Integration and Scale Approach
Scale Up

>6 million BAX / year
Case Study #1
>12.5 million BAX / year

4x Make-up & 4000 BAX hold capacity

Scale Up
1x Make-up & 800 BAX hold capacity

Scale Up
3x Make-up & 2000 BAX hold capacity

Scale Up
4x Make-up & 4000 BAX hold capacity
Scale Up

Chutes
Peak data

Sorted for narrow-body only

>20 mil BAX / year

Scale Up
Case Study #3

Scale Up
Preconditions and assumptions

• Salary: $80,000 per year ~ $38,00 per hour (including social cost)

• 40 hour work week

• 4% of salary as worker insurance

• BBHS can reduce sickness absence with 2%-points

• Based on peak data

• BBHS can reduce tail-to-tail operations with 30%

• Based on airport with ~12.5 mio. PAX / year
Sorting hall #1

Staffing comparison at peak

As is staffing need at peak

Current handler staffing
20 handlers

BBHS staffing need at peak

BBHS operator staffing
2 operators

68m

20m
## Staffing Sorting Hall #1

<table>
<thead>
<tr>
<th>Time</th>
<th>As is</th>
<th>BBHS</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30 AM</td>
<td>5</td>
<td>2</td>
<td>10.5 h/shift</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>13</td>
<td>2</td>
<td>44 h/shift</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>10</td>
<td>2</td>
<td>44 h/shift</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>20</td>
<td>2</td>
<td>75 h/shift</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>12</td>
<td>2</td>
<td>27 h/shift</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shift</th>
<th>As is</th>
<th>$/shift</th>
<th>BBHS</th>
<th>$/shift</th>
<th>Savings</th>
<th>$/shift</th>
<th>$/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5 h/shift</td>
<td>$399</td>
<td>$1,672</td>
<td>39 h/shift</td>
<td>$1,672</td>
<td>206.5 h/shift</td>
<td>$7,847</td>
<td>$2,864,155</td>
</tr>
<tr>
<td>44 h/shift</td>
<td>$1,672</td>
<td>$2,850</td>
<td>75 h/shift</td>
<td>$2,850</td>
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<td>206.5 h/shift</td>
<td>$7,847</td>
<td>$2,864,155</td>
</tr>
</tbody>
</table>

**As is**
- 245.5 h/day
- $9,329 /day

**BBHS**
- 39 h/day
- $1,482 /day

**Savings**
- 206.5 h/day
- $7,847 /day
- $2,864,155 /year
Sorting hall #2

Staffing comparison at peak

As is staffing need at peak

- 80m
- Current handler staffing: 31 handlers

BBHS staffing need at peak

- 34m
- BBHS operator staffing: 5 operators

80m
### Staffing Sorting Hall #2

<table>
<thead>
<tr>
<th>Time</th>
<th>As is</th>
<th>BBHS</th>
<th>Savings</th>
<th>Summaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30 AM</td>
<td>8</td>
<td>3</td>
<td>17.5 h/shift</td>
<td>366 h/day</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>19</td>
<td>5</td>
<td>56 h/shift</td>
<td>90.5 h/day</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>14</td>
<td>5</td>
<td>36 h/shift</td>
<td>275.5 h/day</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>31</td>
<td>5</td>
<td>130 h/shift</td>
<td>36 h/shift</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>17</td>
<td>5</td>
<td>36 h/shift</td>
<td></td>
</tr>
</tbody>
</table>

- **Savings**
  - As is: $665/shift
  - BBHS: $2,128/shift
  - Savings: $1,463/shift
- **Summaries**
  - As is: $1,368/shift
  - BBHS: $4,940/shift
  - Savings: $3,572/shift
### Tail-to-tail operations

<table>
<thead>
<tr>
<th>Time</th>
<th>As is</th>
<th>BBHS</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30 AM</td>
<td>9</td>
<td>6</td>
<td>10.5 h/shift</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>36</td>
<td>25</td>
<td>44 h/shift</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>36</td>
<td>25</td>
<td>44 h/shift</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>51</td>
<td>36</td>
<td>75 h/shift</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>30</td>
<td>21</td>
<td>27 h/shift</td>
</tr>
</tbody>
</table>

- **As is**
  - 9 h/shift: $399 /shift
  - 36 h/shift: $1,672 /shift
  - 36 h/shift: $1,672 /shift
  - 51 h/shift: $2,850 /shift
  - 30 h/shift: $1,026 /shift

- **BBHS**
  - 6 h/shift: $1,026 /shift
  - 25 h/shift: $2,850 /shift
  - 36 h/shift: $1,026 /shift

- **Savings**
  - 10.5 h/shift: $399 /shift
  - 44 h/shift: $1,672 /shift
  - 44 h/shift: $1,672 /shift
  - 75 h/shift: $2,850 /shift
  - 27 h/shift: $1,026 /shift

### Summaries

<table>
<thead>
<tr>
<th>Summaries</th>
<th>As is</th>
<th>BBHS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As is</strong></td>
<td>664.5 h/day</td>
<td>$25,251 /day</td>
</tr>
<tr>
<td><strong>BBHS</strong></td>
<td>464 h/day</td>
<td>$17,632 /day</td>
</tr>
</tbody>
</table>

- **Savings**
  - 200.5 h/day: $7,619 /day
  - $2,780,935 /year
# Sickness absence and worker insurance

<table>
<thead>
<tr>
<th></th>
<th>Sickness absence</th>
<th>Worker insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As is</strong></td>
<td>$929 /day</td>
<td>$929 /day</td>
</tr>
<tr>
<td><strong>BBHS</strong></td>
<td>$732 /day</td>
<td>$197 /day</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>2%</td>
<td>$732 /day</td>
</tr>
</tbody>
</table>

## Cost Summaries

<table>
<thead>
<tr>
<th></th>
<th>As is</th>
<th>BBHS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sickness absence</strong></td>
<td>$1,626 /day</td>
<td>$246 /day</td>
</tr>
<tr>
<td><strong>Worker insurance</strong></td>
<td>$929 /day</td>
<td>$197 /day</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td>$503,700 /year</td>
<td>$267,180 /year</td>
</tr>
</tbody>
</table>
Total Savings

<table>
<thead>
<tr>
<th>Total Sorting Hall Savings</th>
<th>$6,685,340/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Other Savings</td>
<td>$3,551,815/year</td>
</tr>
<tr>
<td>Total Potential Savings</td>
<td>$10,237,155/year</td>
</tr>
</tbody>
</table>

Payback of ~2.5 years

Excluding value of capacity increase, removing need for new building investment
Benefits and Opportunities
Benefits

As is

- Departure
- Arrival
- Delivery time

- 100% of all BAX
- 2.8/1000
- 8

BBHS

- Departure
- Arrival
- Delivery time

- 5% of all BAX
- 1.4/1000
- 5

Turn around time

Time savings

Lost and damaged

Staffing needs
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Operational</th>
<th>Efficiency</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational</td>
<td>• Smooth and safe baggage flow</td>
<td>• Improved turn around time</td>
<td>• Reduced labor costs on apron and in sorting hall</td>
</tr>
<tr>
<td></td>
<td>• Gentle baggage handling</td>
<td>• Quicker handling process time</td>
<td>• Reduced insurance/injury costs</td>
</tr>
<tr>
<td></td>
<td>• 95% reduced manual lifting</td>
<td>• Full BAX traceability</td>
<td>• Reduced lost and damaged BAX costs</td>
</tr>
<tr>
<td></td>
<td>• Full baggage reconciliation overview of arrival and departure</td>
<td>• High utilization of existing space</td>
<td>• Aggressive system payback</td>
</tr>
<tr>
<td></td>
<td>• Reduced work injuries</td>
<td>• High cart utilization</td>
<td>• Less investment in new space</td>
</tr>
<tr>
<td></td>
<td>• Time savings</td>
<td>• Just in time storage and sortation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduced amount of staffing required</td>
<td>• Taking control over baggage flow</td>
<td></td>
</tr>
</tbody>
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**Operational**

- Smooth and safe baggage flow
- Gentle baggage handling
- 95% reduced manual lifting
- Full baggage reconciliation overview of arrival and departure
- Reduced work injuries
- Time savings
- Reduced amount of staffing required

**Efficiency**

- Improved turn around time
- Quicker handling process time
- Full BAX traceability
- High utilization of existing space
- High cart utilization
- Just in time storage and sortation
- Taking control over baggage flow

**Financial**

- Reduced labor costs on apron and in sorting hall
- Reduced insurance/injury costs
- Reduced lost and damaged BAX costs
- Aggressive system payback
- Less investment in new space
Value Proposition

- **Eliminates manual lifting**
  - Luggage is flushed automatically to/from Trolleys and belts

- **Baggage handling efficiency**
  - Reduced time from bag drop-off to delivery at destination

- **Time savings**
  - Flushing to/from A-CU and D-CU prevail existing approach

- **Full traceability**
  - By batching luggage it can be traced from drop off to delivery

- **Baggage cart utilization**
  - Reduces airports cart fleet to 1/5th

- **Gentle handling**
  - BBHS eliminates abrasive manual lifts and loading

- **Aggressive payback**
  - Cost efficient solution with only 3 years payback

- **Insurance premiums**
  - Less manual lifts leads to fewer work injuries

- **Square meter utilization**
  - The ‘batch’ approach reduces requirements to baggage halls
Thank you
For further information on the BBHS system, please contact us at info@bbhs.dk or +45 3178 1012