



ECAR ENGINEERING CENTRE

# **Modular training program «Engineering Center Management School»**

## **Catalogue of module «QUALITY MANAGEMENT»**

Training list:

- Practical aspects of effective design documentation quality control system creation (2 days training)
- The practice of creating an effective QMS that meets the principles of ISO 9001; AS / EN 9100, applying Lean principles (2 days training)
- Internship in the quality department of ECAR for quality managers (1 day internship)
- Internship for managers in the department of design documentation quality control of ECAR (1 days internship)
- Conducting internal audits of engineering processes using Lean methodology (Q6) (1 day training)

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JSC ENGINEERING CENTER ECAR

**Seminar program:**

**"Practical aspects of effective design documentation quality control system creation"**

MOSCOW



## JSC ENGINEERING CENTER ECAR

"Practical aspects of effective design documentation quality control system creation"

### 1. SEMINAR PURPOSE:

- ✓ To consider the organization of the quality assurance system of engineering documentation in the company, to determine methods and ways of building an effective verification process in the design documentation check department (DDC);
- ✓ To master skills of using basic tools of DDC.

### 2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of design bureau departments involved in the release and verification of engineering documentation, as well as managers and specialists of quality departments of various industrial enterprises.

### 3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 16 acad. hours (2 days);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

### 4. SEMINAR DESCRIPTION:

- ✓ During the seminar, attendees will get acquainted with the unique practical experience of specialists of the engineering center of the leading European aircraft corporation in building a system for ensuring the quality of engineering documentation at a level of at least 98%;
- ✓ Built on the principle "minimum theory - maximum practice", the seminar will allow attendees to master practical knowledge in a short time and begin to apply it in practice successfully.

### 5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in the field of quality control of engineering documentation;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open form of discussion of issues under consideration.

### 6. SEMINAR OUTPUT:

The attendee gets necessary knowledge about methods and ways of building a quality assurance system of engineering documentation in the company, functions of DDC and its tools, methods of building an effective verification process in DDC, and practical skills on the following topic.

### 7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

#### Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).

### 8. SEMINAR SCHEDULE:



**Day 1**

| <b>Topic No.</b>     | <b>Topic name</b>   | <b>Time, hour</b> |
|----------------------|---|-------------------|
| 1                    | Registration of attendees. Presentation of the lecturer. Information about JSC ECAR. The rules of the seminar.  | 09.30–10.00       |
| 2                    | Presentation of the company, experience, problems, and achievements.<br>Quality assurance system of engineering documentation (ED) in the company: <ul style="list-style-type: none"> <li>- Structure of the Quality Department;</li> <li>- Causes of ED quality problems and their solution;</li> <li>- ED quality assurance methods and processes;</li> <li>- The company's quality goals and their cascading;</li> <li>- Visualization of indicators, escalation of problems and their solution;</li> <li>- Basic rules for solving a quality problem;</li> <li>- Structure of ED requirements;</li> <li>- Motivational aspects of quality assurance.</li> </ul> | 10.00–11.30       |
| Break (coffee break) |   | 11.30–11.45       |
| 3                    | DDC: <ul style="list-style-type: none"> <li>- The place and goals of the department in the general verification process.</li> </ul> Department's functionality.<br>Lean production system tools (Q6) as part of DDC work: <ul style="list-style-type: none"> <li>- Visualization board;</li> <li>- Methods of practical problem-solving;</li> <li>- Acknowledgement sheets.</li> </ul>  | 11.45–13.15       |
| Break (lunch)        |   | 13.15–14.00       |
| 4                    | Practice: to develop a Checklist.<br>Checklist as the main assessment tool.   | 14.00–15.20       |
| Break (coffee break) |   | 15.20–15.30       |
| 5                    | Practice: a tour of the office and a visit to DDC.<br>Work with standards (external / internal / notification of the employees, application of the acknowledgement sheet).  | 15.30–16.45       |
| 6                    | Questions and answers.  | 16.45–17.15       |



**Day 2**

| <b>Topic No.</b>     | <b>Topic name</b>   | <b>Time, hour</b> |
|----------------------|---|-------------------|
| 1                    | Registration of attendees.  | 09.30–10.00       |
| 2                    | <p>Revision.<br/>The process of formal verification of engineering documentation and check of the product digital mock-up:</p> <ul style="list-style-type: none"> <li>- Distribution of responsibility;</li> <li>- Work standardization;</li> <li>- Tools used;</li> <li>- Key performance indicators (KPI).</li> </ul> <p>The process of engineering documentation compliance assessment:</p> <ul style="list-style-type: none"> <li>- Main KPIs of DDC;</li> <li>- Standardization and allocation of work;</li> <li>- Work scope of the engineering documentation compliance assessment.</li> </ul> | 10.00–11.30       |
| Break (coffee break) |   | 11.30–11.45       |
| 3                    | <p>What makes up the formal verification time.<br/>Errors and dealing with them:</p> <ul style="list-style-type: none"> <li>- Work of DDC to eliminate sources of errors identified by the customer.</li> </ul>   | 11.45–13.15       |
| Break (lunch)        |   | 13.15–14.00       |
| 4                    | <p>Practice: Check the drawing. Discuss errors.<br/>The most common errors when DDC checks ED.<br/>Methods and techniques for checking engineering documentation at DDC.<br/>Application of automation tools for checking engineering documentation.<br/>Working with the staff of DDC:</p> <ul style="list-style-type: none"> <li>- Features of staff recruitment;</li> <li>- Staff engagement in DDC;</li> <li>- Professional development of the department members.</li> </ul>   | 14.00-15.20       |
| Break (coffee break) |   | 15.20–15.30       |
| 5                    | Q&A session.  | 15.30–16.45       |
| 6                    | Summing-up and certificate issuing.   | 16.45-17.15       |



JSC ENGINEERING CENTER ECAR

**Seminar program:**

**"The practice of creating an effective QMS that meets the principles of ISO 9001; AS / EN 9100, applying Lean principles"**

Moscow



## JSC ENGINEERING CENTER ECAR

"The practice of creating an effective QMS that meets the principles of ISO 9001; AS / EN 9100, applying Lean principles"

### 1. SEMINAR PURPOSE:

To acquaint attendees with the unique practical experience of formation and implementation of the quality management system in the engineering center of the leading European aircraft corporation.

### 2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of quality management system departments of various mechanical engineering enterprises.

### 3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 16 acad. hours (2 days);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

### 4. SEMINAR DESCRIPTION:

- ✓ During the seminar, attendees will get acquainted with the organization of the quality management system of the Engineering Center ECAR;
- ✓ During the practice, participants will consolidate their knowledge by analyzing ways and methods of solving problems related to the creation and operation of a quality management system in a company.

### 5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in the field of quality management;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open form of discussion of issues under consideration.

### 6. SEMINAR OUTPUT:

The attendee receives theoretical knowledge about methods and ways of creating an effective QMS compliant with ISO9001 and AS/EN9100 principles, using Lean principles; acquires practical skills on this topic.

### 7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

#### Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).





**JSC ENGINEERING CENTER ECAR**

"The practice of creating an effective QMS that meets the principles of ISO 9001; AS / EN 9100, applying Lean principles"

**8. SEMINAR SCHEDULE:**

**Day 1**

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 1                    | Registration of attendees. Presentation of the lecturer. Information about JSC ECAR, the rules of the seminar.   | 09.30–10.00       |
| 2                    | Processes of the company:<br>- What activity should be considered as a process;<br>- How to describe the process so that it works.   | 10.00–11.30       |
| Break (coffee break) |  | 11.30–11.45       |
| 3                    | Policy and objectives of the company:<br>Policy of the Engineering Center ECAR;<br>Setting company goals;<br>Cascading company goals to the level of individual performers' goals;<br>Ways of communication.<br>Practice: cascading company goals into personal goals of performers.   | 11.45–13.15       |
| Break (lunch)        |  | 13.15–14.00       |
| 4                    | KPI (key performance indicators) system:<br>Relationship between KPI, the company's goals and process goals;<br>Examples of organization of KPI collection;<br>Visualization boards (SQCDP boards).<br>Practice: Determine a method of data collection for KPI under consideration.  | 14.00–15.20       |
| Break (coffee break) |  | 15.20–15.30       |
| 5                    | Risks and opportunities, corrective actions and continuous improvement:<br>Risks and opportunities at a company level;<br>Risks and opportunities at a project level (internal and shared with a customer);<br>List of corrective actions (SQCDP action list);<br>Application of practical problem solving (PPS) method;<br>A system for employee recognition for improvement proposals. | 15.30–16.45       |
| 6                    | Questions and answers.   | 16.45–17.15       |



**Day 2**

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 1                    | Competence and knowledge management in a company:<br>Competency matrix;<br>Organization of teaching process;<br>Training system.<br>Document management.<br>Supplier Management:<br>Work on improving supplier performance.<br>Internal audits.            | 10.00–11.30       |
| Break (coffee break) |  | 11.30–11.45       |
| 2                    | Customer satisfaction:<br>Work on increasing customer satisfaction at a company level and a project level.<br>Practice: Solve problems with the quality management system.   | 11.45–13.15       |
| Break (lunch)        |  | 13.15–14.00       |
| 3                    | The quality management system in departments of design bureau:<br>Quality representatives in departments;<br>Fixing requirements;<br>Development of the Quality Plan;<br>The process of ensuring engineering documentation quality.                        | 14.00-15.20       |
| Break (coffee break) |  | 15.20–15.30       |
| 4                    | The quality management system in departments of design bureau:<br>Key performance indicators and statistics;<br>Analysis of discrepancies;<br>Records (application of the PMDB Project Management Information System);<br>Interaction between departments. | 15.30–16.45       |
| 5                    | Questions and answers.<br>Summing-up and certificate issuing.  | 16.45–17.15       |



JSC ENGINEERING CENTER ECAR

**Program:**

**"Internship in the quality department of ECAR for quality managers"**

MOSCOW



### 1. TRAINING PURPOSE:

- ✓ Participants of the training will become a part of the Quality Department team of the engineering center and will be able to observe details of basic processes and practices of the Quality Management System (QMS) of the leading European aircraft corporation;
- ✓ Attendees get the opportunity to consult specialists to solve their problems in the company.

### 2. TARGET AUDIENCE:

The training is meant for managers and leading specialists of quality services and quality management system departments.

### 3. TRAINING CHARACTERISTICS:

- ✓ The training format – "become a member of the team and learn how the system works" (not more than 2 participants in a group);
- ✓ The duration of the training – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two breaks (coffee breaks), lunch.

### 4. TRAINING DESCRIPTION:

During the practical training, attendees have a unique opportunity to gain maximum practical knowledge and skills in the shortest time. All stages of the process of quality department management will be considered on real-life examples, attendees will have the opportunity to look at processes from the inside and ask all the questions they will have.

### 5. CRITERIA FOR SUCCESSFUL TRAINING COMPLETION:

- ✓ The theoretical foundation for the training is laid at the seminar "The practice of creating an effective QMS that meets the principles of ISO 9001; AS / EN 9100, applying Lean principles", that participants are recommended to take in advance. In the absence of such a possibility, the program will require adaptation;
- ✓ Attendee involvement in the training process;
- ✓ Initiative, attentiveness of an attendee;
- ✓ An open form of discussion of issues under consideration.

### 6. TRAINING OUTPUT:

The attendee gets practical skills to create an effective quality management system in a company.



**7. TRAINING CONDITIONS:**

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The practical training can only be conducted in a face-to-face format.

Handout materials issued to attendees:

- ✓ *Training program;*
- ✓ *Training handout material (for educational purposes).*

**8. TRAINING SCHEDULE:**

| Topic No.            | Topic name   | Time, hour  |
|----------------------|--|-------------|
| 1                    | Presentation of the company JSC "Engineering Center ECAR" to participants and a tour of the office.<br>Introduction to the Quality Department team.  | 09.30–10.00 |
| 2                    | Presentation of the company's quality management system (QMS).<br>The company's QMS processes.<br>Structure and functionality of the Quality Department.<br>Functions of quality specialists on projects. Setting and monitoring goals, cascading the company's objectives into the performers' objectives.<br>Working with risks and opportunities at different levels of the company.<br>Familiarization with the operation of the system of key performance indicators (KPIs) in the company.<br>The format of feedback from a customer, its receipt and analysis.<br>The practice of working with Q6 system tools in the department. | 10.00–11.30 |
| Break (coffee break) |  | 11.30–11.45 |
| 3                    | Working with risks and opportunities at different levels of the company.<br>Familiarization with the operation of the KPI system in the company.<br>Participation in a team meeting near the Visualization Board.  | 11.45–13.15 |
| Break (lunch)        |  | 13.15–14.00 |



**JSC ENGINEERING CENTER ECAR**

" Internship in the quality department of ECAR for quality managers "

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 4                    | Participation in the practical solution of a problem (if possible), or studying examples.<br>Participation in the meeting with a quality specialist of a project.                      | 14.00–15.20       |
| Break (coffee break) |  | 15.20–15.30       |
| 5                    | Review of the engineering documentation assessment process at the employee's workplace.<br>Work on collecting statistical data and analyzing it.<br>Development of corrective actions. | 15.30–16.45       |
| 6                    | Questions and answers.<br>Summing-up and certificate issuing.  | 16.45–17.15       |



JSC ENGINEERING CENTER ECAR

**Program:**

**"Internship for managers in the department of design documentation quality control of ECAR (DDC)"**

Moscow



## JSC ENGINEERING CENTER ECAR

"Internship for managers in the department of design documentation quality control of ECAR (DDC)"

### 1. TRAINING PURPOSE:

The training will allow attendees to find out about methods, processes, and tools of DDC management using practical examples, and get the opportunity to receive professional advice to solve specific problems at an attendee's enterprise.

### 2. TARGET AUDIENCE:

The training is meant for managers and leading specialists of quality departments and DDC departments of design bureaus.

### 3. TRAINING CHARACTERISTICS:

- ✓ The training format – "become a member of the team and learn how the system works" (not more than 2 participants in a group);
- ✓ The duration of the training – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two breaks (coffee breaks), lunch.

### 4. TRAINING DESCRIPTION:

- ✓ During the training, built on the principle "minimum theory – maximum practical solutions", participants get the opportunity to become a part of the engineering center team of the leading European aircraft corporation and gain unique experience in participating in quality control processes of engineering documentation (ED), which allow ensuring ED quality level over 98%;
- ✓ During the training, attendees receive practical skills that allow them to apply effectively the experience gained in their work.

### 5. CRITERIA FOR SUCCESSFUL TRAINING COMPLETION:

- ✓ The theoretical foundation for the training is laid at the seminars "Practical aspects of effective design documentation quality control system creation" or "Practical application of Lean tools in the management of engineering and operational activities" that participants are recommended to take in advance. In the absence of such a possibility, the program will require adaptation;
- ✓ Attendee involvement in the training process;
- ✓ Initiative, attentiveness of the attendee;
- ✓ An open form of discussion of issues under consideration.

### 6. TRAINING OUTPUT:

The attendee gets maximum skills of practical work on the topic "Management of DDC".

### 7. TRAINING CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The practical training can only be conducted in a face-to-face format.

#### Handout materials issued to attendees:

- ✓ Training program;
- ✓ Training handout material (for educational purposes).



**JSC ENGINEERING CENTER ECAR**

"Internship for managers in the department of design documentation quality control of ECAR (DDC)"

**8. TRAINING SCHEDULE:**

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 1                    | Presentation of JSC "Engineering Center ECAR" to participants and a tour of the office.<br>Introduction to the team of the engineering documentation quality control department (DDC, compliance assessment) and the quality department team.                                | 09.30–10.00       |
| 2                    | Presentation of DDC:<br>- Place and goals of the department in the process of engineering documentation check;<br>- Department's functionality.  | 10.00–11.30       |
| Break (coffee break) |  | 11.30–11.45       |
| 3                    | The practice of work with tools of the lean production system (Q6):<br>- Visualization boards, work with the main KPIs of the DDC;<br>- Methods of practical problem solving;<br>- Acknowledgement sheet.<br>- Participation in a team meeting near the Visualization Board. | 11.45–13.15       |
| Break (lunch)        |  | 13.15–14.00       |

**JSC ENGINEERING CENTER ECAR**

"Internship for managers in the department of design documentation quality control of ECAR (DDC)"

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 4                    | Introduction to the process of creating a checklist and using it in the verification process.<br>The checklist content (main sections and checkpoints).<br>Work with standards (external / internal / notification of employees, application of the acknowledgement sheet).<br>Studying ED assessment process at the employee's workplace.<br>Verification methods and techniques to avoid errors.<br>Practical demonstration of the use of verification tools.<br>Use of automation in the verification process | 14.00–15.20       |
| Break (coffee break) |  | 15.20–15.30       |
| 5                    | Fixing the results of the check and working with them.<br>Participating in a daily meeting of the department team to discuss the state of work.<br>Work sharing in a team.<br>Working with missed errors in the department.<br>A new employee gets acquainted with the training program.<br>Working with the DDC staff:<br>- Setting goals for employees;<br>- Staff motivation.   | 15.30–16.45       |
| 6                    | Questions and answers.<br>Summing-up and certificate issuing.  | 16.45-17.15       |



JSC ENGINEERING CENTER ECAR

**Seminar program:**

**"Conducting internal audits of engineering processes using Lean methodology (Q6)"**



## JSC ENGINEERING CENTER ECAR

"Conducting internal audits of engineering processes using Lean methodology (Q6)"

### 1. SEMINAR PURPOSE:

- ✓ Familiarize participants with the Q6 system audit processes and methods;
- ✓ Master skills in using main tools for conducting the Q6 system audits.

### 2. TARGET AUDIENCE:

The seminar is meant for curators of projects on the implementation of the Q6 system in companies, managers responsible for the implementation of the Q6 system in the departments of organizations, the Q6 system audit participants.

### 3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

### 4. SEMINAR DESCRIPTION:

- ✓ The seminar will cover the main sections of the Q6 system and its purposes. Attendees will get acquainted with the objectives, processes, and methods of conducting audits, consider practical aspects of their application.
- ✓ The program, built on the principle "from theory to practice", will allow to master the material in a short time and then successfully use it in practice.

### 5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in the field of quality management;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open form of discussion of issues under consideration.

### 6. SEMINAR OUTPUT:

Attendees will get an impression of the practical experience of conducting internal audits using the lean production methodology and will be able to initiate processes for implementing the Q6 system audits in their company.

### 7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

#### Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).

**JSC ENGINEERING CENTER ECAR**

"Conducting internal audits of engineering processes using Lean methodology (Q6)"

**8. SEMINAR SCHEDULE:**

| <b>Topic No.</b>     | <b>Topic name</b>  | <b>Time, hour</b> |
|----------------------|--|-------------------|
| 1                    | Registration of attendees. Presentation of the lecturer. Information about the JSC ECAR, the rules of the seminar.   | 09.30–10.00       |
| 2                    | A brief overview of the Q6 methodology, general provisions, and recommendations for starting the audit.<br>Overview of the processes responsible for "Feedback" – Q1.<br>Practice. | 10.00–11.30       |
| Break (coffee break) |  | 11.30–11.45       |
| 3                    | Overview of the processes responsible for "Problem Solving" – Q2.<br>Practice.   | 11.45–13.15       |
| Break (lunch)        |  | 13.15–14.00       |
| 4                    | Overview of the processes responsible for the "System of Indicators" – Q3.<br>Overview of the processes responsible for "Standardization" – Q4.<br>Practice.                       | 14.00–15.20       |
| Break (coffee break) |  | 15.20–15.30       |
| 5                    | Overview of the processes responsible for "Qualification and Training" – Q5.<br>Overview of the processes responsible for "Process Control" – Q6.<br>Practice.                     | 15.30–16.45       |
| 6                    | Questions and answers.<br>Summing-up and certificate issuing.  | 16.45–17.15       |