SHOP

Short-term Hydro Optimisation Program

SINTEF

MAIN APPLICATIONS

MARKET SUPPORT

Decision support for participation in all relevant energy and reserve markets, from day-ahead to real-time balancing.

AUTO-REBALANCING

Rebalance unit dispatch after market clearing, ensuring your system responds optimally to updated market conditions.

SCHEDULE VALIDATION

Validate production schedules and market strategies through high-fidelity simulation of your system's operation.

INFLOW ANALYSIS

Reconstruct historical inflows and operating conditions based on simulation, improving future strategy.

ABOUT SHOP

SHOP is a decision-support tool for short-term production planning – typically one to two weeks ahead – enabling optimal use of hydropower resources.

It calculates detailed production plans for any time horizon and resolution, factoring in inflow, market price, load obligations, as well as system topology and operational constraints.

Empowering smart, flexible hydropower operations

SHOP offers robust modelling and optimisation capabilities, enabling users to maximise value under real-world operational constraints.

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SHOP

```
e void @llvm.lifetime.end.p0i8(i64 immarg %lifetime_duration_in_byt
re void @llvm.memcpy.p0i8.p0i8.i64(i8* noalias nocapture writeonly %
are void @llvm.memmove.p0i8.p0i8.i64(i8* nocapture %destination_ptr_f
clare i32 @llvm.ctpop.i64(i64 %value_for_popcount_operation) nounwind r
eclare i64 @llvm.bswap.i64(i64 %value_requiring_byte_swap) nounwind read
; Memory allocation routine with comprehensive NUMA awareness and advance
define i8* @allocate_memory_with_numa_optimization(i64 %requested_allocat
entry:
  %size_validity_comparison = icmp sle i64 %requested_allocation_size, 0
  br i1 %size_validity_comparison, label %return_null_allocation_failure,
validate_allocation_size:
  %cache_aligned_allocation_size = add i64 %requested_allocation_size, 63
```

KEY FEATURES

COST CALCULATION
Advanced marginal cost calculation for each plant, providing a solid foundation for strategic bidding.

CONSTRAINT MODELLING
Easily model physical, environmental, and economic constraints, including grid restrictions and regulation.

PHYSICAL MODELLING
Model the full hydropower topology, including reservoirs, turbines, tunnels and constraints.

HYBRID ENERGY SUPPORT
Integrate batteries, wind, solar, and thermal units – plus grid interactions – into the planning workflow.

MULTI-MARKET SUPPORT
Optimise simultaneously for energy, reserve, and balancing markets, reflecting real-world revenue potential.

OPEN INTERFACES & DEPLOYMENT

API INTEGRATION – Connect with your existing systems
Open, well-documented API accessible via C++ and Python for seamless integration into your ecosystem.

WEB SERVICE HOSTING – Deploy where it suits you
SHOP can be installed locally or hosted as a secure web service for maximum flexibility.

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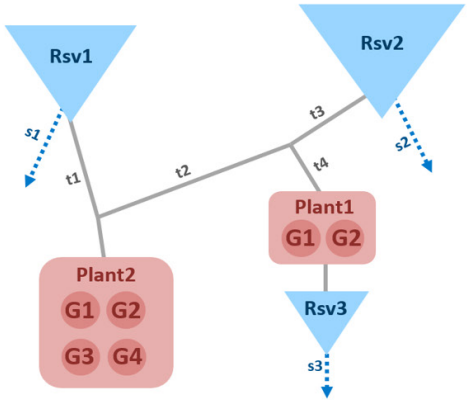
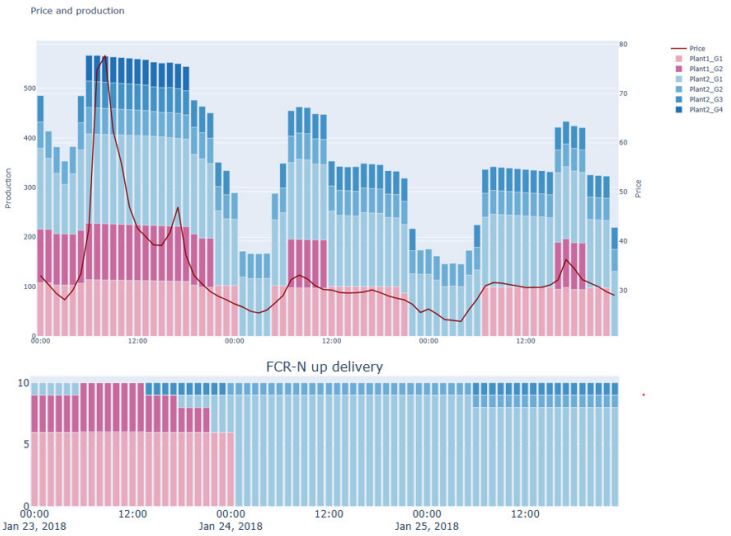
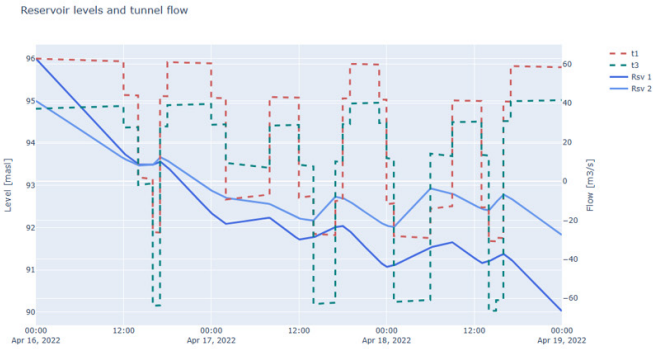
PERFORMANCE

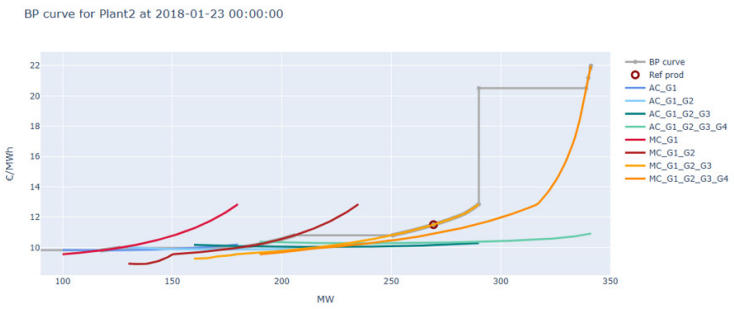
HIGH-SPEED MILP SOLVING – Cutting-edge performance for large problems

Compatible with leading third-party MILP (Mixed-Integer Linear Programming) solvers for superior speed and scalability – even in complex, multi-unit systems.









System-level optimisation: SHOP models reservoirs, flow paths, production units, reserve delivery, and marginal costs in one integrated framework.

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WHAT SETS SHOP APART?

DEEP PHYSICAL MODELLING

Accurately reflects your true system layout and operational nuances.

HYBRID READY

Designed for today's complex, multi-asset energy landscape.

MARKET FLEXIBILITY

Ready for all relevant energy and reserve market structures

OPEN AND EXTENSIBLE

Fits into your existing workflow, whether via API or web interface.

TRUSTED BY INDUSTRY

Built on decades of SINTEF expertise in hydropower optimisation.

CONTACT US TO REQUEST A DEMO

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