

Das Know-how.

REFA

REFA Training Methods of Work Design and Data Determination

Description of the modules



Methods of Work Design and Data Determination

Your know-how basis in Industrial Engineering

The efficiency and the success of a company are decisively determined by the design of processes and work places. This requires the professional determination and application of process data. The seminar Methods of Work Design and Data Determination deals with the following key themes and corresponding tools.

YOUR TOPIC – TARGET GROUPS

- qualified skilled and executive staff, specialists and managers
- master craftsmen and industrial foremen
- technicians
- work councils
- staff from assembly, production planning and control as well as CIP team leaders and –moderators.

YOUR BENEFIT – COMPETENCE

In probably every branch of economic activity the term “process” – understood as operational sequence or procedure – belongs to those keywords which are always linked to challenges. The seminar Methods of Work Design and Data Determination provides you with the necessary knowledge

- how and with which tools processes can be analysed and based on the results of these analyses
- how you can professionally design even comprehensive processes.

Processes are generally very complex and it takes numerous process data in order to develop and to permanently optimise them. The seminar Methods of Work Design and Data Determination provides you with the necessary practical support and tools:

- to characterise and to determine the manifold data
- to apply the data within the scope of process developments and –optimisations in a targeted and tailor-made manner.
- Special emphasis is placed on getting-to-know selected tools and in particular their use in practical day-to-day application.

DURATION

The course consist of 80 seminar lessons (10 days full-time).



n ^o	Module name	Lessons (1 lesson = 45 minutes)
1	REFA Work System – Performance Unit and Process Element	4
2	Principles of Work Design	8
3	Task and Process - Structuring and Design	3
4	Work Data Management – Process and Time Types	16
5	Performance Rating	4
6	REFA Time Study - Execution and Evaluation	18
7	Setup Time – Determination and Optimization	3
8	Determination of Standard Data Elements	6
9	Contingency Allowance Determination	4
10	Activity Sampling	6
11	Utilization of Work Data for Cost Calculation	8
	Total lessons	80

Module Features

Module 1: REFA Work System – Performance Unit and Process Element



BENEFIT

- You will be familiar with the functions and classification of work systems as elements of organizations and processes as well as the description and documentation of work systems, that can be utilized for work system design and work data determination.
- You will be able to analyze work systems by using the REFA Work System Documentation.

CONTENT

- Terms and correlations
- Work system as model and performance unit
- Work system factors and types
- Description and documentation of work system

LEARNING GOALS

After completing this module you will be able to:

- explain function and classification of work systems (Understanding of theory and facts)
- explain types and layouts of work systems
- explain the importance and application of the REFA Work System
- allocate work systems systematically

Module Features

Module 2: Principles of Work Design



BENEFIT

- You will gain an understanding regarding the importance of work and its effective design as well as the human performance capacity and its utilization.
- You will learn about the effects of work loads and measures that influence these loads, as well as standards, limits and data that can be used for work design. You will also learn about the importance of influencing factors, including relevant dimensions that effect work areas and points of operation. You will also learn how to use these factors in order to improve work situations and conditions.
- You will understand the Principles of Work Design and how they can be applied in practice.

LEARNING GOALS

After completing this module you will be able to:

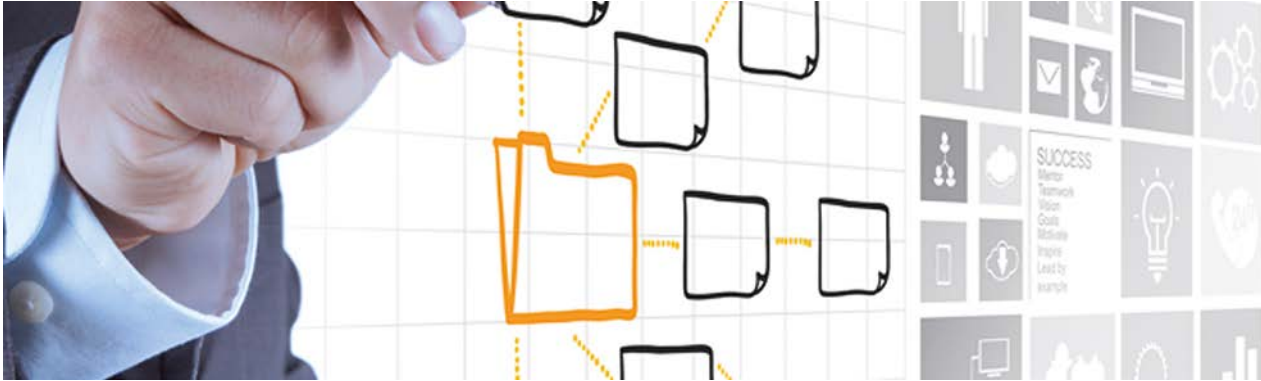
- explain the necessity and concerns of work design
- explain the requirements, targets and influencing factors of work design using examples
- illustrate the economical and social implications of a badly designed work situation
- recognize and assess the significance of necessary measures to improve the work situation
- utilize work design data problem oriented

CONTENT

- Human Performance within the work system
 - Humane work design
 - human performance capacity
- Work load and work strain
- Influencing and improving work load
 - limits and scientifically validated findings
 - order, cleanliness and occupational safety
 - environmental influences
 - work area and motion range
- Determination of work load – methods, examples

Module Features

Module 3: Task and Process – Structuring and Design



BENEFIT

- You will learn the principles of the REFA Task Description and use it to structure and design tasks and it into context. You will apply methods for the systematic structuring of work processes, utilize the REFA Standard Program Task Design and Process Analysis to optimize tasks and processes.

LEARNING GOALS

After completing this module you will be able to:

- structure, analyze, describe and document tasks
- optimize and design tasks
- come up with different process structures
- systematically analyze and optimize processes

CONTENT

- Introduction, problem statement terms
- task structure, design using an example
- task structuring and analysis using Taxonomy levels ranks and delimits

Module Features

Module 4: Work Data Management – Process and Time Types



BENEFIT

- You will be able to utilize the REFA process and time types as a tool to clearly define a process based on work system, human resources, work objects and information data.
- You will be able to distinguish between value-adding, non-value adding, influenceable and non-influenceable process steps and know their category.
- You recognize opportunities for process improvement through work design and master the basics of work data acquisition.

LEARNING GOALS

After completing this module you will be able to:

- clearly distinguishing Actual and Target Time and apply methods for their determination
- distinguish the REFA Process and Time Types and know their application
- clearly determine, systematical structure and evaluate the interaction of operators, equipment, work objects, and information data within the work system
- create suitable performance indicators for the evaluation and assessment of work processes

CONTENT

- REFA-Process Types
 - Terms, Correlation
 - Differentiate between work systems, operators, equipment, work pieces, information (flow)
 - Procedure for determining and applying the process types
- REFA Time Types
 - Terms, Correlations, Delimitation
 - Process Time TP, Work System Lead Time TDS, Order time, other Time Types
 - Time data collection

Module Features

Module 5: Performance Rating



BENEFIT

- During the execution of a time study varying performance levels over the course of the study or between different operators must be taken into consideration. Therefore a performance rate must be attached to the measured actual time.

LEARNING GOALS

After completing this module you will be able to:

- understand the importance of the performance rating
- justify the need for a reference performance and based on that explain REFA Standard Performance
- present intensity and effectiveness in the context of motion sequences explain their interdependency and identify the associated performance rate
- indicate the limits of performance rating
- explain the practical approach in assessing the performance rate according to the REFA Standard Program
- perform a performance rating

CONTENT

- Importance of Performance Rate
- Performance Rating
- RFA Standard Performance
- Evaluation of Motion Sequences
- Performance Rating – Requirement
- Performance Rating – Evaluation Approach

Module Features

Module 6: REFA Time Study – Execution and Evaluation



BENEFIT

- You are familiar with legal, labor contractual and operational obligations and requirements that may apply to data determination and able to put time studies into operational context.
- You will gain competence in the preparation, execution and evaluation of a time study. You are familiar with currently available technology to support data collection in the context of a time study.
- You are able to establish statistical indicators to evaluate the data quality of the time study.

LEARNING GOALS

After completing this module you will be able to:

- define the types and targets of a time study
- explain applicable legal, labor contractual and operational obligations and requirements that must be considered regarding the determination of data through out all phases of a time study, including stakeholders that must be informed through out the process like supervisors, members of thee labor council and who ever else might have a valid concern in the matter.
- explain the individual steps of the REFA Standard Program „Time Study“
- explain the impact and importance of process steps, measurement points (trigger points) and influencing factors for a time study using appropriate examples
- choose an appropriate form of documentation for measured data according to the sequence of process steps
- explain the relationship between the REFA Time Structure and data determined or calculated during a time study

- evaluate a time study based on the written documentation including Time per Unit
- execute and evaluate a time study including performance rating, statistical evaluation and calculation of the standard time
- support in the determination of suitable time measurement (data collection) systems

CONTENT

- Types and Targets of a Time Study
- The REFA Standard Program „Time Study“
- Preparation of a Time Study
- Execution of a Time Study
- Evaluation of a Time Study
- Application of results of a Time Study

Module Features

Module 7: Setup Time – Determination and Optimization



BENEFIT

- You will acquire knowledge regarding setup times in the context of target times, equipment utilization and work efforts related to the preparation of work systems. You will gain the methodological competence for the optimization and reduction of setup times and insight in the implications of an external setup organization, its staffing requirements and the need to view setup times from a different perspective than equipment related activities.

LEARNING GOALS

After completing this module you will be able to:

- testablish the operational importance of setup time reduction
- indicate the possible methods for the determination of setup times
- evaluate setup times
- explain why an optimized setup process must lead to a new standard.

CONTENT

- Targets of Setup Time Optimization, applicable methods, Planning and Structuring of Optimization Processes
- Execute Setup Time Optimization
- Evaluation of Optimization Processes, Assessment of Setup Times, Avoidance and Optimization of Setup Times, Utilization of Hard and Software, Exercise: Evaluation of a Study for the Optimization of a Setup Process

Module Features

Module 8: Determination of Standard Data Elements



BENEFIT

- You will be able to understand the opportunities Standard Data Elements provide as a tool for planning, control and simulation, and gain competence in establishing Standard Data Elements efficiently and economically.
- The module will explained various methods for collecting and processing data necessary for the establishment of Standard Data Elements.
- You will understand how the intended purpose or application of the Standard Data Elements influence and define the required data quality.

LEARNING GOALS

After completing this module you will be able to:

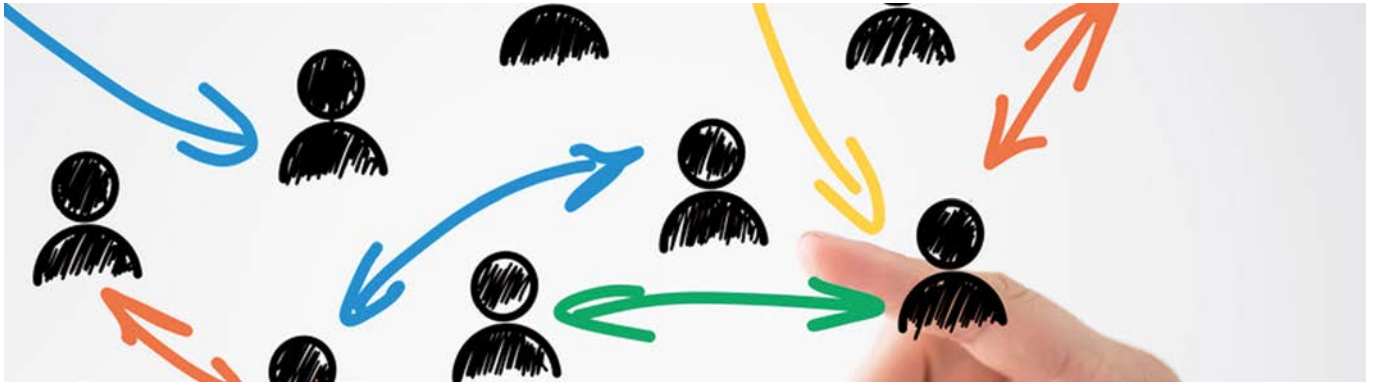
- specify the advantages and fields of applications of Standard Data Elements
- explain relevant influencing factors and provide appropriate examples
- define the preparatory steps for the establishment of Standard Data Elements and provide appropriate examples
- explain the particular features of a time study required if used to determine Standard Data Elements
- execute time study for determination of Standard Data Elements independently assesses and
- develop a simple example to present an arithmetic deduction of the linear correlation between time and influencing factors based on a given set of data – provide a functional and graphical assessment of the results
- present possible software solutions
- explain the REFA Standard Program Determination and Usage of learning content to provide a structuring and evaluation tool for standards data elements

CONTENT

- Targets of Standard Data Elements
- Types of Standard Data Elements
- Factors that Influence the Determination of Standard Data
- REFA Standard Program Determination of Standard Data Elements
- Standard Data Elements
- Determination Statistical Principles (Data, Regression, Certainty)
- Software Based Data Evaluation, Assessment of Results
- Presenting of Standard Data Elements (Functions, Graphics, Tables)
- Preparation of Standard Data Elements

Module Features

Module 9: Contingency Allowance Determination



BENEFIT

- You will acquire the necessary knowledge to determine and apply contingency allowance times in order to identify unproductive time elements as a basis for process improvement as well as a basis for the negotiating of allowance time percentage with stakeholder such as labor unions.

CONTENT

- Terms and correlations, observation time
- Execution of an allowance time study
- Interpretation of results

LEARNING GOALS

After completing this module you will be able to:

- identify order-dependent, order-independent and personal allowance times and distinguish them from time elements that must not be included in the allowance time calculation
- organize and evaluate allowance time studies
- analyze and evaluate the results of executed allowance time studies and identify opportunities for process improvement.

Module Features

Module 10: Activity Sampling



BENEFIT

- You will be able to identify opportunities for improvement in an effective manner and understand Activity Sampling as versatile tool.

LEARNING GOALS

After completing this module you will be able to:

- to explain the principles of Activity Sampling
- utilize the REFA Standard Program Activity Sampling and facts)
- prepare, coordinate and evaluate an Activity Sampling
- describe the opportunities and limits of applying Activity Sampling
- recommend operational applications ability)

CONTENT

- Introduction, Principles of Activity Sampling (AS)
- REFA-Standard Programm AS
- Requirements and applications of Activity Sampling
- Use of REFA Forms
- Analyst or operator driven observation

Module Features

Module 11: Utilization of Work Data for Cost Calculation



BENEFIT

- You can explain the importance of cost accounting for the company or operation and will acquire the necessary special knowledge to carry out cost calculations based on work data.

LEARNING GOALS

After completing this module you will be able to:

- explain the fields of application of cost accounting
- define the concept of cost
- explain the relationship between work data and cost using examples
- describe the terms cost types, cost center and cost object using examples
- explain important distinctions between direct and indirect costs, fixed, variable and semi-variable (mixed) costs as well as explain their relationship to work data using examples
- describe the purpose of the Operations Accounting Form (BAB)
- calculate indirect cost surcharges
- explain the difference between quantity unit related cost object and time related cost object accounting
- implement a multi-level surcharge calculation based on the available work data
- critically evaluate the calculated results and identify possible opportunities for cost savings
- perform a simple cost comparison based on the available work data
- critically evaluate the obtained information.

CONTENT

- tasks of cost accounting
- definition of cost terms, establish the link that connects them to work data
- cost types, centers and objects
- direct and indirect costs; fixed, variable and mixed (semi-variable) costs
- structure and tasks of the BAB
- indirect cost surcharges
- quantity unit and time related cost object accounting
- multi-level surcharge calculation
- cost comparison analysis
- critical evaluation and cost savings

REFA further education & training – à la carte and tailor-made



REFA seminars have the same standard worldwide. The actual way of implementation depends on where and for whom the training takes place as well as on the local social and economic conditions.

Our offer to carry out in-house training measures has proven to be particularly successful for international companies. We come to you wherever you are located. Seminar contents and – schedule are adapted to your requirements. To complement our standard seminars, we also develop tailor-made training or seminar modules which are exclusively adapted to your needs.

Your contact



Roberto Pfeffer
Head of REFA-International
+49 (0) 6151 8801-154
roberto.pfeffer@refa.com

© Copyright

by REFA-Bundesverband e.V.
Verband für Arbeitsgestaltung,
Betriebsorganisation und Unterneh-
mensentwicklung, Darmstadt

All rights, particularly those of the
translation, reserved. Reprints or pho-
tomechanical reproduction are subject
to prior, written consent.

REFA® is a registered trademark.

Printed and distributed by REFA,
Wittichstraße 2, 64295 Darmstadt
Germany.

Tel.: ++49 6151 8801 -154

Fax: ++49 6151 8801 -28

e-mail: refa@refa.de

REFA-services in the internet:

www.refa.com