The table shows the inventory details for different products over 6 weeks. The columns represent the weeks, and the rows include Customers, B.W., M.R., P.R., Total Demand, Beg. Inv., Required Prod, and Ending Inv.

- **Customers**: The demand varies from week to week, with a peak of 700 in week 3.
- **B.W.**, **M.R.**, and **P.R.** have consistent demand across weeks.
- **Total Demand** is calculated by summing the demands from the previous weeks and includes a constant 100 demand each week.
- **Beg. Inv.** starts at 1500 and decreases over the weeks.
- **Required Prod** shows the production needs, with a consistent requirement of 2000 units per week.
- **Ending Inv.** shows the inventory levels after each production cycle. The calculation for the first week's ending inventory is highlighted:
  \[(2000 + 690) - 1350\]
  \[SS = 500\]

The备注 (footnote) indicates:
- Min lot size = 2000
- BI = 1500

The note at the bottom suggests a production schedule for the next 6 weeks, with production set at 2000 units in the first 3 weeks and 2000 units in the last 3 weeks.
Suppose that in weeks the total demand is $3610$ (not $610$)

\[ \text{Demand} = 3610 \]
\[ BI = 1240 \]
\[ RP = 4000 \]
\[ EI = 1630 \]

$\implies \text{net requirement} = 3610 - 1240 = 2370 > 2000$

$EOQ$ +

\[ \text{Demand} = 3610 \]
\[ BI = 1240 \]
\[ RP = 870 \]
\[ EI = 580 \]

$\chi + 1240 - 3610 = 500$

\[ \chi = 2870 \]

$E0Q+$

\[ 2000 \]

\[ 870 \]
Rough-cut capacity analysis

<table>
<thead>
<tr>
<th>Weeks</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1200</td>
<td>30000</td>
<td>75000</td>
<td>120000</td>
</tr>
<tr>
<td>2</td>
<td>30000</td>
<td>105000</td>
<td>45000</td>
<td>175000</td>
</tr>
<tr>
<td>3</td>
<td>28500</td>
<td>75000</td>
<td>44500</td>
<td>148000</td>
</tr>
<tr>
<td>4</td>
<td>30000</td>
<td>75000</td>
<td>45000</td>
<td>150000</td>
</tr>
<tr>
<td>5</td>
<td>27500</td>
<td>75000</td>
<td>45000</td>
<td>147500</td>
</tr>
<tr>
<td>6</td>
<td>27500</td>
<td>75000</td>
<td>45000</td>
<td>147500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>109250</td>
<td>390000</td>
<td>135000</td>
<td><strong>404250</strong></td>
</tr>
</tbody>
</table>

(a) @ 200kwh

Product

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Load</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 hr/unit</td>
<td>5000</td>
<td>3000</td>
<td>150</td>
<td>13250</td>
<td>20000</td>
</tr>
<tr>
<td>30 hr/unit</td>
<td>3750</td>
<td>6000</td>
<td>150</td>
<td>15000</td>
<td>25000</td>
</tr>
<tr>
<td>45 hr/unit</td>
<td>5250</td>
<td>5250</td>
<td>250</td>
<td>20250</td>
<td>25000</td>
</tr>
<tr>
<td>5000</td>
<td>7500</td>
<td>7000</td>
<td>8750</td>
<td>22500</td>
<td>109250</td>
</tr>
</tbody>
</table>

(b) Yes, the total production capacity is sufficient over the 6-week schedule (\(120,000 > 109,250\)).

However, weeks 1, 2, and 5 are underloaded. Weeks 3, 4, and 6 are overloaded.

(c) Move 750 hrs in weeks 3 and 4 to week 2.

Move 2500 hrs in week 6 to weeks...
### MPS in produce-to-stock & produce-to-order firms

<table>
<thead>
<tr>
<th>Economic production qty.</th>
<th>Produce-to-stock</th>
<th>Produce-to-order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot-size</td>
<td>Usually based on Prod. economics such as EOQ, EoQt, EPQ, etc.</td>
<td>Usually determined by the customer order.</td>
</tr>
<tr>
<td># of products to produce/schedule</td>
<td>Few</td>
<td>Large (as most products are custom made)</td>
</tr>
</tbody>
</table>

---

### Chap 15: Resource Requirements Planning (RRP) Systems

Once the master production schedules (MPSs) for all end items are established, the quantity and time of all process resources such as raw materials, parts, and sub-assemblies need to be determined. This determination is known as RRP.
Two major components of RRP:
1. Material Requirements Planning (MRP) → material only
2. Capacity Requirements Planning (CRP)

Material Requirements Planning (MRP)

MRP is a technique used to control inventories of parts, subassemblies, and finished products with dependent demand.

ex: Demand for automobile tires in the original equipment market (OEM).

On the other hand, inventory theory/control (Chap. 14) is a technique used to control inventories of parts, subassemblies, and finished products with independent demand.