

INTEGRATED ENGINEERING B.V.

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AN INTERACTIVE SCULPTURE USING AN AIR/LIQUID DISPLAY =====

Technical description =====

The system is built up from three major components:

1. A touchscreen mounted on a 20" monitor
2. An Apple II Plus 64K system
3. A display processor

1. The touchscreen with a resolution of 64 x 48 is run by its own 6803 processor mounted on a peripheral card inside the Apple. The main components are infrared leds and photodiodes of which 32 are mounted in a staggered fashion on boards at the 4 sides of the screen. 8 Infrared beams are sent across the screen simultaneously during 300 μ S. A total scan takes about 7 μ S after which time the coordinates of the interrupted X- and Y-beams are placed in two 8-bit latches which can be read out by the Apple.

2. The Apple system is running a turnkey Pascal program with some machine language routines for speeding up the graphics. The program will allow the user to draw on the screen with his finger, shift the image left or right and save it to disk. Saved images can be combined into one and sent to the air/liquid display. The system also contains an interface card for a video camera by which images can be brought into the system from photographs or finished art-work. The whole system is menu-driven in a user-friendly manner.

3. The display processor is mounted inside a cabinet together with the solenoid valves. It consists of a 6803 processor with 2K ROM and 8K RAM. In this RAM 1800 columns of 32 channels high can be stored and displayed on the air/liquid screen continuously. The valves are driven by 4 boards with 16 transistor drivers each. A 16 wire flatcable connects all display boards to the processor. Communication between the display processor and the Apple is asynchronous at 7.5K baud. Data is sent in packets with checksums. Each p.v.c. channel tube is equipped with an infrared led/photodiode pair after 16 bitlengths of tube. The data from this diode is used in a feedback algorithm which computes the on-time for the air and liquid valves for each channel in order to get an equally moving image across the display.