

TECHNOLOGY BROCHURE · 2026

04 LUBE OIL BLENDING PLANT

BLENDING · FILLING · PACKAGING

Blending plants that combine base oils and additives to a formula, with storage, mixing, quality control and filling planned as a single process line.

- Base oil & additive tank farm
- Batch & in-line blending
- Additive dosing & heating
- QC laboratory interface
- Small-pack to drum filling
- Packaging & palletising

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WHAT A BLENDING PLANT MAKES

A RECIPE, REPEATED EXACTLY

A finished lubricant is mostly base oil. The rest is an additive package that gives the oil its working character: keeping engines clean, protecting gears under load, resisting oxidation, flowing in the cold. The share of additives varies widely, from very little in some industrial oils to a substantial portion of heavy-duty engine oils.

The blending plant's job is simple to state and demanding to deliver: combine the right base oils and additives in the right proportions, at the right temperature, without contamination, and prove it with a lab result before the product is packed.



FIG. 4.1 FINISHED LUBRICANT

TABLE 4.1 COMMON ADDITIVE TYPES AND WHAT THEY DO

ADDITIVE TYPE	FUNCTION IN THE FINISHED OIL
Detergents & dispersants	Keep soot and deposits suspended so surfaces stay clean
Anti-wear & extreme pressure	Form protective films on metal under heavy load
Antioxidants	Slow oil breakdown at high temperature and extend drain intervals
Viscosity modifiers	Reduce thinning with heat, enabling multigrade oils
Pour point depressants	Help the oil flow at low temperatures
Corrosion & rust inhibitors	Protect metal surfaces from moisture and acids
Anti-foam & demulsifiers	Release entrained air and separate water

TABLE 4.2 BASE OIL CATEGORIES A PLANT MAY HANDLE (API CLASSIFICATION)

GROUP	GENERAL DESCRIPTION
I	Conventional solvent-refined mineral oils
II	Hydrotreated mineral oils with low sulphur
III	Hydrocracked mineral oils with high viscosity index
IV	Synthetic polyalphaolefins (PAO)
V	Other base stocks, e.g. esters and naphthenic oils

THE BLENDING PLANT

ACCURATE BLENDS, CLEAN PACKS

01 **Tank farm** Base oils received, stored and heated

02 **Additives** Drum decanting, heating and day tanks

03 **Metering** Load cells or flow meters, recipe control

04 **Blending** Heated kettles with agitation

05 **QC release** Lab approval of every batch

06 **Filling** Filtration, filling and packing

TABLE 4.3 BLENDING METHODS

METHOD	BEST FOR	NOTE
Batch kettle blending	Wide grade range, smaller batches, simple operation	Lowest entry cost
Simultaneous metering	Faster batches with components dosed together	Shorter cycle times
Automated in-line blending	High-volume grades blended straight to tank or filler	Highest throughput

The method is chosen from your grade list, batch sizes and growth plan. Many plants start with batch kettles and add automated metering later. Capacities are engineered to client requirement.

PROCESS

- Base oil and additive storage with heating
- Drum handling and decanting
- Blending kettles, mixers and transfer pumps
- Line flushing and pigging to limit cross-contamination
- Finished product tanks

FILLING & PACKAGING

- Bottle filling for retail packs
- Pail and bucket filling
- Barrel and drum filling
- Capping, induction sealing, labelling
- Batch coding and cartoning

CONTROL & QUALITY

- Recipe management and batch records
- PLC / HMI control of dosing and transfers
- Lab for viscosity, flash point, pour point and more
- Sampling points at every stage
- Safe handling of additive concentrates

WHY BLEND IN-HOUSE

Control over every litre

- Own formulations and private-label brands
- Consistent quality, batch records for every lot
- Base oil bought in bulk, packed close to market
- Flexible grade and pack changes

Viscosity gets the attention. The additives decide the performance. Our plants are built to dose both precisely.

LET'S TALK ABOUT YOUR PLANT

FROM A FEED SAMPLE TO A RUNNING PLANT.

Share your feedstock, the products you want and the capacity you have in mind. Our process team will come back with a technical route, a block flow diagram and the next steps.

01 · Send

Feed details

Feedstock type, source, analysis if available, and the volume you expect per day.

02 · Define

Target products

The grades or cuts you need, the quality they must meet, and site constraints.

03 · Receive

Technical proposal

Process route, equipment scope and an execution plan for your review.

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