

The “On-The-Road-Training Programme”

2023 IPLOCA Health & Safety Award



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1. COMPANY PROFILE

Bonatti is an EPC **International General Contractor providing services to Oil & Gas and Power industry.**

Our activities range from **engineering**, to **construction** and **plants and pipelines operation & maintenance** of.

Bonatti' exceeds **70 years experience** in challenging projects, **performed** under the **most critical environmental and logistical conditions** in **remote locations**, combining **innovative technologies and methodologies.**

Bonatti is "loop cycle service company", providing:

- **Engineering**
Our engineering capabilities are applied to a wide range of works and delivery methods: from EPC projects to maintenance services. Leveraging on field experience we inject top class engineering solutions into all activities.
- **Construction**
We review project processes since pre-construction phase. The effective integration of construction knowledge into planning activities, design and field operations allow us to achieve the overall project objectives in compliance with deadlines, accuracy and HS&E-CSR requirements. Our experience in construction is a wealth of knowledge developed over decades executing challenging projects all over the world. Due to our experience in all disciplines we commit full reliability performance to our clients: this is our main goal.
- **Operation & Maintenance**
Our multi-years' experience in global operation & maintenance services allows us to integrate client's operational capabilities. The goals are production efficiency and optimized overall project lifecycle costs.

Bonatti's operations are deployed in **4 Continents** with **10,000 people** working with us.

In each context Bonatti operates, the attention to local context maximisation and local communities is paramount.

Worked Man Hours

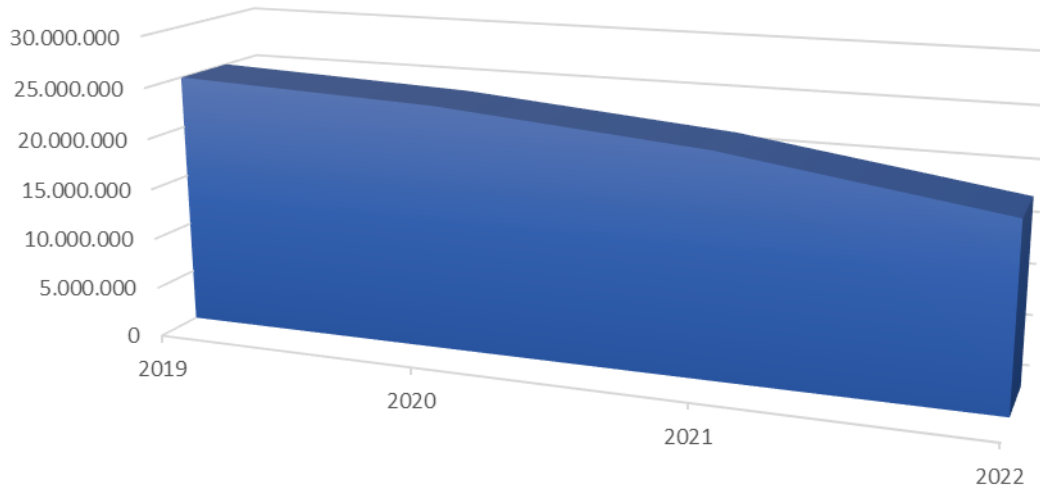


Figure – Worked Man-hours

2. FINDINGS

Training is one of the most challenging aspects occurring in the pipeline business, due to logistic issues. Furthermore, as evidenced in many incident investigations, lack of competence and training is one of the most recurrent causes.

Competence assurance and adequate and continuous training and awareness to keep up to the right level the competencies of workforce is the aspect targeted in this piece of work.

The challenge to gain a structured, pervasive and effective training for all staff are o associated to several issues, such as;

1. Due to the very nature of pipeline business, the location in which the activities take place are spread on the territory. Spread distances are often quite large;
2. Resistance from operation and production to make workers available to attend the scheduled training sessions;
3. Classroom training versus practical training on the spot:
in-classroom training is usually performed by theoretical approach. That does not take into account the ground elements encountered in the day-by-day activities (e.g. terrain orography, specific conditions of a given KP, restrains, etc...);
4. Customisation: *traditional* training session are not able to bring the attendees to “live” the lesson learned of an unwanted event, neither a deviation, neither to let the worker to practically test an activity process (based on a specific Method Statement and Risk Assessment) in a “Zero Risk area”.

3. SOLUTION

Bonatti has therefore designed and implemented an innovative initiative to guarantee staff the most effective continuous training:

The **On-The-Road-Training**, makes training units directly available into the operations sites.

The initiative entails the **On-The-Road Training**- ensuring the training being customized to actual real and specific operation situation. That allows to address the specific challenges faced by the workers and, possibly also by them highlighted.

This responds to:

1. Logistic issue: the mobile unit is able to reach each Project worksite and working team without constraint;
2. Training quality and location: Workers can be trained with specific session, directly at the worksite, Logistic base or Base Camp, with the same training quality. This allows to spare the time needed for moving of staff to training facility;
3. Site specific issues: The training on site, can easily include those features which are peculiar to the areas where the activities are performed. This also allows a direct confrontation between trainers and workers on their site-specific concerns, and eventually resolve them on the spot;
4. Customization: Bonatti identified the equipment and machinery most statistically likely to be involved in accidents and near misses or subject to HSE observations. Specific virtual representation of defined jobs were as well determined. Both were "positioned" inside the **On-The-Road-Training Unit** to carry out tailored training sessions.



On-The-Road-Training Unit - exteriors

The unit is able to provide 2 modalities of training:

1. **Advanced** - through the use of technologically advanced equipment:
 - **Augmented Reality** – via **QR Code** and **Glyphs**. It is **applied to** Real equipment and tools or scaled Heavy equipment. Once the trainee frames by a camera (mobile phone) guides the subject through all the safety information (both HSE requirements and correct use)

Scan to run a trial!



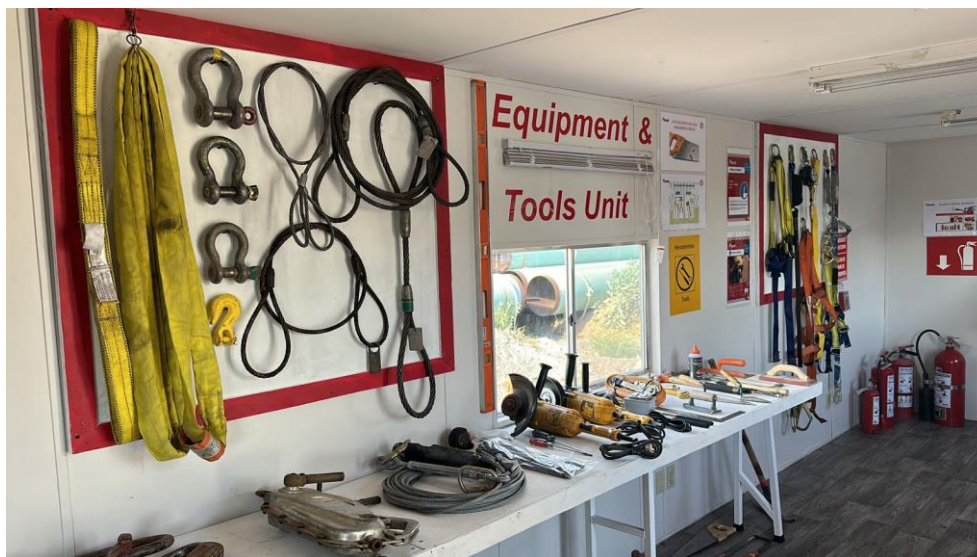
QRCode for Hand Power Tool - example



QRCode for Heavy Equipment - Sideboom - example

- **Virtual Reality** – the use of a visor brings the worker in an immersive tailored scenario, where an activity process or a lesson learned is virtually “experienced”.
2. **Standard** - via tools used usually in a “static” training room, such as:
- Monitors,
 - Projector,
 - Whiteboard,
 - Tool and equipment for training purpose
 - Training material.

The above tools are taken directly at work site, overcoming all issue relating to the use of a traditional training room, and guaranteeing quality training fully customized to site specific activities.



On-The-Road-Training Unit - interior



On-The-Road-Training Unit - interior

4. IMPLEMENTATION

On-The-Road-Training- unit has been mobilized on Pipeline project site, to reach each work areas and provide innovative workers involvement during training.

Inside the mobile training unit, you can find:

- Real equipment and tools (e.g. grinding wheel, welding machine), equipped with **QR Code**. **The trainee is provided with a mobile phone or a tablet** (available in the unit) by

which camera he can frame the QR Code. Once framed, the device provides all the safety information (HSE requirements and correct use) inherent to the framed equipment.

- Scale models of heavy equipment (e.g. Sideboom, excavators), which once framed, "animate" on the screen of the device providing the trainee with all the information necessary for correct use and control.
- The **Virtual Reality Training Kit**, which allows the trainee to be transported to an immersive virtual area. In such a way the trainee can practically test his knowledge and familiarity about HSE requirements any kind of activity (e.g. excavations). Among the other advantages, such a technique does eliminates the exposition of workers to any real risk. The kit is a simulator that magnifies the risk perception and possible unwanted consequences. Trainees may test in a protected environmental their own HSE knowledge. They can also experience possible consequences of an unwanted event on themselves. In fact, such sophisticated technology foresees and represents all external inputs.



Virtual Reality Training 1



Example of Virtual Reality Training scenario



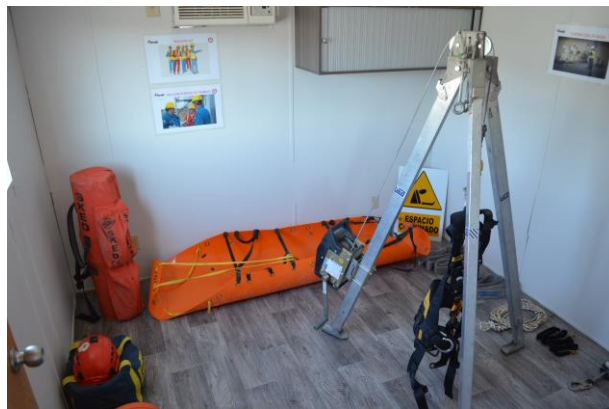
Virtual Reality Training 2

On-The-Road-Training unit, is a **training center on wheels**, able to provide the **full training set** (both Advanced and Standard) according to the Project HSE Training Matrix, everywhere at site.

Inside the mobile unit each area is set up to respond to a specific practical training and awareness session requirement, as example:

- Working with hand power tools
- Lifting and Rigging
- Visual inspection on equipment and tools
- Emergency response and first aid
- Confined Space Entry
- Road Safety

- Work at height
- Safe use of PPE
- Etc...



On-The-Road-Training Unit – interior: CSE training room



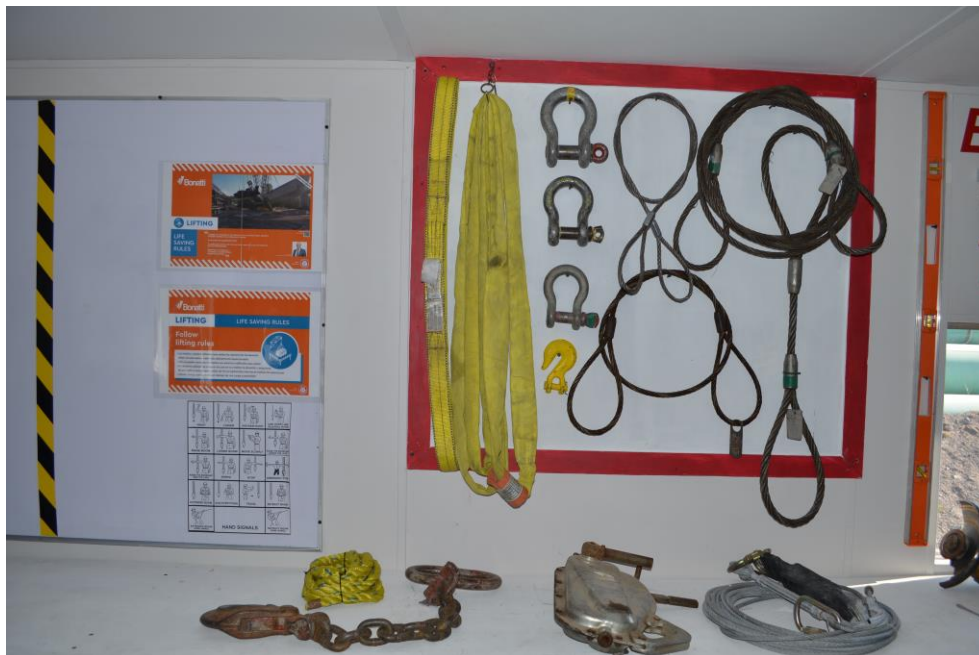
On-The-Road-Training Unit – interior: training areas



On-The-Road-Training Unit – interior: Hand power tools



On-The-Road-Training Unit – interior: Road Safety



On-The-Road-Training Unit – interior: Lifting and Rigging

5. WIDESPREAD DIFFUSION IN THE WORK AREAS

Once the **on-the-road training- Initiative** is activated on a Project, as the mobile unit reaches the workspaces, the trainees will find the relevant QR codes or Augmented Reality activation symbols applied to all equipment used by the workforce during daily activity.

In this way, the constant availability and consultation of material discussed and viewed with the HSE trainer of the mobile unit is ensured.





QR Code used by worker

6. ACHIEVEMENT

The feedback collected by the workforce and the project management on the initiative, is encouraging the Company to invest in this modality of training.

It ensures a real involvement of the workforce during training sessions and availability of specific information directly on site.

The use of Augmented and Virtual Reality with proprietary system allow Bonatti to fully tailor the selected information and the material to widespread among the workforce, tailored to specific Project and location.

Monitoring the main HSE KPI in the last trimester in Algeria and Mexico, where **On-The-Road-Training** initiative was implemented, it is possible to identify a decreasing trend in LTIF and TRIR.

7. LONG TERM PLANNING

Bonatti will continue to develop the on-the-road training- initiative, adopting the best available techniques on training and awareness to improve efficiency and effectiveness in this area.

All training material shall be constantly updated and perfected to meet the specific needs of each project and country

The **On-The-Road Training-** Initiative, is becoming a Bonatti standard on each area and project.

Further fully customized scenarios will be developed to include:

- New working processes based on specific Method Statement and Risk Assessment
- Cooperation scenario for two or more workers, to test communication and coordination of employee at the worksite.

The next steps where the initiative will be fully adopted, is:

- Americas, by June 2023
- Europe, by September 2023
- Africa, by December 2023
- Asia, by March 2024.