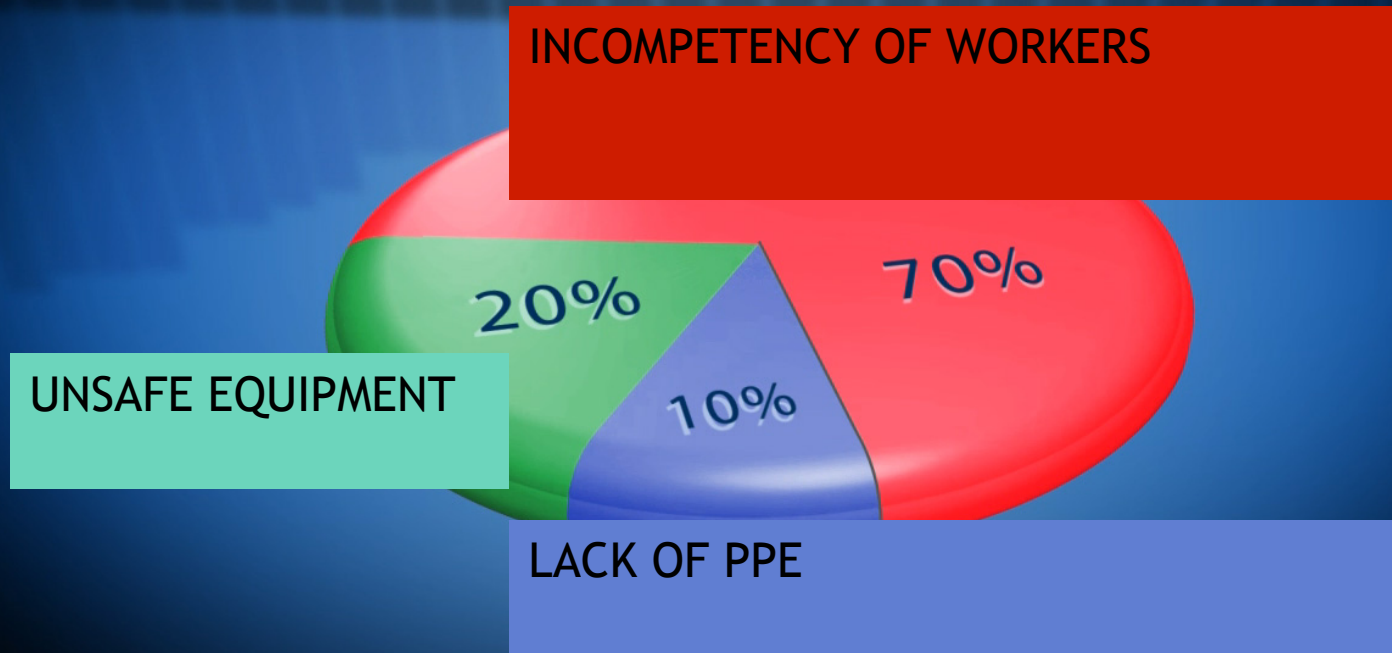




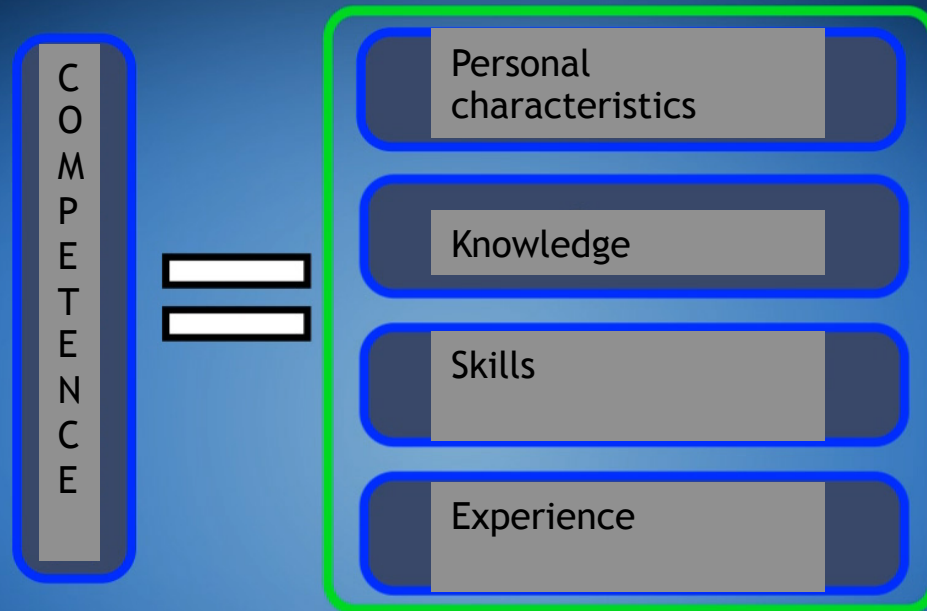
**Video informational complex for development  
and control of workers' competence  
according to the Occupational Safety  
requirements.**

## CAUSES OF ACCIDENTS AT WORK



According to statistics the main causes of occupational accidents are workers' incompetent actions.















The lack of protective equipment and the usage of unsafe tools are left in the background.



**КОМПЕТЕНТНОСТЬ (ОХРАНА ТРУДА) — ЭТО СПОСОБНОСТЬ РАБОТНИКА САМОСТОЯТЕЛЬНО ИСПОЛНЯТЬ ТРУДОВУЮ ФУНКЦИЮ С СОБЛЮДЕНИЕМ ТРЕБОВАНИЙ ОХРАНЫ ТРУДА, ОСНОВАННАЯ НА НЕОБХОДИМЫХ ЛИЧНОСТНЫХ ХАРАКТЕРИСТИКАХ, ЗНАНИЯХ, УМЕНИЯХ, НАВЫКАХ И ОПЫТЕ В СФЕРЕ ОХРАНЫ ТРУДА.**

The competence in occupational safety is the worker's ability to work independently, observing the occupational safety requirements. This ability is based on personal traits, knowledge, skills, habits of work and the experience in occupational safety.















## CRITERIA FOR COMPETENCES ASSESSMENT

COMPETENCES LEVEL		Risk of harm depends on worker's competence level			
		low	considerable	high	fatal
competent					
Not well-informed					
uninformed					
Dangerously uninformed					

The probable harm level depends on worker's competence level.  
The competence is divided into 4 levels:

















## CRITERIA FOR COMPETENCES ASSESSMENT

COMPETENCES LEVEL		Risk of harm depends on worker's competence level			
		low	considerable	high	fatal
competent 	Insignificant violation of OSH norms, low level of harm				
Not well-informed 					
uninformed 					
Dangerously uninformed 					














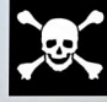
- the actions of the competent worker may lead to the insignificant breach of occupational safety requirements, low risks realization and low harm to health;

## CRITERIA FOR COMPETENCES ASSESSMENT

COMPETENCES LEVEL		Risk of harm depends on worker's competence level			
		low	considerable	high	fatal
competent 	Insignificant violation of OSH norms, low level of harm				
Not well-informed 	Significant violation of OSH norms, low or significant level of harm				
uninformed 					
Dangerously uninformed 					















- the actions of uninformed worker may lead to the essential breach of occupational safety requirements, essential risks realization and essential and low harm to health;

## CRITERIA FOR COMPETENCES ASSESSMENT

COMPETENCES LEVEL		Risk of harm depends on worker's competence level			
		low	considerable	high	fatal
competent 	Insignificant violation of OSH norms, low level of harm				
Not well-informed 	Significant violation of OSH norms, low or significant level of harm				
uninformed 	Gross violation of OSH norms, low, significant or high level of harm				
Dangerously uninformed 					

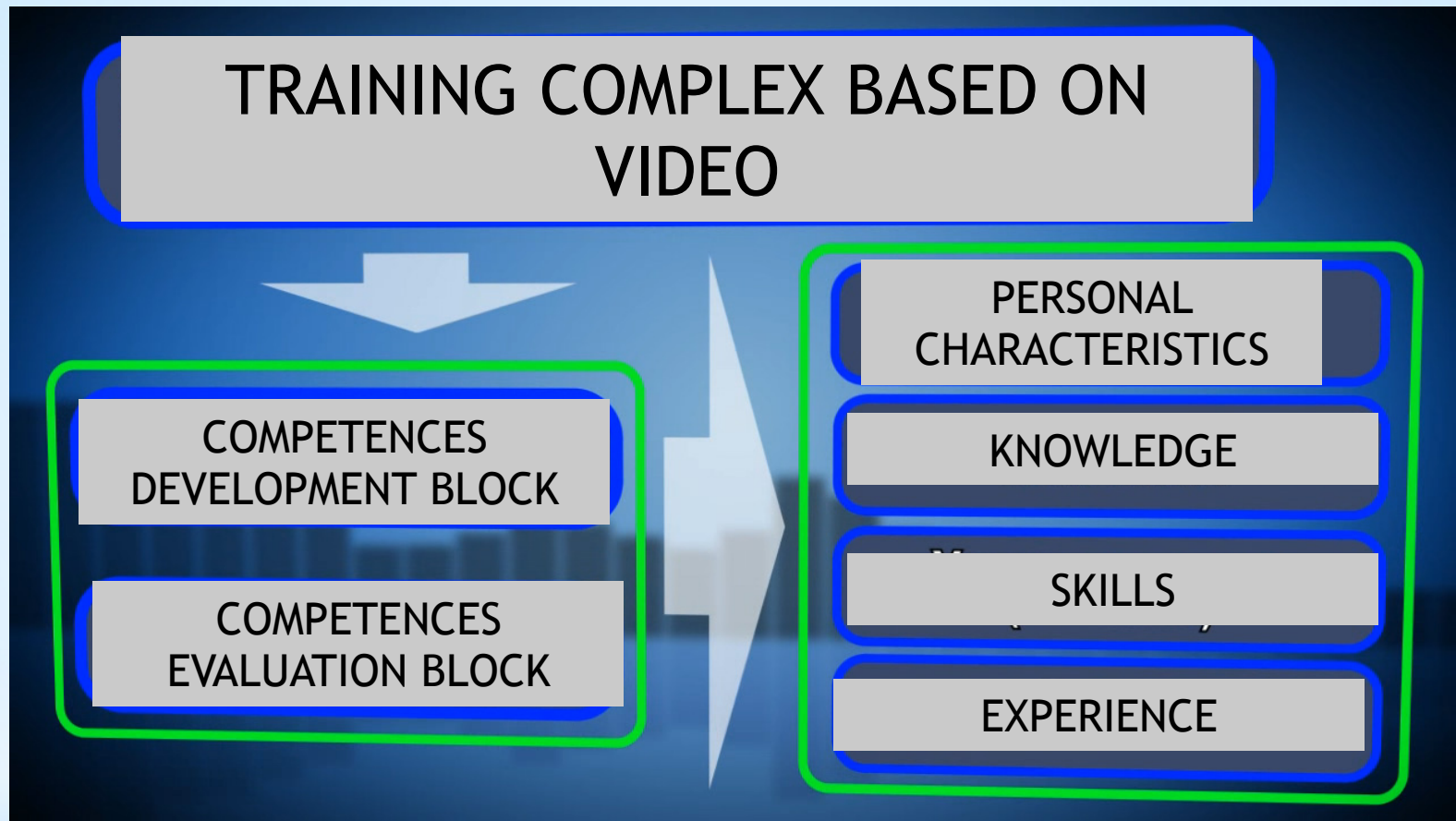
- the actions of incompetent worker may lead to the rough violations of occupational safety requirements, high risks realization, serious injury, essential and low harm to health;

## CRITERIA FOR COMPETENCES ASSESSMENT

COMPETENCES LEVEL		Risk of harm depends on worker's competence level			
		low	considerable	high	fatal
competent 	Insignificant violation of OSH norms, low level of harm				
Not well-informed 	Significant violation of OSH norms, low or significant level of harm				
uninformed 	Gross violation of OSH norms, low, significant or high level of harm				
Dangerously uninformed 	Gross violation of OSH norms, low, significant, high or fatal level of harm				

- the actions of dangerously incompetent worker may lead to the fatal violations of occupational safety requirements, fatal risks realization, the harm to health of all the levels, including death.





The modern video informational technologies can be conventionally divided into the section of worker's competence development and the section of control of the worker's competence level.

For the development of worker's competence we use innovative methods, which influence upon different components of the competence.

COMPETENCES DEVELOPMENT  
BLOCK

KNOWLEDGE

**ОЦЕНКА СТЕПЕНИ РИСКА, ОБУСЛОВЛЕННОГО  
ПРОИЗВОДСТВЕННОЙ СРЕДОЙ**

		1	2	3	4	5
		PROBABILITY				
LEVEL OF HARM	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

**Если комиссия установила, что степень риска  
очень низкая, низкая или средняя разрабатываются  
план мероприятий по устранению и минимизации  
сроков устранения и**

VIDEP INSTRUCTIONS ARE ABOUT GENERAL ISSUES OF  
OCCUPATIONAL SAFETY AND METHODS OF RISK  
IDENTIFICATION AND MANAGEMENT

Educational video courses and video films are dedicated to the general issues of occupational safety and to the methods of risk detection, evaluation and management.

COMPETENCES DEVELOPMENT  
BLOCK

KNOWLEDGE



COMPETENT WORKER IS ALLOWED TO WORK

VIDEP INSTRUCTIONS ARE ABOUT GENERAL ISSUES OF  
OCCUPATIONAL SAFETY AND METHODS OF RISK  
IDENTIFICATION AND MANAGEMENT

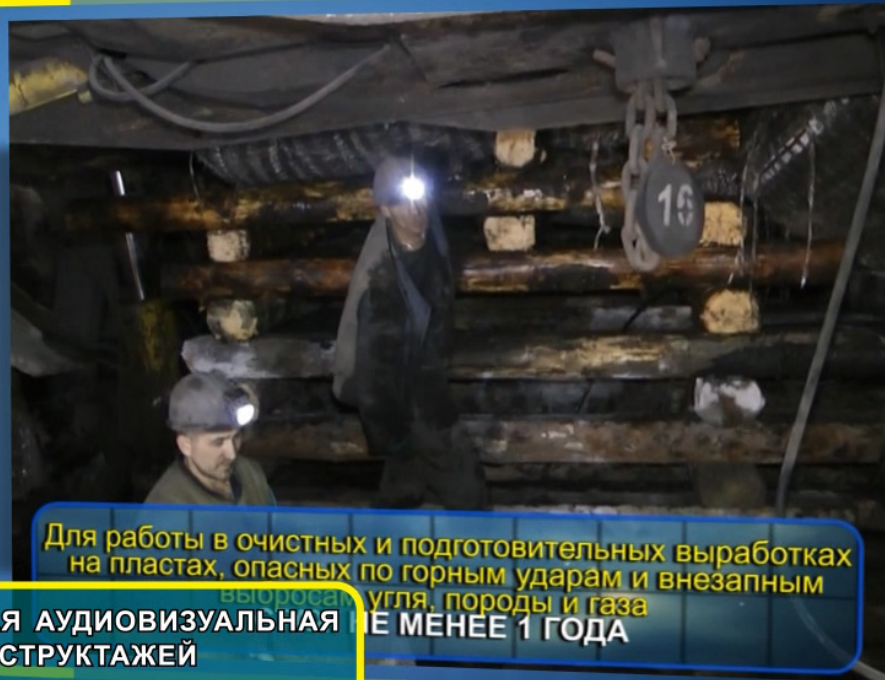
РАБОТНИК ДОПУСКАЕТСЯ К РАБОТЕ В ШАХТЕ

Their aim is to form at worker's the initial habits of safe work, to inspire in worker the confidence, that his personal competent actions increase his safety.



COMPETENCES DEVELOPMENT  
BLOCK

KNOWLEDGE



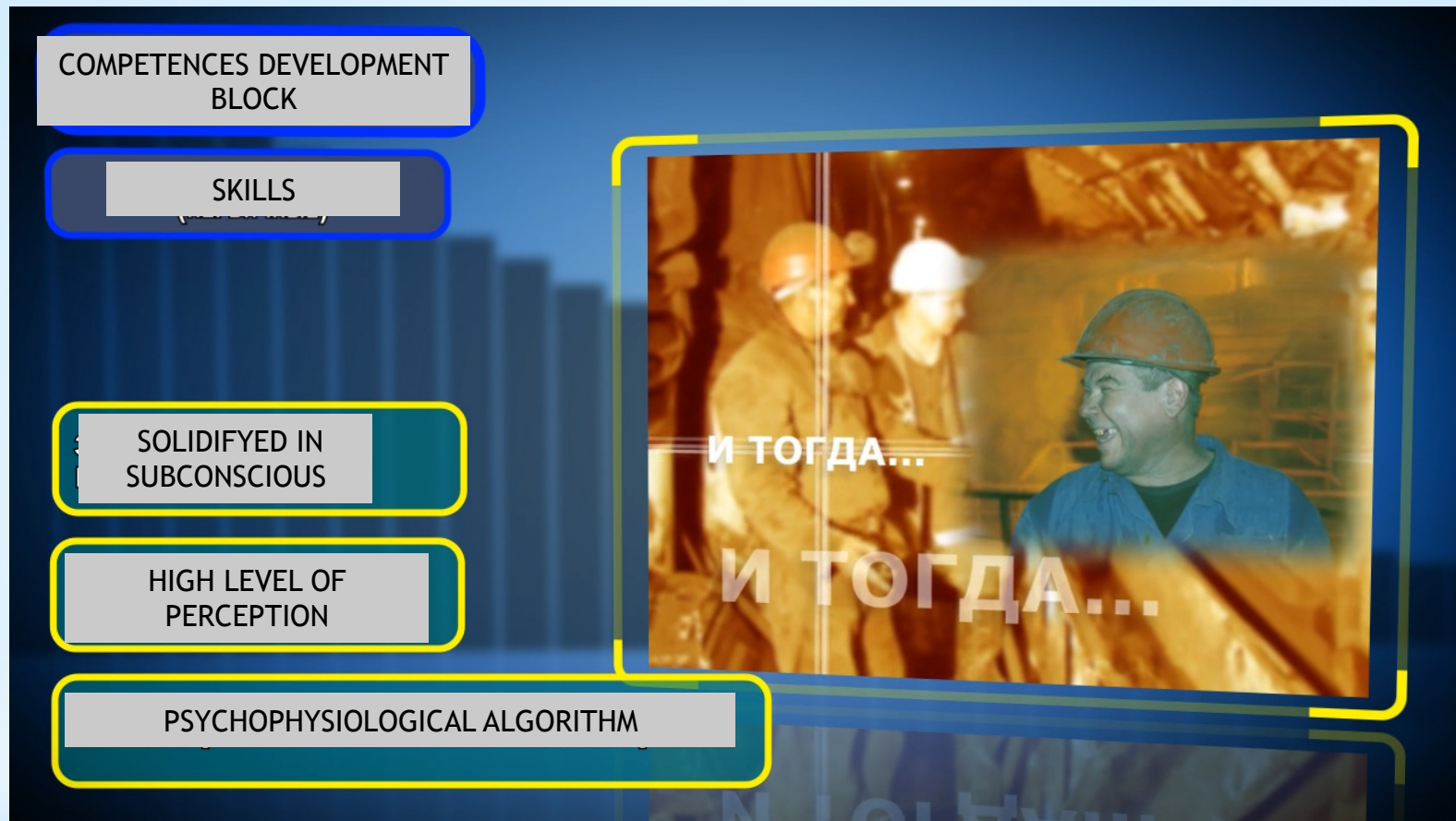
Для работы в очистных и подготовительных выработках  
на пластах, опасных по горным ударам и внезапным  
выбросам угля, породы и газа

НЕ МЕНЕЕ 1 ГОДА

**Видеоинструктажи - новая аудиовизуальная  
форма сопровождения инструктажей  
по охране труда**

The video instructions are the new audio-visual form of assistance during the occupational safety trainings. It includes the review of harmful and dangerous occupational factors, safe methods and habits of work, and also the requirements of occupational safety.





Kuzbass-COT developed a special psychophysiological algorithm, that enables the high level of perception of the instructions' texts and the efficient consolidation in the workers' inner space.

COMPETENCES DEVELOPMENT  
BLOCK

SKILLS

SOLIDIFIED IN  
SUBCONSCIOUS

HIGH LEVEL OF  
PERCEPTION

PSYCHOPHYSIOLOGICAL ALGORITHM



In the algorithm are widely used the psychological techniques, which improve the quality of memorizing of the educational issues.

COMPETENCES DEVELOPMENT  
BLOCK

SKILLS

FIRE AT ELECTRICAL INSTALLATION (1000 w)

YOUR CHOICE

EXTINGUISH A FIRE

SWITCH OFF THE POWER

INTERACTIVE MULTIMEDIA SOFTWARE IS A STRUCTURED SET OF  
MULTIMEDIA ELEMENTS ON SAFE METHODS OF WORK

We also use interactive multimedia programs, which are the structured bank of multimedia pieces of safe work, where the trainee is not only a spectator, but the character, who has to make decisions and perform certain actions. The consequences of incorrect actions are also demonstrated.



COMPETENCES DEVELOPMENT  
BLOCK

EXPERIENCE



3D COMPUTER-BASED MODELS OF REAL  
SITUATIONS

The transfer of experience is realized at the expense of analysis of real accident. The detailed analysis on the example of 3D model piece, showing the breach of occupational safety requirements and its tragic consequences, involves the strongest, so called, emotional memory and helps in more efficient memorizing of the information.



COMPETENCES DEVELOPMENT  
BLOCK

EXPERIENCE



3D COMPUTER-BASED MODELS OF REAL  
SITUATIONS

На штанге стоял отбойный ключ, который  
Скорюпин С.В. и Астаев М.Е. забыли убрать

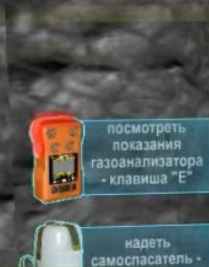
Скорюпин С.В. и Астаев М.Е. забыли убрать  
На штанге стоял отбойный ключ, который

From this point on in the dangerous situation the emotional memory is activated and the analysis is remembered. As a result the worker acts reasonably and more carefully.

## COMPETENCES DEVELOPMENT BLOCK

### ЗАДАЧИ:

- Позвонить диспетчеру
- Надеть самоспасатель
- Выключить конвейер
- Взять огнетушитель
- Потушить возгорание



VIRTUAL SIMULATORS

The combined development of all the components of worker's competence is provided by computer virtual simulator. As the tragic practice shows, the mass base of people (60 %) act impulsively, in a random manner, panic, when the serious danger appears.

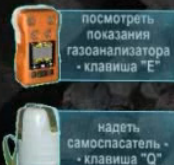


COMPETENCES DEVELOPMENT  
BLOCK

PANIC

ЗАДАЧИ:

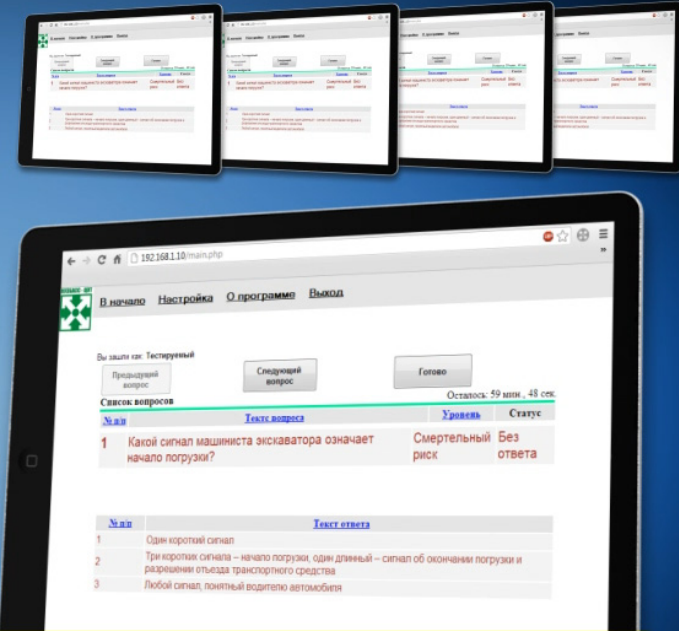
- Позвонить диспетчеру
- Надеть самоспасатель ✓
- Выключить конвейер ✓
- Взять огнетушитель
- Потушить возгорание



VIRTUAL SIMULATORS

The preliminary trainings on correct actions with the usage of personal and collective virtual simulators identically provide the decrease, the suppression of the panic factor in emergency situation.

## COMPETENCES EVALUATION BLOCK



### **Контроль знаний работника в области охраны труда**

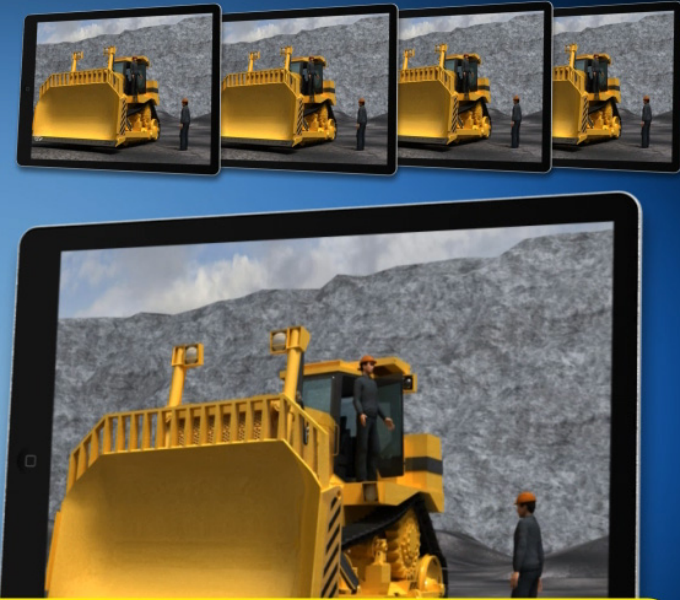
Для контроля в основном используются текстовые вопросы по общим и специальным требованиям к знаниям работника.

Ошибочные ответы — возможные некомпетентные действия комментируются.

To evaluate the worker's competence and its components we use special examiner, which provides the control of worker's knowledge in occupational safety. For control are generally used text questionnaires on basic and special requirements. Incorrect answer and probable incompetent actions are commented.



The laptop screen shows a web browser window with a table of test results. The table has two columns: the first column lists various transit types, and the second column shows the result 'ОД "ОЗЖ-Кубань"' (OD 'OZH-Kuban') for each. The transit types listed are: 'Тест "Передаточные поданные транзиты"', 'Тест "Оформление первой поездки"', 'Личный тест иронисты', 'Пассажирский транспорт', 'Тест "Передаточные поданные транзиты"', and 'Пассажирский транспорт/перевозки пассажиров'.



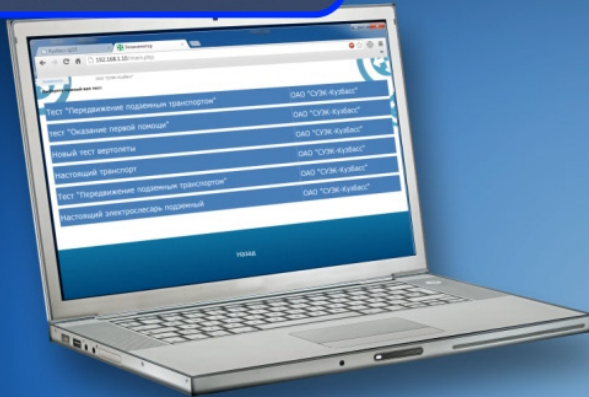
**КОНТРОЛЬ СПОСОБНОСТИ РАБОТНИКА ПРОГНОЗИРОВАТЬ РАЗВИТИЕ ОПАСНОЙ СИТУАЦИИ И ДЕЙСТВОВАТЬ В АВАРИЙНЫХ СИТУАЦИЯХ.**

Для контроля в основном используются интерактивные видеофайлы и 3D-компьютерные модели, подготовленные на основе анализа аварий и несчастных случаев.

**Ошибочные ответы — возможные некомпетентные действия комментируются.**

Interactive control of experience. The control of worker's ability to predict the development of dangerous situation and to act in emergency situations. For control are generally used interactive video files and 3D models, created on the basis of analysis of accidents. Incorrect answer and probable incompetent actions are commented.

COMPETENCES EVALUATION  
BLOCK



**ИНТЕРАКТИВНЫЙ КОНТРОЛЬ ЗНАНИЙ ПО ОКАЗАНИЮ ПЕРВОЙ ПОМОЩИ**  
Для контроля способности работника оказывать первую помощь  
пострадавшим при конкретных травмах используются интерактивные  
видеофайлы  
Ошибочные ответы — возможные некомпетентные действия комментируются.

Interactive control of first aid knowledge. For control are generally used interactive video files. Incorrect answer and probable incompetent actions are commented.

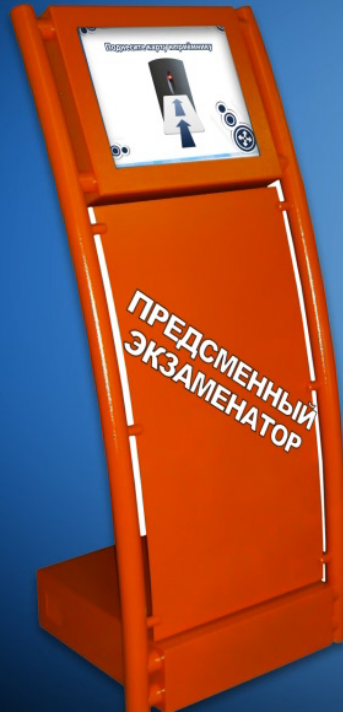


## COMPETENCES EVALUATION BLOCK



The examiner is created on a base of client-server architecture, supports the wireless data transmission and provides the possibility to use budget-priced tablet PCs. The results of examination are collected in the single data base of workers' competence.





## THE VANDAL-RESISTANT EXAMINER

МАССОВОЕ И ЭФФЕКТИВНОЕ ЗАПОМИНАНИЕ МЕТОДОВ  
И ПРИЕМОВ БЕЗОПАСНОГО ВЫПОЛНЕНИЯ РАБОТ

НЕПРЕРЫВНО И МАССОВО ПОБУЖДАЕТ  
РАБОТНИКОВ К БЕЗОПАСНОМУ ВЫПОЛНЕНИЮ РАБОТ

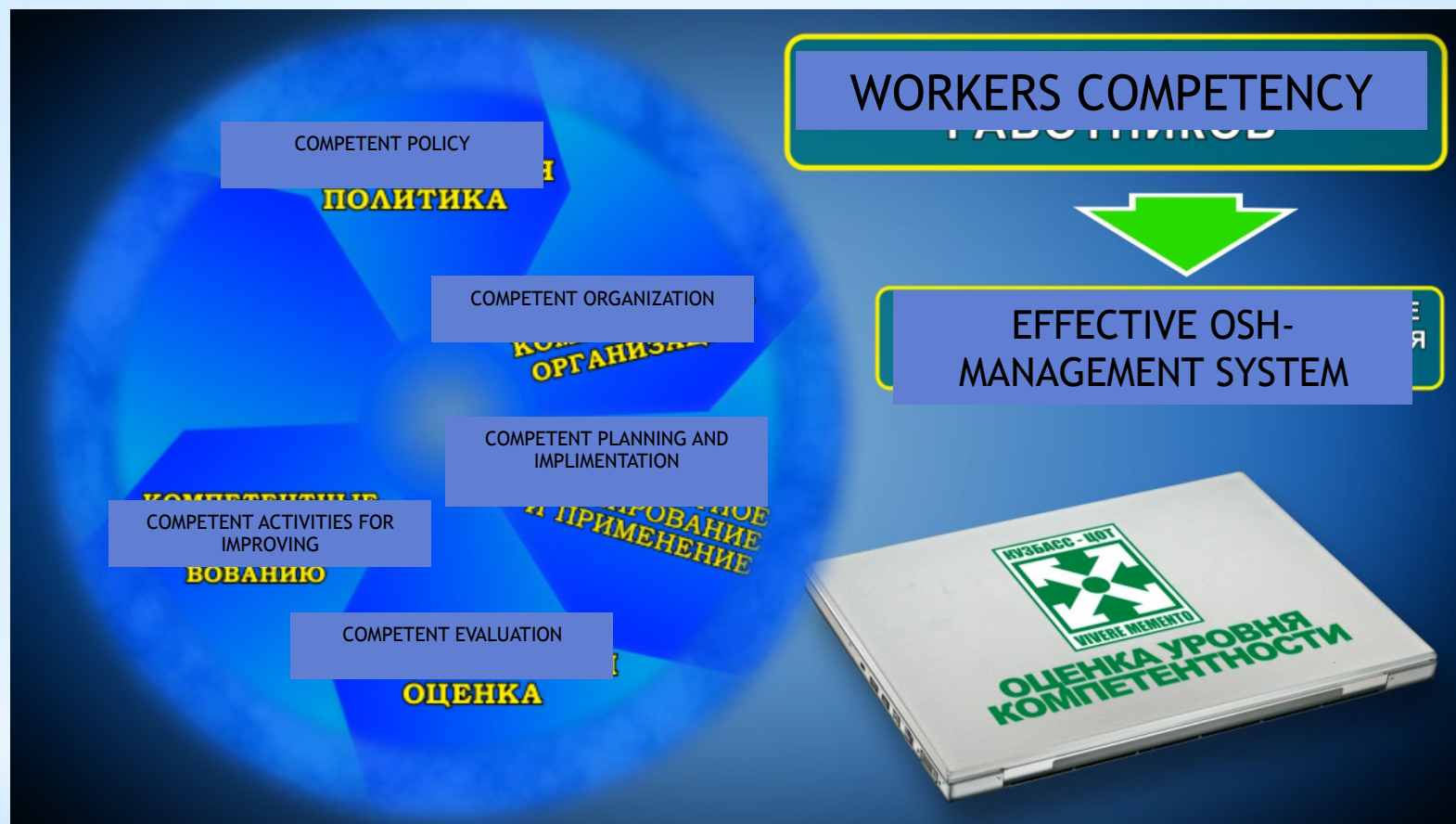
ОШИБОЧНЫЕ ОТВЕТЫ — ВОЗМОЖНЫЕ  
НЕКОМПЕТЕНТНЫЕ ДЕЙСТВИЯ КОММЕНТИРУЮТСЯ

The vandal resistant before shift examiner makes possible the automation of massive personal control of workers' knowledge through rapid (10-20 seconds) testing before the shift. It guarantees massive and efficient memorizing of methods and habits of safe work.

## АКТИВНО СТИМУЛИРУЕТСЯ САМОПОДГОТОВКА РАБОТНИКОВ ПО ВОПРОСАМ БЕЗОПАСНОСТИ ТРУДА



It enforces the workers to work safely permanently and massively. Incorrect answer and probable incompetent actions are commented. Computer examiner “Competence level control” and before shift examiner actively stimulate workers’ self-tuition in occupational safety issues.



Objective and operative control and maintenance of adequate level of workers' competence provide the efficient functioning of all the main elements of the occupational safety management system, such as: competent policy, competent organization, competent planning and implementation, competent evaluation, competent action on improvement.



## EFFICIENCY



**В 2010 году для ОАО «Белон» были разработаны учебные программы по формированию компетентного подхода к управлению личной безопасностью работников с использованием видеоинформационных технологий**

The following example illustrates the efficiency of using the video informational technologies to develop and control the workers' competence: in 2010 OAO Belon (open joint-stock company) made a decision to create the educational program, which would form the competent approach to workers' personal safety management.

## EFFICIENCY



**В 2010 году для ОАО «Белон» были разработаны учебные программы по формированию компетентного подхода к управлению личной безопасностью работников с использованием видеоинформационных технологий**

Kuzbass-COT developed educational programs and adequate lectures with the usage of video informative technologies.



## EFFICIENCY

учебные фильмы и видео-инструкции по охране труда

интерактивные видео-инструкции по охране труда

разбор аварий и инцидентов на компьютерных 3D моделях



The educational films and video instructions on occupational safety were shot in the coal mines with the workers of OAO Belon (open joint-stock company). Including the instructions, which can be used as interactive.



## EFFICIENCY

учебные фильмы и видео-инструкции по охране труда

интерактивные видео-инструкции по охране труда

разбор аварий и инцидентов на компьютерных 3D моделях



The analysis of concrete emergency situations and accidents was based on the 3D models of the real accidents.

## EFFICIENCY

### NUMBER OF WORKERS TRAINED



The number of workers trained under the program “Leadership in occupational safety” during 2 years was 2960 individuals, or 53,6% of the whole staff. The expected percentage for 3 years is about 80,4%.

EFFICIENCY

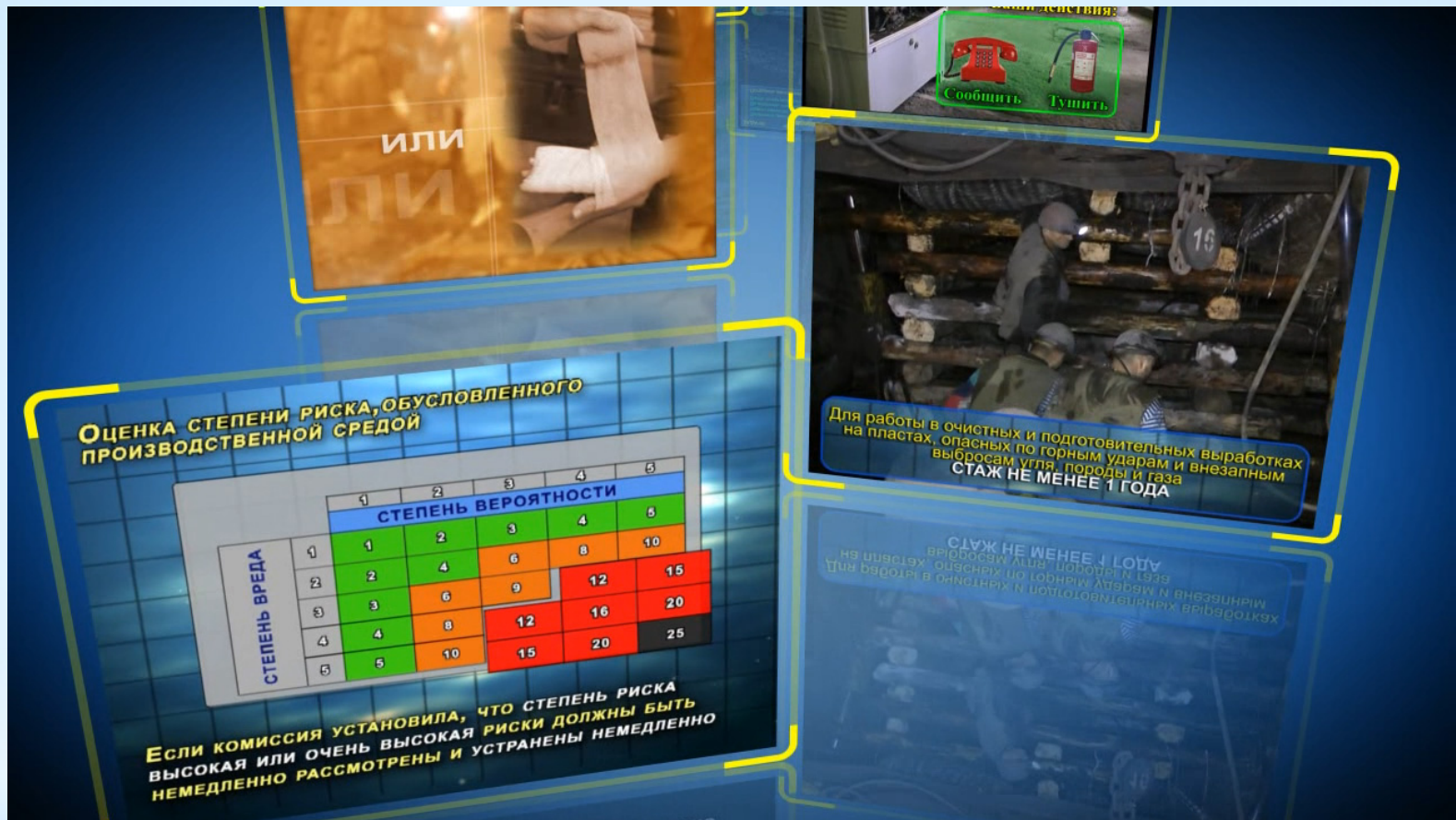
NUMBER OF WORKERS TRAINED

РАБОТНИКОВ  
ЧИСЛО  
ННЫХ  
NUMBER OF WORKERS INJURED



Resulted from using the video informational technologies in the trainings of personnel of OAO Belon (open joint-stock company) the essential reduction of occupational injuries appeared. Obviously, the other measures to reduce occupational injuries were realized in the Company. Otherwise, it is important to note that it has been done in the past.





Thus, we guess, the improvement of worker's competence in occupational safety, using video informational technologies, has proved its practical significance and it is now one of the most efficient methods to reduce occupational injuries.



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