Food / OQ-04

Flour mills: energy and flour extraction

Flour production grew 56%. Mills worldwide manage energy and extraction for every tonne of wheat using data.

One percentage point of flour extraction can equal a year's profit.

In January–February 2026, large enterprises produced 210.7 thousand tonnes of flour, 56.2% more. Most of a mill's energy goes to grinding. Bühler has stated that its digital mill reduces grinding energy by up to 10%.

Conceptual architecture. No operating results are shown.

01 Intake	Wheat · Moisture · Scale
02 Grinding	Roller mill · Electricity · Load
03 Output	Flour · Bran · Grade
04 Report	Shift · kWh/t · Extraction %

At a glance

+56.2% — Growth in flour production, January–February 2026. [1]

Up to 10% — Bühler claim: reduction in grinding energy with Mill E3. [2]

15,000+ — Data points in the Whitworth Bros digital mill. [2]

November 2026

01 Evidence and context

Who it is for

Mill owner	Production cost.
Process engineer	Recipes and extraction.
Energy manager	Electricity.
Quality	Flour quality.

Facts and global practice

National Statistics Committee

January–February 2026: 210.7 thousand t of soft wheat flour, +56.2%. [1]

Bühler (millermagazine.com)

Bühler: with Mill E3, grinding energy falls by up to 10% and whole-mill energy by 7–10% (at the same extraction and quality). [2]

foodengineeringmag.com; Bühler

Whitworth Bros (United Kingdom): more than 15,000 data points in its Mill E3 mill; the extraction management system shows differences between recipes. [2]

This indicator was not found in open sources for Uzbek enterprises — it is measured during the audit.

02 Where the losses occur

Extraction not measured

Wheat in and flour out are not compared by shift.

Energy tracked only in total

kWh is not divided by tonnes.

Idle running

Roller mills run without load.

Recipe

Wheat blending and moisture control are manual.

How the loss is calculated

Extraction	(planned – actual extraction) % × tonnes of wheat milled per period × flour price per tonne
Energy	kWh/t × tariff per kWh = energy cost per tonne
Idle running	idle hours per period × power draw (kW) = wasted kWh per period
Quality	tonnes downgraded to lower grade per period × price difference per tonne

Illustrative calculations; establish the baseline, units and rates during the site assessment. Avoid counting the same loss twice.

03 Solution architecture

Every tonne tracked for energy and extraction

Data is collected from scales and electricity meters, and flour extraction and kWh/t are calculated per shift.

01 Intake

Wheat · Moisture · Scale

02 Grinding

Roller mill · Electricity · Load

03 Output

Flour · Bran · Grade

04 Report

Shift · kWh/t · Extraction %

Modules

Electricity meters	Per line	Engineering capability
Scale integration	Intake and output	Engineering capability
Extraction report	Per shift	Engineering capability
Warehouse (WMS)	Flour and bran	Commercially available

Each module has a readiness status. Third-party results are not a forecast for your site.

04 Implementation and measurement

01 Energy audit

Meters.

Output: Baseline.

02 Pilot

1 month.

Output: kWh/t and extraction.

03 Scale-up

Whole mill.

Output: Full coverage.

04 Subscription

Monthly.

Output: Trends.

What is measured

Flour extraction	%	Scale
Energy	kWh/t	Meter
Idle running	Hours	Monitoring
Grade share	%	Quality

What is needed to start

- Mill owner
- Electrical diagram
- Scales
- Shift schedule

05 Readiness checklist and next step

01 Is flour extraction measured per shift?	Yes / No / Unknown
02 Is kWh/t known?	Yes / No / Unknown
03 Is roller mill idle running visible?	Yes / No / Unknown
04 Is wheat moisture recorded?	Yes / No / Unknown
05 Are the scales connected to the system?	Yes / No / Unknown
06 Are recipes compared?	Yes / No / Unknown
07 Is the energy limit monitored?	Yes / No / Unknown
08 Is bran accounting accurate?	Yes / No / Unknown
09 Are shifts compared?	Yes / No / Unknown
10 Is there a responsible person?	Yes / No / Unknown

What we do not promise

• Exact timeline and price without an audit

• Certificate or inspection result

• Guarantee of export permission

• Unmeasured results

Mill energy audit

We measure your mill's energy and extraction and show where the losses are.

• Map of break points

• Pilot plan

• Implementation fee and monthly subscription

Scope, price and schedule are agreed after reviewing the site and its data.

06 Sources and scope

[1] National Statistics Committee: 210.7 thousand t of flour in January–February 2026 (+56.2%). stat.uz, 22.04.2026.

stat.uz

[2] Bühler: Mill E3 — up to 10% less grinding energy; more than 15,000 data points in the Whitworth Bros mill. millermagazine.com; foodengineeringmag.com.

millermagazine.com

foodengineeringmag.com

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