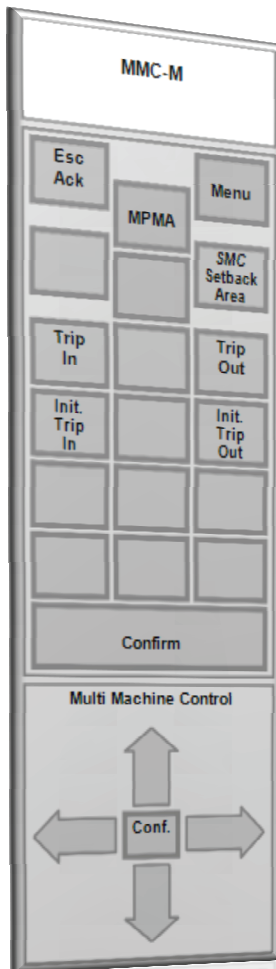


MMC – Multi Machine Control

In the last decade, there has been an increasing amount of drill floor equipment being automated. The main driving factor was removing roughnecks from the “red zones”. Another reason was the improved efficiency and consistency that automation had provided in other industries.

As the next step towards full automation of the drill floor processes National Oilwell Varco® brings you MMC – Multi Machine Control. MMC offers full automation of the pipe tripping process.

By letting MMC control the already automated machines, the operator can focus fully on the process and everything happening around it. As a result, both safety and efficiency of the tripping operations are improved while keeping at least one operator in the loop controlling the overall speed and execution.



How does MMC work?

Multi Machine Control allows ONE operator using ONE joystick to control all the drill floor equipment involved when tripping drill pipe to and from the well center. A full range of feedback from each machine enables the system to hand over pipe without ever involving the operator.

Closed Circuit Television (CCTV) Integrated

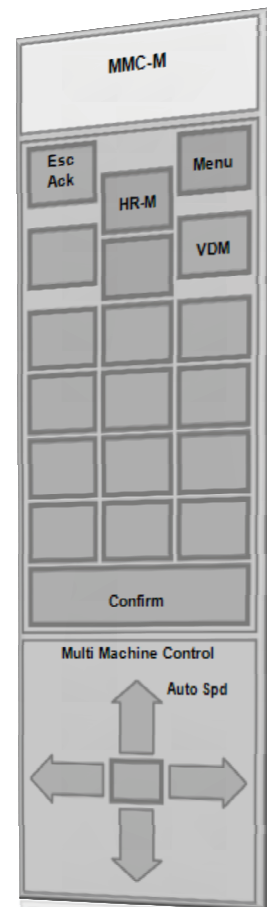
With CCTV integrated into MMC, camera selection is done by the system putting focus **where** it's needed **when** it's needed.

Single Operator Screen

Human Machine Interface (HMI) is contained on one screen providing the operator with all the information needed. Sub menus offer diagnostic and initiation settings and statuses.

Maximum Robustness

MMC is designed to be as robust as possible. If a problem occurs the machine in question can be taken out of the MMC sequence and run in manual mode to solve the problem. Once solved, it can then be signed back into the sequence without having to reset it.



www.nov.com / rig@nov.com

10000 Richmond Avenue
Houston, Texas 77042
United States
Phone: 713 346 7500
Fax: 713 435 2195

Dvergsnesbakken 3
Service Box 401
4604 Kristiansand
Norway
Phone: 47 38 192000
Fax: 47 38 192311



MMC – Multi Machine Control

What does MMC offer?

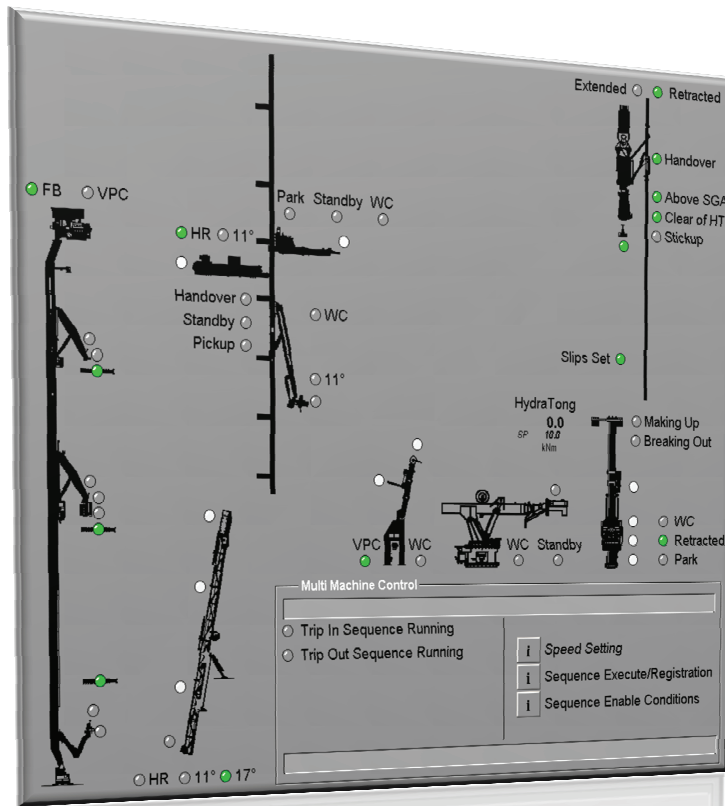
Tripping Speeds

- Faster
- More consistent

The sequence is computer controlled the same efficiency is achieved throughout long operations and between various crews.

Tripping speeds are improved due to less time is spent by the operator switching between various keypads and screens.

One operator can control all machines involved simultaneously resulting in the least amount of waiting time for each machine.



Value of investment

On some locations and wells, tripping can account for as much as 20-30% of drill floor operations. With the improved speed, the ability to better predict the tripping speeds all these factors will allow for better planning of well operations.



Safety

- Reduced operator fatigue
- Less miscommunication
- Focus on the operation

By reducing the amount of buttons pushed in repetitive operations such as tripping, the chance of operator errors are reduced.

With less focus needed to remember the sequence of buttons to push, operator fatigue and stress is reduced as well.

This also seen indirectly through the improved speed as a specific operation can be completed in a shorter time.

Reducing Crew

- Less people involved in drill floor operations

By automating the process, crew can effectively be removed from the drill floor operations.

With one person controlling the operation, communication delays and misunderstandings between operators are minimized.

Machines included in MMC:

Every drill floor machine can be included in MMC.

Some examples are:

- Top Drive / Drawworks
- HydraRacker
- HydraTong
- Elevated Backup Tong
- Vertical Pipe Chute
- Pipe Tail-in Arm
- V-Door Machine
- Upper Guide Arm
- Spinning Guide Arm

Value of investment

Unwanted incidents are costly to everyone involved and improving safety on the rig is and always will be a worthwhile investment.

Optimized running of the drill floor equipment reduces the wear and tear on machines.

CONTROLS:

- SMI Platform
- Dedicated HMI

SPECIFICATIONS:

The unit integrates with the Smart Machine Interface platform.

ADDITIONS:

The unit can be upgraded to include off drill floor equipment and other common targets such as mouse holes and stand building tower.

www.nov.com / rig@nov.com

10000 Richmond Avenue
Houston, Texas 77042
United States
Phone: 713 346 7500
Fax: 713 435 2195

Dvergsnesbakken 3
Service Box 401
4604 Kristiansand
Norway
Phone: 47 38 192000
Fax: 47 38 192311

