

**RISK FREE
EQUIPMENT
OPERATION
EXPERIENCE**



TEKFEN CONSTRUCTION





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ABOUT TEKFEN CONSTRUCTION

Tekfen Construction, today a leading organization in challenging fields of contracting activities but also a studious environmentalist, traces its roots to an engineering consulting company established in 1956.

Tekfen Construction, an affiliate of Tekfen Holding, is a respectable signature as an international contractor with major accomplishments in Turkey, the Middle East, North Africa, Caucasia, Central Asia, East-Central Europe.

With its sister companies and strategic partnerships in engineering and steel manufacturing, Tekfen Construction is a dynamic EPC contractor, specialized in pipelines, refineries, major industrial processing plants, heavy civil works, marine structures, power plants, electrical and communication works, worldwide.

As an ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 certified company, Tekfen Construction is dedicated to the highest quality standards and aiming for sustainable excellence through "continual improvement" and strict belief in "teamwork" with prioritizing health and environmental protection.

Tekfen Construction is a large family of 16,000 employees, including subcontractor's personnel.



MACHINERIES AND MOBILE EQUIPMENT

Machinery and mobile equipment are essential parts of all kinds of construction activities, as well as pipeline projects. Machinery and mobile equipment help to carry out challenging tasks in the easiest/fastest way and also reduces the need for human-power. That's why they are one of the most valuable assets for all companies in the construction industry.



SAFETY RISKS

Despite all those advantages, there are safety risks posed by machinery and mobile equipment that may lead to fatal injuries.

In reducing risks and number of potential accidents, operators' competency is one of the most important criteria which should be taken into consideration.

Consequently, in addition to operators' certificates associated with the equipment they use, Tekfen Construction also test their competence during recruitment process.

At this stage of the recruitment process, candidates were subject to operate real machinery, therefore some additional risks like accidents caused by inadequate operating skills were taken by the Company.



EFFECT ON PROGRESS



While the operators pass the pre-employment assessment, practical trainings are conducted at regular intervals to improve their skills, as continual improvement of operators' safety awareness is a key factor for preventing accidents related to machinery and mobile equipment movement.

That's why Tekfen Construction were providing resources for internal or external trainings and allocate active mobile equipment on site for training purposes.



Tekfen Construction researched new technologies to avoid putting the operators in a risk during the employment and skill development trainings. While VR (Virtual Reality) technology provides large range of opportunities, Tekfen Construction Management decided to invest in VR technologies for trainings and assessments for the operators.

VR APPLICATION

Virtual Reality (VR) is a computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings. This environment is perceived through a device known as a Virtual Reality headset or helmet. VR allows users to immerse themselves in work environment, learn how to operate equipment to improve their abilities.



Tekfen Construction started to use a VR technology during both recruitment process and internal training program for Mobile Elevated Work Platform operators. One of the reasons behind the provision of VR Simulator is that to prevent recurrence of near miss incidents happened before, during the pre-employment assessments and training of operators.

VR software which simulates MEWP usage preferred at the first stage of this investment. Scenarios for usage of other types of machinery and mobile equipment (e.g., mobile crane, loader, side-boom, etc.) are planned to be implemented in near future.

VR APPLICATION

Tekfen Construction's "Machinery & Equipment Maintenance and Repair Facilities" which is located in Turkey, provides technical service function for machinery and mobile equipment used in Tekfen Construction Projects all over the world.

In addition, training programs are implemented in this facility to train competent operators. A large number of the operators working in Tekfen Construction Projects have been assessed and trained in the facility.

To improve said training program, VR simulator which provides training and competency assessment for Mobile Elevated Work Platform operators was settled and a special room was allocated in the facility to provide a decent training atmosphere.

Beyond any legal or Client requirements, Tekfen Construction Management funded resources for the equipment and area, to add value operators' professional development and implement this best practice in the industry.



VR APPLICATION

A scene from *Practical Training* session.



VR APPLICATION

Scenes from *Practical Training* session and *Pre-employment Assessment* process.



VR APPLICATION

Since the VR application has been got into use on February 2020, more than 100 MEWP operators attended to practical trainings. Feedback received from operators who attended to training sessions were quite positive.

Improvement in MEWP operators' safety awareness was observed and reported by HSE personnel at Project sites. This improvement has made an positive effect on unsafe act statistics which were reported in between July 2020 and March 2021.

In the first half of 2020, 8.3% of reported unsafe acts associated with machinery & mobile equipment was related to MEWP usage, in all Tekfen Construction projects. Since the training hours provided with VR application started to increase, the rate given above has decreased to 5.7%.



BENEFITS OF 'VR'

HIERARCHY OF CONTROLS



The VR application eliminates all possible safety risks that may be encountered while assessing operators' competency by traditional methods during the recruitment process on a mobile equipment.

Due to the fact that the software used in the VR system allows for changes easily, new scenarios needed in training and competency assessments are easily implemented, and the operators are able to experience this without additional cost.



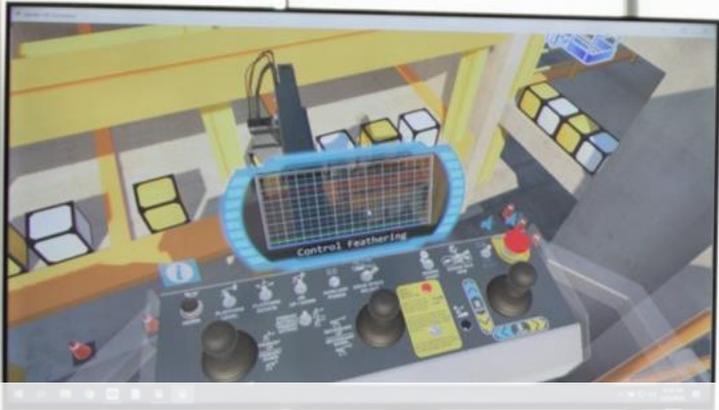
As a result of withdrawal of equipment from the site activities for practical trainings and assessments by traditional methods, we were both lagging behind in progress and experiencing high costs. Instead, the new VR investment saves us from these troubles and provides the same opportunity with less risk.

ADDITIONAL BENEFITS OF 'VR'

VR Implementation helps to reduce carbon emission by eliminating the need for diesel driven equipment use during trainings and/or assessments (More than 600 hours of training sessions and pre-employment assessments have contributed indirectly to protect the environment).



With the provision of VR Equipment into the operator training program, opportunity to improve operators' competency through making them experience to cope with harder situations (being on an edge of a trench and so forth) which would be avoided in a traditional training with the equipment.



Thank You



BUILDING
A Sustainable
FUTURE