

TRIDENT COMPUTER RESOURCES, INC.



Providing Solutions Through Simulation

AUTODYNAMICS, the *World Leader of Process Plant Simulator Systems*, offers affordable operator training solutions which can only be provided through high fidelity, dynamic, real-time simulation. There are more than 400 AUDY™ Operator Training Simulators installed worldwide in over 40 countries.

Dynamic Simulation, the most cost-effective way to increase plant performance, enables you to learn how your plant will respond to that emergency you hope never happens. Your AUDY Simulation System **costs less than 24 hours of downtime** of just one process unit, and allows your operators to practice startup, shutdown, various design modes, and emergency situations.

The Simulator System

The AUDY Simulator System, the most comprehensive, realistic simulator product on the market today, features different types of operator stations and an extensive library of simulation models driven by COMPAQ Computer Corporation's (COMPAQ) 64-bit RISC based AlphaStation, which delivers high performance computing.

A complete AUDY Training Simulator includes:

- Simulation Computer
- Operator Station
- Instructor Workstation
- Dynamic Process Simulation Models

A typical AUDY system may include several AUDY standard process models and usually one or more custom developed models designed precisely to the customer's specifications and needs.

Operator/Trainee Stations

AUDY offers you a diverse selection of operator stations:

- Full Function interface to actual Distributed Control Systems (DCS)
- Emulated DCS Operator tations

AUDY has uniquely engineered and designed interface hardware and software which can be interfaced with today's distributed control system operator stations. This system allows for the best of both worlds---***full functionality of the operator station including DCS configurations and graphics as well as the full functionality of the AUDY training system***, i.e., backtrack, freeze, snapshots, etc.

AUDY has successfully delivered high-fidelity, real-time operator training simulators interfaced to all of the major DCS suppliers, including:

- ABB/Bailey
- Fisher/Rosemount
- Foxboro
- Honeywell
- Yokogawa

AUDY's has also *Emulated* most major DCS vendors' digital control operator stations including:

- Honeywell
- Yokogawa
- Foxboro
- Toshiba

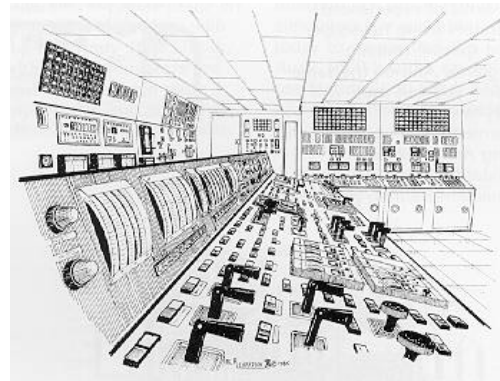
AUDY's emulated operator stations feature a 21-inch color monitor, touchscreen or pointing device and operator keyboard. AUDY software emulates the displays of these operator stations in detail enabling operators to train using the same operational procedures as on the real DCS. AUDY's Emulated Operator Stations do not require actual DCS hardware which provides significant cost savings for the simulator without compromising training realism.

Instructor Workstation

The AUDY Instructor Workstation provides the maximum in flexibility while achieving the user-friendly features you expect from *AUDY, the worldwide simulation systems specialists*. This powerful software is easy to use because all control options are presented via menu or graphic displays. Pull-down menus are related in an easy to understand logical methodology. System flexibility is provided by offering a broad selection of control functions.

The color, X-Windows graphical based instructor station provides non-design condition summary, instructor-requested diagnostics and many features including:

- Multiple modes of operation
- Initial conditions
- Snapshots
- Faults and Malfunctions
- Instructor variables
- Field-operated devices
- Process variable monitors
- Multiple time scales both fast time and slow time



AUDY Experience in Your Industry

Gas Processing

Prior to the AUDY digital training system, only large gas plants could afford a simulation training system. Now, all plants can benefit from a training simulator. AUDY's simulation programs will teach your operators gas compression, gas treating, light-end distillation, refrigeration and sulfur recovery. AUDY's vast experience includes LPG, LNG, NGL, Syn Gas---*AUDY has done it all.*

Production

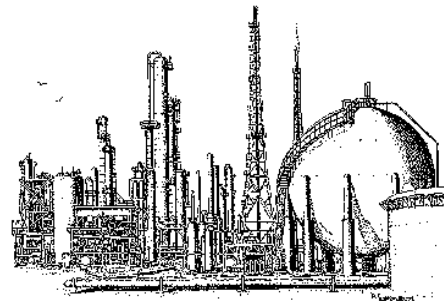
Offshore or onshore, oil or gas, AUDY meets your training needs for production processes. From wellhead to gas-oil separation, desalting, gas treating, storage and transfer, we have designed training systems which have resulted in safer, more efficient production worldwide.

Refining

More than 200 refineries in every region of the world use an AUDY training systems to meet specific training needs and concerns. AUDY's dynamic simulation is used in Europe for new process technology training, in the Middle East for the training of new operators in grass roots plants, in Asia to increase safety and efficiency, in North America for unit revamp training, and in South America for instrumentation upgrade training.

Petrochemical/Chemicals

For those plants producing ethylene, ammonia, fertilizer, polymers, monomers or other chemicals using batch or continuous processes, AUDY has the experience to develop a training program to meet your specific needs. Our proprietary programs provide training on many typical chemical process units.



Pulp and Paper

Only AUDY has developed simulation training programs that cover the entire spectrum of the pulp and papermaking process: digesting, pulp washing and screening, bleaching, paper machine, chemical recovery boiler, evaporators and concentrators, and multi-fuel boilers.

AUDY PROCESS PROGRAMS

The heart of the AUDY system is the simulation model. AUDY offers a wide variety of program models to suit your needs and your budget.

Standard Programs

AUDY Standard Programs feature unit operations found in typical process plants. AUDY's proprietary library of standard models includes programs for **entry-level operations**, instrumentation training, basic unit operations and distillation. **Advanced operations training programs** include crude fractionation, fluidized catalytic cracking, catalytic reforming, hydrocracking, hydrodesulfurization, sulfur recovery and more. AUDY programs accurately represent operations from cold start through design and upset conditions.

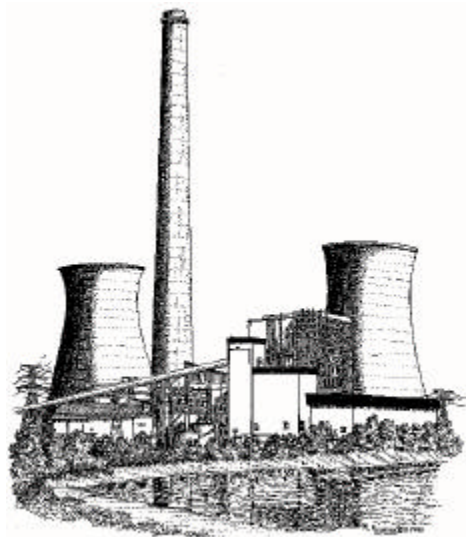
Custom Programs

If your plant requires a custom simulation program, our Simulation Engineering staff---the most experienced in the industry---will develop it to your plant's specifications and instrumentation. AUDY has developed process programs for such units as **crude oil distillation, fluidized catalytic cracking units, hydrocracking, hydrotreating, LPG, LNG, ethylene, polyethylene, polypropylene, ammonia, digesters** and many more.

AUDY custom programs, developed with TRIDENT's proprietary model development language added AUDYSIM, enables your staff to perform engineering or process control studies, as well as allowing them to make program modifications as your plant changes.

Customized Programs

AUDY may be able to meet your simulation needs with a Customized Simulation Program. With its extensive library of programs, AUDY may be able to configure our existing models to best match your plant equipment configuration and nomenclature. By having our engineers work directly with your plant engineers and your plant specifications, AUTODYNAMICS may be able to generate a cost-effective solution to your needs using your specifications and instrumentation.



AUDY: Pioneer of Dynamic Process Simulation

The value of a simulator as a training tool depends to a significant degree on the fidelity of the simulation models. AUDY has created over **300 custom models** as well as over **80 AUDY standard programs** to meet our customers' objectives. No other vendor has the expertise or the successful track record that AUDY has achieved.

Excellence

AUDY has simulated more processes than all of our competitors combined. One of our refining customers said, ***"I didn't think that it could be this good."*** AUDY's dedication to client satisfaction as well as our vast experience will maintain AUDY's commitment to excellence.

Realistic Simulation Programs

The simulation programs provide high fidelity, real time, dynamic representations of ***plant start-up, process upsets and emergency conditions***. Trainees can observe conditions that even an experienced operator may have rarely seen, and they will learn how to respond correctly in a risk-free environment. Another refining customer said, ***"If I had to design a simulation system, the AUDY system is exactly what I would have designed."***

Modular Design

Hardware and software options are available to expand the size and scope of the simulation training programs as well as the number of

independent, simultaneous training sessions, which can be supported. ***AUDY's unique modular design permits maximum flexibility*** now and in the future.

User Friendly

All instructor functions are graphical based point and click, making the simulator user-friendly and intuitive. The instructor need not have any knowledge of computer operation in order to effectively train personnel. The instructor is prompted for every action from selection of programs and initial conditions to entering process upsets and taking snapshots.

Reliable

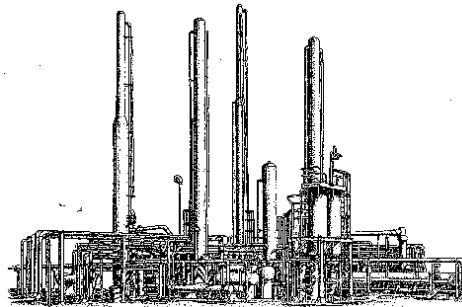
The simulator is designed with proven electronic components and is extensively tested. This means that there are fewer problems upon installation and that system availability is maximized. Training can begin, and proceed uninterrupted, promptly upon commissioning. Our Service Engineers are on call **twenty-four hours a day**, seven days a week.

Advanced Training Software

AUDY's Advanced Training Software (ATS) is utilized to standardize training, measure student's performance, and document the training session. This software allows the entire simulation training session to be recorded including alarm functions, process variables, malfunctions and trends and graphics. The Automatic Training Exercise (ATE) software is an expert system which enables instructor-less, pre-programmed scenarios which are consistent, repetitive and automatically documents simulator sessions. Trainee Performance Monitor (TPM) gathers statistics on the student's performance during the training exercise, displays a live performance bar-chart, and prints a comprehensive report at the instructor's request.

COMPAQ ALPHA Based Computers

The AUDY simulator is based upon the COMPAQ ALPHASTATION 64-bit RISC based high performance processor. AUDY is a registered VAR with COMPAQ which means worldwide service and reliability.



AUDY's Powerful AUDYSIM[®] II

AUDYSIM[™] II is a rigorous, powerful, totally integrated, interactive software package designed for process and control engineers who require dynamic simulations of industrial processes and associated control systems in a real time environment. AUDYSIM II Plant Models are designed by configuring process streams with unit operations algorithms without the need for programming or compilation.

The software structure package is completely modular and flexible, and consists of these key features:

- Extensive Unit Operation Algorithm Library
- Rigorous Computations
- No Programming/Compiling
- Equation of State Thermodynamics
- No Size Limitation
- Accurate Process Dynamics

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