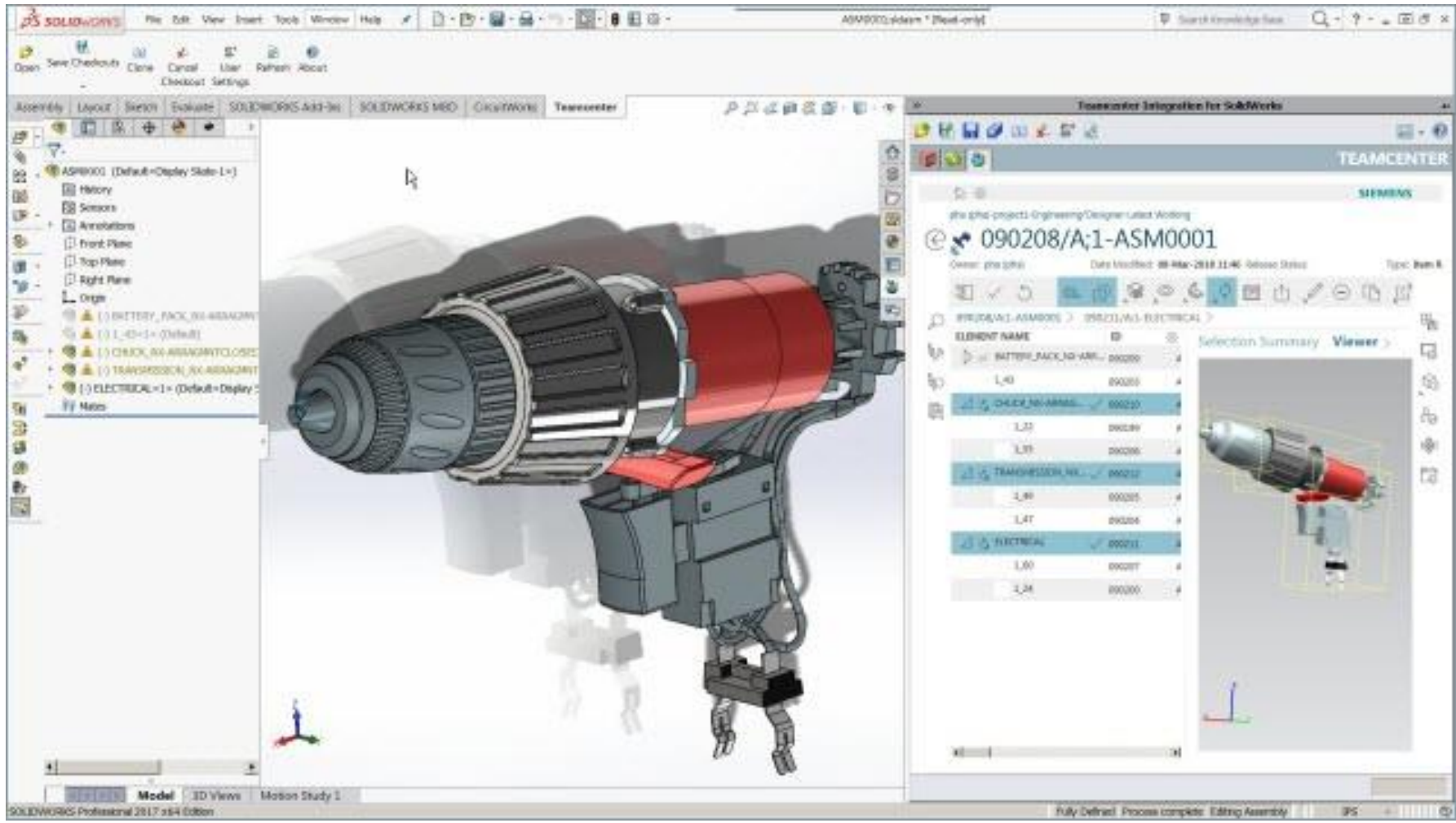
SELECTION SUMMARY VIEWER

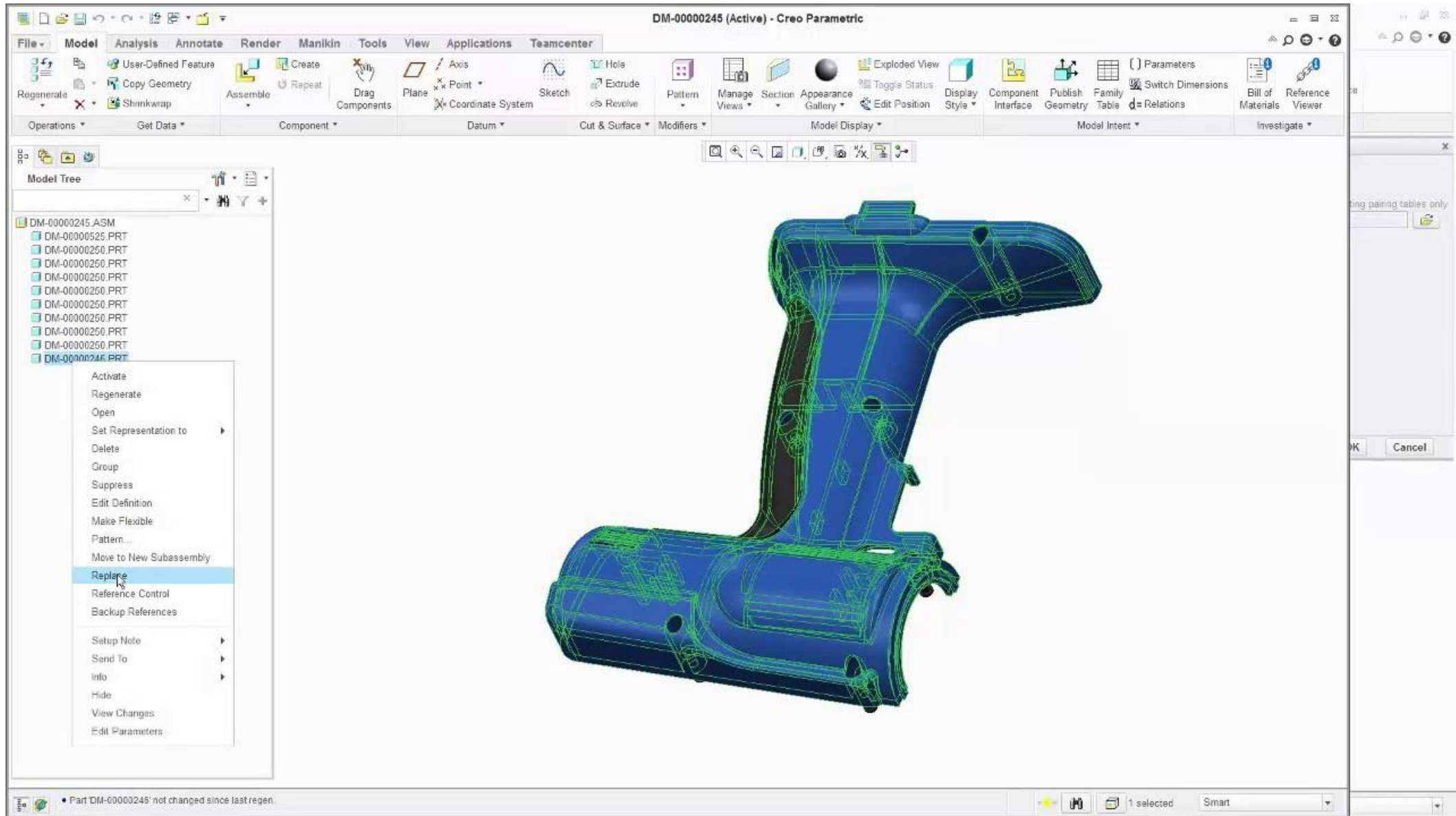
ELEMENT NAME	ID
BATTERY_PACK_NE	090209
L47	090207
L25	090201
L48	090203
CHECK_NE ARRANGEMENT	090210
L22	090189
L35	090206
TRANSMISSION_NE ARR.	090212
L49	090205
L47	090204
ELECTRICAL	090211
L30	090207
L34	090200

Surface Importance of 1.43e+13

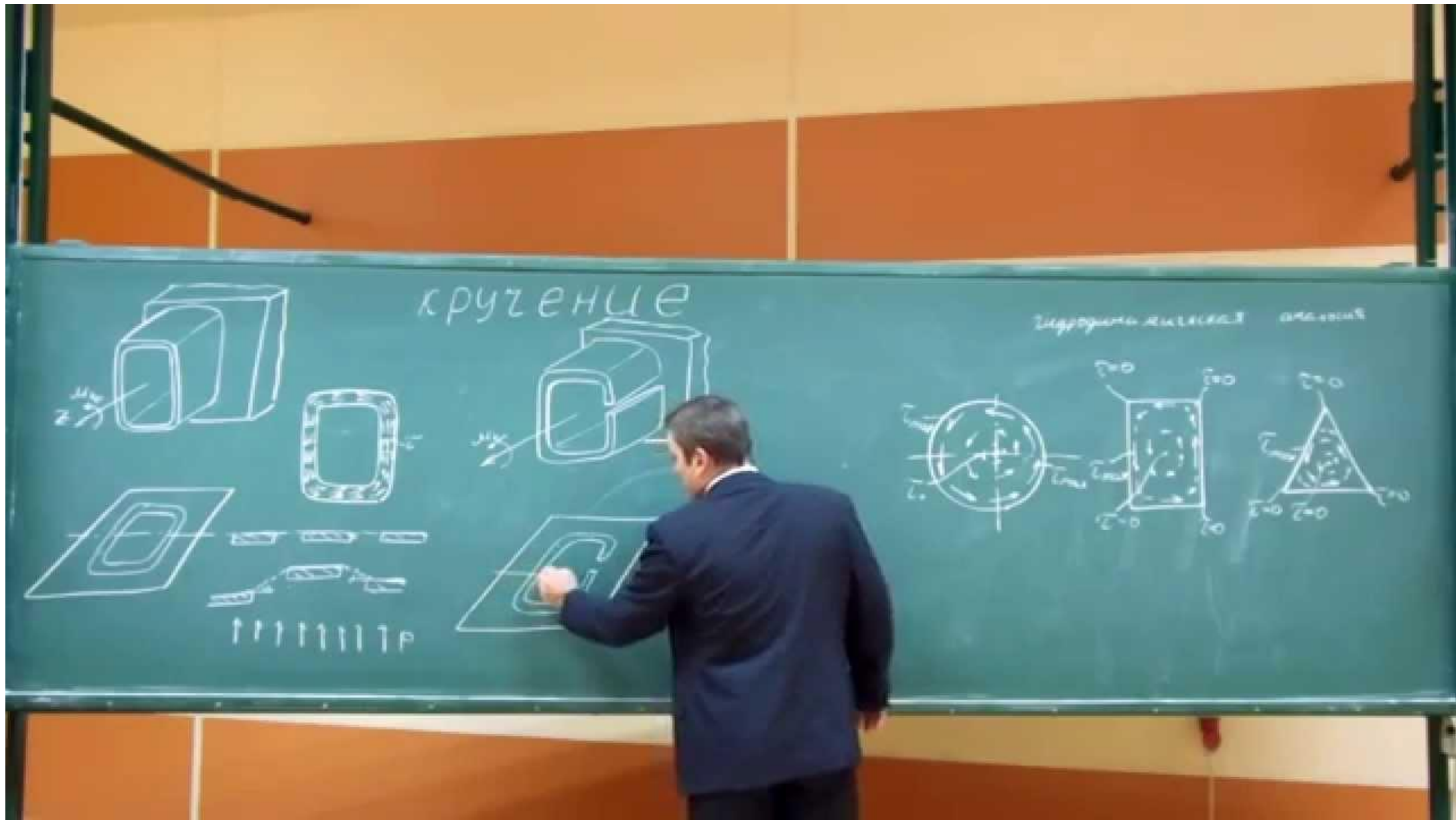
Model 3D Views Motion Study 1

SOLIDWORKS Professional 2017 x64 Edition Fully Defined Editing Assembly 95

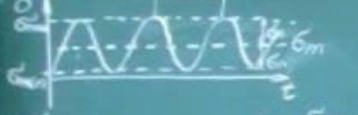




Material resistance (Сопротивление материалов)



3) Амплитудно-частотная характеристика

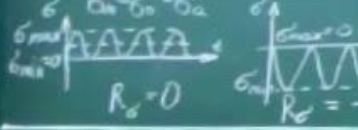


$R_{\sigma} = \frac{\sigma_{max}}{\sigma_{min}}$
 $\sigma_m = \frac{\sigma_{max} + \sigma_{min}}{2}$
 $\sigma_0 = \frac{\sigma_{max} - \sigma_{min}}{2}$

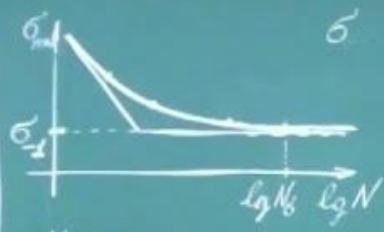
1) Сигналы с постоянной амплитудой $\sigma_m = 0$



2) Пульсационный сигнал

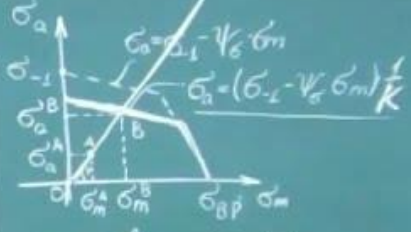
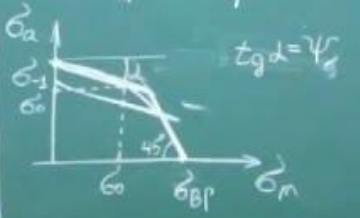
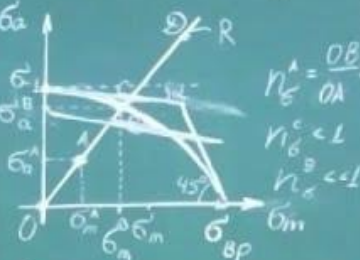


Кривая усталости



$N_{\sigma} = 10^7$ - база испытаний
 σ_{-1}
 σ_{-2}
 σ_{-3}
 σ_{-4}
 σ_{-5}
 σ_{-6}
 σ_{-7}
 σ_{-8}
 σ_{-9}
 σ_{-10}

Диаграмма предельных амплитуд

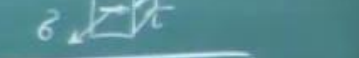


$n_{\sigma}^A = \frac{0.8 \sigma_{-1}}{\sigma_a}$
 $n_{\sigma}^B < 1$
 $n_{\sigma}^C < -1$
 $K = \left(\frac{1}{\epsilon_{\sigma}} + \frac{1}{\beta} - 1 \right) \frac{1}{\beta \gamma_{\sigma}}$
 $n_{\sigma} = \frac{\sigma_{-1}}{\sigma_{\sigma K}}$
 $\beta = \frac{\sigma_{-1}}{\sigma_{-2}}$
 Pump

$n_{\sigma}^A = \frac{\sigma_m^B}{\sigma_m^A} = \frac{\sigma_{-1}}{\sqrt{\sigma_m^2 + K \sigma_0^2}}$

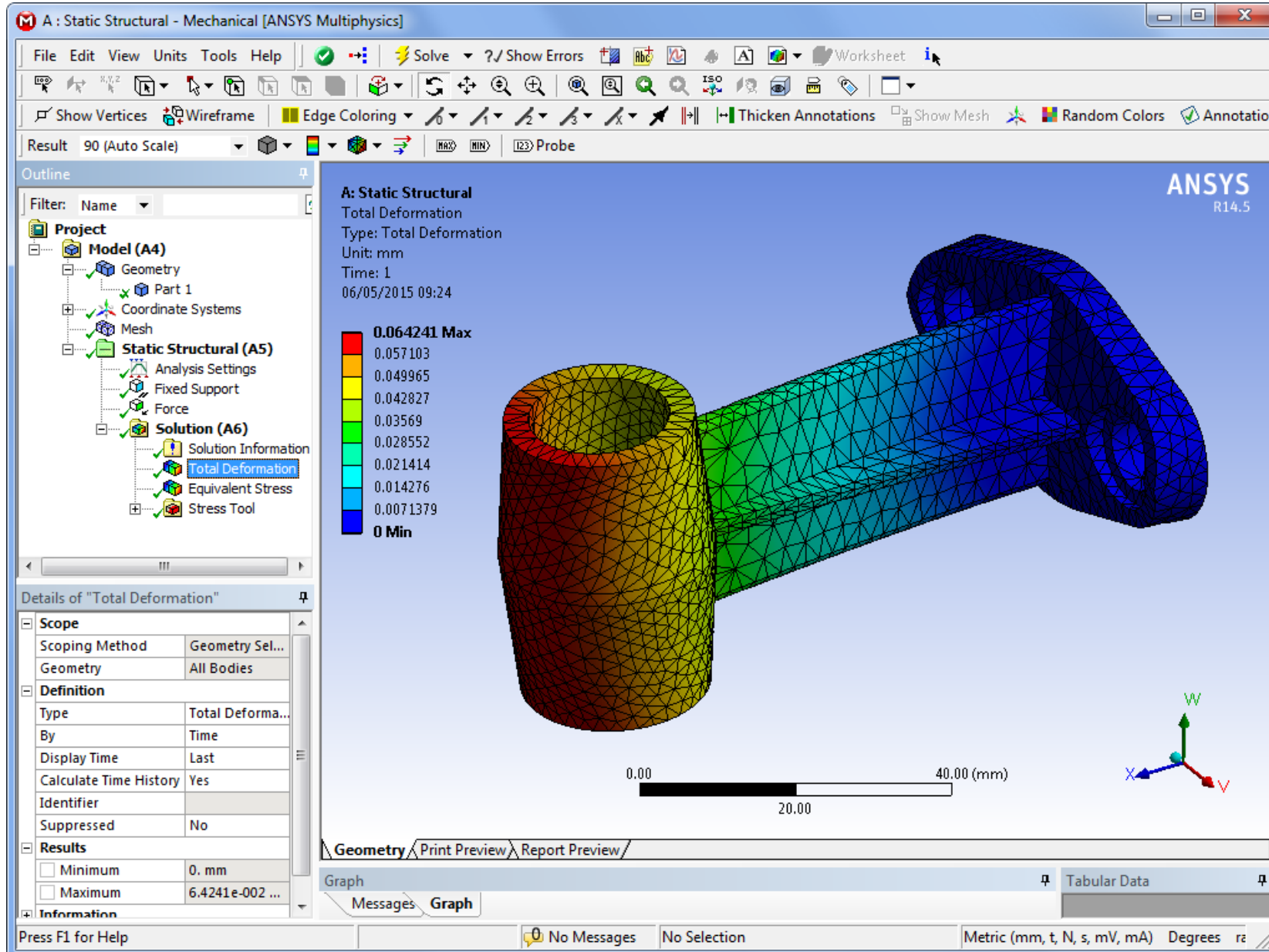
$n_{\sigma} = \frac{\sigma_{-1}}{\sqrt{\psi_0 \sigma_m^2 + K \sigma_0^2}}$

$n_{\sigma} = \frac{\sigma_{-1}}{\sqrt{\psi_0 \sigma_m^2 + K \sigma_0^2}}$



$\frac{1}{n_{\sigma}^2} = \frac{1}{n_{\sigma}^2} + \frac{1}{n_{\sigma}^2}$

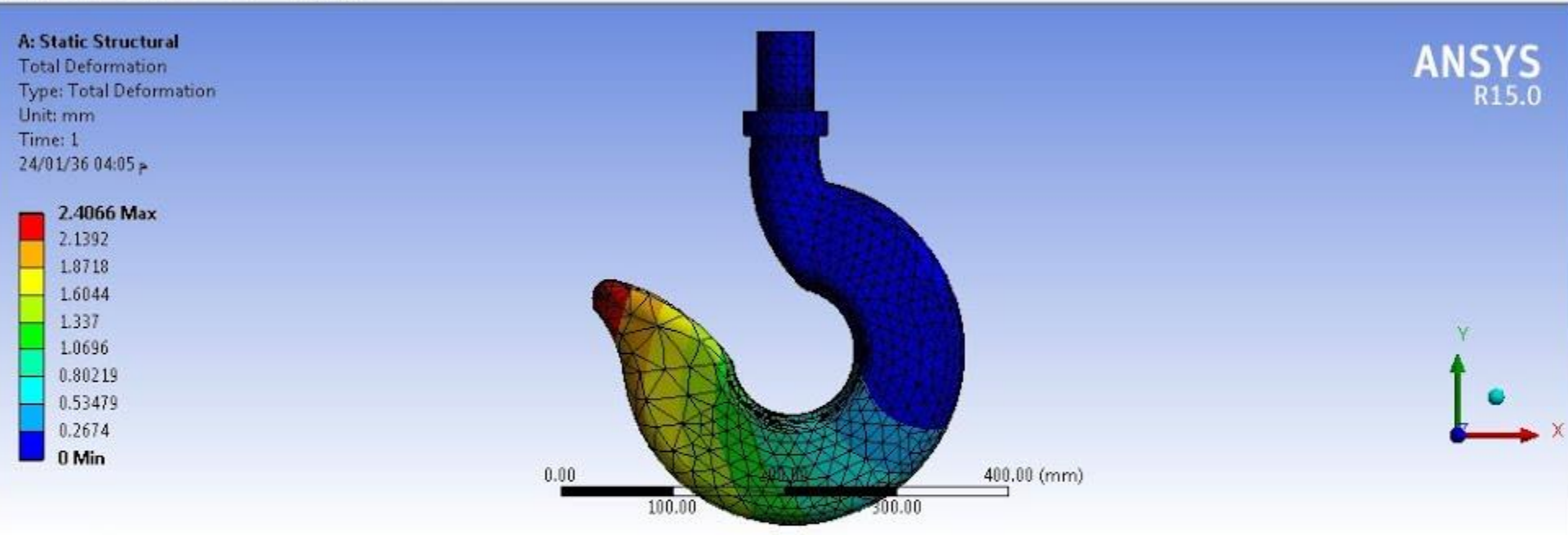
CAE (Computer Aided Engineering)



Outline

Filter: Name

- Project
 - Model (A4)
 - Geometry
 - Coordinate Systems
 - Connections
 - Mesh
 - Static Structural (A5)
 - Analysis Settings
 - Fixed Support
 - Pressure
 - Solution (A6)
 - Solution Information
 - Equivalent Stress
 - Total Deformation



Details of "Total Deformation"

Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies

Geometry | Print Preview | Report Preview | Graph | Tabular Data

ANSYS Workbench Solution Status

Overall Progress...

Writing Results File...

Interrupt Solution | Stop Solution

10 Frames | 2 Sec (Auto) | 3 Cycles

1.

Milling machine (Фрезерный станок)



CAM (Computer Aided Manufacturing)

isel[®]
From Components to Systems



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Results



Файл Главная Вставка Разметка страницы Формулы Данные Рецензирование Вид Что вы хотите сделать? Выход Общий доступ

Вставить Шрифт Выравнивание Число Стили Ячейки Редактирование

Arial 12 A A Ж К Ч \$ % 000 0,00 0,00

Условное форматирование Форматировать как таблицу Стили ячеек Вставить Удалить Формат





Сортировка и фильтр Найти и выделить

ПРЕДУПРЕЖДЕНИЕ СИСТЕМЫ БЕЗОПАСНОСТИ Запуск макросов отключен. Включить содержимое

A1 X ✓ f

Übersicht Kreditrückzahlung Projektteilnehmer 2015, Kirgisien Nord															Stand:			
Nr.	Tn	Name, Vorname	Kredit bewilligt	Kredit Vertrag	Kredit bezogen	Rückzahlungen					Zinsen		Strafzinszahlung		Ist-Liste	Seminar	Bemerkungen	Bemerkungen
						SOLL-Stand	IST-Stand	Abweichung SOLL-IST	Rest-schuld	OK	nicht OK	OK	nicht OK	OK	nicht OK	OK		
Уча стник	Участн ик	Имя, Фамилия	Кредит одобрен	Кредит по договору	Кредит получен	Возврат					Процент		Пени		Приобр.	Семинар	Примечания	Примечания
						Сост. Должно	Сост. Есть	Расхожд Долж.-Есть	Остаток долга	OK	не OK	OK	не OK	OK	не OK	OK		
1					260				260			-9		-1				
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17																		
18																		
19																		
20																		
21																		

Bank Account Cross-Reference - Set Up Bank Accounts By Address

   Form  Tools

Address Number

3003

CSC Corporation

Record Type

Supplier

Customer

A/R Drafts, Auto Debit

Auto Receipts Payor

Bank Information

Bank Transit Number

852200451

Bank Account Number *

2165987458

Control Digit

IBAN

Description

First Interstate Bank

Checking or Savings Account

Checking account

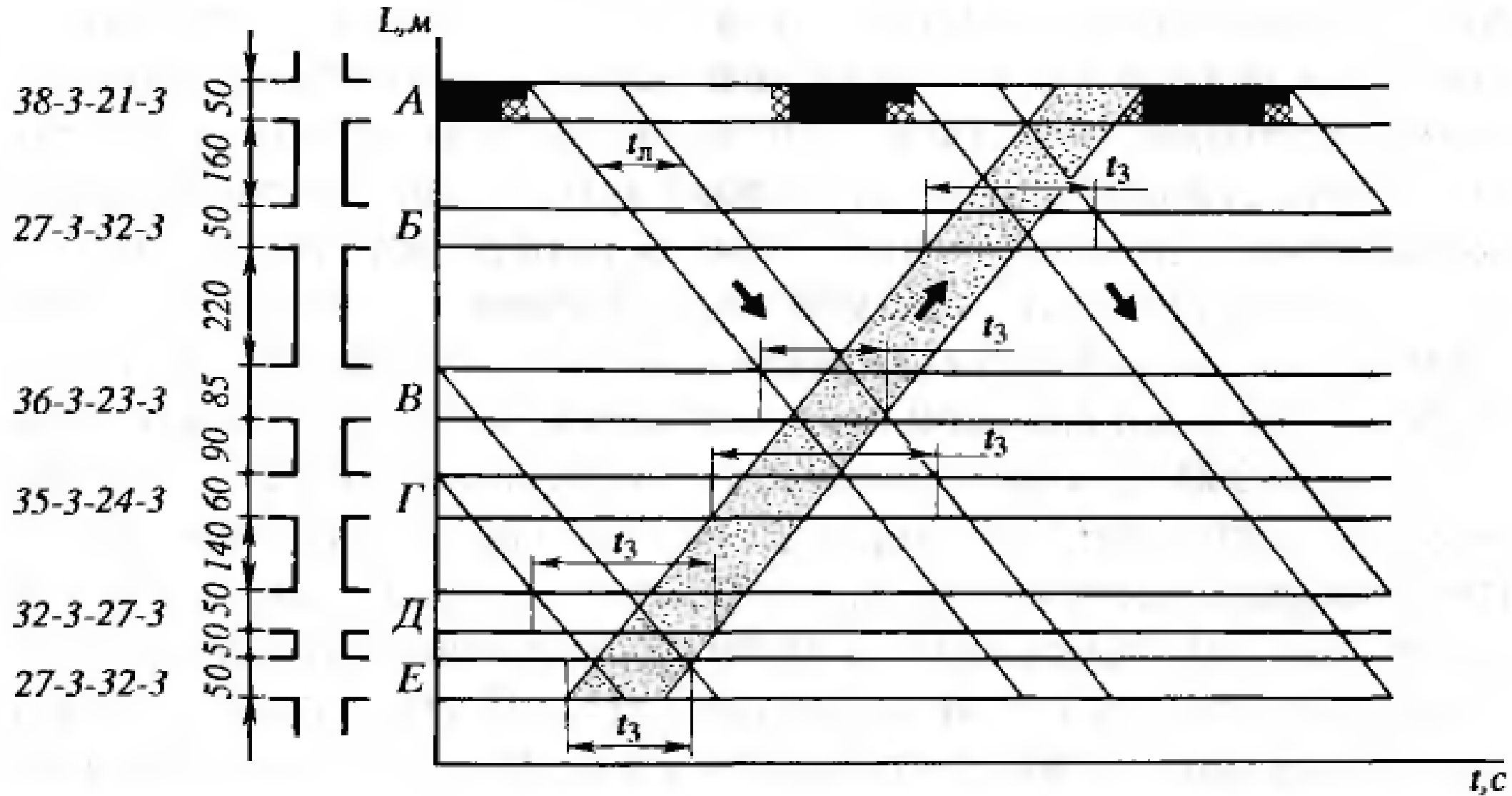
SWIFT Code

Reference/Roll Number

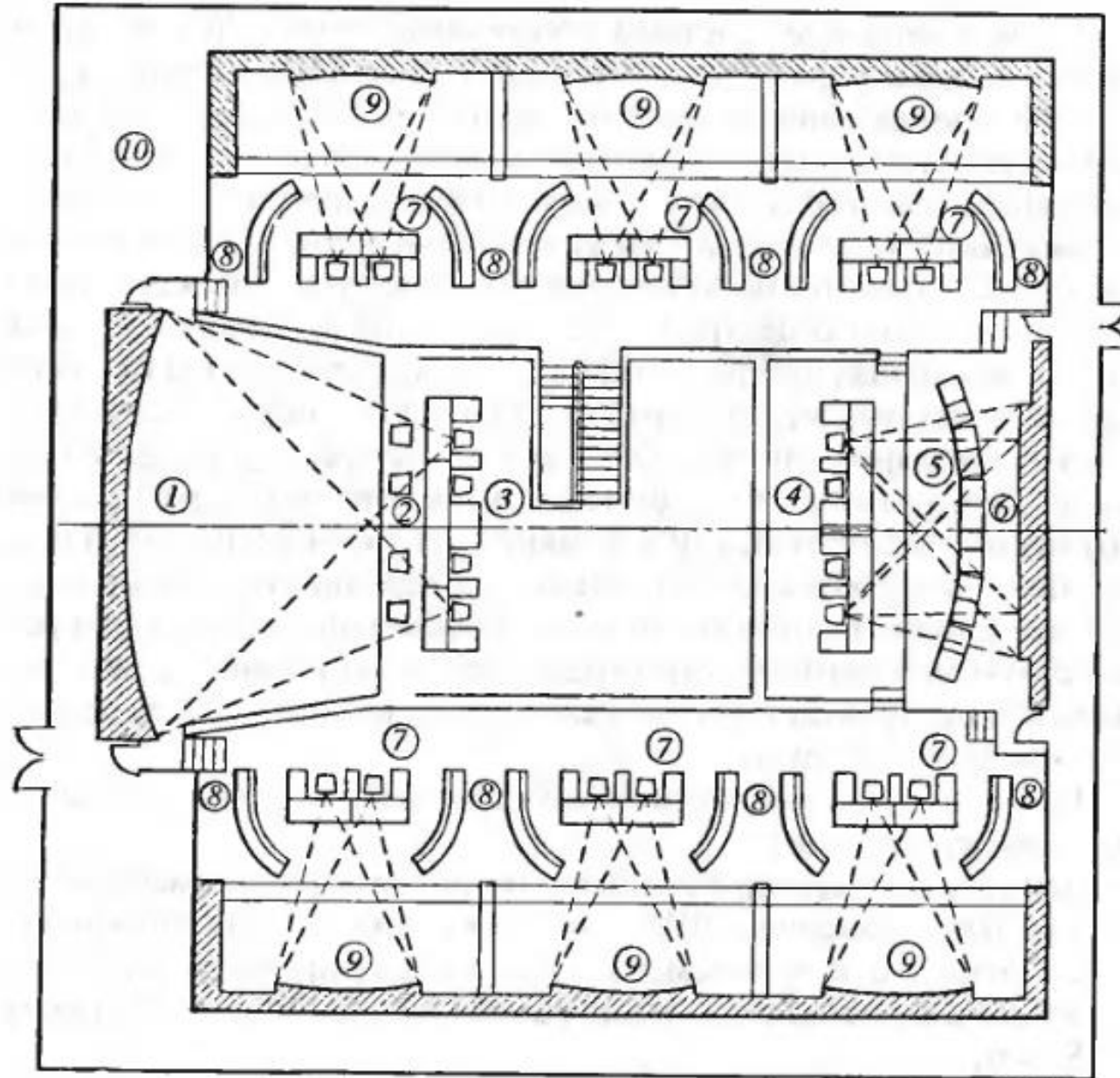
Bank Address Number

Bank Country Code

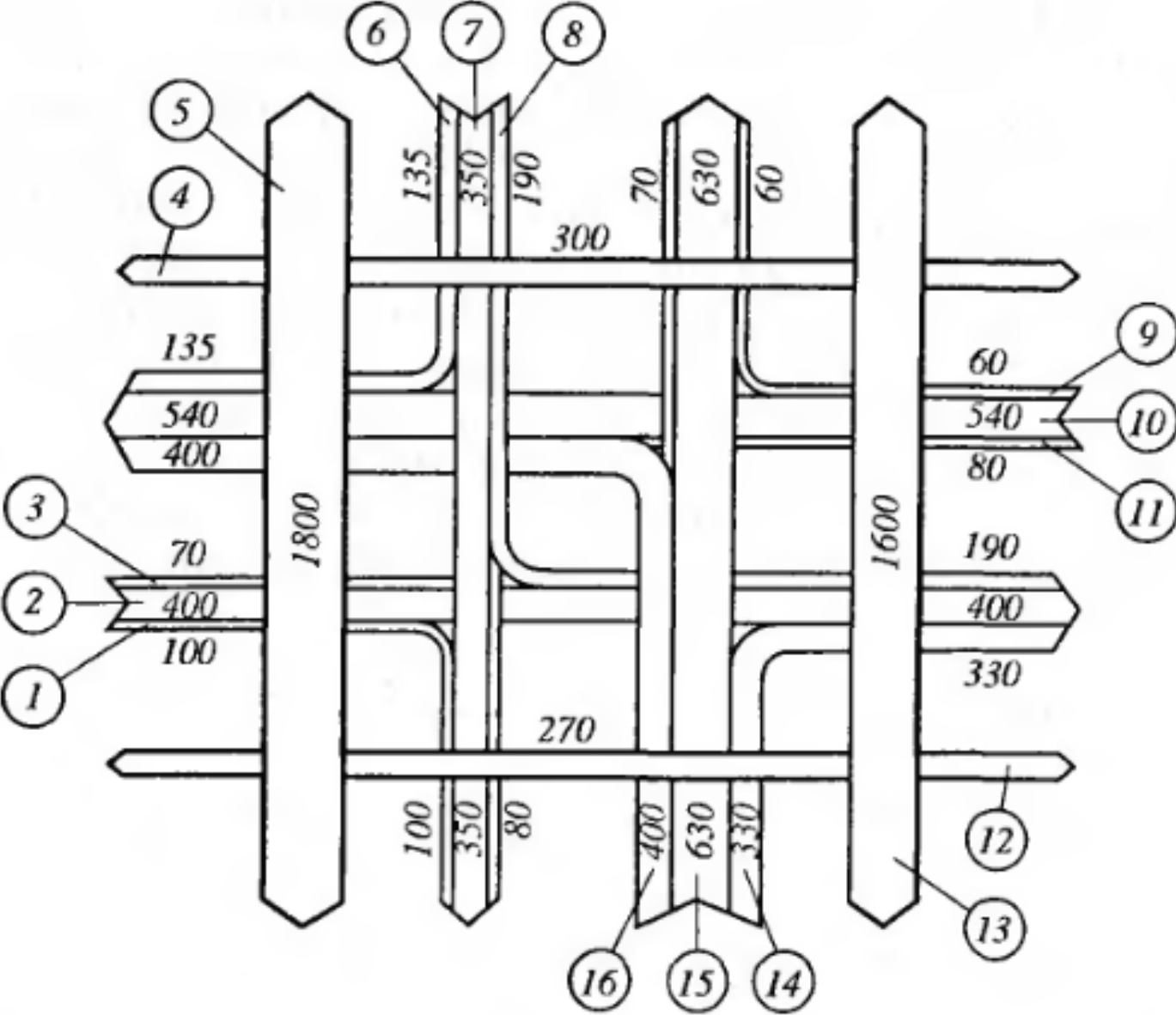
Coordinated Traffic Control



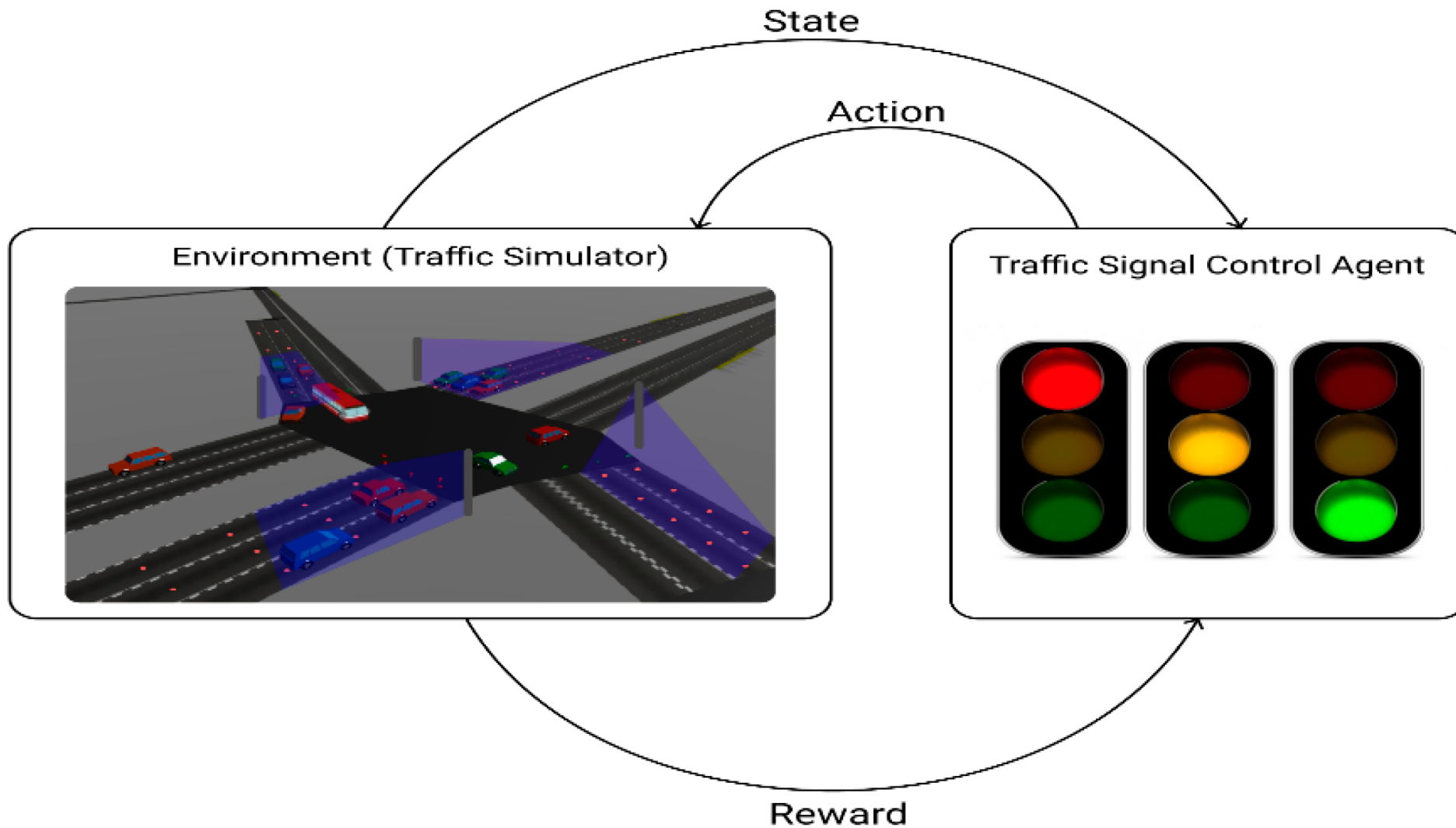
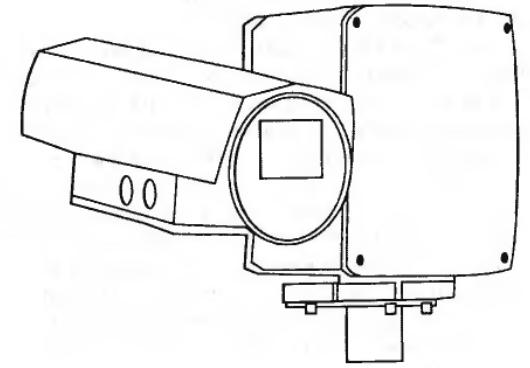
Control room (диспетчерский зал)



Cartogram of the intensity of transport and pedestrian flows



Fuzzy Logic Technologies



Traffic simulation









Thank you for your attention!

