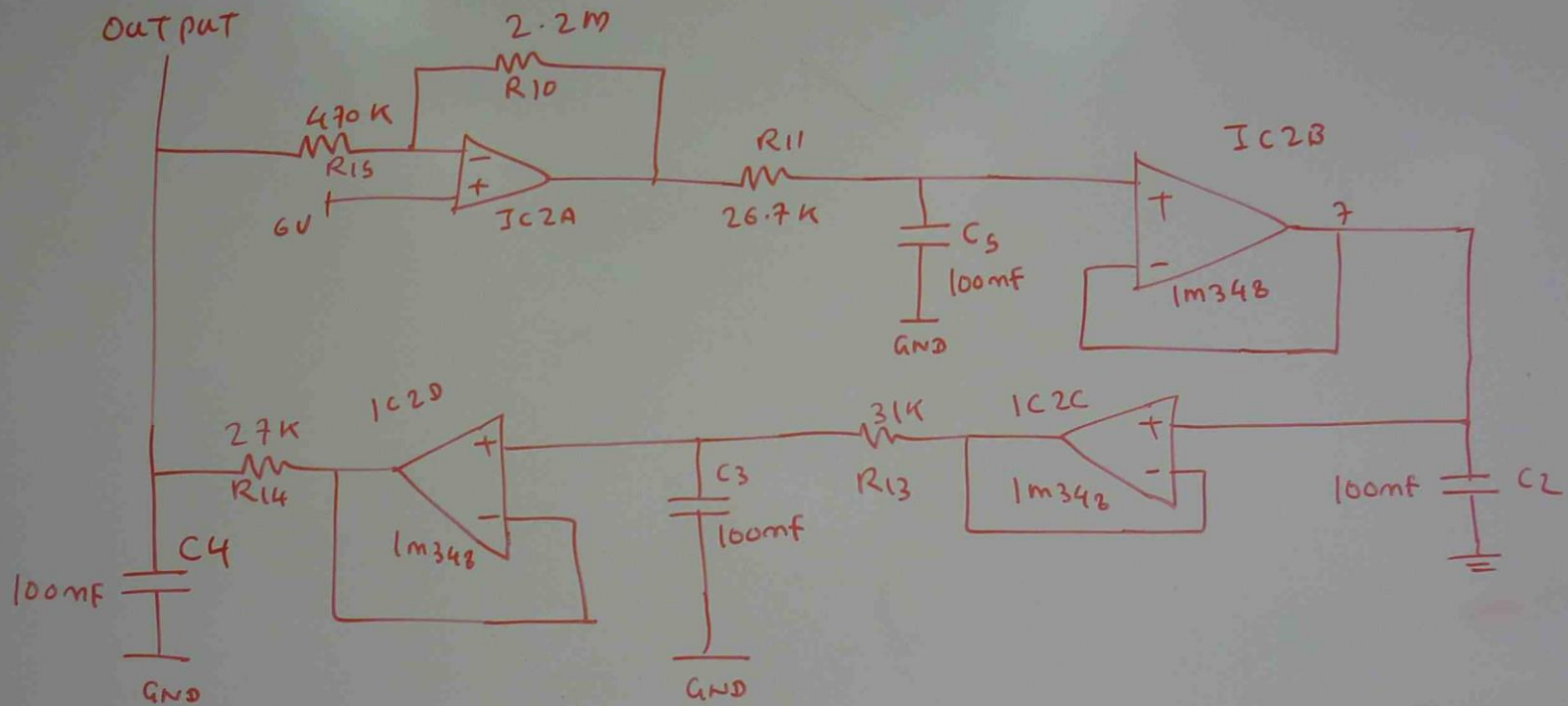


SINE WAVE GENERATOR



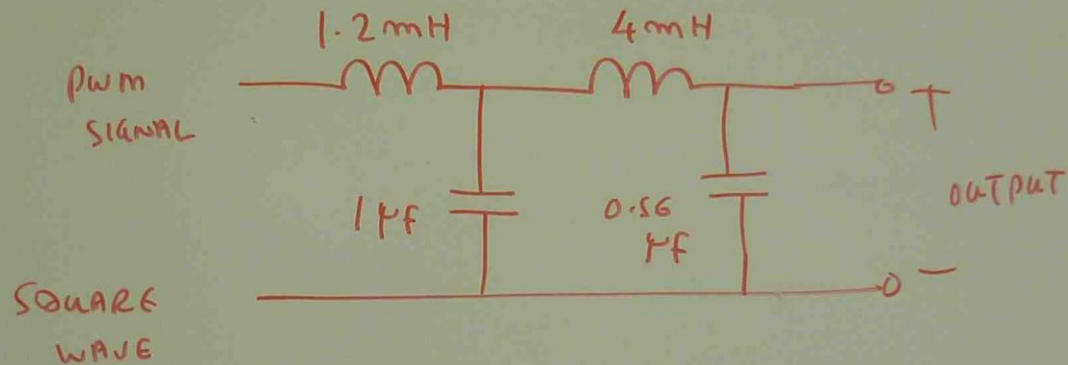
THE FREQUENCY OF THE OSCILLATOR IS CONTROLLED BY THE 4 FILTERS COMPRISED OF A RESISTOR AND CAPACITOR.

BY CONTROLLING THE SIZE OF THE RESISTOR IN ONE OF THE FOUR FILTERS, FREQUENCY CAN BE ADJUSTED.

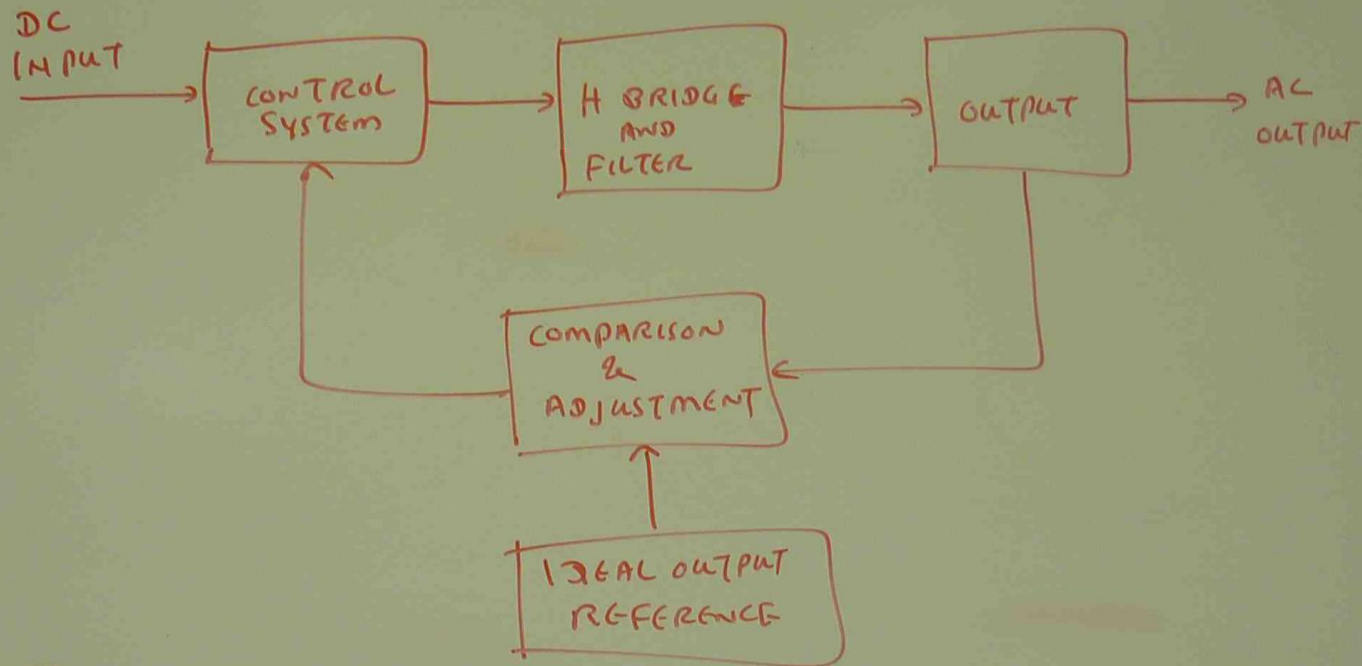
FILTER DESIGN

A SIMPLE ONE POLE INDUCTOR-CAPACITOR LOW PASS FILTER
DESIGNED FOR PASSING ALL SIGNALS UNDER 50KHZ.

TWO POLE OUTPUT FILTER

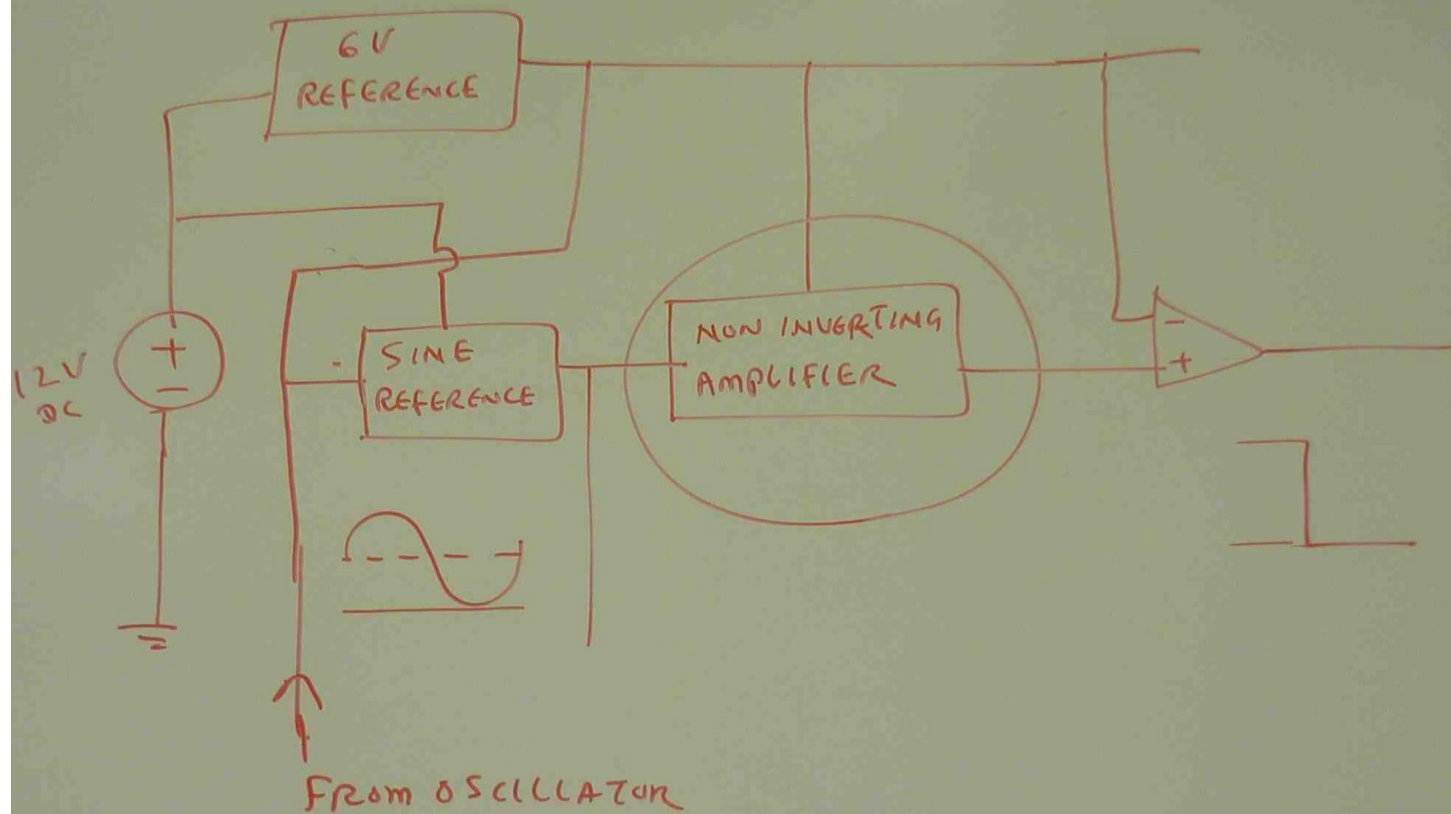


OVERVIEW DIAGRAM OF FILTER DESIGN



THE ABOVE DIAGRAM IS OVER VIEW DESIGN DIAGRAM OF INVERTER THAT PRODUCES SINEWAVE OUTPUT 120V RMS.

REFERENCE SECTION CONNECTION



THE CLOSED LOOP CONTROL SYSTEM WOULD ALLOW THE SYSTEM TO OUTPUT THE CORRECT VOLTAGE AND POWER NO MATTER WHAT THE LOAD.

SOMETIMES CERTAIN LOADS CAN CAUSE FLUCTUATIONS AND VOLTAGE SPIKES WITHIN THE DRIVING PORTION OF THE CIRCUIT.

TRANSIENT VOLTAGE SUPPRESSION (TVS) DIODES ARE ADDED TO THE SYSTEM IN ADDITIONAL TO CIRCUIT PROTECTION AND SNUBBERS.

TVS DIODES ARE SPECIAL IN THAT THEY ARE ABLE TO WITHSTAND THE QUICK VOLTAGE AND CURRENT SPIKES THAT OCCUR IN MOSFET SWITCHING

FOR THIS APPLICATION, A TVS DIODE OF RATING 170VOLT WOULD BE USED.

THESE DIODES ARE APPLIED ACROSS EACH OF THE 4 MOSFET'S USED IN THE H BRIDGE TO PROTECT THEM FROM SURGES THAT CAN OCCUR IN BASIC SWITCHING OR INDUCTIVE LOAD.

PURE SINE INVERTOR CIRCUIT

PURE SINE INVERTER CIRCUIT

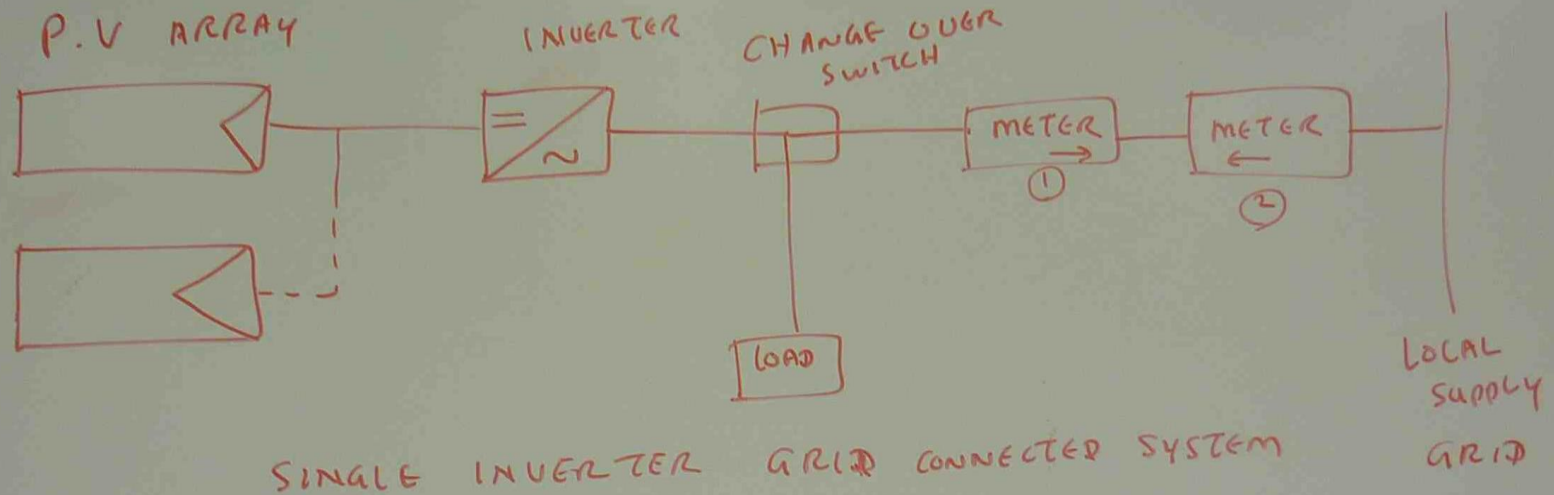
THE INVERTER CONVERTS 12 VOLT DC FROM BATTERY INTO 110 VOLT AC 50 HZ SINE WAVE.

PULSE TRAIN IS PRODUCED INTERCHANGEABLY FROM PORT (A) AND PORT (B) BY MICRO CONTROLLER 89C52051 DURING THE POSITIVE HALF AND NEGATIVE HALF OF THE SINE WAVE.

THE PULSE TRAIN IS THEN INPUTTED TO THE MOSFET POWER SWITCHING CIRCUIT, WHICH IS NEXT DIRECTED TO THE PRIMARY SIDE OF TRANSFORMER.

THE OUTPUT IS THEN FILTERED.

GRID CONNECTED PV SYSTEM DESIGN



SINGLE INVERTER GRID CONNECTED SYSTEM

P.V ARRAY

A NUMBER OF PV PANELS CONNECTED IN SERIES AND/OR IN PARALLEL GIVING A DC OUTPUT OF THE INCIDENT IRRADIANCE. ORIENTATION AND TILT OF THESE PANELS ARE IMPORTANT DESIGN PARAMETERS, AS WELL AS SHADING FROM SURROUNDING OBSTRUCTIONS.

INVERTER

A POWER CONVERTER THAT INVERTS THE DC POWER FROM THE PANELS INTO AC POWER. THE CHARACTERISTICS OF THE OUTPUT SIGNAL SHOULD MATCH THE VOLTAGE, FREQUENCY AND POWER QUALITY LIMITS IN THE SUPPLY NETWORK.

LOAD

LOAD STANDS FOR THE NETWORK CONNECTED APPLIANCES IN THE BUILDING THAT ARE FED FROM THE INVERTER (OR) ALTERNATIVELY, FROM THE GRID.

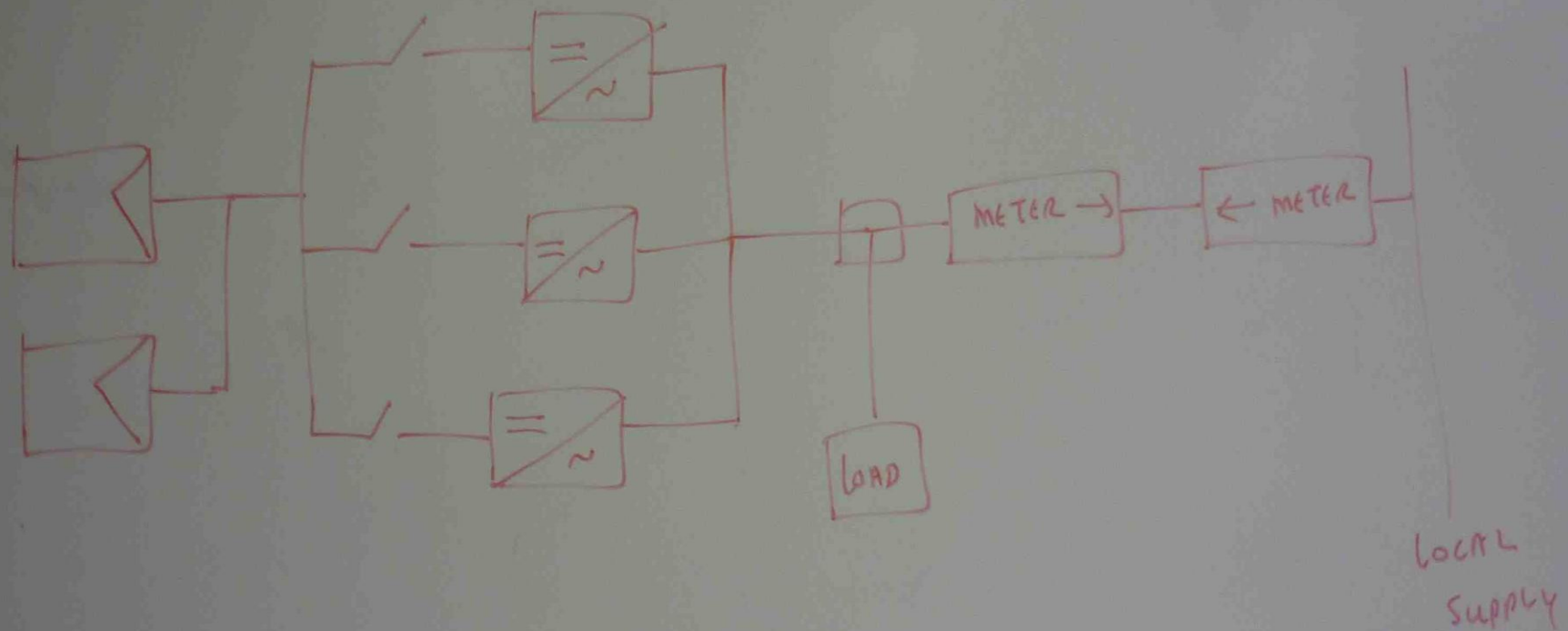
METER

THEY ACCOUNT FOR THE ENERGY BEING DRAWN FROM (OR) FED INTO THE LOCAL SUPPLY NETWORK

LOCAL SUPPLY

PUBLIC SUPPLY 1ϕ , 3ϕ .

GRID CONNECTED P.V SYSTEM WITH MULTIPLE INVERTER



COST EFFECTIVE

THE CURRENT COST OF SOLAR PANELS, AND OTHER RENEWABLE ENERGY SYSTEMS, MEANS THAT GRID INTERACTIVE SYSTEMS ARE NOT AS COST EFFECTIVE AS RELYING PURELY ON THE GRID FOR ELECTRICITY. IN SPITE OF THIS, MANY PEOPLE ARE CHOOSING TO INSTALL GRID INTERACTIVE SOLAR SYSTEM AS THEY DO NOT CREATE ANY GREEN HOUSE GASES WHEN GENERATING ELECTRICITY, UNLIKE COAL-FIRED POWER PLANTS.

PRICES OF GRID INTERACTIVE SYSTEM CAN START FROM AS LITTLE AS \$2000 FOR A PAIR OF SOLAR PANELS AND A SMALL INVERTER. A SYSTEM CAPABLE OF RUNNING AN AVERAGE SUBURBAN HOME WOULD COST AROUND \$20,000 TO \$25,000 AND WOULD INCLUDE

A SOLAR ARRAY OF 1.5 TO 2 KW AND AN INVERTER
TO SUIT.

THE OFFICE OF THE RENEWABLE ENERGY REGULATOR HELPS THE
CONSUMERS TO SUBSIDISE THE COST OF THE SYSTEM.

LARGE SOLAR POWER SYSTEM

24 X 83 WATT SOLAREX PHOTO VOLTALIC PANELS
MOUNTED ON THE NORTH FACING ROOF OF THE
HOUSE COVERING AN AREA OF 18 SQUARE METRES,
THE SOLAR ARRAY HAS A GENERATING CAPACITY OF
ABOUT 2 KILOWATTS.

THE ARRAY IS CONNECTED TO 2.2 KW C.S.A INVERTER
THAT CONVERTS THE ELECTRICITY TO 240VOLT IN HOUSE.

THE SYSTEM COSTS AROUND \$26000.

ENERGY SAVINGS

FOR THE ABOVE SYSTEM FOR A SUBURBAN HOME,
WHEN THE POWER GENERATED BY THE SYSTEM EXCEEDS
6000 KWH, IT CAN SAVE AROUND 9 TONNES OF
GREEN HOUSE GAS EMISSION.

