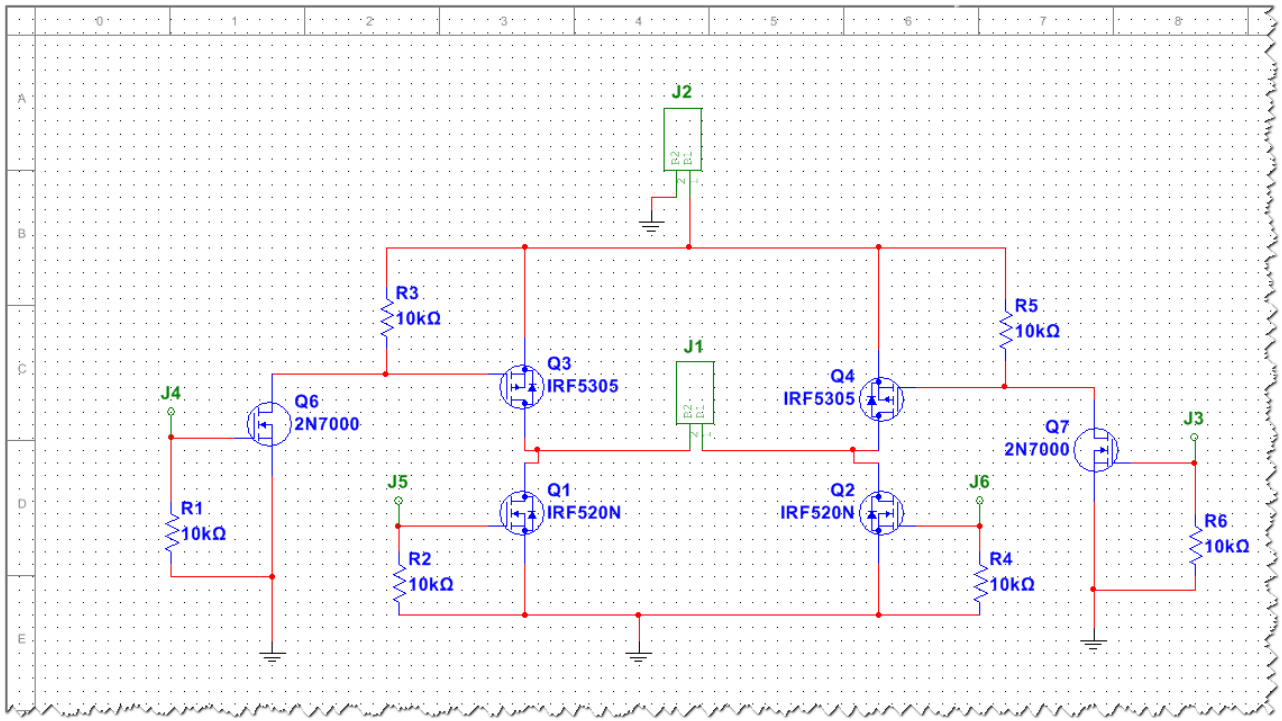
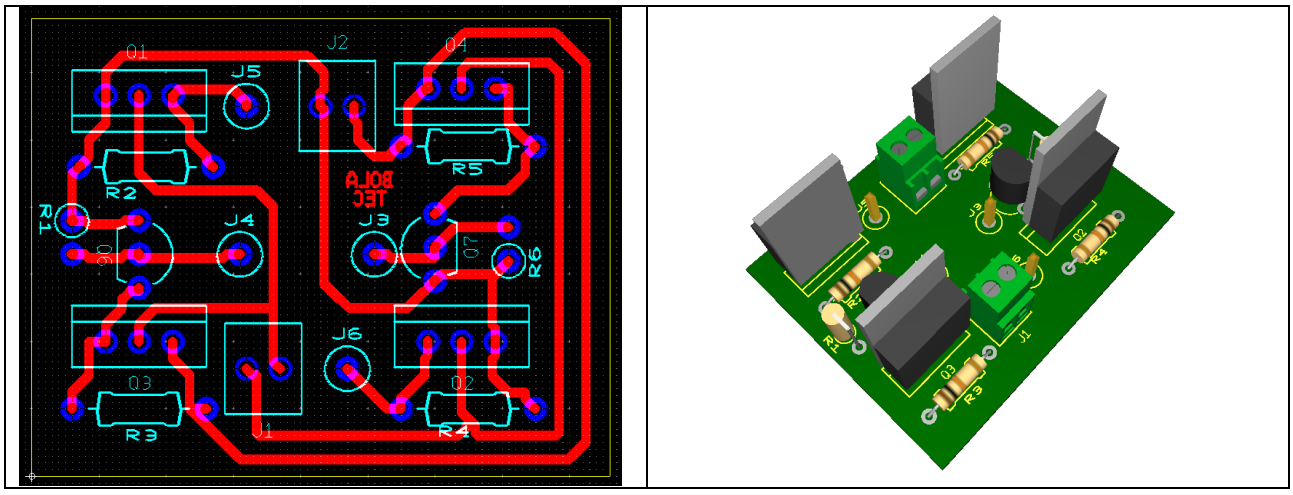
H.C. Ørsted Gymnasiet

H-bro med FET

Multisim



Ultiboard



Arduino kode

```
/*
  Dette program tager mod kommandoer tal 0-9 for at styre motor
*/

//**********************************
//Setup constants
//**********************************
const int Q1 = 3;
const int Q2 = 9;
const int Q3 = 10;
const int Q4 = 11;

//**********************************
// Global variable
//**********************************

int incomingByte = 0;   // for incoming serial data
int motorSpeed = 0;
int oldSpeed = 0;
int ledToggle = 0;

void setup() {

  //**********************************
  // Set inout and output pins, set default value
  //**********************************
    pinMode(Q1,OUTPUT);
    analogWrite(Q1,0);
    pinMode(Q2,OUTPUT);
    analogWrite(Q2,0);
    pinMode(Q3,OUTPUT);
    analogWrite(Q3,0);
    pinMode(Q4,OUTPUT);
    analogWrite(Q4,0);
  /*
    // Set pin 2,9,10 and 11's PWM frequency to 3906 Hz (31250/8 = 3906)
    // Note that the base frequency for pins 3, 9, 10, and 11 is 31250 Hz
    setPwmFrequency(Q1, 8);
    setPwmFrequency(Q2, 8);
    setPwmFrequency(Q3, 8);
    setPwmFrequency(Q4, 8);
    http://playground.arduino.cc/Code/PwmFrequency
    */
    ////////////////////////
    // FOR DEBUG PURPOSES
    pinMode(13, OUTPUT);
    digitalWrite(13, ledToggle);
    ////////////////////////
    //**********************************
    //Serial connection 9600 Baud
    //**********************************
    Serial.begin(9600);

  }

void loop() {
  // put your main code here, to run repeatedly:
```

```
  motorSpeed = readSerial();

  // Check if speedchange is nessesary
  if (oldSpeed != motorSpeed)
  {
    if (motorSpeed == 0)
    {
      // Shut down all FETs
      analogWrite(Q3, 0);
      analogWrite(Q4, 0);
      analogWrite(Q2, 0);
      analogWrite(Q1, 0);
    }
    else if (motorSpeed > 0)
    {
      analogWrite(Q4, 0);
      analogWrite(Q1, 0);
      analogWrite(Q3, 255);
      analogWrite(Q2, motorSpeed);
    }
    else if (motorSpeed < 0)
    {
      analogWrite(Q3, 0);
      analogWrite(Q2, 0);
      analogWrite(Q4, 255);
      analogWrite(Q1, (motorSpeed * -1));
    }
    Serial.println(motorSpeed,DEC);

    // Save new speedvalue
    oldSpeed = motorSpeed;
  }
  delay(1000);

  // Toogle the LED 13 for livelight
  ledToggle=ledToggle + 1;
  digitalWrite(13,ledToggle%2 );
}

//**********************************
// Read data from UART connection
//**********************************
int readSerial() {
  while (Serial.available() > 0) {
    // read the incoming byte:
    incomingByte = Serial.parseInt();
  }
  return incomingByte;
}
```

Hvis I ikke lykkes med at få kommunikationen til at virke med Arduinoen, så prøv at udskifte dette ”`while`” med ”`if`”