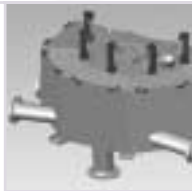


# Project Engineering Group

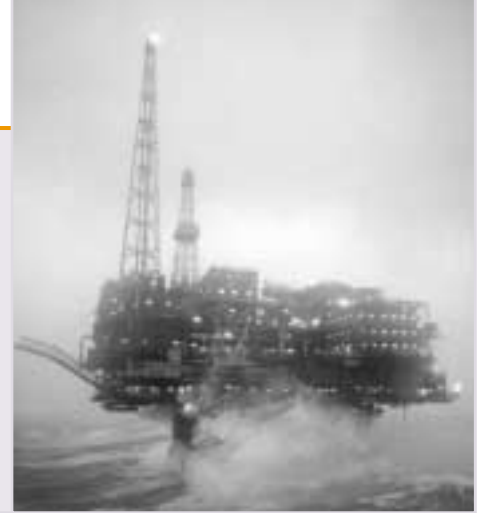
*High-specification drilling-waste-management, fluids-processing, and mixing and bulk-handling equipment packages for your operations worldwide*



**Mi SWACO**

*Customer-focused, solutions-driven*

# Custom-built bulk-handling and drilling-waste-management equipment increases your well-construction performance and safety



The M-I SWACO\* Project Engineering Group, based in Aberdeen, Scotland, UK, is a team of professionally qualified project, design and discipline engineers, dedicated to producing project-specific equipment for new and refurbished drilling installations.

The concept for the group began in the 1980s when modifications to equipment were necessary to meet the stringent electrical and hazardous-area regulations for North Sea drilling and production. Here is a brief list of what we offer our clients:

- Multi-discipline, team approach
- Project management
- Detailed engineering and design
- Onshore fabrication and rigsite installation
- Testing and commissioning
- Development of manufacturers' equipment and systems
- Integration with rig/platform drilling control and monitoring system
- Compliance with ISO 14000 and working to CE, NORSOK and GOST standards



## Accommodating your changing needs

The drilling rig construction business has become more cost-conscious and sensitive to HSE issues in recent years. As a result of this, North Sea and ISO standards are being exported to new areas such as the Caspian Sea and Eastern Russia. The Project Engineering Group has expanded rapidly to cope with these ever-increasing industry demands. Our project experience in recent years has included some of the largest contracts for the supply of Drilling-Waste-Management (DWM) equipment ever issued by operators and drilling contractors.

The scope of equipment and projects the group undertakes spans all M-I SWACO product lines, including:

- Solids control
- Drilling-waste management
- Cuttings re-injection
- Cuttings transport and storage
- Cuttings dryers
- Cuttings inter-field transfer
- Mud mixing and bulk handling
- PLC control systems
- ENVIROCENTER\* facilities
- Cuttings treatment
- Water treatment
- Thermal treatment

## Where it makes sense to apply project-specific engineering and manufacturing

As the economic stakes of drilling and production rise, more operators are taking a second look at project-specific bulk-handling and DWM equipment as a way to control costs in the face of challenging demands such as:

- Harsh environments
- Extended-life requirements
- Spares reduction
- Environmental regulations
- Health and safety issues

While we design, engineer and manufacture equipment to suit specific needs, we also try to help our clients reduce costs through commonality of materials and spares as well as consistent documentation. Satisfied customers around the world agree that the up-front investment is more than outweighed by the long-term benefits:

- Reduced costs
- Improved operational efficiency
- Increased safety
- Regulatory compliance

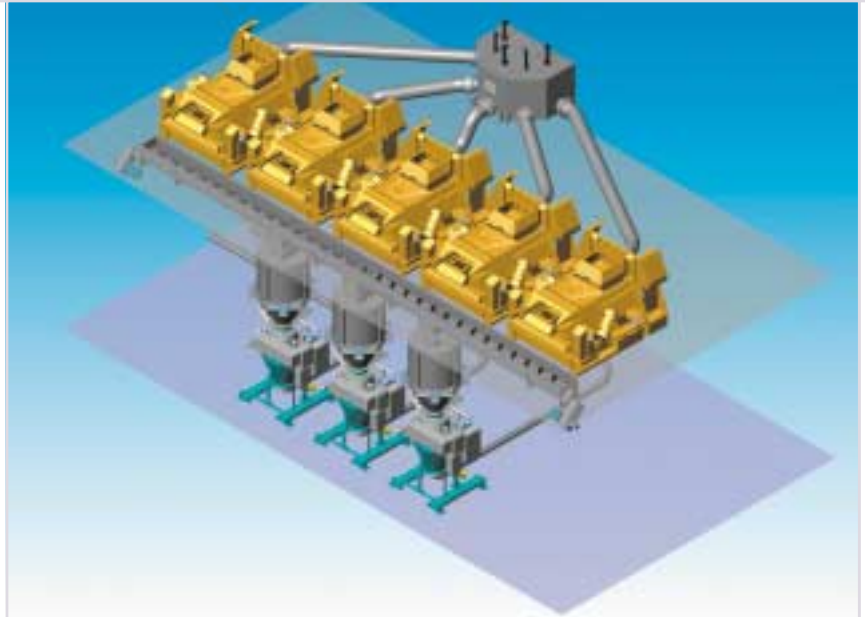
## HMI technology

Human-Machine Interface (HMI) systems are becoming increasingly common features in modern drilling installations. They can be designed to operate in stand-alone mode, or they can be integrated into the drilling-rig manufacturers' systems. Through integration, the outputs from these systems, including alarms, are available to those involved in the drilling process: drillers, mud loggers, mud engineers, and drilling-waste-management and operator personnel.

With HMI systems, operations personnel can set upper and lower performance parameters, or pre-set timed operations, for equipment that previously had to be manually operated and monitored. Benefits include a significantly improved working environment, keeping workers out of potentially hazardous environments; reduced personnel requirements; and improved equipment performance because of better overall control of the drilling-waste-management and mud-mixing system components.

We utilize systems-control hardware and software that enables remote control and monitoring of the following equipment:

- Shale shaker flow and pond depth
- Centrifuge feed, speed and torque
- Cuttings re-injection packages



- CLEAN CUT\* systems
  - Vacuum systems
  - Screw conveyors
  - Degasser operation
  - Automated mud-mixing systems
- Our next step, being developed in conjunction with process-control personnel, is to provide links to shore-based or corporate facilities so that real-time activity on the rig can be monitored remotely.

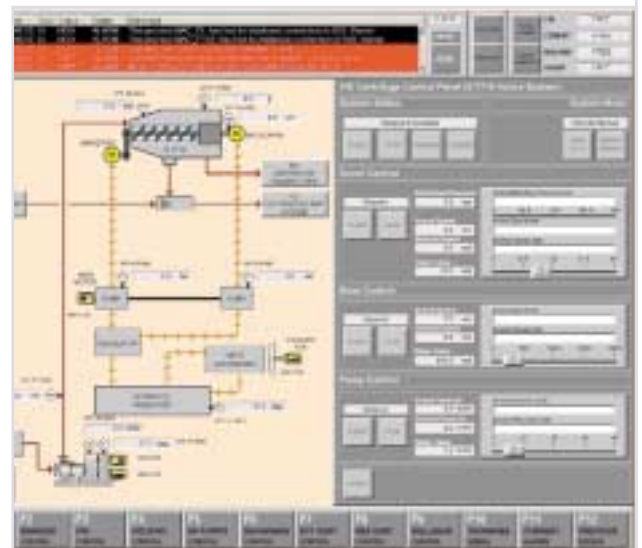
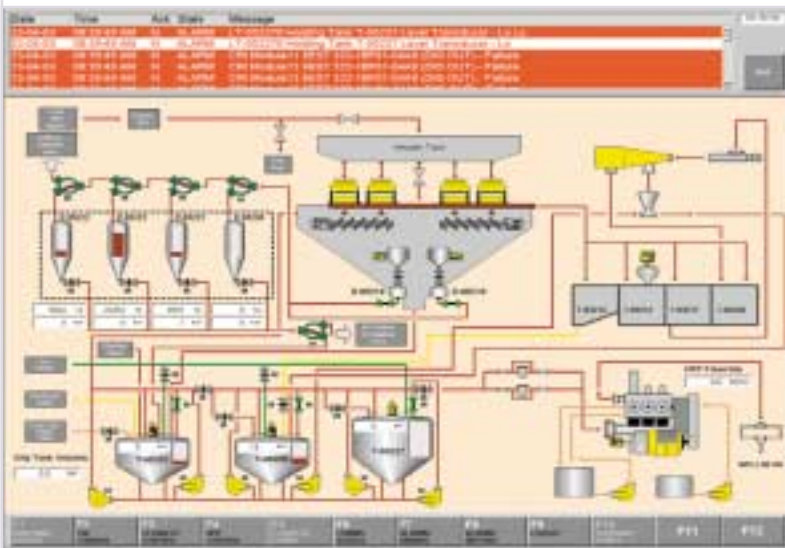
## The final details: project-specific documentation

Another core activity of the Project Engineering Group is to produce project-specific documentation that goes with each of the packages

and individual components of the non-standard manufactured items, including:

- SMDS — Supplier Master Documentation Schedule which can include up to 600 documents for complex projects
- DCT — Data Collection Tool captures information of every tag detail within the scope of supply
- Project-specific user manuals
- Manufacturing records
- Project-assurance manuals

Documentation takes on an important role in helping equipment operators get the most from the systems we design, build and manufacture.



## Why use the M-I SWACO Project Engineering Group?

As the world's largest supplier of drilling fluids, completion fluids and drilling-waste-management equipment, M-I SWACO has learned what is important to you. Through our INTEGRATED FLUIDS ENGINEERING\* (IFE\*) program, we have proven the technologies that work and eliminated the ones that do not.

We are committed to helping you manage your drilling- and completion-fluids systems and drilling wastes. This ensures maximum performance of all fluid-related elements and brings benefits in terms of faster drilling, less downtime, better reservoir production and lower overall costs.

The Project Engineering Group is a logical extension of this philosophy. Through the IFE approach to specifying complementary equipment and fluids, in addition to an appreciation of technical and environmental parameters, we can design DWM and mud-mixing systems that are



Mobile cuttings re-injection unit destined for Croatia. Its design allows transport from rig to rig and field to field.

exactly fit-for-purpose and provide real benefits to you:

- Integrated approach
- Reduced non-productive time
- Fewer HSE incidents
- Increased net present value
- Lower overall cost

## Questions? We'll be glad to answer them.

Simply contact your local M-I SWACO representative for more information about the ways in which our Project Engineering Group is helping operators simplify the complexities of today's demanding drilling programs.

### INTEGRATED FLUIDS ENGINEERING:

*The proven way to reduce your drilling time, increase production, meet your environmental objectives and lower your drilling project costs.*

The Benefits	How IFE Delivers
Increased ROP and drilling performance, minimized total well costs	Cross-trained project engineers and a total fluids system plan
Elimination of "unscheduled events"	One source for drilling, drill-in and completion fluids, and fluids management
Gauge hole and better casing bond	Proper fluid selection and application
Reduced dilution rates, maintenance costs and waste generation	Aligned fluid objectives and coordination
More cost-effective fluids/waste transport and reconditioning	Optimized solids control, waste treatment and fluids handling, and environmental compliance
Better formation evaluation	Integrated fluids data acquisition and management
Minimized formation damage, maximized reservoir production	Optimized reservoir fluid selection for completion techniques and hardware
Lower HSE risks; optimum compliance	Comprehensive HSE preplanning and onsite monitoring



Product specification CD-350\* variable-speed centrifuge.



*CLEANCUT ISO-PUMP\* units destined for an installation in the Caspian Sea.*

## Features

- Equipment custom-designed for each application
- Project management and a multi-discipline, team approach
- Engineering, design, fabrication, installation, testing and commissioning
- Compliance with ISO 14000 and working to CE, NORSOK and GOST standards
- Project-specific documentation

## Benefits

- No lost time due to incompatibility
- Single-source responsibility and a high-performance product
- Reduced costs and delivery times
- No lost time or extra costs associated with compliance issues
- Reduced training time and fewer operator errors



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