

EDL Anlagenbau Gesellschaft mbH

Lube Oil Blending

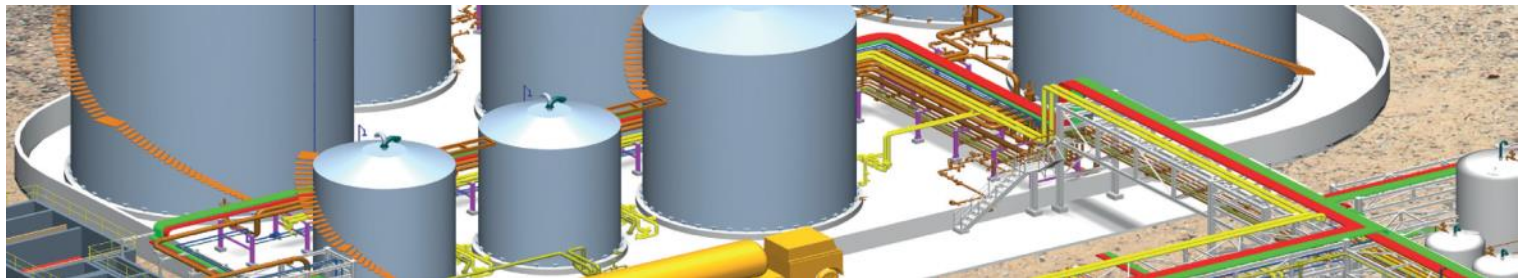
EDL Anlagenbau Gesellschaft mbH



General Information about EDL

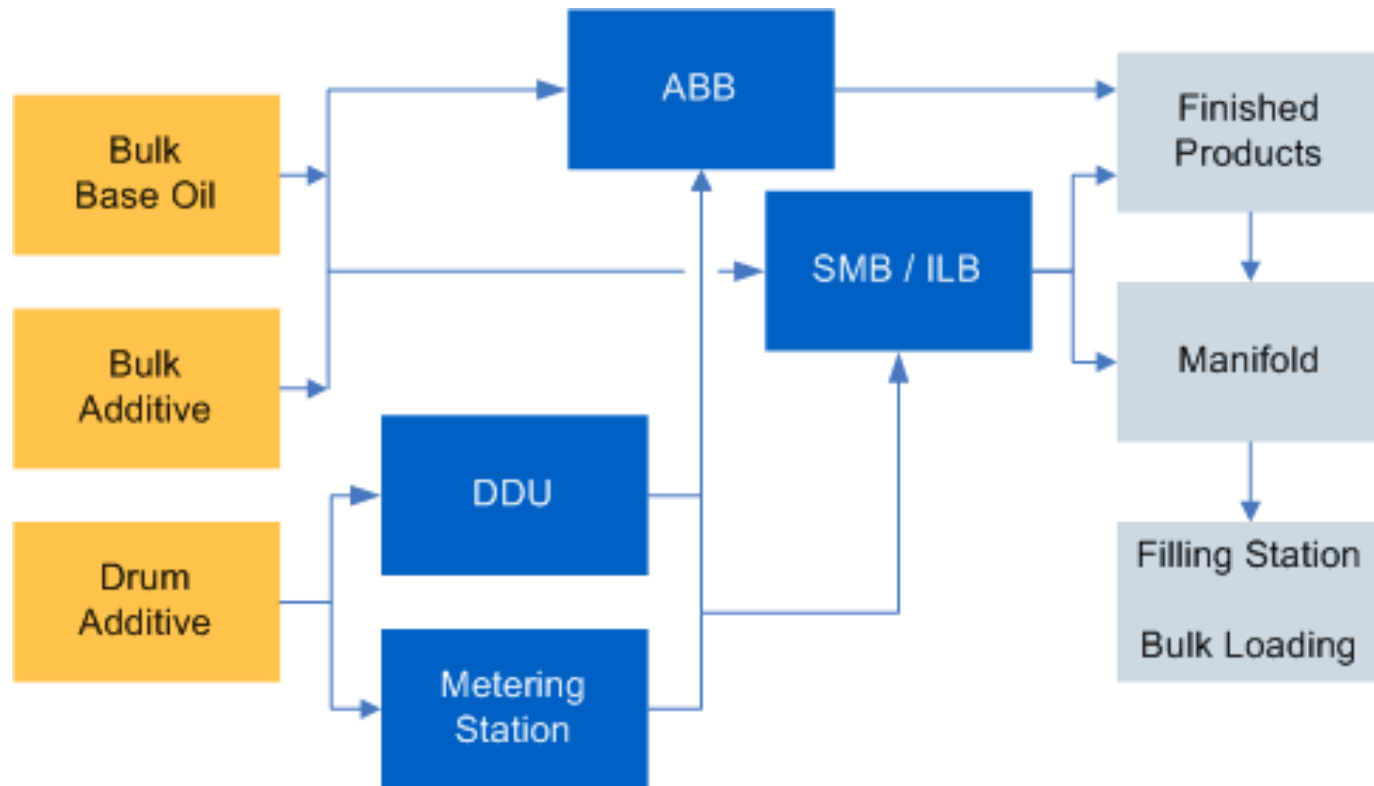
“Engineering carried out in Leipzig”

- Long-term tradition as a regional and internationally operating engineering company
- Heavy focus and experience in process and detail engineering
- A leading and technology-driven medium size company located in Central Europe



EDL's Capabilities

EDL Anlagenbau Gesellschaft mbH designs and supplies complete lube oil blending plants and core equipment for the efficient and innovative production of lubricants.



Block flow diagram of a lubricant oil blending plant (LOBP)

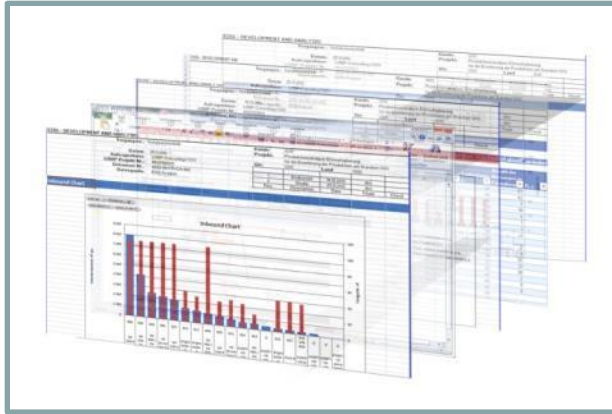
EDL's Capabilities

As general contractor, EDL has the professional expertise and specialist know-how to design and build complete lubricant plants and certain main components from a single source:

- **Studies (debottlenecking, energy efficiency, revamp etc.)**
- **Engineering (basic, detail etc.)**
- **Supply of equipment (blending equipment, peripheral systems etc.)**
- **Integration (delivery of key equipment acc. to customer specification)**
- **Construction supervision and commissioning**
- **Aftersales service (maintenance, training, troubleshooting)**

EDL's Capabilities

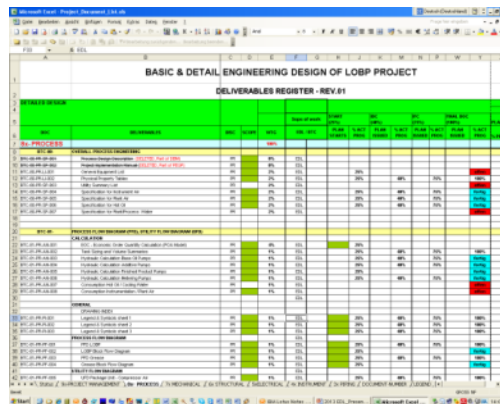
Preparation of a Lube Oil Blending Plant Concept



Analysis



3D-Planning

A screenshot of a Microsoft Excel spreadsheet titled "BASIC & DETAIL ENGINEERING DESIGN OF LOBP PROJECT DELIVERABLES REGISTER - REV.01". The spreadsheet is a detailed project schedule and deliverables register, organized into columns for task ID, task name, start date, end date, duration, and status. It includes a summary section at the top and a detailed list of tasks below, with some cells highlighted in green and red to indicate different levels of completion or risk.

Documentation

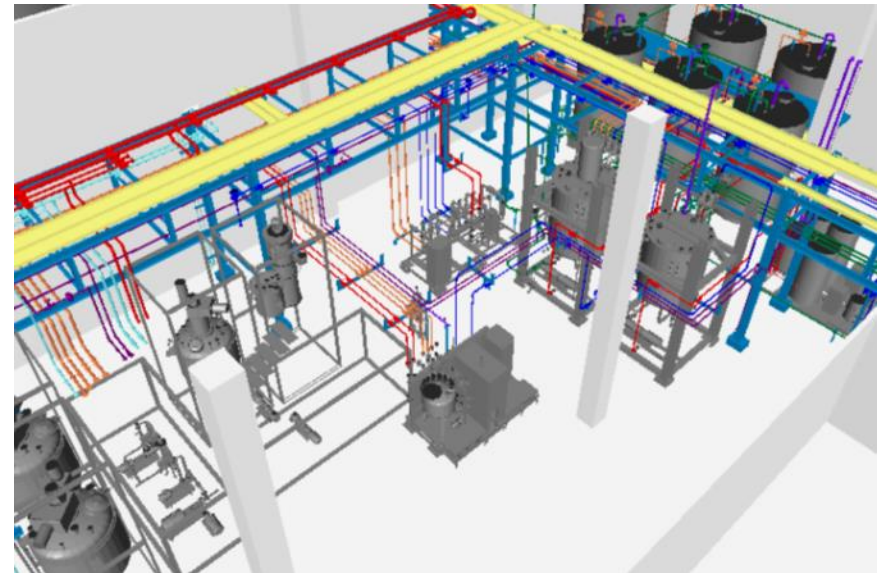
Success Strategies in the Lubricants Market

- Lowest production cost
- Highest product quality
- Efficient batch control
- Flexible plant design

Blending Equipment

Construction and Delivery of Core Equipment for the Blending Process:

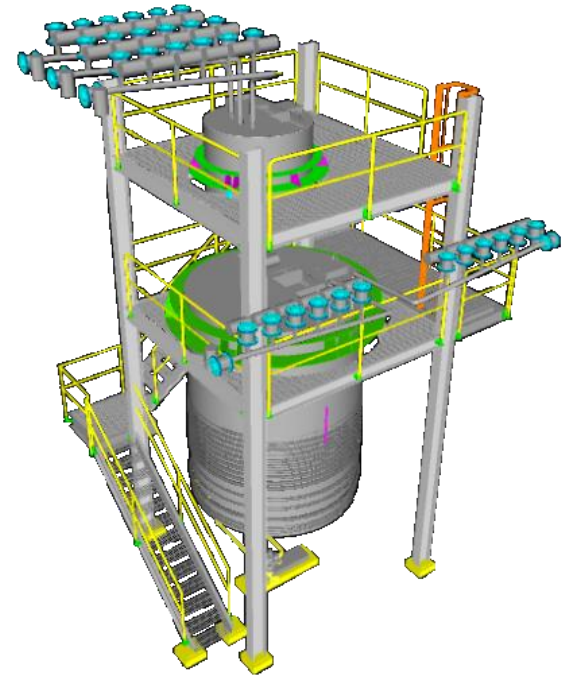
- **ABB... Automatic Batch Blender**
- **ILB..... Inline Blender**
- **SMB... Simultaneous Metering Blender**
- **DMB... Dissolving Mixing Blender**
- **DDU... Drum Decanting Unit**
- **DO Drum Oven**
- **VI Viscosity Improver Unit**
- **Manifolds**
- **Piggable lines**
- **Filling and Blow Moulding**
- **Warehouse**
- **Blending control system**



Blending Equipment

ABB Automatic Batch Blender

- ABB is suitable for batches
- Easy to adjust acc. to requested quality
- ABB consists of:
 - Blending kettle
 - Dosing header
 - Agitator
 - Finished product pump
 - High accuracy by weight cells
 - Premix hopper vessel
- Blending kettle can be heated by steam, hot oil or electrically
- Ingredients are mechanically mixed into a homogeneous solution
- All rinsing base oils are part of the formula, there is no slop generation



Blending Equipment

SMB Simultaneous Metering Blender

ILB Inline Blender

- **SMB/ILB is suitable for a high throughput**
 - **Fast and continuous mixing**
 - **Real-time measurement**
- **SMB/ILB is based on a modular concept.**
 - **Each dosing module consists of:
mass flow meter, flow control valve, automatic check valve
and air injection point for module purging**
 - **Dosing modules are dedicated to base oils or additives**
- **Minimum contamination**
- **Blends can be sent directly to packing or shipping**

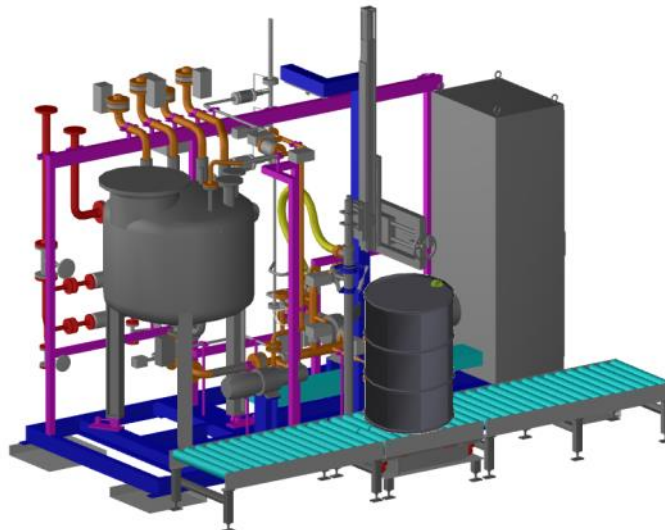


**Skid-mounted Simultaneous
Metering Blender**

Blending Equipment

DDU Drum Decanting Unit

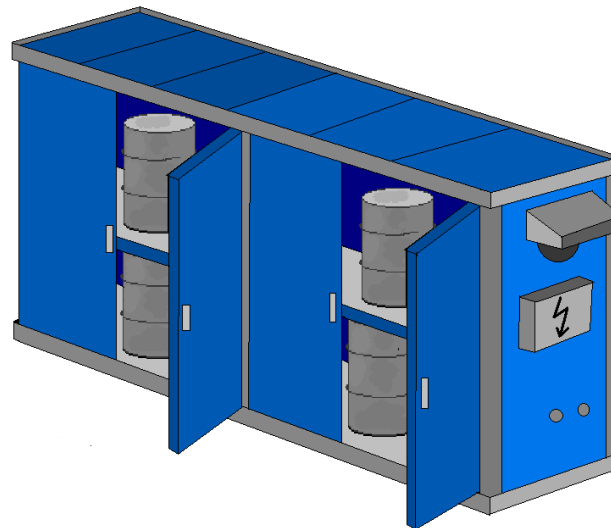
- Fast automatic decanting
- Suitable for container sizes 60 l, 200 l drum up to IBC
- within 5 – 7 mins/drum
- Rinsing oil is part of formula (no slop generation)
- DDU consists of: suction lance, heated rinsing vessel, decanting pump, rinsing pump, weighing system



Blending Equipment

DO Drum Oven

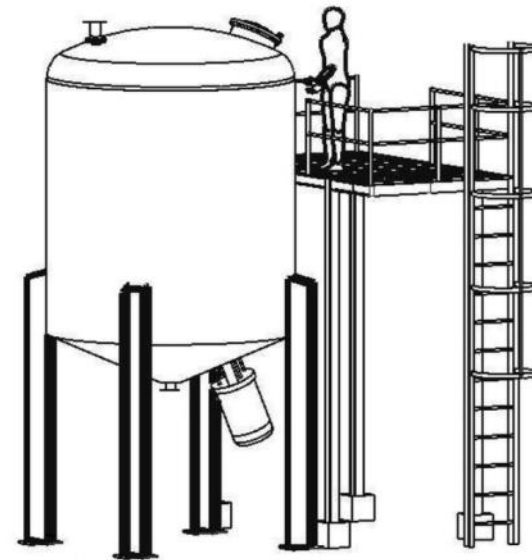
- Preparation of barrels for fast decanting
- Heating up of ingredients
- Decrease of viscosity
- Easy decanting by DDU
- All-round thermal insulation with non-flammable mineral fibre plates



Blending Equipment

Viscosity Improver Unit (VI)

- Preparation of additives to increase the viscosity index
- Heating and dissolving of polymer blocks
- Batch size 5 to 20 MT
- Conical bottom dissolving vessel
- High shear dissolver



Skid-mounted Blending Units

EDL's Blending Equipment is skid-mounted, tested and certified

- **Process Equipment:**
 - ABB ... Automatic Batch Blender
 - DDU ... Drum Decanting Unit
 - SMB ... Simultaneous Metering Blender
 - ILB ... Inline Blender
 - VI Viscosity Improver Unit
- **Advantages:**
 - Easy handling and integration into existing units
 - Significant reduction of assembly costs at site
 - Significant reduction of installation (plant shut-down) time at site
 - Increase of manufacturing quality based on manufacturers' experience
 - Highest quality is ensured by module prefabrication in Germany

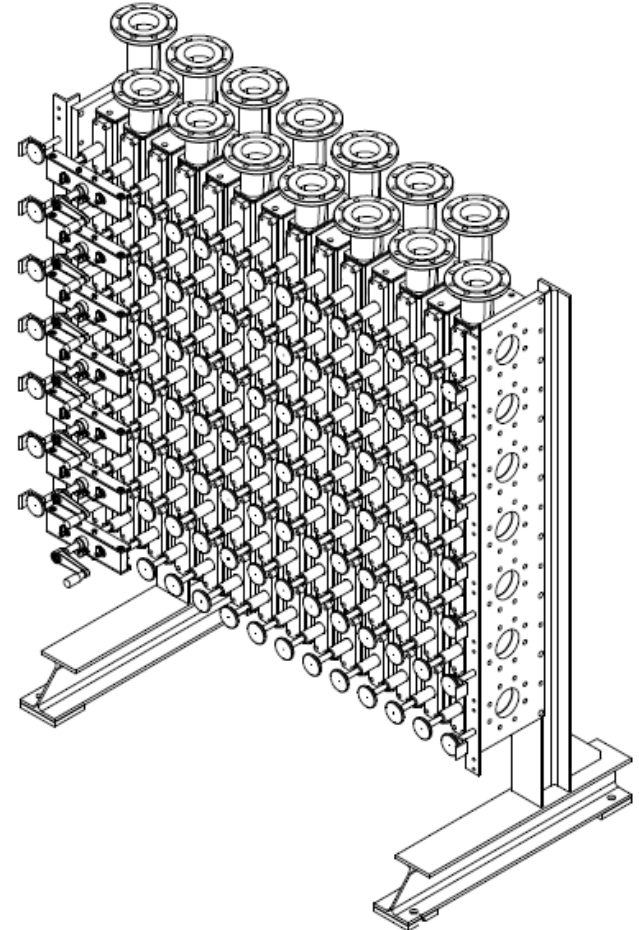


Skid-mounted Simultaneous Metering Blender

Blending Equipment

Manifold

- Purpose
 - Routing of flows
 - e.g. connection from one tank to several filling lines at the same time
- Piggable design
- Safety for plant operating personnel
- Saving of handling time
- Handling
 - via DCS



Blending Equipment

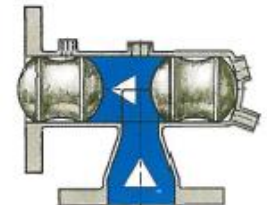
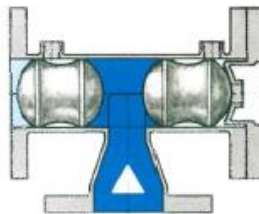
Piggable Lines

- Use of modern pigging technology
- Cleaning of pipes and valves to avoid cross contamination
- Environmental issues
- Cost reduction
- Saving of product and time

Typical Pig



Pig Launching and Receiving Stations



Blending Equipment

Filling Lines and Blow Moulding Machines for Lube Oils:

- 200 l drums
- 25 litre canisters
- 5 litre canisters
- 1 litre bottles

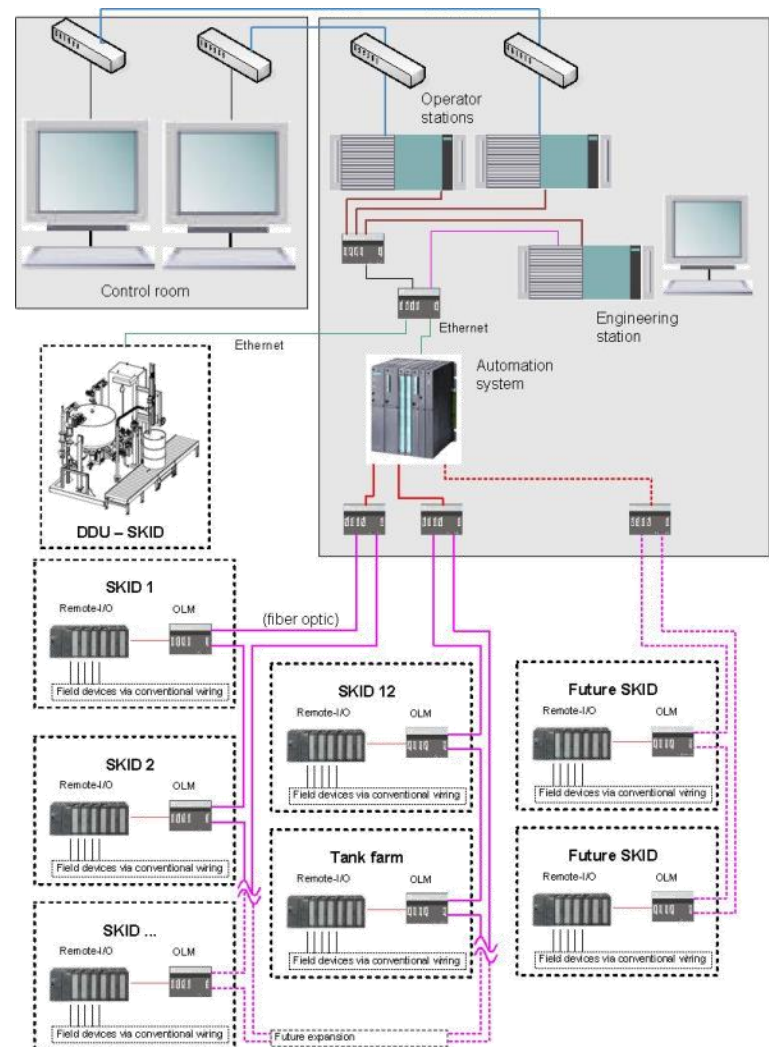


- Easy product change
- High flexibility for the future
- Automatic palletizer
- Capping machines
- Conveyors
- Labeling

Blending Control System



- Easy handling and integration into existing automation systems
- Profibus combined with Remote I/O
- Third-party systems
- Modular flexible expandable
- LAB / ERP interface
- Batch control software open source



References



Lube Oil Blending Plant with Simultaneous Metering Blender (SMB) and Dosing Manifold for automatic production of up to 40 batches per day
GS Caltex Corporation, Seoul / South Korea, 2015

EDL Services for the complete Blending Plant Life Cycle



EDL – Engineering with Competence

EDL Anlagenbau Gesellschaft mbH

Lindenthaler Hauptstraße 145
D-04158 Leipzig / Germany

Phone: +49-341-4664-400

Fax: +49-341-4664-409

E-mail: GF@edl.poerner.de

Internet: www.edl.poerner.de

VIDEO IP 194.25.217.60

